Post-deregulation passenger selection of US airports

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Abstract

Airlines have endured a prolonged period of intense competition with the advent of deregulation in 1978. Market innovations and price-cutting dramatically expanded the number of travelers utilizing the national air transportation network. Bankruptcies and mergers reduced the number of contestants in the industry and eventually produced four national carriers controlling 80-85 percent of the passengers and routes. This new market power of the dominant airlines is resulting in industry changes designed to reduce operational uncertainty but is also having detrimental effects on many airports, particularly the smallest airports. This study employs qualitative and quantitative methods to explore the viability of the nation’s smallest primary commercial service airports. Three journal articles are fused in examining different aspects of the viability question. In Article 1, a longitudinal comparative analysis presents historic growth patterns for various sized airports during deregulation and reveals a distinctly lower growth rate for nonhub airports than their larger rivals. Even with a burgeoning market for travelers, growth for nonhub airports was anemic and the industry experienced massive passenger migration to the 60 largest airports. Article 2 addresses the topic of consumer switching, expands on extant literature with qualitative analyses, and proposes a theoretic, conceptual framework of four primary types of traveler purchasers. Each traveler type has its own distinct switching rationale and creates leakage patterns contoured to the features of their preferred airport. Building on the migration and switching findings of the first two articles, Article 3 explores converging market conditions and factors that are threatening future airline service for dozens of the smallest airports. By extracting findings from contemporary research, a comparative analysis of airports identifies 33 airports that face the highest risk of losing air service. The explanatory model places the airports in rank order by weighting various threat criteria. Qualitative interviews of air service professionals offer insider observations generally not known to the public, confirm observations found in existing research and verify that market forces are acting to reduce the number of airports in the network. The key contribution of the three articles of the thesis is its description of how key actors (firms, customers, agencies) interact and respond to policy decisions that have unintended consequences to small airports and their regional economies. There are predictable patterns in the relational linkages of these actors that contribute to our understanding of how a particular industry evolves under various pressures and how it interacts with factors outside the industry. The preponderance of the evidence from this study reveals that current market trends are generally caustic to the continued operation of small airports. Industry experts are reticent in acknowledging that the next phase of deregulation is underway with the consolidation of the nation’s nonhub airports.
Declaration

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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Dedication

This thesis is dedicated to my family. I gratefully acknowledge Dr. Laszlo Czaban, Dr. Matthew Allen, Dr. Jikyeong Kang, Dr. Atul Gupta, Mark Courtney, and Rosemary Stafford for their timely and essential support. In addition, I want to extend my ardent appreciation to the University of Manchester, its faculty and staff, and my cohort of classmates for this enriching journey.

Author

The author holds a Bachelor of Science in Journalism from South Dakota State University in Brookings, SD and a Master of Business Administration degree from Lynchburg College in Lynchburg, VA. He has co-authored four research articles published in academic journals.
1. Bridge Introduction

The multifaceted contributions of a passenger airport make it a unique community asset that position a regional economy to compete for the most coveted employment and investment opportunities (Florida et al., 2015). Conversely, the loss of air service would plunge a community’s immediate and future prospects into a freefall for economic survival. In addition to its obvious transportation role, airports are a revolving door for consumers seeking to engage in a myriad of activities with commercial implications. Analysts broadly agree that airports generate jobs and investments that add to a region’s general prosperity (Zhang and Czerny, 2012). While there is top-of-mind awareness for the likes of O’Hare, LAX and LaGuardia, the benefits of an airport are scalable and expand its host’s range of economic possibilities even for the smallest airport (Walston, 2016). Consultants that make recommendations on locating new businesses insist that an airport’s attributes weigh heavily on the types of jobs its community can attract. Conversely, an airport’s loss of air service is likely to result in dire consequences, including the community’s dislocation of businesses and consumers that depend on immediate accessibility to logistics and the national network (Ellis, 2010). In addition, the community will suffer an opportunity cost from having lost a market alternative that will no longer be available for consideration in future investment decisions. While the immediate and future costs are incalculable (Mowry, 2014), the loss of airline service reduces a community’s economic options and is likely to send it down a less prosperous path (Florida et al., 2015).

This summary of my airport experiences in Lynchburg serves two purposes. First, it is indicative of the plight of nonhub airports (the smallest primary commercial service airports) and their gradual loss of airline service. Secondly, Lynchburg’s erosion of air
service prompted in me a palpable curiosity about the experiences of other small cities and their nonhub airports. This study’s research proposal and methods approach emanate from my professional experiences, education, personal epistemology and vexation at the loss of two major airlines from the Lynchburg Regional Airport. Manchester’s DBA Director granted my request to address the topic with three individual research articles. While the longitudinal analyses used in Article 1 was underway, its results would direct the construction of the additional complimentary, yet distinct study topics. Based on gaps identified in extant literature, it was envisioned that the other two articles would engage a qualitative exploration of consumer switching from the smallest commercial airports and a study of the current market viability of nonhub airports. In the methods design for this study, it was appropriate to follow the qualitative, comparative data analyses of Article 1 with additional qualitative investigations to develop theory that addresses the overarching research question: what is the viability of nonhub airports in the current air services market.

As the president of the Lynchburg Regional Chamber of Commerce in 2001, I assisted the airport manager in forming the Air Service Development Partnership to involve business stakeholders in the recruitment of additional air service. At the time, the Lynchburg Airport offered United service to Dulles-Washington, Delta service to Atlanta and US Airways service to Charlotte and Pittsburgh. All three major airlines operated in Lynchburg through their regional carriers and primarily used turboprop equipment to fly the short routes of about one hour. Because the Partnership involved several of the Chamber’s largest member businesses and the importance of air service in our region, I (as president of the organization) personally participated in the meetings. At the initial meetings, Partnership members articulated their desire for an additional airline, new
routes, more flights, cheaper airfare and better aircraft. The airport manager had regular meetings with representatives from all three airlines and reported general satisfaction with Lynchburg’s enplanement numbers and load factors. The September 11 terrorist attacks made travelers afraid to fly and passenger demand plunged in Lynchburg and nationally. Within months, United asserted that it was losing money and announced plans to abandon its Lynchburg service. Once United made its announcement, it quickly became obvious that nothing could reverse the decision. Shortly after, US Airways downsized its hub in Pittsburgh and dropped service to numerous small cities, including Lynchburg.

For the ensuing 13 years, I worked closely with the airport manager to restore service. We met with airline planners and schedulers to build relationships and make modest requests for improvements. While we enjoyed a few successes and the Airport posted solid numbers, Delta announced its plans to leave Lynchburg in 2011. Delta was the first major airline to announce its strategy to eliminate small jets from its nationwide fleet. In private channels, we were told that eliminating service to Lynchburg would allow Delta to reduce several small jets and lower its costs of operation in Virginia. The airline projected that its rewards members in Lynchburg would drive one hour to fly Delta from the Roanoke Airport and would benefit from a more favorable revenue allocation from its international traffic. A personal meeting with airline representatives and a passionate defense by the airport manager did not dissuade Delta from its decision to abandon Lynchburg. After several years of attempts by its savvy airport manager and posting solid enplanement and load factor performance, Lynchburg is still served by the regional surrogate for American Airlines (after merging with US Airways) and primarily turboprop aircraft. Despite his best efforts, the airport manager expresses concern that the
one-hour driving distance to two larger airports may eventually prompt the remaining airline to abandon Lynchburg.

Knowledge acquired through education and career experiences solidified personal preferences that largely defines my personal epistemology and, thus, influences the framework of inquiry used in writing this thesis. Sequentially, working in a variety of capacities at the college newspaper and earning a bachelor of science in journalism cultivated an appreciation for objectivity, the development of techniques that accurately reflect the closely held views of interview subjects, and the importance of word selection and storytelling in imparting a coherent message to an audience. A six-year stint as an editor for three weekly newspapers and political communications specialist for a United States Congressman, South Dakota Lieutenant Governor, South Dakota Governor and legislative lobbyist for six organizations fostered knowledge of the public’s diversity of opinions, how to effectively convey a message to policy-makers and the inner workings of political apparatus. A lengthy career in managing business associations developed diverse knowledge in marketing, management, geographic differences, economic and community development, a broad view of numerous business sectors, and advanced techniques to advocate on behalf of membership organizations. Five semesters as an adjunct business professor and intimate interaction with a college business school introduced a new challenge and the need to intertwine the theoretical with the practical to impart knowledge and understanding to classrooms of diverse abilities and motivations. Finally, graduate studies have strengthened comprehension of accounting, finance, statistics, economics, relevant computer applications, research methods, international business and epistemology. Gained over a lengthy portion of my career, these
professional development experiences have enhanced my ability to interact with people from a range of backgrounds and perspectives.

1.A. Epistemological influence on the research design

In identifying an epistemology that best reflects my personal style, it is natural to gravitate toward a preference that compliments ontological realism and aligns with the lessons derived from my experiences. Numerous tenets of American Pragmatism make it an appealing epistemology that embodies my beliefs and offers direction to developing a research approach for this thesis.

**Creation:** Introduced the 1870s and steeped in Western beliefs, America’s first philosophical contribution has had a durable influence (Campbell, 1996). The development of the foundational tenets of Pragmatism was a prevailing topic of the Metaphysical Club, a small group of notable scientists and academics that met in Cambridge, Massachusetts. In particular, four members of the Club are regarded as the most influential in presenting and articulating the initial theory of Pragmatism: Charles Sanders Peirce, William James, Chauncey Wright and future Supreme Court Justice Oliver Holmes, Jr.

**Principles:** It is difficult to generalize Pragmatism as its founding members emphasized different aspects of the theory and were not always in agreement (Burke, 2007). Nearly 150 years after its introduction, Pragmatism’s critics have reached tacit agreement on its most compelling principles: values, and even truth, are not fixed or absolute; experimentation enables positions to be tested; philosophy should help solve human problems; human growth occurs from molding and adjusting to their environment; democracy allows for individual and societal development; individuals should prioritize
practical results over tradition and customs; an idea is best measured by its usefulness; human existence in this world is always changing; change can be managed to satisfy human need; and empiricism is essential in education and the formulation of ideas. These principles are extracted from various authors and articles written about Pragmatism. One Hilary Putnam opines that the essence of Pragmatism can be reduced to four claims: fallibilism, anti-skepticism, the dichotomy of fact and value, and the notion that experience should be central to philosophy (Putnam, 1994). Another apologist contends that six characteristics best portray Pragmatism’s distinctiveness in the field of Philosophy: the meaning of ideas and statements must be understood from their practical consequences; the degree to which an idea meets human needs and presents evidence of truth; there is no real need to search for a foundation of fixed truths; complexity of thought is reflected only by theories; there is no knowledge gained outside of experience; and whatever stifles reasoned inquiry is not a productive pursuit (Pfeiffer, 2003).

Expansion: A central premise of this problem-solving philosophy is that the meaning of an idea is a function of its practical consequences (Pfeiffer, 2003). By emphasizing matters of human existence over rigid dogma, Pragmatism advocates a broad examination of the world through experiential modes of observation, practical results, inspection, verification and reflection. Pragmatism endeavors to apply scientific methods to theoretical thought. The fledgling epistemology expanded through the writings of its founders to influence the fields of psychology, sociology, law, education, politics, arts, ethics and the individual pursuit for gathering knowledge (Misak, 2013). Pragmatism places preeminence on matters of human existence over the snares of philosophic doctrine advanced by skeptics.
Founder: Peirce was the first member of the Metaphysical Club to introduce Pragmatism to the public through his writings, closely followed by the renderings of James. They advanced different priorities. Peirce emphasized the synthesis of knowledge within a community of peers while James stressed the development of beliefs as a product of individuals who seek to make sense of the world (Misak, 2013). They agreed on tenets to promote rather than suppress the creation of knowledge: epistemological inquiry must start in the middle where people find themselves, and philosophical views should not block the path of inquiry (Campbell, 1996). With these criteria in mind, Pragmatists rigorously refute the traditional view that inquiry should begin with a clean slate and a neutral starting point (McDermid, 2006). In Pragmatism, evidence attained through inquiry replaces doubt with a better belief and eventually fixes belief if a position can permanently fend off arguments (Misak, 2013). As scientific inquiry discovers new arguments and evidence, fallible beliefs and theories are subject to revision or rejection. Particularly in the view of James, the Pragmatist does not advocate a particular method for fixing belief and respects a diversity of views until evidence demonstrates which ideas are valid and which are not. Based on the attendant problems associated with fallibility, James and Peirce view claims of true belief (permanently settled science) as more of a threat than a comfort (Pfeiffer, 2003).

By applying scientific methods to philosophy, Peirce hoped that inquiry would be used to solve real problems and avoid protracted debates on trivial or abstract issues of little or no relevance (Campbell, 1996). Peirce contends that a logical and social epistemology is more closely aligned with how people think. By incubating theory in a community of rational peers, Peirce asserts that experiments and critical analyses of published results create a uniform evaluation method that enhances involvement and
builds consensus among participants (Misak, 2013). Cooperative community inquiry enables individuals with a laboratory mind to attain agreement by defining meanings, creating hypotheses and aligning beliefs until consensus is achieved. As an ontological realist, Peirce claims that reality provides a framework that makes it possible for people to act on their beliefs and knowledge.

**The individual:** James applied Pragmatism to the level of the individual, maintaining that beliefs play a vital role in our daily lives. On matters of personal inquiry, he asserts that new beliefs must be built on currently held beliefs (Campbell, 1996). While individuals cannot always be correct about their beliefs, James asserts they should attempt to avoid error by continually testing them. Based on the sheer number of decisions that people must make each day, personal inquiry is likely to be a gradual process. People make decisions and form beliefs without sufficient information because they do not think like scientists and cannot postpone decisions until they have been published, debated and vetted. James contends that moral questions may require belief to proceed evidence and that life compels individuals to act on what they think they know and believe (Misak, 2013). James suggests that matters of religious faith may not satisfy scientific standards for evidence but neither do decisions for agnosticism. He concludes that individuals are justified in leading religious lives and holding views on the existence of God even though they cannot be proven true (Pfeiffer, 2003).

**Holmes:** Future Supreme Court Justice Oliver Wendell Holmes applied principles of Pragmatism to legal reforms. He submits that inquiry and experience allows judges to overcome fallibility in interpreting the law and helping them to arrive at the best possible outcomes. Holmes asserts that the law should be viewed in terms of expected behavior and society’s willingness to act on the best available answer at that time. Like scientists,
judges rely on a process of inquiry that blends beliefs, customs and experiences to arrive at solutions that aim to eliminate disputes (Misak, 2013). James applies the same Pragmatic standard of validity in his shared conception of law and truth. Later in his life, Holmes distanced himself from the James version of Pragmatism and indicated a closer alignment with Dewey’s writings.

**Dewey:** Although John Dewey was not a member of the Metaphysical Club, he routinely references ideas from the group and is considered one of the most influential proponents of Pragmatism. Active in education and child development communities, Dewey prescribed Pragmatism for evaluating and reforming inherited social customs and practices (Hookway, 2013). He asserts that experience, inquiry and the scientific method are applicable to all branches of philosophy in addressing the problems of daily existence. Though some matters are impervious to advance reason and experience, Dewey suggests that instinct and critical evaluation of the consequences of actions will ground understanding and lead to improvements in social policy (Misak, 2013). He submits that a community of peers committed to scientific inquiry will enable society to solve its social and political problems one by one.

In 1938, Dewey authored the book, *Logic: The Theory of Inquiry.* Citing Peirce, Dewey asserts that science and logic improve in tandem and that logic is an observable result of the activities of inquiry (Dewey, 1938). By distinguishing between common sense and scientific inquiry, Dewey promotes a logic associated with forming and transmitting a cultural environment. He states that cultural relationships form from individuals conforming to group activities, interests, customs, institutions and language meanings. Dewey submits that common sense used to explain cultural developments rarely adheres to mathematical and quantitative explanations but are worthy of study by
qualitative methods. Similarly, he repeats a central tenet of Pragmatism in contending that every conclusion reached in scientific inquiry is subject to further inquiries and this conditional status is necessary to advance understanding.

Dewey was a prolific writer with more than 1,000 published works on philosophy, education, culture, religion and politics until his death in 1952. As Dewey’s career was concluding, many philosophers who shared his views began exchanging their pragmatism stripes for realism and naturalism as Darwinism continued to win converts and logical empiricism expanded from Europe. After decades of critical review, Pragmatism’s ideas grew stale and gave way to novel and stimulating ideas from these other epistemologies (Hookway, 2013).

**Resurgence:** After Dewey, Pragmatism lay dormant for about two decades when it experienced a resurgence of acceptance and popularity. In the 1970s, interest was rekindled in Pragmatism’s ideas and contributions as contemporary thinkers once again cited the principles and rationale of its founders (Hookway, 2013). In the 1980s and 1990s, led by Hilary Whitehall Putnam and Richard Rorty, philosophers resurrected the views of Peirce, James and Dewey in modern applications of Pragmatism in matters such as the renewal of philosophy, ethics, democracy, scientific enterprise, community of inquirers and religion (Misak, 2013). Rorty and Putnam drew on traditional concepts from Pragmatism in launching their own version of the epistemology called Neopragmatism and Linguistic Pragmatism (Whitehead, 2016). The postmodern version shifted emphasis from experience to language and the notion that the contextual application of words creates meaning by using *mental language* to describe concepts. They repudiate primary principles of prevailing epistemologies and reintroduce many of the classical tenets of Pragmatism: complete skepticism, fallibilism, antidualism about facts and values, and the
role of experience in philosophy. A new generation of Pragmatists considered Rorty’s new ideas as captivating while other peers dismissed them as idiosyncratic.

In 2017 and 2018 alone, Pragmatism is featured in 82 published research articles in a wide range of subjects, according to Google Scholar. In the first of two recent examples, Pragmatism is portrayed as a neutral and equalizing mediator for the consideration and development of feminist viewpoints (Whitehead, 2016). In addition, French economists made Pragmatism the foundation for coordinating actors and integrating their research perspectives for domestic, industrial, market, green and civic conventions, which are socio-cognitive resources used to advance society (Diaz-Bone, 2016). Recent research articles have also addressed topics as diverse as the best practices for social studies teachers, climate change effects on fishermen, integrating Total Quality management into higher education, Hermeneutics, application in Chinese universities, integration policies, strategic decision making in the healthcare sector and many other.

**Critics:** Conversely, from the beginning, critics have refuted Pragmatism and the interpretations of its apologists and have adjusted their critiques as the discussion flow in philosophy has changed. In the beginning of the 20th century, Pragmatism and its critics spread beyond North America. Emboldened by denunciations from philosophers in England and France, Italian critics asserted that Pragmatism is a poor copy of British empiricism and revolted against science itself (Riley, 1911). The Italians enunciated common concerns that the approach defines truth by utility, changes with time and context, and what one person perceives as useful is not uniform for others. It was argued that pragmatic principles define truth by subjective evaluations of success and that every action and thought is judged on whether it makes a positive difference.
Since Pragmatism’s founders did not always agree, external criticism alternated between Peirce, James, Wright, Holmes and Dewey. One of the largest initial divides in Pragmatism was between Peirce and James on the matter of religion. James broke from Peirce’s standards of scientific method and peer review to assert that it is reasonable for individuals to embrace religion without any certainty of truth. James asserted that humans are forced to make many important decisions in the presence of uncertainty and that practical needs justify the acceptance of beliefs and practices (Pfeiffer, 2003). Wright openly opposes James by asserting that empiricism and scientific scrutiny must validate religion, ethical and moral judgements, and other unseen forces (Misak, 2013). British philosophers Bertrand Russell and G. E. Moore ridiculed James’ idea of plastic truth as defective, insisted that claims of truth be subject to verification, and that it is senseless to assert that an individual’s belief inevitably makes it true. The ensuing barrage of similar criticism damaged Pragmatism’s reputation within philosophy and stalled its acceptance in America and Europe. However, analysts continue to debate James’s notion that a belief can be adopted from a personal concept of God or that it contributes to utility, happiness and fulfillment (Hookway, 2013).

Through decades of publications, Dewey’s contributions to Pragmatism cultivated new converts to the approach as well as new attacks. Dewey is recognized for his theory of inquiry, methods for social progress, and criteria for moral and political engagement. However, his critics argue that Dewey fell into the Pragmatism trap of basing his ideas on the relativity of changing time, place and circumstances (Sorrell, 2013). Other contemporary critics mitigate their praise with charges that Dewey falls short when measured against modern ethical standards. A proponent for Darwinism contends that Dewey appropriated several of his ideas from Charles Darwin to advance himself and
Pragmatism (Schaefer, 2014). He asserts that Dewey drew on Darwin’s evolutionary logic to develop his own concepts of the development of human potential, the necessity of integrating human endeavors with our environment, his approach to philosophic inquiry and the potential for combining various cultures of knowledge to benefit society.

Schaefer (2014) submits that Dewey views democracy as the political structure best equipped to encourage innovation and societal development in a nation with America’s attributes. Other critics are concerned that Pragmatism has historically perpetuated nationalistic and gendered premises that preclude fair and open consideration of a variety of alternative viewpoints involving colonialism, imperialism, sexuality, religion, race and class (Whitehead, 2016). Critics urge pragmatists to formally reevaluate their rich tradition of inclusiveness in context of modern political and historical progression with an enlightened commitment to include many more stakeholders who have yet to be included in the Pragmatist narrative.

Proponents consider Pragmatism’s commitment to diversity and pluralism as one of its greatest strengths but detractors interpret this commitment as an indication that the epistemology stands for little or nothing (McDermid, 2006). Through its 150-year history, Pragmatism is dogged by a reputation for looseness of thought by many of its critics (Misak, 2013). The debate continues between those who disavow the existence of truth and objectivity and those who embrace Pragmatism as a thoughtful attempt to improve the human condition by inching ever closer to the truth.

**My choice:** Despite its critics, Pragmatism elucidates themes that are appealing to individuals who are interested in improving the consistency of their thought and applying philosophic reasoning to their daily challenges. Pragmatism is not a single philosophy but a flexible method for approaching philosophy. Pragmatism maintains a high bar for
scientific inquiry, poses a helpful framework for solving social problems and offers an accommodating map for individuals negotiating the constant challenges of the human predicament. It is logical for a researcher to begin a process of inquiry with the knowledge currently possessed and the resolution to make adjustments as additional information is acquired. Pragmatism allows us to rely on the results that we find in experience and to break out of the paralyzing intellectual traps of skepticism and epistemologies not grounded in reality.

I find that Pragmatism provides an appropriate epistemological approach to pursue the research questions and inquiry necessitated by this thesis. Fundamentally, Pragmatism assisted me in developing the three research articles through its reliance on utility and practical consequences. Each phase of research produced new information, new questions and a clearer definition of the tasks that lay ahead. Three extensive literature searches and four research methods enabled an incremental understanding of the total picture and sharpened the research questions necessary to advance to the next phase of the project. The initial assimilation of literature and the involved longitudinal analyses of hundreds of airports revealed valuable data that positioned me to proceed to the next set of refined research questions and selection of appropriate methods. Similarly, the literature search and inquiry results from the second article provided clarity for the final stage of questions and research goals. The utility produced at each phase produced a cascade of knowledge, experience and a platform to sharpen focus and draw conclusions that address the overarching question of the viability of the nation’s smallest primary airports.

While extensive research exists on the air service industry, questions concerning the viability of the nation’s smallest commercial airports required additional attention. Identifying the gaps in knowledge and formulating a research response required
flexibility in developing compatible methodologies that revealed new knowledge and
theory. Pragmatism provides a practical basis for examining the results of mixed methods
to answer these questions. The following section elaborates on the research design and the
rationale used for collecting and analyzing data to draw coherent conclusions.

1.B. Research design

An extensive literature review of airports and the air service industry preceded the
identification of a research topic and approach. The inventory demonstrated a dearth of
data concerning the longitudinal measurement of post-deregulation growth of airports.
The analysis of period growth rates for the four FAA size classifications for primary
commercial service airports (large, medium, small and nonhub) is essential for a
comparative evaluation of nonhub airports and their larger rivals. Fortuitously, the
Department of Transportation has been collecting annualized origin and destination
(O&D) data for commercial service airports since the passage of airline deregulation.
Criteria were devised to standardize the raw data from a 36-year period in order to arrive
at annual average growth rates for individual airports and the four FAA airport
classifications.

The growth results from the comparative analyses objectively confirm a
significant disparity between nonhub airports and larger airports. While this data
substantiates that nonhub airports have not been enjoying the same degree of success in
the burgeoning post-deregulation market, more evidence is needed to make the claim that
they are teetering on viability. Article 2 employs convenience sampling and semi-
structured interviews to introduce qualitative techniques in an attempt to reveal consumer
switching differences between large and small airports. With switching as the study’s unit
of analysis, Article 2 identifies numerous advantages that motivate travelers to switch from their preferred hometown airport to a larger alternate airport. Coding analyses of primary consumer preferences resulted in the identification of four traveler purchasing profiles and the creation of a new conceptual framework theory. These findings strengthen the assertion that nonhub airports find themselves in a precarious position in terms of preventing leakage of their market and potential passengers.

Article 3 adds two additional elements to the viability discussion by introducing the research methods of qualitative expert testimony and comparative analysis of published at-risk attributes. The at-risk attributes are identified in extant research and reinforce converging market conditions (cited in the introduction) that are endangering numerous nonhub airports. The comparative analysis of at-risk factors results in an explanatory model of 33 airports that face the greatest danger of losing airline service. Finally, candid discussions with seasoned industry professionals verify the array of caustic market conditions that currently face small airports and their recognition that airport consolidation is underway.

This study’s research design employs diverse methods in addressing its overarching question about the viability of nonhub airports. These methods include a quantitative analysis of airport growth trends, qualitative interviews of airline passengers, a comparative analysis of at-risk factors and qualitative interviews with industry experts to approach the viability question from various angles. By examining different aspects of the issue, the new knowledge and theory generated by these studies effectively mesh with Pragmatism principles that promote combining scientific and experiential methods in addressing issues of human interest and their practical consequences.
1.C. Key literature

The literature selected for the three research articles reflects the shifting emphasis of content in each. While consumer switching, passenger migration and the post-deregulation airline environment are common topics of these articles, they each engage separate bodies of literature. Research questions define the nature of the literature that connect the articles and allows them to transition in a progressive manner that builds upon successive contributions. While the study draws from almost 400 research articles, there are a few that are notable in advancing important concepts identified in the three articles. Alfred E. Kahn, the final chairman of the Civil Aeronautics Board and renowned as the Father of Airline Deregulation, commented on deregulation’s effect on matters such as airline mergers, regulatory oversight, customer service, drawbacks of CAB control of the industry, and predatory tactics of dominant airlines (Kahn, 1988a, 1988b, 1990, 2001). Michael Wittman and William S. Swelbar, co-authors of an MIT study on air service, offer candid commentary on industry market trends and the difficulties faced by small communities in maintaining their air service (Wittman and Swelbar, 2013). Barney C. Parrella wrote a seminal report for the Transportation Research Board focusing on issues of consumer choice in multi-airport regions (Parrella, 2013). Richard Cyert and James March offered invaluable insights about decision making theory of large, dominant corporations that relate to the practices of oligopoly carriers in the airline industry (Cyert and March, 1963). Eric Pels is largely credited with the notion that travelers use a two-step process for selecting an airline and airport for their trips (Pels et al., 2001, 2003).

Literature for Article 1, *Post-deregulation passenger selection of US airports*, focuses on changing market conditions resulting from airline deregulation, background information on airports, the industry’s reduction in airfares, price elasticity of demand,
consumer response to low prices, the emergence of low-cost carriers, price discrimination and traveler types, airline cost control, and the collapse of competition from bankruptcies and mergers. The focus for the literature for Article 2, Consumer nested preferences and switching in airport selection, shifts to airport markets and competition, consumer criteria for airport selection, longitudinal enplanement growth rates for airports of various size, consumer switching attributes, passenger migration theory, airline retention activities, airline pricing, customer satisfaction, airports as community assets, and advantages of small and large airports. Article 3, Mature deregulated market is purging nation’s nonhub airports, presents literature about the importance of airports to regional economies, large corporation decision making theory, shocks to the airline industry, converging pressures on nonhub airports, regulatory oversight of the airline industry, government and corporate networking theory, federal support for small airports, and the roles of regulatory agencies. Due to the immediacy of the issues in Article 3, this study utilizes several articles from newspapers and magazines to capture developments that are not currently available in research journals.

1.D. Questions emerge

The initial research question emanates from an essential gap in the information that reveals whether the behavior of the smallest commercial service airports is substantially different than larger airports. Despite a federal data source that measures quarterly enplanements at passenger airports, there is an absence of a yardstick that measures post-deregulation growth rates for airports of various size on a comparative basis. This dearth prompted the research question for Article 1:
What is the pattern of consumers selecting airports for their originating flights in the wake of airline deregulation?

While the question appears to be awkwardly worded, it carefully reconciles the management of existing, short-term data sources with the objective of generating quantitative comparative data that spans a 36-year period. Article 2 builds on the results of Article 1 by examining the phenomenon of consumer switching with emphasis on the smallest primary airports. It was necessary to structure the research questions to allow for the finding that travelers have a preferred airport and to evaluate the behavior of travelers selecting originating airports for their trips.

For travelers indicating loyalty for a specific airport, what would prompt them to switch to an alternate airport? What identifiable patterns emerge from analyses of traveler decision making data that differentiate them in selecting an alternate airport?

With the migration data from Article 1 and consumer switching information from Article 2, we confidently assert that nonhub airports face a significant disparity in passenger growth and switching attributes. These conclusions position the questions emanating from research objectives for Article 3:

What substantial hazards currently face the nation’s smallest primary commercial service airports? What federal agency regulatory authority exists to take corrective action in the industry? What are the explanatory factors indicating that an airport is on the verge of losing commercial air service?

Study methods emanate from the questions and objectives of a research project. Inquiry of each question promotes the discovery of causes and leads to a more complete understanding of the complexity of the study topic.
1.E. Methods

Various agents are involved in the fate of small airports. Even though airports have a variety of sources for exchanging industry information, they perceive adjoining airports as competition for their potential passengers and do not coordinate their activities to achieve any type of overall efficiency. Small airports operate within a competitive environment where they face many of the same challenges as other airports their size, particular in their relentless search for better service options from their partner airlines: more carriers, more flights, cheaper airfare and better equipment. However, each airport is unique in terms of its available market based on the proximity of the number and size of competing airports and the nature of its region’s population employment mix, travel inclinations of local travelers and commercial attractions. Studying the viability of the nation’s smallest primary airports requires different types of data from the various agents. This inquiry process requires more than one methodology and that the methods identified are complimentary in providing internal validity to the study’s findings and conclusions. Pragmatism encourages the use of a combination of quantitative and qualitative methods to add value to the inquiry process by providing a range of knowledge to adequately address the identified research questions.

Inquiry begins with the identification of the types of data required to address the research questions. Mixed methods were selected to explore the social phenomenon described in this thesis. To ensure the intended corroboration across research strategies, a triangulation design was contemplated to increase the validity and trustworthiness of the study’s findings. In addition to enhancing the cross-checking of data and results, combining quantitative and qualitative methods is considered a reliable and effective approach for developing knowledge and theory of complex social situations (Bryman and
Bell, 2003). We also designed research methods with the goal of explaining how and why the methods are developed, as well as the ability to replicate the methods now or in the future. The combination of methods from the three articles include the quantitative components of a longitudinal analysis of passenger migration and the creation of a predictive model of at-risk airports, as well as the qualitative components of semi-structured interviews of passengers and air service professionals and the creation of a conceptual model of traveler purchase patterns. Triangulation of the study’s multiple methods fortifies the desired coordination between the qualitative experience of essential actors and quantitative findings in a manner that balances the strengths and weaknesses of each.

In approaching the overarching research question of small airport viability, the extensive initial literature search revealed the absence of a standard to compare the growth of airports since the implementation of deregulation. An objective basis for measuring airport growth is necessary to understand the passenger migration resulting from the near tripling of the nation’s enplanements during the period. Fortuitously, deregulation requires airlines to report on the number of passengers boarding at each airport in the city pairs of its routes. The Department of Transportation collects and reports T-100 (monthly) and DB1B (quarterly) sources for airport enplanements. This data is used to reveal passenger flows and airline market shares. When I was engaged in the initial inquiry for Article 1, DOT had reported data on almost 2,000 airports from 1979-2014, inclusive. This depository of DOT enplanement data is raw, massive and virtually unusable in its current form. After researching private sector companies that maintain and manage data from the two DOT reports, I performed reference checks and interviewed Data Base Products, regarded as one of a few preferred companies in the
industry that synthesize and sell T-100 and DB1B (also known as Origin and Destination Survey) data. More information and citations on O&D and T-100 data are available (Article 1: III. Methods).

**Article 1:** Discussions about the creation of the longitudinal study were conducted regularly with my thesis advisers. Over a two-year period, Data Base Products provided three batches of annual enplanement data from 1979-2014, inclusive. That was the extent of the company’s involvement in my project. The batches were consolidated into a single Excel spreadsheet and the enplanement results for the 36-year period were correlated for each of the 700 airports provided by Data Base Products. The airports were analyzed for trends related to growth, airport size and migration factors. Prior to the selection of FAA size classifications as the basis of the comparative analyses, airports were divided into quartiles and deciles for evaluation. Based on these calculations, it was determined that there are compelling advantages to assembling the airports into groups with homogenous characteristics based on annual enplanements, service offerings and operational challenges. The FAA reached the same conclusion decades ago when it created criteria for annually categorizing airports by their total annual enplanements (Article 1: 3.A. Methods observations; Article 1: 4. Study findings; Article 2: 1.A. Airports compete to retain travelers in deregulated market). Since airports are reevaluated annually for the FCC classifications, there is fluctuation in the number in each group. Generally, there are about 30 large hub airports, 30 medium hub airports, 70 small hub airports and 250 primary nonhub airports. In addition, there are about 120 non-primary commercial service airports, operations so small that they record less than 10,000 annual enplanements. Due to the homogenous qualities of large hub, medium hub, small hub and primary nonhub
airports, we determined to limit our study to this group of primary commercial service airports. In the process of reviewing and testing the data, it became apparent that there are incongruities that are not conducive to the formulation of homogenous airport groupings. Criteria were created to impose limits with the goal of arriving at four homogenous groups of airports. To this end, the sample group was limited to routes originating in and terminating at US destinations and airports in continental US states. Additional criteria and rationale appear in Article 1: 3.A. Method observations. After applying these limitations to the data and the sample airports, what remains is a group of airports that have operated commercial service continuously since deregulation; their annual enplanement totals reflect enplaning to and from domestic destinations, which is the basis of measurement for the DOT reports.

These criteria narrowed the test sample to 306 airports. Again, we designed the study’s limitations for the purpose of creating homogenous groupings and using a uniform basis for measuring enplanements at each airport. The criteria provide consistency among the four FAA classifications to be evaluated. Finally, the spreadsheet data on the 306 subject airports was formatted with math functions to make a variety of calculations on each airport, the FAA classifications and sample totals. Individual airports were measured for annual growth rates, period (1979-2014) growth rate, and net gain in passengers from the beginning to the end of the period. Airports were coded for their respective size classification based on their status in the FAA’s April 2015 report, which pegs their classification to 2014 results (the most current results available when the analysis was conducted). Each of the four FAA classifications were measured for: annual enplanements, annual growth rates, period growth rate, net gain in passengers during the
study period, net numeric growth during the period, and market share of total enplanements at the beginning and end of the period. Finally, the entire sample of 306 airports was measured for annual enplanements, annual growth rates, period growth rate, net gain in passengers during the study period, and net numeric growth during the period. In addition, a separate T-100 report allowed our study to ascertain the number of carriers serving each airport. For airports served by multiple regional carriers and contract carriers for a national airline, they were counted only once. For example, if three regional carriers subservient to United Airlines provided service to an airport, we would list the airport as having service from United. These computations enabled the study to draw conclusions on the findings that appear in Article 1.

Article 2: While the data from Article 1 generated several findings, the study was primarily interested in the comparative evaluation of annual average growth factors for large, medium, small and nonhub airports. With an annual average growth rate of 1.2 percent, nonhub airports lagged significantly behind their counterparts: large, 4.8 percent; medium, 5 percent; small, 3.2 percent; and 4.4 percent for the entire sample. The findings from Article 1 also reveal that 67 airports experienced a net loss of passengers for the study period, all of which were nonhub airports. As a share of the total annual enplanements, nonhub airports fell from 7.5 percent to 4.3 percent during the study period. These findings demonstrate that nonhub airports suffered from anemic growth while the industry enjoyed a virtual tripling of its annual volume of travelers. While the post-deregulation growth analysis provides an objective basis by which we can evaluate the relative performance of nonhub airports, Article 1 provides answers about only one aspect of the viability issue.
The challenge for Article 2 is to provide specific, comparative information on why larger airports are growing much more quickly than small airports. Article 2 relies on qualitative methods to explore consumer switching in airport selection with an emphasis on nonhub airports (Article 2: III. A qualitative approach to methods development). While literature is replete with logit and factor analyses of consumer responses to available choices, little has been written to explain why travelers switch from their hometown airport. In order to examine consumer switching, the study relies on the theory of nested decision making, which suggests that travelers jointly select the airline and the airport during their purchasing process. It is also important to frame this topic with the understanding that consumers are increasingly likely to shop for and purchase their airline tickets from internet travel sites, where they are prompted to select a preferred airport.

With consumer switching as the unit of analysis, we selected a qualitative method and designed a semi-structured interview schedule to extract preference information from travelers. We determined that interviewing travelers at the nonhub airport would produce more meaningful information than interviews via the telephone, mail or internet. The script inquires about a series of trip considerations: trip purpose, preferred airport, alternative airports, ticket purchasing process, leisure travel purchase factors, business travel purchase factors, reasons for airport selection, reasons for airline selection, rewards program usage, travel experience and demographic information. The semi-structured schedule provided the structure of thoroughly covering the questions with the flexibility of allowing the interview participant to emphasize what is important to them. Interviews were between one half hour and one hour in duration, depending on the traveler’s level of participation. In Lynchburg (VA), I attempted to engage travelers at the airport in
advance of their flights. The airport manager provided a gate pass to provide me with the flexibility of interviewing travelers before going through security or waiting at the gate.

Although we opted for the convenience sample method, an ardent attempt was made to interview a cross section of people of various genders, ages, races and incomes. Convenience samples do not make claims of statistical validity and used in this instance to identify an unweighted menu of actual reasons (no prompting) for consumers selecting an airport and switching to an alternate airport. Interviewing travelers with diverse demographic characteristics increases the likelihood that the range of primary motivations will be identified. An initial screening question established whether prospective interviewees had participated in the decision to purchase the trip ticket. Conducting semi-structured interviews at the airport was an efficient method for collecting data. People were receptive and willing to participate and share their thoughts. As a former journalist, I have experience in establishing rapport with interview subjects and making them feel comfortable to offer their opinions during open-ended questioning. In Lynchburg, 21 travelers were interviewed. Their comments were recorded, transcribed, analyzed, coded, and re-analyzed for contrasts and commonalities. Results were reported to my adviser. A preliminary finding from the Lynchburg interviews and later confirmed in Greenville (NC) interviews is that travelers predominantly possess top of mind awareness of a preferred airport.

A second phase of interviews was conducted in Greenville. The research team determined that conducting interviews in the city of another nonhub airport might produce additional data. For the same reason, it was determined that the airport would not be used for identifying and interviewing travelers. This convenience sample consisted of travelers from the Greenville area and three other states that are acquaintances and agreed
to participate in an interview at a location of their choice. Again, participants were selected in an attempt to collect data from a broad representation of demographic attributes. It was also determined that participants would be asked to participate in an internet purchase scenario after the interview and to record the scenario by video recorder. For the scenario, participants were asked to go through their typical search process using their favorite travel site and their favorite destination to determine the option they would most likely purchase. In this phase, 10 of 11 travelers agreed to participate in the video-recorded purchase scenario.

My adviser traveled to Greenville to discuss the project’s study design and supervise seven of the interviews. In this phase, 11 interviews were recorded, transcribed, coded and evaluated to bring the total interviews to 32. After reviewing the video recordings and comparing them to the interview transcripts, it was determined that the videos did not produce unique or relevant information to justify its use in the study. While the Greenville interviews did produce a new primary rationale for switching, the study team determined that the conditions of theoretical saturation had been reached and that additional interviews would provide minimal new information. Based on our research aim to explore consumer switching in airport selection, the perceptions and experiences gathered from 32 travelers were deemed sufficient. Additional information on the process of collecting and analyzing the interview data is presented in the Methods section (Article 2: 3.B. Methods summary).

Sifting through the interview data, 49 primary and secondary reasons for airport selection were identified (Appendix 2: Primary, secondary reasons for traveler ticket purchases). The reasons were evaluated for stickiness, coded and assigned to 11 groups: proximity of airport, airline reputation, ticket prices, airport convenience, airline
preference and rewards programs, lower airport access costs, airline itinerary and equipment, airport amenities, airline dynamics of airports with more than one carrier, traveler perceptions of airport, and originating city offerings. Further analysis and coding enabled the division of the 11 groups of airport selection reasons into four categories: airport attributes, ticket price attributes, itinerary attributes, airline preference attributes.

Analysis of coding for business and leisure travelers indicates a disparity in how these groups approach their ticket purchase decision. The interview schedule asked respondents for their primary reason for purchasing a ticket for leisure trips and their primary reason for purchasing a ticket for business trips. This new information allowed for the evaluation of similarities and differences of travelers within each of the four categories that resulted in the merger of two of our categories, ticket price attributes and itinerary attributes. At this point in our analysis, two of our categories represented purchasing priorities based on the features of the selected airline and one category represented various aspects of the selected airport.

Each of the categories consists of travelers with similar purchasing motivations based on their perception of the compelling factors that led them to purchase airline tickets from the originating airport. When these categories were applied to the 31 traveler profiles, most of the participants fell cleanly into one of the categories. However, three of the profiles did not fit the pattern of any of the three categories. Results were coded and analyzed for the identification of switching rationale. By subjecting the traveler profiles to Boolean logic and versus coding to identify competing goals among the respondents, a new category emerged that captured the preferences of the outlier participants. The reason that these outliers initially escaped detection was due to their strongly formed aversion to their hometown airport (and airline), which precluded its consideration in the purchase
process of these travelers. This type of behavior is defined as systemic switching (Article 2: 2.A. Distinguishing between consumer switching and migration) and an example of the broken profile (Article 2: 4. Study findings). Based on their primary purchasing criteria, the remaining three categories consist of consumers that base their purchase decision on price and time factors (traders), airport attributes (simplifiers), and airline preference attributes (gamers).

Finally, with the identification of the four traveler profiles, the study was able to add depth to each of the categories by coding, analyzing and identifying additional profile characteristics (Article 2: 4. Study findings) in the creation of the conceptual framework diagram of traveler purchasing profiles (Article 2: Figure 2). These decision framework characteristics include contrasting preferences for business and leisure travel, use of agents, air travel experience, preference of distribution channels, heuristics, and distance to an alternate airport.

**Article 3:** The final journal article in this thesis builds on the findings of the first two articles. Article 1 describes the competitive conditions fostered by deregulation and the subsequent migration of the expanding market of new consumers attracted to lower prices. The vast majority of the growth migrated to the nation’s 60 largest airports while nonhub airports experienced losses and anemic growth. Article 2 explains why travelers are disposed toward switching from nonhub airports to their larger neighbors. The identification of four traveler profiles demonstrates the four primary motivations of these consumers and explains the substantial switching factors that are outside of the control of small airports. This study seeks to review the converging hazards threatening nonhub airports and further address the overarching question of their viability.
This study features the influence of major actors in the air service industry. Deregulation radically shifted the market power of the airlines and government regulatory agencies. Literature cites theoretical models that explain their behavior in the current environment. Article 3 employs two research methods to provide qualitative comparative data (Article 3: III. Methods development for qualitative and comparative analyses). Semi-structured scripts are used in interviewing individuals with varied, extensive experiences in the air service industry to gather informed observations and insights about the industry and the outlook for the nation’s smallest airports. The second research method identifies airport risk factors from extant research and creates an explanatory model of airports facing the greatest risk of losing commercial service. Developed to expand upon the evidence provided in Article 1 and Article 2, this study will employ comparative analysis and qualitative analysis techniques to advance its research objectives. These assessments provide critical and timely information that attends to the viability of nonhub airports.

Industry experts were selected for this study to confirm or contest claims made about the nonhub airports and the air service market (Article 3: 2.A. Expert interviews). These individuals were selected to represent various aspects of the industry and include a department manager for a major airline, the manager of a large international airport, the manager of a medium hub airport, the manager of an airport that is near the midpoint in terms of annual enplanements, the manager of a nonhub airport, the manager of a general aviation airport that lost its commercial service 20 years ago, and a United States congressman who is the chairman of the Judiciary Committee of the House of Representatives. These professionals possess many years of experience in airport management at various sized operations, planning and scheduling for a dominant airline
company, and the regulatory and legislative branches of the federal government. All of these individual reside in Virginia. Since the federal government regulates the industry, the state in which they operate is inconsequential. These individuals agreed to my request for an interview. Senator John Thune, a member of the Senate Transportation Committee, declined my request for an interview.

Distinct semi-structured interview schedules were crafted for the airport managers, airline manager and congressional representative. Each script inquired about conditions occurring within their sector of the industry and the effect of market forces on nonhub and Essential Air Service airports. While EAS airports are not the subject of this thesis, they do represent a group of airports that require federal subsidy to survive and influence the distribution of pilots and aircraft among the nation’s smallest airports. My advisors approved interview schedules. Interviews with the three airport managers were conducted at their offices. Interviews with the airline executive and general aviation airport manager were arranged by telephone. At his request, the interview script was sent to the congressional representative and he replied by email. The interviews were recorded, transcribed analyzed and reported to my adviser. The interviews were between an hour and an hour-and-a-half in duration.

For reasons of which I can only speculate, my questions were well received by the interview participants and the expert interviewees were surprisingly candid in their comments. Particularly on the viability of the smallest airports, their observations went far beyond anything that I have read in the media or literature about the industry. Due to space limitations, Article 3 contained a small portion of their insightful and provocative thoughts. The article included their assessments on the post-deregulation marketplace and their outlook for small airports (Article 3: 4.A. Expert interviews). Their cumulative
comments not only corroborated the dire market conditions, they directly confirmed the suspicion that airport consolidation is underway.

Another opportunity for triangulation and a source of internal verification presented itself in gathering literature for the final journal article (Article 3: 3.2.C. At-risk airports). In discussing the plight of small airports, researchers cite four factors that indicate airports in jeopardy of losing commercial service: nonhub airports, single-carrier airports, non-EAS airports and airports within two hours driving distance of a competing airport that is primary nonhub or larger. These factors are supported by secondary source of data maintained by the US DOT, a source that is regarded as reliable and accurate. Since the first three of these factors are binary in nature, it was a simple matter of eliminating airports that did not meet all three criteria. The fourth factor involving driving distance required the use of Google Maps to ascertain the remaining airports that met the condition of having a rival airport within a two-hour driving distance. All four factors are supported by secondary data and are replicable.

A total of 33 airports met these criteria (Article 3: Table 1: Commercial airports at greatest risk of loss of airline service). In gathering and analyzing this data, I concluded that these at-risk airports could be further evaluated through the application of weighted factors that would allow for their placement in rank order. DOT reports allow for the extrapolation of data specific to each of the at-risk airports: number and FAA classification of rival airports within two hours, the number of competing airlines operating within their adjacent airports, and its 2015 enplanement total. The method for weighting these criteria and placing the at-risk airports in rank order is described in the endnotes (Article 3: 3.2.C. At-risk airports). After analyzing the data on these measurements and comments from the researchers, it was determined that the greatest
threat to the at-risk airports were (in order): the greatest number of competing large hub airports within the two-hour radius, the greatest number of medium hub airports within the radius, the greatest number of small hub airports within the radius, the number of competitor airlines within the radius, and the lowest number of enplanements. Because all of the factors and criteria are based on secondary sources of data, the methods used to identify this group of at-risk airports can be reproduced in the future.

1.F. Thesis development

Based on empirical evidence, the study’s initial assumption is that changing conditions in the air service industry related to the maturation of the deregulated market are disproportionately harming small commercial service airports. The assumption, which cannot be quantitatively confirmed through the extant literature, is that airline consolidation is having a particularly adverse effect on the nation’s smallest airports. The various methods advanced in this process of inquiry revealed surprises that required adjustments in data collection and the research approach. The modified research proposal envisioned that the three articles would be directed by their own conceptual framework, objectives and research approach but would logically relate and build on the findings and foundation of the previous study.

Initially, deregulation fostered a wave of low cost entrants, invigorated innovation and a prolonged period of price wars. Article 1 offers Price Elasticity of Demand as the underpinning theory behind the phenomenon of robust consumer response to lower airline prices. Other economic concepts fortified the market’s strong response to price cuts. The income effect and substitution effect also supported the travelers’ mushrooming growth in consumption as a response to the industry’s battle for lower prices. Higher cost legacy
airlines instituted *discriminatory pricing* and *price dispersion* in their dynamic pricing models to compete for leisure and other price-conscious travelers.

In response to the lack of a standard to measure the period growth of various sized airports, quarterly data for 36 years and for almost 700 airports was structured and analyzed (Chapter 3.2. Study findings). The data analyses required more than two years to arrive at comprehensive criteria identifying the sample set of 306 airports that are representative of the four primary FAA classifications of large hub, medium hub, small hub and nonhub airports. While the analyses produce several interesting results, the most compelling findings relate to the disparity in growth rates of nonhub airports and larger airports, as well as the higher likelihood that nonhub airports would experience a net loss of passengers over the 36-year period. The divergence in growth rates was astonishing with the average annual growth rate for nonhub airports of 1.3 percent, 5 percent growth rate for medium hub airports, 4.8 percent for large hub airports and 3.2 percent for small hub airports. Despite the near tripling of the industry’s annual total of passenger enplanements during deregulation, 67 of the 184 nonhub airports tested incurred a net loss of passengers from the beginning to the end of the study period. Other findings demonstrate the primary migration of new travelers to the largest airports. These results are clear indications that nonhub airports are behaving differently than larger airports.

The challenge for Article 2 is to explain why nonhub airports are not performing as well as larger airports. The nation’s network of primary commercial airports competes for a finite number of daily passengers. An airport’s ability to attract travelers dictates its number of daily departures and other service offerings. Consumer switching and nested decision making theories offer clarity to the reasons why travelers select an alternate airport over the preferred choice of their hometown airport. Nested theory posits that
travelers must simultaneously decide on an airport and an airline to make the most satisfying choice for purchasing a trip ticket. Ultimately, the airport that is selected for the consumer’s originating flight must meet personal criteria for proximity, cost and travel time.

Qualitative interviews reveal that travelers have top of mind awareness for their hometown airport (Article 2: IV. Findings: Traveler profiles capture varying approaches to airport selection, switching). The preponderance of travelers identifies their hometown airport as their preferred airport even though many may regularly depart from an alternate airport. With consumer switching as the unit of analysis, analyses of the interviews identify four traveler purchasing profiles and their primary reasons for switching from their preferred airport to an alternative. In three of the four profiles, nonhub airports experience substantial leakage of travelers from their market area due to numerous advantages of larger airports. Most of the reasons that consumers switch from their preferred airport are the result of attributes controlled by the airlines: prices, temporal features and rewards programs.

Drawing on the migration evidence from Article 1 and the consumer switching inclinations from Article 2, the final study poses questions about the present dangers and viability of nonhub airports. Decades of airline consolidation have positioned the four dominant airlines to place even greater emphasis on their profit and growth goals. These powerful companies now have the collective ability to reduce their exposure to financial loss caused by unforeseen market shocks. Classic theory on the decision making of companies that dominate an industry exhibit generalizable behaviors for directing resources toward their most pressing goals and promoting a market environment that purges uncertainty (Cyert and March, 1963). The industry’s implementation of aircraft
upgauging and capacity discipline practices are reducing uncertainty for the dominant airlines but are exacerbating the mounting problems of the smallest airports. Literature and expert testimonies indicate that deregulation’s diminished role for regulators and legislators make it unlikely for them to disrupt this prolonged era of low prices, market growth and general consumer satisfaction.

While it may not be the dominant airlines’ intent to reduce the number of nonhub airports, current circumstances are driving the market to that end. Literature in Article 3 identifies several research findings that predict when an airport is poised to lose its air service. Drawing from secondary data sources, this study identifies a list of nonhub airports at the highest risk of losing airline service and prioritizes the list of at-risk airports by weighting the risk criteria. The result was the identification of 33 airports that meet four explanatory criteria for the potential loss of their air service (Article 3: III. Methods development for qualitative and comparative analyses: At-risk airports). The power of dominant airlines, converging market conditions and the reluctance of regulatory agencies to intercede are leading to a new phase of airline deregulation -- the consolidation of nonhub airports. Industry experts are quietly resigned to the certainty of this inevitable setback for an unknown number of small cities and their regional economies.

A summary of the contributions of the articles is located in the final chapter (Thesis discussion).
Article 1: Post-deregulation passenger selection of US airports

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Abstract

This longitudinal study examines passenger boarding (O&D) data from a sample of 306 airports during the post-deregulation period, 1979-2014. Deregulation of the airline industry eliminated barriers to compete for US markets, resulting in a surge of air service entrants and new consumers, as well as the creation of a new regulatory template that would expand air service, worldwide. Price elasticity of demand and its conventions of price discrimination, price dispersion, substitution effect, and income effect explain the rationale and maneuvering of major airlines to reduce ticket prices to contest entrant low cost carriers. While rigorous competition during the study period nearly tripled the number of total annual US passengers, airports did not share equally in the benefits. The nation’s largest airports enjoy an annual growth rate that is more than three times greater than the smallest “nonhub” airports. This 36-year comparative analysis of passenger trends provides actual measurements and observations of the evolving pattern of traveler migration to the originating and destination airports of city pairs.

Keywords: airline deregulation, airline industry, airports, commercial air service, FAA airport classifications, income effect, legacy airlines, longitudinal, low cost carriers, passenger growth, passenger migration, price discrimination, price elasticity, price wars, substitution effect
1. Introduction

Public references to the air service industry are often limited to the nation’s largest airlines and airports due to their visibility and sheer size. In order to understand the efficacy of the nation’s air transportation network, it is essential to create an objective, long-term standard for measuring the movement of airline passengers among this diverse and dispersed system of airports. Airports possess a unique blend of physical attributes, service offerings and markets that represent a wide variation of populations, incomes and passenger characteristics. Because corporations finance airlines and local governments fund airports, divergent interests exist for the entities that invest in the air service infrastructure, which serves a willing market of travelers. Particularly since the deregulation of the airline industry, airlines are empowered to make business decisions that may not benefit host airports and local economies. In the intervening 36 years, how have air travelers responded to a myriad of changes in pricing, services and new choices? To answer this question, it is essential to observe the number of consumers purchasing airline tickets to the airports of selected city pairs and to identify the trends emerging from a longitudinal analysis.

The Airline Deregulation Act of 1978 caromed the industry from iron-clad control to unfettered access to every US market and route. The high-stakes chess match pitted resource rich major airlines against smaller nimble rivals with lower cost structures. As deregulation architects hoped and predicted, intense competition ensued and airline companies relied on their unique strengths to build loyal cores of customers and to expand as quickly as equipment, labor and finances would allow. Legacy (also referred to in the literature as trunk, network, traditional, major and full service) airlines were wary of the demonstrated ability of low cost (also referred to as discount and no frill) carriers
to compete for passengers in the major markets. These low cost leaders developed successful business models that featured no frills service, much lower ticket prices and excellent treatment of their passengers. When deregulation began in 1979, many entrants adopted the low cost model. The most competent of the major airlines recognized that competing with low cost carriers depended on their ability to lower their own costs, thus allowing them to lower ticket prices to an optimal extent. Hard-nosed competition and a prolonged price war have since defined the airline industry throughout 36 years of deregulation.

Demand for air service grew, and at the peak of the market, US residents were taking 2.2 trips a year (Graham, 2006). Even though demand grew at twice the rate of the US economy (Tretheway, 2004), airlines struggled to generate meager profit margins (Zuidberg, 2014). Low cost airlines have had a profound impact in increasing national travel demand by leading the marketplace with the cheapest airfare on most routes and establishing price as the primary factor affecting passenger selection of an airline (Martínez-Garcia et al., 2012). Fear of losing market share to low cost carriers conditioned legacy airlines to be judicious in implementing price discrimination practices by offering varying ticket prices to its passengers, which restricted their ability to recover operating costs (Tretheway, 2004). Improving efficiency and controlling costs became essential to airlines interested in narrowing the price gap with low cost competitors. Legacy airlines trimmed so many costs for such a long period, their services are nearly indistinguishable from their low cost rivals (Goll and Rasheed, 2011). As a result, today’s market is fundamentally different than in the years immediately following deregulation (Mumbower et al., 2014).
An estimated 65 percent of the population lives within 20 miles of 517 commercial service airports (Bhadra and Kee, 2008). Proximity is often not sufficiently important to compel a passenger to purchase a ticket originating from the closest airport over a less expensive ticket for a flight originating elsewhere. Even though ticket prices are controlled by airlines, airfare is a primary determinant in the traveler’s selection of an airport for their originating flight. Travelers use a two-step decision process to simultaneously select an airport and an airline for their flight (Suzuki, 2007; Pels et al., 2001). When travelers access their favorite online travel site, they must designate one or more airports to begin their search. With the cheapest flight options listed in descending order, consumers decide which combination of airline itinerary and airport provides the most desirable option.

Selecting an airport is an essential element of this nested decision process that concludes with the traveler booking an airline ticket. Consequently, periodic measurement of passengers embarking from and returning to an airport is an important determinant of its utilization relative to other airports and an objective indicator of the airport’s ability to capture a share of passengers in its catchment area. This aptitude is reflected in an airport’s origin and destination (O&D) total. The Bureau of Transportation Statistics of the US Department of Transportation maintains O&D data for commercial service airports and provides the data source for exploring the research question: What is the pattern of consumers selecting airports for their originating flights in the wake of airline deregulation?

Several studies have used O&D data for articles about the air service industry (Brueckner et al., 2013; Goetz and Vowles, 2009; Bhadra and Kee, 2008; Goolsbee and Syverson, 2008; Morrison, 2001; Kahn, 1988a; Oster Jr and Zorn, 1983). This is the first
study to examine passenger boarding totals (O&D) from a large sample of 306 airports for the entire post deregulation period, 1979-2014 inclusive. This study provides benchmark airport passenger totals from the year that deregulation was implemented and measures airport growth through the entire period until the most recent reporting year of 2014. Reporting growth rates for similar size airports provides valuable information about airport viability in large, medium and small population bands that have gone undetected and unreported. The growth trend lines will allow a baseline measurement to evaluate the effects of a prolonged weakened economy, the results of the industry’s collapse to four major airlines or air service disparities for airport classifications. Sample airports are analyzed for annual and period passenger totals and growth rates. The study identifies airports with a net loss of passengers for the period, the number of airlines serving each airport, and conducts a comparative analysis of airports grouped by four Federal Aviation Administration (FAA) categories. FAA airport classifications are a recognized industry standard that provides a consistent method for measuring performance and sorting airports into groups that share similar operational challenges.

Ensuing sections address the classic economic theory, *Price Elasticity of Demand*, and how its tenants influence the new competitive environment and the emergence of price as the dominant force restructuring the market. Bolstered by favorable consumer response to lower ticket prices, key developments leading to and emanating from deregulation explain the industry’s movement into a sustained price war.

**1.A. Price elasticity of demand**

Price, followed by personal income and market population, is the most influential driver of demand for air travel (Corsi et al., 1997). The abrupt transition from a highly
regulated to deregulated industry and the ensuing price war led analysts to assign price
elasticity as the unseen force responsible for dramatically energizing the formerly
underperforming business sector. With mantra-like frequency, the literature explains the
industry’s explosive growth by linking the factor most responsible for the transformation
(price) to the durable economic concept (price elasticity).

Consumers ponder an array of issues in assessing their desire for a particular
product or service. Collective perceptions and preferences differ for each product
contemplated for purchase, creating a measurable and fluctuating distinction referred to as
a demand curve. In basic terms, price elasticity of demand is the degree to which a change
in price prompts a response along the demand curve or the quantity desired of the
product. The formula for the coefficient of price elasticity of demand for a product or
service is:

$$\text{Price Elasticity of Demand} = \frac{\% \text{ change in quantity demanded}}{\% \text{ change in price}}$$

This formula usually produces a negative value due to the inverse nature of the
relationship between price and quantity demanded, although it not unusual for economists
to refer to the value in absolute terms with a positive value. This study denotes elasticity
values in in absolute terms. When a price changes and quantity desired does not, demand
is considered perfectly inelastic and equal to zero. Values between zero and less than one
signify that demand is inelastic. When the elasticity coefficient is equal to one, demand is
defined as unit elastic. Finally, values greater than 1 indicate that demand is elastic, and it
can be said that the consumer (or groups of consumers) was sensitive or responsive to a
change in price.
A shopper may stop purchasing peanut butter after a 5-cent price increase, but may continue buying heating oil even after a $1 per gallon increase in price. Goods perceived as essential are typically more unresponsive to price changes, and consumers continue purchasing these goods even after steep price increases -- a characteristic of inelastic demand. Conversely, increasing the price of a good that is not deemed important may deter a consumer from purchasing the item because the opportunity cost becomes too high, a reflection of elastic demand. In other words, alternate available options may provide the consumer more perceived value for the money. A good is defined as highly elastic if a small change in price leads to a large change in the quantity demanded. A good is considered to be inelastic when a price change has little effect on the quantity demanded.

Airline service may be considered essential to an individual traveling to attend his mother’s funeral, but may be considered discretionary to someone seeking to vacation in the Bahamas. A traveler’s motivation and financial means influence their willingness to accept various changes in price. The price elasticity value indicates a traveler’s sensitivity, responsiveness or degree of willingness to accept a price change. The price elasticity value also applies to groups, such as passengers of a route or all US passengers in a particular year. For example, when a 10 percent increase in airfare for a flight from Chicago to Kansas City results in a 15 percent decrease in ticket sales, the elasticity value is -1.5 (or 1.5 in absolute terms), and therefore, travelers are determined to be responsive to the change in the ticket price for the Chicago-Kansas City flight. Unfortunately, with assorted pricing practices that produce varying ticket prices for an identical flight and an abundance of available itinerary options, ascertaining an elasticity value is impractical for many direct comparisons in the airline industry.
In the literature, elasticity values are estimates for specific situations (e.g. a fare change on a route or an industrywide change in average price for a particular period). Researchers may calculate elasticity values only when they can sufficiently restrict the unit of analysis. In order to arrive at an accurate and meaningful elasticity value, the researcher must only measure the individual or group response to a uniform and specific group of circumstances occurring as part of their purchasing decision. Substitution and income variables may change with every purchase decision faced by a consumer. In these situations, elasticity values are invalid for comparative purposes if any of the input variables are dissimilar. Elasticity values are a snapshot of the consumer response to the conditions that exist at the moment that the purchase decision is made. While there is immense value in gauging consumer responsiveness to ticket price changes, it would be flawed to assign credence to an elasticity value from multiple purchase decisions where conditions are not identical and more than price is influencing the determination of the value.

Therefore, not only do elasticity measures reflect traveler response to prices, they reflect shifting priorities in maximizing utility in allocating their limited income (Borenstein, 2005). Calculations of elasticity reflect consumer preferences and their relative sensitivity to various prices of a product in a resource-constrained environment (Gillen et al., 2008). Limited by incomes and budgets, travelers endeavor to make purchase decisions that produce the greatest personal utility (Brons et al., 2002). Understanding traveler responsiveness to pricing is essential to airline companies. An airline wants to know the business consequences of a $10 reduction in ticket prices for its Atlanta to Orlando route. Elasticity measurements can instruct an airline whether a price cut generates a sufficient number of new customers to offset the loss of income and,
therefore, justify continuation of the price cut. It is valuable for the airline to know whether its price cut attracted new passengers to the market, siphoned off passengers from rival carriers, or a combination of both. If price-cutting on a route results in a cascade of price cuts by rivals, the airline must question whether the new lower fare is attracting new consumers to the market or merely redistributing current travelers. Conversely, an airline company increasing its ticket prices needs to know the adjusted market demand for its service, and possibly, which rivals acquired its lost business or whether its former customers opted for a substitute such as driving.

Elasticity of demand theory is commonly presented as a symmetrical mathematical relationship. The traditional theory posits that when a 10 percent increase in price results in a 15 percent decline in demand, a 10 percent decrease in price will result in a 15 percent increase in demand. There may be circumstances when this symmetrical relationship does not apply to demand response functions (Wadud, 2015). Asymmetrical relationships or *imperfect reversibility* exists for changes in airfare, fuel prices and income and their corresponding effects on the demand of paying passengers. His studies indicate that travelers are more responsive in the short-term to ticket price increases (.143) than price decreases (.113), and elasticity continues to develop asymmetrically in the long-term to airfare increases (.526), rather than price decreases (.417). His findings suggest that price elasticity is not a symmetrical relationship and that consumers react differently to price increases than to price decreases of products. While this finding does not negate the value of the classic theory, it adds an important dimension to the contextual interpretation of asymmetrical responses to specific market transactions.

With fuel price as the explanatory factor, Wadud’s data shows asymmetry and hysteresis (a delay) in the demand response. Because fuel price increases (or decreases)
may not be immediately passed through to passengers, there is discretion on the part of
the airlines to determine when to assign the price increase and how much of the cost
increase the airline will seek to recover at that time. When fuel prices surpass the
preceding highest increase, airlines will make the largest and most immediate adjustments
to ticket prices (Wadud, 2015). Unfair as it may seem, airlines may not discount ticket
prices after a decline in fuel prices, or they may delay any adjustments (Özmen, 2009).
This condition is referred to as a *rocket and feather* response, where prices climb like a
rocket after a cost increase, but after periods of cost decline, prices fall as slowly as a
feather (Escobari, 2013).

Wadud confirms the existence of imperfect reversibility for income elasticity on
air service demand through a similar pattern of results in two models using three income
scenarios. Increases to consumer income result in greater demand for air service during an
economic recovery than during a recession. Travelers may quickly increase their air
service consumption when their incomes rise; however, due to familiarity resulting in a
preference for flying, consumers may not be as quick to decrease travel when their
incomes are cut. In addition, when traveler income increases following an income
reduction, consumers are more likely to increase their air service demand faster than
travelers experiencing steady increases in income.

A review of 14 current articles on airline demand shows a uniform acceptance of
perfect reversibility in factors affecting demand. Demand models developed in the US
and the UK neglect to consider imperfect reversibility or hysteresis influences. Wadud
asserts that corroboration of his theory enhancements has important implications for
airline planning and revenue maximization. Nonetheless, additional validation will not
undermine the transcendent value of demand elasticity theory, and most likely, will serve to strengthen it.

In the context of air transportation and deregulation, the price elasticity of demand concept mushrooms into several other substantial but narrower influences that will be briefly discussed here: substitution effect, income effect, price discrimination, and price dispersion. Income and substitution effects explain the resulting change in consumption from a price change. The income effect is the elasticity value of a consumer’s response to a price change resulting from the limitations of their budget and the perceived impact of the higher price. The substitution effect is the elasticity value of consumer response to a price change and their adjusted perception of other products and options that could potentially satisfy their need (Gillen et al., 2008).

A product’s price elasticity depends on the number and quality of substitution choices. Substitutes reflect high price elasticity when consumers have numerous purchase options; conversely, few available substitutes diminishes consumer choices and demand becomes more inflexible (Brons et al., 2002). There are numerous forms of substitution in air service. Airlines contest rivals (substitutes) for market share on routes. In certain instances, other modes of transportation may possess sufficient merits to be considered suitable alternatives. The acceptability level of substitutes determines the elasticity of the product as better substitutes result in higher elasticity and poor substitutes generate lower elasticity. Finally, there may be unique attributes of a demographic, geographic, or economic nature that further reduce the consideration set of acceptable substitutes (e.g. storms, impassable mountain ranges, battle zones, and long travel distances). Limited by budgets and guided by personal preferences, travelers evaluate available options to arrive at the choice that provides the greatest personal satisfaction. If the price of their choice
exceeds an acceptable threshold, travelers may reopen the process and consider additional
trip characteristics as well as new substitutes. A job interview scheduled in two days in a
city 3,000 miles away may not have any acceptable substitutes due to irreplaceable
attributes of the trip. Conversely, an unacceptably high price for a leisure trip to Bora
Bora may prompt the traveler to create an extensive list of substitute destinations,
alternative times of the year, and other transportation modes (Brons et al., 2002).

Household income is the only socio-economic variable that predictively correlates
with a traveler’s choice to purchase airline tickets. Specifically, consumers with annual
household incomes of more than $100,000 are more apt to fly (Garrow et al., 2007).
Travelers with higher discretionary incomes rely more on air transportation (Mutti and
Murai, 1977). However, when air service is not essential and considered a luxury good,
demand will be more elastic, even when the traveler has higher income and disposable
income levels (Crouch, 1991). Price elasticity is inversely related to national wealth
measurements, confirmation that high-income travelers are more price sensitive than low-
income travelers. This may seem counterintuitive; however, viewing air service as a
luxury good positions the expenditure as discretionary and increases the customer’s
responsiveness to a price increase (Brons et al., 2002).

Models based on the income elasticity of the value of travel time (VIT) also reveal
that consumer responsiveness increases with income; travelers with below-average
incomes are not responsive to changes in value of time variables. Simply put, as traveler
income increases, so does their perceived value of time and their willingness to pay more
for attributes that result in saving time. For travelers of more limited means, lower prices
are more important than timesaving criteria in their purchase decisions (Börjesson et al.,
2012).
Legacy airlines place restrictions upon cheaper tickets that make them objectionable to travelers motivated by time and convenience preferences (Stavins, 2001). Initially, agreeing to the Saturday-night stayover requirement, trip lengths of more than seven days, cancellation penalties and advance purchase requirements allowed travelers to purchase discounted airfare. Airlines no longer actively market the Saturday night stayover as a way for leisure travelers to save money, but the dynamic pricing models used by the airlines continue to manage load factors through discriminatory pricing (Kim, 2007). Depending on available seating, airlines may discount airfare for economy passengers and incrementally raise business class prices as the departure day approaches (Gillen et al., 2008). Airlines charge higher prices to self-selecting business travelers that choose departure flights leaving at peak times and opt for more expensive amenities (Orlov, 2011).

Much of the price dispersion in ticket prices is based on consumer self-selecting choices that may result in restrictions associated with discounted tickets, thus, creating substantial ticket price differences between leisure travelers and time-sensitive, comfort-oriented business passengers (Borenstein and Rose, 1994; Elkins, 1986). Legacy airlines target travelers that place a higher premium on conveniences and are not dissuaded by discrimination pricing tactics (Dana, 1998). Meanwhile, low cost carriers with lower cost structures strive to offer the cheapest airfare to their passengers. The trend toward lower ticket prices has greatly expanded the national market for price sensitive travelers (Stavins, 2001). Intense competition between legacy airlines and low cost carriers has increased price discrimination practices (Holmes, 1989) the primary cause of price dispersion (Kim, 2007).
Other forms of price discrimination have been put into practice. When the number of competitors on a route increases, discriminatory competition increases for travelers with the highest price elasticity. Greater route competition encourages airlines to employ the pricing practice of discounting ticket prices for the most price-sensitive leisure travelers. Conversely, as a carrier gains a higher market share of a route, price discounts from that carrier diminish (Stavins, 2001; Dana, 1998) and average prices increase (Orlov, 2011). Less price discrimination for business and leisure passengers will reduce price dispersion on routes dominated by either customer type (Borenstein and Rose, 1994).

Price elasticities vary across diverse aspects of the air service industry, with shifting values between markets and routes that are unique for each airline and time period (Mumbower et al., 2014). Estimating elasticity values can be challenging (Brons et al., 2002), as disentangling complex pricing data may lead to erroneous conclusions (Borenstein and Rose, 1994). Researchers may contribute to knowledge and theory only by avoiding the pitfalls that weaken demand models and elasticity estimates (Gillen et al., 2008). This data is important since price elasticity measures and projections are utilized by airline management and by regulators in making decisions about policy, taxes, and airport fees (International Air Transport Association, 2008).

Considered together, the theory of price elasticity of demand and the interrelated concepts of income effect, substitution effect, price discrimination, and price dispersion help provide order and logic to the seemingly unfathomable competitive landscape created for the airline industry by rapid deregulation. On the foundation of traveler response data generated by price elasticity measures, income and substitution effects add a layer of understanding about the change in consumption resulting from a price change.
Additional elasticity values derived from trending consumer budget constraints and the fluctuating menu of market alternatives provide valuable texture and context in comprehending how price changes are complicit in the constantly changing competitive tapestry. These economic principles help explain why the higher cost structure of the legacy airlines compelled them toward discriminatory pricing practices and, thus, to compete with their low cost rivals and still generate sufficient revenue to remain financially viable. Finally, price discrimination by the legacy airlines and the competitive pressures fostered by low cost airlines combine to create price dispersion to satisfy a wide range of pricing needs of a growing and diverse market. These concepts explain the airline industry’s departure from adhering to the traditional business model of charging one price for a largely undifferentiated product as well as the justification for the unfathomable complexity of a logarithmically-driven dynamic pricing approach. The air service pricing structure is distinct from that employed by any other industry. Due to growing public concerns for an industry largely controlled by four firms and contemplation of antitrust regulations to ensure fair competition for consumers, it is essential that policy-makers and shareholders of the nation’s air service infrastructure comprehend the general nuances of the mechanics of the industry’s pricing structure, as well as the conditions that gave birth to this fluid form of revenue maximization.

2. Literature

As the painting style of pointillism creates images from patterns of dots, extensive literature during the deregulation era provides a detailed, albeit pixelated, view of the industry that has seemingly settled into a recognizable image. Of course, 36 years of hindsight provides greater clarity of this tumultuous and unpredictable succession of
events and outcomes. The ebb and flow of economic conditions and world events provided numerous jolts along the way. By piecing together individual research contributions during the period, the observer can clearly see the transformation that began with the unleashed forces of price competition resulted in the emergence of four national airline companies and a public that is much more dependent on air transportation.

Ensuing sections draw on extant research to focus the finer details of the period into a cogent representation of today’s airline industry and a compulsory bridge to findings that explain the emergent passenger distribution patterns.

Once a traveler has a destination in mind, price and travel time from their front door and back determine whether flying is the preferred transportation option (Garrow et al., 2007). Since the passage of deregulation and the subsequent steady downward pressure on ticket prices, overall demand for airfare has been elastic (Ghobrial and Kanafani, 1995), and travelers have become more price sensitive through the years (Berry and Jia, 2010). Prolonged price wars have conditioned consumers of air travel to expect cheaper airfare.

Extant literature confirms the continual reduction of airline ticket prices since deregulation. Initially hindered by a national recession, fares fell an inflation-adjusted 6 percent between 1978 and 1984. The Civil Aeronautics Board concluded that the market entry of discount airlines precipitated downward pressure on ticket prices (Peach, 1983). Other studies note long spans of declining prices. Airfare decreased an inflation-adjusted 20 percent from 1995 to 2004 (Borenstein, 2005). During the 20 years from 1995 through 2014, inflation-adjusted airfare decreased 13.8 percent (US DOT, 2015). Another study finds that greater competition and pricing strategies lowered real airfare prices by 50 percent from 1979 to 2011 (Thompson, 2013). As one would expect, there were constant
fluctuations in average ticket prices during the study period with larger markets generally enjoying the benefits of falling prices more than small markets. Even so, deregulation was highly successful in setting competitive forces in motion that led to substantial overall reductions in airline ticket prices (Kahn, 2001).

Cheaper airfare is widely credited as the primary cause for the impressive growth in annual passenger totals in the United States. Several transformational developments were instrumental to the deregulated market’s growing appeal to consumers. Their roles will be briefly summarized and include: the rise of low cost carriers, the advent of price discrimination through traveler types, the industry campaign to control costs and cut prices, and the era of bankruptcies and mergers.

2.A. Price leadership from the low cost carriers

It may be helpful to create a mental image of deregulation-era competition as a dog track, where Southwest Airlines is the mechanical rabbit and the powerful legacy carriers are the speedy greyhounds in pursuit – running furiously with engrossed determination, but never quite catching the price pacesetter. There is broad consensus on the profound influence of Southwest in setting the tone for deregulation and as a template for low cost carriers entering the rejuvenated market. It is widely recognized that average prices are lower on routes served by Southwest (Bilotkach and Lakew, 2014), that its entry into a market exerts intense downward pressure on prices (Orlov, 2011), and that Southwest prompts customers of rival airlines to expect cheaper airfare (Kim, 2007). The price leadership of Southwest induces more travelers to use air transportation over other modes (Bhadra and Texter, 2004). By focusing on short routes, increasing frequency and secondary airports, Southwest initially thrived by avoiding direct competition with the
legacy airlines (Windle and Dresner, 1999). Southwest earns market share by offering no-frills service for substantially cheaper prices. It led a contingent of low cost carriers (LCCs) in stimulating the airline industry’s substitution effect and, therefore, attracting new price-sensitive consumers to the market (Bhadra, 2003). Southwest’s successful business model has been imitated by airlines all over the world (Graham, 2013; Doganis, 2009) and is often praised for its monumental contribution to the success of airline deregulation in the United States (Morrison, 2001).

The student became the teacher. Ironically, the “model” of low cost carriers owes much of its renowned success to the visionary leadership and professional generosity of Pacific Southwest Airlines (PSA). Southwest imitated the business approach and corporate culture of PSA (Collins and Hansen, 2011) when both airlines were operating intrastate routes and specializing in short routes prior to deregulation (Ellison, 1982). PSA, which labeled itself the world’s friendliest airline and painted a smile on the nose of its airplanes, was the first large low cost airline in the US. Southwest founder Herb Kelleher asserts that his company’s imitation of PSA was so thorough, Southwest became a photocopy of PSA (Collins and Hansen, 2011). Operating outside the control of the Civil Aeronautics Board as intrastate operators, PSA demonstrated in California and Southwest in Texas that non-legacy airlines could profitably operate by offering cheaper fares. Both airlines entered the new era of competition with the advantages of lower cost structures and the ability to offer airfare considerably cheaper than the legacy airlines (Fawcett and Farris, 1989). Emulating PSA’s signature humor and affection for its passengers, Southwest prospered in deregulation and grew to what is now the fourth largest airline in the US. Successful in its own right, PSA was acquired by USAir in 1988.
Numerous studies underscore the historic dominance of Southwest. Upon the threat of Southwest entering a route, legacy airlines preemptively lower prices as much as 24 percent, and when Southwest begins service, prices fall more than 29 percent (Goolsbee and Syverson, 2008). This strategy is designed to deter Southwest from entering the route and to allow rivals to acquire the greatest possible market share if it does. Another study indicates that airfare of all competitors drops 30 percent and total passengers increase 63 percent after Southwest’s entry into a market (Kim, 2007). Another study finds that upon Southwest entering a route, average fares declined 48 percent and the number of passengers tripled (Windle and Dresner, 1995). Similarly, when Southwest exited a route, average ticket prices rose 8.5 percent (Morrison and Winston, 1995). In the four-quarter study period ending in 1995, Southwest was responsible for 71 percent of LCC revenue passenger miles and about 50 percent of airfare discounts credited to deregulation (Morrison, 2001).

Economists and industry analysts heaped high praise on other low cost carriers, as well. Through cheaper airfare and pressuring legacy airlines to lower ticket prices, low cost carriers have played a transformative role in shaping the deregulated industry (Brueckner et al., 2013). The growth of LCCs is an important development that facilitated lower ticket prices (Bilotkach and Lakew, 2014) and more intense price competition by their rivals, even on adjacent routes (Brueckner et al., 2013). Low cost carriers attracted new consumers to the market (Mumbower et al., 2014), are cited for altering the financial performance of the entire industry (Berry and Jia, 2010), and significantly lowered average ticket prices across the US (Windle and Dresner, 1999). Today’s surviving low cost carriers include Allegiant Air, Frontier Airlines, JetBlue, Southwest Airlines, Spirit Airlines, Sun Country Airlines, and Virgin America. Discount airlines are also having a
positive impact in Canadian and European markets by offering cheaper airfare and attracting more travelers to their markets (Gillen et al., 2008). Nearly 80 percent of those who use low cost carriers in European markets select the airline on the basis of ticket price (O’Connell and Williams, 2005).

The customary model of low cost carriers consists of cheaper prices, point-to-point routes of short and medium lengths, high productivity of labor and aircraft, uniform aircraft styles, high load factors, lower labor costs, a single seating class, no food or beverage service, direct internet ticket distribution, operation from secondary airports (Zuidberg, 2014) and a reliance on ancillary revenues (Graham, 2013). Legacy airlines typically operate with additional costs associated with managing hubs, costs associated with global alliances, and cost savings from operating older and larger aircraft. Moreover, they benefit from the efficiency of coordinating waves of passengers through flight banks at hub airports (Zuidberg, 2014).

Business media acknowledges that Southwest’s competitive position has weakened in the ever-changing industry. As Southwest is now the nation’s fourth largest airline, its costs have grown and is no longer the industry’s low-cost leader (Bachman, 2014). Basking in a 44-year history of the extolled “Southwest Effect,” today’s Southwest has begun to resemble its surviving legacy competitors American, United and Delta. The three largest US airlines have fashioned global networks and services that capture profitable business passengers. Meanwhile, ultra-low airlines are offering lower fares and taking away middle-class travelers on domestic routes (Nicas and Carey, 2014). Labor, fuel and other cost challenges have raised Southwest’s per-mile operating cost to 8.25 cents – still ahead of American (8.55 cents), United (8.81 cents), and Delta (8.89 cents)
but behind Spirit (5.98 cents) and JetBlue (7.51 cents). Industry experts speculate that Southwest may have lost its ability to be the industry’s price leader (Bachman, 2014).

Deregulation served to remove price and route shackles from airline competitors. Southwest and PSA, accustomed to the low price business model, quickly demonstrated their prowess for competing in the new aggressive marketplace. A wave of entrant airline companies emulated the business model to the best of their capabilities and resources with varying degrees of success. Major airlines, equipped with superior passenger savvy and deeper financial resources, responded to the low-cost, low-price challenge with a Machiavellian fervor. Legacy airlines picked up the low price gauntlet by building competitive advantages that drew on their size and expertise, as well as narrowing the price gap through a long-term cost cutting discipline. This market savvy cultivated a dynamic pricing system that side stepped head-to-head competition solely on the basis of price and targeted the differentiated motivations and economic abilities of travelers who are willing to pay more.

2.B. Price discrimination and traveler types

There is no definite observable method for establishing a passenger’s travel purpose and, yet doing so is the basis for much of the price discrimination and profit margin that takes place in the industry, particularly for full service airlines. At no point in the ticket selection or boarding process does the traveler reveal their reason for taking a trip. There is no precise list of attributes to draw concrete distinctions between business and leisure travelers. In fact, the same traveler that attends a business meeting on Monday may be taking his family on a leisure trip on Friday. Many travelers approach the purchase decision with a mixture of perceptions emanating from experiences derived
from business trips combined with their experiences from traveling to personal and leisure destinations. While price is the primary factor for most consumers, legacy airlines know that experienced travelers are responsive to other features, as well.

Despite the speculative nature of drawing this seemingly arbitrary distinction, the financial fortunes of many airlines depend on developing successful practices to maximize revenue through price discrimination. An airline that intends to deviate from a simple pricing structure has two available criteria for structuring a more complex system, either passenger self-selection of business and economy class seating or an extensive study of consumer price elasticity predilections (Brons et al., 2002) – the former being imprecise and the latter possible only with extensive customer information.

There is a plethora of literature examining dissimilarities between business and leisure travelers. Due to differences in their trip purpose, it is speculated that business and leisure travelers react differently to pricing and service variations. Airlines research and implement these contrasting motivations in designing their marketing and ticket distribution methods. The differences between leisure and business travelers are substantial enough that they warrant distinct treatment by researchers (Hooper, 1995). Business travelers are more responsive to practices that allow them to act on their higher value of time (e.g. flight selections with shorter waiting periods, direct flights) and are more resistant to changing flights or airlines. Measurably higher price elasticity of leisure travelers make them more responsive to destinations with cheaper airfare (Borenstein and Rose, 1994). Price elasticity values substantially differ based on travel purpose, assuming that other factors are constant (Njegovan, 2006). Numerous studies going back 40 years recognize these basic demand-related differences of the two travel classes (Dresner, 2006). However, in contrast to other studies, Hooper (1995) take a minority position that
the two groups are actually quite similar and it is not sufficiently productive for airlines to differentiate between leisure and business travelers.

The relative value of time for business and leisure travelers was benchmarked prior to deregulation with the value of time estimated at $8.09 an hour for economy passengers and $11.97 for first class passengers (De Vany, 1974). Since then, value of time appraisals have been applied to price discrimination practices with substantially different results (Morrison and Winston, 1995). The time value of business travelers was reset to $86.67 an hour, and increased to $23.81 an hour for leisure and business travelers that are not reimbursed for their travel (Garrow et al., 2007). The value of the temporal aspects of air transportation are contingent on who is paying for the trip. Travelers that pay for their own business or leisure trips experience lower values of time than passengers reimbursed by their employer. Business travelers that are reimbursed have a value of time that is more than triple that of leisure or business travelers paying their own fares. Due to a higher value of time, business travelers are more likely to choose direct flights (Garrow et al., 2007).

Despite their greater interest in time savings and more costly flight amenities, business travelers have been responsive to cheaper airfare. Many business travelers choose to trade off service comforts in exchange for cheaper prices (Mason and Alamdari, 2007). Since deregulation, price competition is responsible for increasing travel by business travelers as well as leisure passengers (Mason, 2001). Erratic economic conditions have prompted many firms to toughen travel policies such as reimbursement limits, policies requiring more extensive searches, and spending thresholds as methods of lowering their travel expenses (Berry and Jia, 2010). Self-employed business travelers and middle managers traveling by themselves rely more on economy class flying (Mason,
Low cost carriers have acquired more business travelers over time (Neal and Kassens-Noor, 2011) due to their growing responsiveness to airfare (Mason and Alamdari, 2007), particularly on business routes (Oum et al., 1986). Passengers regularly taking advantage of the lower fares of LCCs place a lower priority on frequent flyer programs and services offered by legacy airlines (Huse and Evangelho, 2007). Even though airline price wars have been conducive to the growth of leisure travelers, the market share of business passengers rebounded as the industry approached its peak, rising from 41 percent in 1999 to 49 percent in 2006 (Berry and Jia, 2010).

Shortly after deregulation, airlines ubiquitously adopted rewards programs (aka, loyalty programs and frequent flyer programs) in an attempt to remunerate repeat customers, build brand loyalty, and counter the effects of LCCs offering cheaper airfare. In particular, airlines are interested in maintaining their best business passengers due to their higher flying frequency, lower price sensitivity and higher profit margins. Frequent flyer members redeem miles for tickets, fare discounts, seating upgrades, and various discounts for cars, hotels and merchandise. The upper echelon of members gets additional upgrades and privileges at check-in, boarding, and standby. Co-branded credit cards add another tier of benefits from participating airlines and their alliance networks. Since their introduction, rewards programs have proliferated among US competitors and internationally. There are more than 70 frequent flyer programs with more than 100 million participants as of 2012 (Araujo and Kjellberg, 2015). An estimated 14 trillion frequent flyer miles with a value of $700 million were accrued by worldwide travelers by 2005 (Economist, 2005).

Declining airfare and rising incomes have expanded the air service market for the price-sensitive leisure traveler. Constituting nearly half of all travelers (Berry and Jia,
leisure travelers possess divergent purposes for taking trips and require special consideration by airlines competing for the leisure market. Because of their higher price elasticity, targeting leisure travelers helps airlines maximize revenues by achieving high load factors through their allocation of cheap seats and deeper discounts as the day of departure approaches.

LCCs that specialize in point-to-point routes and desirable tourism destinations generate a strong response by leisure travelers. It is in the mutual interest of an airline and airport serving a city pair to ensure that tourists fly rather than drive to their destinations. Markets with tourism attractions attract more visitors and investments (Berry and Jia, 2010). A 1986 study estimates income elasticity for vacation routes at 2.08 and business routes at 1.45; price elasticity for routes has steadily increased as prices have fallen (Oum et al., 1986). Similarly, a UK study from 1970-1998 estimated elasticities from 2.2 to 2.5 for leisure travel (Graham and Guyer, 2000). On vacation routes with an end point in Florida, Nevada, Hawaii, or Puerto Rico, airlines can maximize income by reducing airfare (Dresner, 2006). Las Vegas, Florida, and Hawaii attract 45 percent more visitors on average than other markets (Ghobrial and Kanafani, 1995).

A few international studies contrast two kinds of leisure traveler and advocate the existence of three distinct traveler types: business travelers, leisure travelers (those taking vacations or holidays), and visiting friends and relatives (VFR) travelers (Castillo-Manzano and López-Valpuesta, 2013). A study conducted in Spain documents behavioral differences between leisure travelers and VFR travelers. Leisure travelers are more likely to purchase tickets from a traditional travel agency, travel with adults and relatives, fly on weekends, and use low cost airlines (Castillo-Manzano and López-Valpuesta, 2013). VFR passengers are more likely to travel with children (Seaton and Palmer, 1997), stay in
fewer hotels (Young et al., 2007), stay with friends and relatives, take longer trips, and use the Internet to purchase tickets (Castillo-Manzano and López-Valpuesta, 2013). Cultural and economic differences may produce different results among US travelers; however, there may be merit in further study of the differences between leisure and VFR travelers.

Household income and the number of people in a travel party are important determinants in selecting a transportation mode for leisure travelers. A travel party with multiple members from the same household is more price sensitive to airline travel and its substitutes. A lone traveler is more than twice as likely (69 percent to 29 percent) to select automobile over air transportation. When multiple members of a household are involved in a trip, the disparity between auto and air options becomes more pronounced. The auto/air ratio adjusts to 85 percent to 13 percent with two household travelers and widens to 92 percent to 7 percent with five members (Kim, 2007). Due to the incremental cost of transporting each household member by air, the total travel cost as a percentage of household income increases quickly and makes it more likely that the family automobile will be the mode of choice with a total cost that is largely fixed. This trend has research implications. In surveys of leisure travelers, a researcher should expect a smaller representation of air passengers from lower household incomes and from families with the incremental cost of transporting multiple travelers.

The income effect of price elasticity also comes into play when household income is measured against various transportation modes. Predictably, a household with a higher income selects air transportation more frequently than a household with a lower income. Personal vehicle use was the first option of every band of household income. Air transportation was the choice of 8 percent of travelers with household income of less than
$10,000 and remains largely unchanged through several income bands until household income reaches $50,000, where 15 percent choose the air service option. In the $75,000 band, 22 percent selected air transportation, followed by 28 percent in the $100,000 income band, 30 percent in the $125,000 band, and 36.5 percent in the $150,000 and above household income band. While this information is dated (Hwang and Fesenmaier, 2003), it demonstrates that price is a substantial determinant regardless of the size or income of a household. In both instances, as the cost of purchasing an airline ticket becomes a larger share of the household income, families are more likely to opt for substitutes to air travel. Conversely, a reduction in the price of airfare or growth in family income will trigger an increase in the quantity demanded of air service.

Determinants and motivators are two dynamic influences upon leisure travel demand (Swarbrooke and Horner, 2001). Determinants represent the consumer’s income, time, and access to facilities that make it possible to travel. Motivators represent the rationale, personality characteristics, and marketing messages imparted by the service provider that stoke the consumer’s desire to travel. Determinants and motivators may be placed within a short-term or long-term context as changing circumstances influence consumer choices by either diminishing or expanding the consumer’s ability or willingness to travel (Graham, 2006).

Air transportation fulfills a myriad of consumer needs and wants. Business travelers and leisure travelers constitute two vague markets for the air service industry. While each travel purpose possesses general tendencies and subtle response variations, price elasticity of demand theory and elasticity values add clarity to the dynamic nature of a growing worldwide air service industry. Business and leisure motivations are a fascinating contrivance that has empowered the nation’s most financially secure airlines
to charge markedly different prices for a product that is essentially the same. Meanwhile, reduced regulation and the impermanent influx of competition have created a more responsive market that gained efficiency and increased consumer welfare. Price discrimination practices and the resulting price dispersion allow legacy airlines to earn a profit, satisfy a broad range of traveler needs, and greatly expand the market in terms of total annual passengers and available air service options.

2.C. Cost control and narrowing the price gap

Concurrent to implementing innovations and dynamic pricing, legacy airlines began a campaign of cutting operating costs to expand their ability to narrow the price gap with low cost carriers. Prior to deregulation, airlines competed on the quality of their services. Because CAB discouraged competition, legacy airlines had little incentive to carefully manage their costs. Cost control was an immediate priority in responding to deregulation, prompting an industry-wide dedication to cutting expenses not associated with basic operations (Goll and Rasheed, 2011). Low cost carriers enjoy lower price structures than full-service airlines (Lawton, 2002), a position maintained more recently by Southwest and JetBlue (Berry and Jia, 2010). In response, legacy airlines launched several innovative initiatives (e.g. hub-and-spoke networks, loyalty programs, alliances, code sharing, computer reservation systems, online travel sites, bankruptcy protection) to increase revenue and reduce the cost gap with their LCC competitors. The success of legacy airlines in cutting costs applied additional downward pressure on airfare, which served to expand the market and enhance their ability to compete for passengers.

The advent of internet travel sites was another popular industry innovation that drastically reduced distribution costs and enabled consumers to easily shop for their
desired flight. Travel search sites such as Expedia, TripAdvisor, Priceline, Kayak, and Hotwire are user-friendly alternatives to the confusing hodge-podge of call centers and travel agencies that presided over airline ticket distribution for decades. Online travel booking sites allow travelers to shop and compare airfare, preferred airlines and a variety of other flight attributes (Brueckner et al., 2013). Internet travel sites introduced in the 1990s made significant contributions to growing price dispersion taking place in the industry (Orlov, 2011).

An innovative fusion of information technologies and the internet allowed airlines to elude costly fees and commissions charged by the travel agencies with the added benefit of interacting directly with customers. E-ticketing through online travel sites enables travelers to satisfy their need for comparative pricing information and allows airlines to strengthen customer satisfaction and loyalty (Elkhani et al., 2014). Internet travel sites make travelers more sensitive to price changes in airfare (Berry and Jia, 2010). Similarly, leisure travelers that purchase tickets online are more responsive to price variations than leisure travelers that do not book through internet options. Travelers require basic assurances that the presented prices are representative of prices offered elsewhere in the marketplace (Garrow et al., 2007). As internet ticket sites gained consumer acceptance, airlines began realizing lower distribution costs and customers benefited through direct search capabilities and cheaper airfare. In addition, internet distribution channels have increased price dispersion for low cost carriers, legacy airlines and the routes listed on travel booking sites (Orlov, 2011). By 2007, about 60 percent of US airline tickets and 26 percent of international tickets were sold through internet travel sites (Berry and Jia, 2010). US travelers used online sites to purchase $86 billion of tickets and travel amenities (Hartevelt, 2007).
From 1926 until deregulation, interstate carriers were governed by the Railway Labor Act. The Act strongly advantaged labor’s views and goals in negotiations with the airlines (Thornicroft, 1989; Levine and Levengood, 1983). Legacy airlines, based on decades of tilted labor negotiations, carried substantially higher labor costs than their low cost rivals. LCCs were able to exploit this competitive advantage by directing a greater share of its capital to acquiring new equipment, expanding routes, and increasing market share through cheaper airfare. Deregulation provided new resolve for legacy airlines to control labor costs by contesting wage increases and seeking opportunities to slash wages (Cremieux, 1996). In fact, in the quarter leading into implementation of deregulation, 13 airlines faced 14 strikes as labor resisted giving up any gains won in the past (Northrup, 1983).

Research conducted in the years immediately following deregulation showed mixed results on the earnings of airline employees. Researchers (Dooley, 1994) found little impact on wages. Other researchers (Peoples, 1990; Card, 1986) determined that deregulation had a decidedly negative impact on employee income. The divergence of opinion is due in large part to the lack of available wage and salary data from the airlines (Cremieux, 1996), as well as the difficulty in controlling for all pertinent variables (Hendricks et al., 1980). Alfred E. Kahn, often identified as the chief architect of airline deregulation, asserts that reductions to labor wages have been unduly harsh, even though the regulated environment may have permitted labor wages to be raised to unjustified levels (Kahn, 1988a). It is noteworthy that many airlines, including the three remaining legacy airlines (American, Delta and United), used bankruptcy protection to circumvent the Railway Labor Act processes and negotiate more favorable labor rates.
Cost reductions and economies are derived from a variety of other expense items, as well. Airlines closely monitor and manage fuel and labor expenses that constitute about half of their total costs (Zuidberg, 2014). A quarterly 2015 US passenger airline cost index estimates that current labor and fuel costs represent 49.2 percent of total airline operating expenses, with labor costs accounting for 28.6 percent and fuel costs accounting for 20.6 percent (Hinton, 2015). Since collective bargaining negotiations fix labor costs for extended periods and worldwide markets dictate jet fuel prices, airlines squeeze additional savings from remaining operations expenses, such as: rents, professional services, food and beverage, landing fees, maintenance materials, insurance, commissions, marketing, and utilities.

Operating larger aircraft generates positive cost economies (Ryerson and Hansen, 2013) as well as lower airfare (Bitzan and Chi, 2006). Airport hubs channel arriving passengers to larger aircraft with the expectation of achieving cost economies through high load factors (Bruckner and Spiller, 1994). Cost economies also can be reached by dominant airlines at large hub airports relative to carriers operating at more competitive hubs (Banker and Johnston, 1993). However, complexity changes this relationship as airlines that operate one or zero hubs report lower operating costs (49.4 percent and 25.5 percent, respectively) than carriers managing multiple hubs. Because dominant airlines can charge higher prices at fortress hubs, they may not place as high an emphasis on cost control (Zuidberg, 2014). Airlines may also improve cost economies by increasing route density, limiting connecting markets, operating older aircraft, and participating in hedging arrangements that allow them to reduce fuel price volatility. Most of these factors are advantages of low cost carriers and explain why LCCs typically maintain lower costs of
operation than legacy airlines; legacy airlines achieve cost advantages from hub networks and aged fleets.

Deregulation gave airlines the unrestricted opportunity to match their routes with appropriately sized aircraft and improve load factors. Airlines added regional jets to their fleets to efficiently address the anticipated needs of the routes and markets they plan to serve. Regional jets have the additional benefit of lower labor costs than larger jets (Mumbower et al., 2014). The survivors in today’s airline industry understand the importance of passenger load factors (Borenstein and Rose, 1994). Aircraft sparsely populated with passengers inevitably results in the airline losing money and eroding its overall financial position.

2.D. Bankruptcies and mergers collapse competition

As low cost carriers fought to expand market share through cheaper prices and legacy airlines countered with innovations and price cuts, the resultant price war left more money in the pockets of travelers, but less money flowing into the financial statements of the airlines. Aggressive price competition reduced airline profit margins or forced them to operate in the red. While the proponents of deregulation desired lower prices and more competing airlines, the prolonged competition for low prices forced a steady flow of airlines to go bankrupt or position them for acquisition. Maintaining cost structures that were too high, gaining market share at the expense of profit, insufficient financial capitalization, bare knuckle tactics by competitors, and unpredictable economic conditions were the primary reasons for the exit of hundreds of airlines in the years since deregulation.
The prolonged stream of bankruptcies and mergers was not only a surprise to deregulation proponents, they were a powerful cross current to their prized goal of contestability. As this section will reveal, deregulation set competitive forces in motion that created a precarious battlefield for rivals. If an airline did not adequately match its competitors on ticket prices, it could not generate a sufficient passenger base and became insolvent. If an airline expanded too quickly and operated with insufficient reserves, an unforeseen economic condition could force it into bankruptcy. Going head-to-head with a well-financed rival spelled doom for many airlines. Union strikes and fuel spikes destroyed airlines. Not being able to secure major airport gates or obtain aircraft on time was enough to drive others into bankruptcy. The four major airlines and a few regional airlines with special market conditions (e.g. Hawaiian Airlines and Alaska Airlines) survive today. Bankruptcies and mergers were a consequence of deregulation’s price war. Now that the dust has settled 36 years later, questions of contestability have resurfaced, and along with it, concerns about the rising potential for higher prices and service reductions to small airports. The architects of deregulation were convinced that greater competition would reduce ticket prices.

Proponents projected that deregulation would significantly enhance the contestability of markets and consumer welfare (Douglas and Miller, 1974). As anticipated, a wave of new airlines did enter the market and airfares began to descend. Unfortunately, converging events led to powerful counter currents that choked deregulation’s momentum at several points and contributed to the spate of bankruptcies, acquisitions and mergers that imploded the industry to today’s handful of surviving airlines. Deregulation lowered prices and expanded the market but its proponents could not be pleased with the current oligopoly presiding over the industry.
Economic and industry studies in the ‘60s and ‘70s asserted that the contestability of markets and consumer welfare were better served by deregulating the industry (Goetz and Vowles, 2009). When deregulation began, 30 certificated airlines provided scheduled interstate service. In the ensuing six years, 26 airlines entered the market and 19 withdrew from the market (Fawcett and Farris, 1989). A spike in fuel prices, a national recession, delays in delivery of new aircraft, the burst of entrants, and equipment shifted to lucrative routes combined to produce excess capacity, forcing several airlines to exit the market (Kole and Lehn, 1999). Carriers that excitedly plunged into new markets with new aircraft were unable to pay their debts and went bankrupt. This harsh reality reminded enthusiasts of deregulation that free enterprise does not guarantee that risks will be rewarded (Leonard, 1983). An unintended consequence of deregulation has been the continual procession of acquisitions, mergers, and Chapter 7 and Chapter 11 bankruptcies (Mitchell and Mulherin, 1996; Ellison, 1982). Loosening antitrust restrictions paved the way for even more mergers in the late 1980s (Kole and Lehn, 1999).

Other studies produced different airline growth estimates, but reached similar conclusions. One study reported that deregulation spawned 24 new air service providers; however, by 1988, only two of these new entrants remained in business (Lazar, 1989). Another study reported the number of carriers expanded from 36 in 1978, to 63 in 1980, and 106 in 1985 (Siegmund, 1990). Legacy carriers sought to amplify their competitive advantage by strategically building their networks to generate higher load factors and deftly to respond to price challenges posed by new entrants. These advantages allowed incumbent airlines to stifle and outlast their competition (Lazar, 1989). Legacy airlines were more agile, innovative and responsive to market needs – just as deregulation proponents had intended. The combination of more efficient, assertive legacy airlines and
the failure of several fledgling airlines resulted in a reluctance of capital markets to finance additional entrants. This unwillingness raised an essential barrier to entry and, once again, prompted questions about the contestability of the airline market (Fawcett and Farris, 1989). Legacy carriers constrained competitors by controlling airport slots to highly profitable routes and gaining priority treatment for acquiring fuel-efficient regional jets. These competitive tactics and fuel price spikes hampered, but did not prevent ticket price reductions in the years immediately after deregulation (Ellison, 1982).

Braniff International Airways was the first bankruptcy casualty of the legacy airlines in 1982 (Leonard, 1983). Bankruptcies were rare prior to deregulation. There have been 196 bankruptcies since 1978. As a result, many famous brands no longer exist: Ozark (1986), Eastern (1989), Pan Am (1991), and TWA (2001). Airline bankruptcy does not necessarily mean liquidation or going out of business. Chapter 11, the most used bankruptcy option, allows airlines to continue operations and to pay creditors based on a plan endorsed by a court. Chapter 7 bankruptcy prescribes court supervision for airlines to liquidate their assets and pay creditors. A total of 82 airlines filed for US bankruptcy from 1979 to 1988, 54 airlines from 1989 to 1998, 49 airlines from 1999 to 2008, and 11 airlines from 2009 to 2014 (Calio, 2015). Many airlines that have filed for bankruptcy protection are still operating, including the three of the four largest airlines in the US: American, Delta and United; Southwest has not sought bankruptcy protection. Many Chapter 11 airlines were acquired by or merged with rival carriers. The most recent mergers will likely retire the well-known brands of Continental, Northwest and US Airways – all of which have been through bankruptcy.

After waves of bankruptcy had rocked the maturing deregulated air service industry, Borenstein and Rose (Borenstein, 2005) set out to dispel the myth that distressed
airlines were using Chapter 11 bankruptcy protection to substantially decrease prices to the detriment of their stockholders and competition. It is a popular business notion that a company experiencing financial problems may be tempted to drastically cut prices to attract additional cash and improve the appearance of its financial statements. Rigorous competition prompted many well-known brands to file for bankruptcy to liquidate, reorganize, or be acquired by a rival. Bankruptcy adversely affects petitioning airlines by lowering consumer demand for their tickets, forcing them to lower prices, and inadvertently summoning aggressive responses from healthy competitors. Between 1989 and 1992, seven Chapter 11 filings were submitted by widely-recognized airlines: Eastern, Braniff, Continental, Pan Am, Midway, America West, and TWA. Competitors of bankrupt airlines maintained or increased prices subsequent to bankruptcy filings and their market shares stayed the same or increased. The study concludes that carriers going through bankruptcy did not engage in business practices that did actual harm to their competitors (Borenstein, 2005).

Within a few years of the September 11, 2001 terrorist attacks, four of the remaining legacy airlines (United, 2002; US Airways, 2002 and 2004; Northwest, 2005; Delta, 2005) used bankruptcy protection to close hubs and reduce flights. In a three-year period following the attacks, six legacy airlines (US Airways, United, Delta, Northwest, American and Continental) experienced huge declines in profits (Berry and Jia, 2010). Southwest and other low cost carriers took advantage of this period of hardship for legacy carriers by expanding routes and flights (Bilotkach and Lakew, 2014). The flurry of mergers and three concurrent economic shocks created a caustic environment for struggling legacy carriers. In addition to the aforementioned bankruptcies, the industry experiences the continued expansion of discount airlines and the swell of instability in the
financial markets (Barros et al., 2013). US airlines were in a state of constant fluctuation and financial distress following the market shock of the terrorist attacks (Lai and Lu, 2005). The industry fought through these obstacles and was gaining strength until a devastating jet fuel spike (the US kerosene-type jet fuel price increased from $1.60 a gallon in 2007 to a historic peak of $4.21 in 2008), and the Great Recession ravaged the industry from 2007-2009 (Cogan, 2015). These hardships led surviving airlines to aspire to greater financial discipline by concentrating on cutting costs, gaining operational efficiencies, identifying beneficial acquisitions and mergers, coordinating routes with international alliances and seeking further reductions to labor costs (Barros et al., 2013).

Blockbuster mergers took place during this disruption, with Delta obtaining Northwest in 2008, Continental and United merging in 2010, Southwest buying AirTran in 2011, and American and US Airways merging in 2013. Financial austerity forced airlines to focus on load factors. As a baseline, the industry load factor was 53.7 percent in 1975, climbed to 61.5 percent in 1978, and increased to 62.4 percent in 1987 (Siegmund, 1990). Average load factor grew from 71.2 percent in 1999, to 79.7 percent in 2006, and 81.5 percent in 2007 (Berry and Jia, 2010). By the end of 2014, the largest carriers achieved even higher load factors: Alaska Air Group, 85 percent; Delta 83.7; United, 83.5; Southwest, 82.7; US Airways, 82.6; JetBlue, 81.6; and American, 80.4 (Cederholm, 2015).

Many mergers did not benefit consumers. It is estimated that the Delta acquisition of Northwest increased fares at 32 originating airports by $13 a flight. The American-US Airways and Continental-United mergers increased route concentration and raised prices in hub airports at Newark Liberty, New Orleans, Memphis, and Charlotte. The hub premium at concentrated airports is estimated to be 27 percent higher, but is thought to
have decreased in recent years (Bilotkach and Lakew, 2014). The hub effect increases with the proportion of first class passengers (Lee and Luengo-Prado, 2005) and declines with the presence of a low cost carrier (Brueckner et al., 2013). Due to the minor effect of legacy competition on airfare, mergers of legacy airlines are thought to have minimal price implications as long as the merging airlines have few network redundancies.

Southwest’s purchase of AirTran was intended to bolster its ability to compete with Delta in Atlanta; however, Southwest miscalculated the strength and efficiency of Delta, which is demonstrated in disappointing results of head-to-head competition (Barros et al., 2013). Delta was accustomed to defending its dominance at Atlanta’s Hartsfield Airport and for many years prior had lowered fares on competing routes served by ValuJet (ValuJet merged in 1997 and the resulting airline was named AirTran) ending at Hartsfield Airport, as well as routes flowing through Atlanta (Windle and Dresner, 1999). Recent mergers have reduced competition and have applied upward pressure on fares. For example, it is estimated that the United-Continental merger increased airfare by 4.3 percent for all travelers of US routes (Brueckner et al., 2013).

In summary, the impacts of deregulation have been intense and dramatic. Among other previously discussed effects, well-known airlines have been “politely carved up by the remaining gargantuan airlines” (Deppe et al., 2012, p.1). Regulations under CAB provided a safe harbor for airline survival and, as a result, bankruptcies were rare. It was hoped that deregulation would force airlines to become more efficient, attract new competitors, expand the national air service network, and provide new consumer options that would result in substantial market growth – all of this without compromising safety or quality air service to hundreds of small communities. The literature largely validates these intended results. Even so, deregulation’s architect Alfred E. Kahn laments that
governing authorities have sanctioned all merger applications (until the Justice Department blocked the United and US Airways merger in 2001), has not prosecuted destructive maneuvers of carriers, or imposed anti-trust laws (Kahn, 2001). Regardless of its shortcomings, chief of which is the severe reduction in airlines serving the nation’s air service network, deregulation’s prolonged price war nearly tripled (Figure 1) the number of annual passengers in the US.

Most would agree that the effects of deregulation have been beneficial. Cost reductions and greater efficiencies have improved the industry’s overall productivity. In turn, substantially lower ticket prices expanded the market to a broader cross section of Americans, particularly those with modest incomes. However, as detailed in this section, forces unleashed by deregulation have narrowed the number of competing airlines. The competitive climate that fostered lower prices exists in a much more compact form today through the consolidation of carriers. Deregulation enticed legacy carriers to introduce the hub and spoke network, providing spoke service to hundreds of small cities. Classic theory on the market power of an oligopoly poses uncertainties about the future of the industry: will dominant airlines increase prices, contract the number of air travelers, or eliminate air service to smaller airports?

3. Methods

The sample core of 306 airports is derived from two major airline passenger traffic databases and a computer sculpting process that merges elements of both databases to improve the accuracy of domestic O&D data. US carriers are required to submit various commercial performance data to the Bureau of Transportation Statistics where it is available to the public. O&D data is featured in authoritative articles about airport
selection and the air service industry; (Brueckner et al., 2013). Not only is O&D data is a rich, instructive source of information, it is a far better indicator of local passenger trends than national measurements such as gross domestic product (Bhadra, 2003).

The Passenger Origin and Destination Survey (DB1B) is also referred to as O&D data and the 10 percent ticket sample data, which is purported to be a representative sample of all domestic tickets. There are limitations to the raw data produced by the DB1B instrument. For example, not all carriers are required to report O&D data. Only commercial carriers that operate aircraft with 60 seats or more submit DB1B information. Even when operating domestic routes, foreign carriers do not participate in DB1B reports. Despite its shortcomings, DB1B annual and quarterly compilations provide extensive information about each reporting carrier, origin and destination airports, average fares, number of paid tickets, and miles flown (Wilson, 2015). The second major database is the T-100, submitted by all commercial passenger carriers regardless of aircraft size and includes foreign airlines operating routes to and from the US. Both databases are maintained by the Bureau of Transportation Statistics of the United States Department of Transportation. The O&D is reported quarterly. The T-100 is reported monthly.

Data Base Products is a highly reputable company that has provided various types of commercial airline reports to airline analysts, airlines, airports, universities, labor unions and hotels since 1986. For this study, Data Base Products collected O&D data for 695 US airports for the period 1979-2014, inclusive. Data Base Products tests DB1B raw data and improves the accuracy of route destination totals through computer sculpting and cross analysis of the carriers’ T-100 enplanement data. Data Base Products has been enhancing O&D estimates since T-100 reporting was required for the airlines in 1990. This was particularly important when DOT modified its reporting requirements in 1998 to
include both the operating and marketing carriers from codeshare partnerships and changed the first-generation DB1A report to the updated DB1B report. Adding marketing carriers to O&D reporting reflected the emergence of code sharing agreements between airlines sharing the same flight. Prior to 1998, only the route data for the marketing carrier was included in O&D reporting. By capturing the routing data from marketing and operating carriers in the code sharing arrangement, O&D data now represents all carrier information from this new business arrangement. Data Base Product’s developed expertise in enhancing O&D totals with T-100 data enables it to adjust for this change in methodology and standardize its origin and destination totals. The industry experience and computer sculpting of Data Base make its O&D estimates more accurate than the raw data produced by DB1B and T-100 reporting, particularly in the context of a 35-year longitudinal study.

The Federal Aviation Administration (FAA) classification of airports will be used to segment airports by activity and size. Primary commercial service airlines are publicly owned, offer scheduled service within the United States, and have more than 10,000 boarding passengers each calendar year. FAA classifies airports into four groups based on their annual number or market share of annual commercial passenger enplanements: 

- **Large hub airports** have 1 percent or more of total boardings,
- **Medium hub airports** have less than 1 percent and at least .25 percent of total boardings,
- **Small hub airports** have less than .25 percent and at least .05 percent of total enplanements, and
- **Nonhub airports** have less than .05 percent of annual passenger boardings (Huerta, 2014). Based on their 2015 classification, annual passenger volumes of a subset of primary commercial service airports will be analyzed for the period, 1979-2014.
3.A. Methods observations

Extant literature has little to offer in helping us to understand passenger boarding trends at US airports since the passage of airline deregulation in 1978. There are articles that reference passenger information for limited periods, but an absence of articles that provide a post deregulation longitudinal perspective and comparative analysis of passenger growth trends of airports for the entire 36-year period.

The FAA maintains monthly passenger enplanement data for 1,986 airports of various sizes. Annual data for four quarters of 2014 was released in April 2015, affording this study with 36 annual O&D totals. Data Base Products provided O&D data on 695 commercial service airports. In order to extract meaningful findings from this ocean of data, this study is guided by the research question: What is the pattern of consumers selecting airports for their originating flights in the wake of airline deregulation? Although somewhat cumbersome, the research question is carefully constructed to frame the study’s emphasis on examining passenger migration information that addresses the gap in extant literature and adds a valuable longitudinal perspective to national air service passenger growth trends. It is also important to note that the data collected by the Bureau of Transportation Statistics lacks independent variables that would allow for the use of regression forms of statistical analysis. Through comparative analysis of annual passenger totals of individual airports and their respective FAA airport classifications, new and informative findings are identified about the nature of passenger growth during the study period.

The analysis begins with the data generated by computer sculpting of DB1B and T-100 sources. Findings are generated for available airports and the four FAA primary commercial service airport classifications. With the characteristics of the data set and the
research question in mind, the study necessarily imposes limits on the available data to arrive at the sample group of airports.

- The sample will be limited to airlines and airports reported in DB1B and T-100 data.
- While the international component of air service is important in its own right, this study will consist of routes originating in and terminating at US destinations.
- Air service data to US possessions and territories (e.g. Puerto Rico, Guam, Virgin Islands, and Dominican Republic) is omitted.
- Due to substantially varied growth behavior, eligibility requirements for federal subsidies, distinct statutory treatment, distance from the US air transportation network, and a lack of transportation substitutes, Alaska airports are omitted.
- This study defines a route by its two endpoint airports (city pairs) and includes itineraries with layovers at other airports. This is particularly necessary to incorporate small airports that are served by a single airline and offer service to only one airport.
- The data set begins in 1979, the first year of airline deregulation, and concludes in 2014, the most recent annual data available.
- Airports with missing values during the study period are omitted from the sample.
- The FAA’s April 2015 airport classifications for primary commercial service airports are used to identify sample airports and their assignment to
designated groups of large hub, medium hub, small hub and nonhub airports.

- Combined passenger totals are used as they smooth out irregularities that may occur from reliance on data exclusive to inbound or outbound flights.

This described standard identifies a sample of 306 airports that have provided commercial air service for the entire 36-year period. Sample airports are analyzed for annual and study period passenger totals and growth rates. The study identifies airports with a net loss of passengers for the period, the number of airlines serving each airport, and a comparative analysis of airports grouped into the four Federal Aviation Administration (FAA) categories. FAA airport classifications are a recognized industry standard that provides a consistent method for sorting airports into groups that share a common scale and similar operational challenges with other representatives of the group.

4. Study findings

Total passenger enplanements at 306 sample airports grew 152.8 percent for the 36-year study period with an annual average growth rate of 4.4 percent (Figure 1). During the same period, the US population grew 41.7 percent with an annual growth rate of 1.2 percent. It is clear from these post-deregulation figures that population growth is not the primary influence on the passenger growth transpiring during the study period. Extant literature credits this enormous influx of passenger activity to increased airline competition and consumer responsiveness to substantially lower ticket prices. The income effect of price elasticity expects a decline in consumer purchases of airline tickets when budgets constrict, as they would during a national recession. Airline tickets are a normal
good, and consumers purchase more airline tickets when their incomes increase and purchase fewer when their incomes decrease.

Figure 1: Total Passenger enplanements and population growth (1979 - 2014)

There is a strong correlation between national recessions and declines in annual passenger totals. This graph presents passenger totals from a sample of 306 US airports. The five most recent US recessions are overlaid as gray bars.

Perhaps the most important finding of this longitudinal study is the contrast in growth of airport groups of various size (Figure 2). Medium hub airports logged the largest gains in total passengers with a period growth of 174.06 percent and average annual growth of 4.97 percent. Large hub airports experienced similar period growth of 168.74 percent and annual growth of 4.82 percent. The growth of Small hub airports lagged significantly, with period growth of 110.18 percent and annual growth of 3.15 percent. Nonhub airports, making up more than 60 percent of all primary commercial service airports in the US, logged period growth of only 45.44 percent and annual growth of 1.3 percent. This compares to total airport growth of 152.81 percent for the period and average annual growth of 4.37 percent.
Figure 2: Five-year incremental, annual and period growth (1979-2014)

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</tr>
</thead>
<tbody>
<tr>
<td>Large</td>
<td>8.51%</td>
<td>-6.35%</td>
<td>1.17%</td>
<td>17.68%</td>
<td>11.61%</td>
<td>12.79%</td>
<td>25.37%</td>
<td>168.74%</td>
<td>4.82%</td>
</tr>
<tr>
<td>Medium</td>
<td>1.68%</td>
<td>-10.02%</td>
<td>-1.71%</td>
<td>13.13%</td>
<td>17.77%</td>
<td>20.54%</td>
<td>36.53%</td>
<td>174.06%</td>
<td>4.97%</td>
</tr>
<tr>
<td>Small</td>
<td>0.01%</td>
<td>-8.91%</td>
<td>4.20%</td>
<td>13.64%</td>
<td>9.15%</td>
<td>20.33%</td>
<td>9.48%</td>
<td>110.18%</td>
<td>3.15%</td>
</tr>
<tr>
<td>Nonhub</td>
<td>4.61%</td>
<td>-11.28%</td>
<td>-5.83%</td>
<td>8.46%</td>
<td>-3.70%</td>
<td>35.34%</td>
<td>-21.92%</td>
<td>45.44%</td>
<td>1.30%</td>
</tr>
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Since the industry’s peak in 2007 and recession-related decline through 2009, passenger traffic has grown for all four primary airport groups.

More than a third of all FAA primary commercial service airports offer service by a single carrier (Figure 3). Each airline and its surrogates are counted once for an airport; for example, if two regional carriers for Delta serve an airport, only one is counted. Of 333 airports, 115 are served by a single carrier; 113 are nonhub airports and two are small airports. As expected, smaller airports typically are served by fewer carriers (RITA/BTS, 2015).

Of 67 airports that experienced a net loss of annual enplanements from the beginning to the end of the study period, all are nonhub airports. Ten of the nonhub airports are located in Michigan; six in Wyoming; three in Pennsylvania, Illinois, West Virginia, Alabama, California and Nebraska; and two in Louisiana, South Dakota, Texas, Wisconsin, Mississippi, Montana, Minnesota, Georgia and Iowa. Loss leaders include airports in Modesto, CA, losing 87 percent of total annual passengers from 1979 to 2014; Cheyenne, WY (86.7); Farmington, NM (84.5); Scottsbluff, NE (83.1); North Platte, NE (82); Moselle, MS (81.8); Norton Shores, MI (80.7); Klamath Falls, OR (79.5); Pierre, SD (74.2); and Liberal, KS (71.9) with the highest negative growth rates for the period.
Figure 3: Airports and Number of Air Carriers, 2015

<table>
<thead>
<tr>
<th>Number of Carriers</th>
<th>Number of Airports</th>
<th>Total</th>
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<tbody>
<tr>
<td></td>
<td>Large</td>
<td>Medium</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>4</td>
<td>3</td>
<td>15</td>
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<tr>
<td>5</td>
<td>2</td>
<td>13</td>
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<td>6</td>
<td>7</td>
<td>5</td>
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<td>8</td>
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<td>9</td>
<td>3</td>
<td>1</td>
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<tr>
<td>11</td>
<td>2</td>
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<td>12</td>
<td>3</td>
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</table>

Nonhub airports average 1.8 carriers, Small hubs 4.2, Medium hubs 6.7, Large Hubs 8.3, and all primary service airlines average 3.2 carriers in 2015.

Figure 4: Annual changes in growth rate for total airports and groups

Annual growth rates for FAA airport groups follow similar patterns of growth and decline. Growth rates fall into negative territory during periods coinciding with national recessions.

When changes in annual growth rates are calculated for FAA classification groups, a graphic presentation shows that large, medium and small airports closely adhere
to the total change in airport passenger growth while nonhub airports are more volatile
and deviate more from the total trend line (Figure 4).

Figure 5: Group characteristic of Large, Medium, Small and Nonhub airports

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Passengers</th>
<th>Difference</th>
<th>Growth Share</th>
<th>Number of Airports</th>
<th>Group Share</th>
<th>Passenger Share</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1979</td>
<td>2014</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large</td>
<td>204,679,020</td>
<td>550,058,660</td>
<td>345,379,640</td>
<td>65.65%</td>
<td>30</td>
<td>9.80%</td>
</tr>
<tr>
<td>Medium</td>
<td>68,119,990</td>
<td>186,691,850</td>
<td>118,571,860</td>
<td>22.54%</td>
<td>31</td>
<td>10.13%</td>
</tr>
<tr>
<td>Small</td>
<td>45,813,300</td>
<td>96,288,970</td>
<td>50,475,670</td>
<td>9.59%</td>
<td>61</td>
<td>19.93%</td>
</tr>
<tr>
<td>Nonhub</td>
<td>25,655,750</td>
<td>37,313,820</td>
<td>11,658,070</td>
<td>2.22%</td>
<td>184</td>
<td>60.13%</td>
</tr>
<tr>
<td>Total</td>
<td>344,268,060</td>
<td>870,353,300</td>
<td>526,085,240</td>
<td>100.00%</td>
<td>306</td>
<td>100.00%</td>
</tr>
</tbody>
</table>

Columns report totals for annual passengers, difference in 1979 and 2014 group totals,
group share of passenger growth, number of airport, group share of total airports and
group share of total passengers for first and last years of the study period.

By FAA group, 2014 averages for total passengers enplanement and deplanement
are as follows: Large airports, 18.3 million; medium airports, 6.0 million; small airports,
1.6 million; and nonhub airports, 203,000. FAA classifications group airlines with
comparable annual passenger totals and share similar operational issues. Despite the
numerous nonhub and small airports that represent 80 percent of all airports, large and
medium airports garnered almost 90 percent of the industry’s growth in passengers since
1978 and share almost 85 percent of the total market (Figure 5). Large and medium
airports have increased their market shares of total passengers through the period from
59.45 percent to 63.20 percent and from 19.79 percent to 21.44 percent, respectively.
Meanwhile, the market share for Nonhub airports has declined from 7.45 percent to 4.29
percent, and small airports fell from 13.31 percent to 11.06 percent for the period. The
number of total US passengers for sample airports has grown dramatically from 344
million in 1979 to 870 million in 2014, an increase of more than 526 million passengers from the first year of deregulation through 2014. More than 65.5 percent of these new passengers have migrated to the large airports, with another 22.5 percent traveling from medium airports.

5. Conclusions

Market conditions today may place smaller airports at greater risk for service reductions or abandonment. Since deregulation, 500 million more passenger enplanements have poured into the national air service network. While the literature’s greater attention to the largest airports indicates that they have been a primary beneficiary of passenger growth, the emphasis of this study is the performance of the sector constituting the smallest primary commercial service airports. Extant studies limited to small groups of airports and abbreviated timeframes provide important information, but do not create a complete picture of longitudinal and comparative growth patterns. This study contributes new knowledge with its analyses of passenger migration and growth trends for more than 300 airports during the 36-year period since deregulation.

Deregulation of the airline industry unleashed the power of competition, resulting in a surge of new consumers to the market and a new template to expand air service in countries around the world. “Maniacally detailed restrictions” (Kahn, 2001, p. 317) that guided US commercial aviation through its infancy gave way to a cohesive political cabal with a collective desire to expand the stifled industry by incentivizing airlines to cut costs and reduce airfare. In passing deregulation, economists and industry proponents unified in the belief that price reductions would expand the market by appealing to millions of price sensitive consumers. Price elasticity of demand is commonly referenced as the invisible
force behind the masses of travelers that now select air service over other transportation options.

While no one could predict all of the innovations and changes in the industry, deregulation had the intended effects of attracting new airlines to the market, expanding competition for the most populated routes, improving the operational efficiency of the airlines, lowering ticket prices and increasing traveler reliance on air transportation. The introduction of low cost carriers, the creation of hub-and-spoke networks, the industry’s newfound urgency to cut costs, and dynamic pricing models that featured price discrimination combined to make the marketplace more responsive to consumer desires and exerted continuous downward pressure on prices. Cutthroat competition fostered a prolonged price war and an environment where mergers and bankruptcies were commonplace.

As the number of annual passengers in the industry almost tripled during the study period, the national network of primary commercial service airports experienced distinct growth patterns, largely correlated to FAA classification. The US annual passenger growth rate of 4.37 percent for the period far exceeds the annual average population growth of 1.2 percent. Consistent with the price elasticity of demand model, decreases in annual passengers coincide with national recessions, confirming that airline tickets are a normal good for consumers. While all airport groups have benefited from deregulation, Large hub and Medium hub airports have enjoyed more than triple the growth of Nonhub airports. The number of carriers in a market, route concentration, and city pairs served by Southwest Airlines are primary factors in driving down airfare. As the architects of deregulation feared, many of the nation’s small airports are exposed to reductions in the quality of equipment, available seating, and number of flights.
The 36-year comparative analysis of 306 sample airports shows that the nation’s largest airports gained the most from the airline industry’s largesse. A group of 31 medium airports and 30 Large airports experienced annual passenger growth of 4.97 percent and 4.82 percent, respectively. Meanwhile, the numerically larger groups of 61 small hub airports and 184 nonhub airports underwent more modest growth rates of 3.15 percent and 1.3 percent, respectively, which were well below the national passenger annual growth rate of 4.37 percent. Nonhub airports experienced the greatest volatility, while the trend lines for medium, large and small airports closely mirrored the growth rate pattern for the general industry. Furthermore, of 67 airports that actually experienced a net reduction in the number of passengers from 1979 to 2014, all of them are nonhub airports. Clearly, nonhub airports are performing substantially differently than larger airports.

Now that the market has imploded to four major national carriers, industry proponents are contemplating whether the current level of competition is sufficient to serve the interests of consumers, the public good, and the network of cities that have invested immense amounts of taxpayer funding in air service infrastructure. The security of the national air service network is a matter of interest to national policy-makers, the airline industry, local governments as well as individuals and businesses that depend on quality air service from their respective communities. This study espouses to assist these groups in better understanding the economic forces unleashed by deregulation, migration patterns resulting from 36 years of rigorous competition, and new concerns raised by the barrage of mergers and bankruptcies that have collapsed the field of air service providers.
6. Future research

Hub and spoke networks were the post-deregulation invention of major airlines looking to create a competitive advantage over their low cost rivals. With the receding of competition posed by hundreds of mergers and bankruptcies, will major airlines be motivated to maintain a disbursed network of small airports? Congress authorized the Essential Air Service program to ensure that a group of very small airports continues to provide scheduled air service to their markets. If a severe national recession were to substantially decrease passenger demand, would small airports be in peril of losing all scheduled air service?

There are obvious and well-known reasons why travelers select large airports over small airports. Other than lower airfare and a wider selection of itinerary options, what are other factors that are inducing passenger leakage from small airports to larger competitors? Are the advantages of close and convenient sufficient to enable small airports to maintain market share and continue to be relevant players in the national air transportation network? Consumers hold varying opinions about the perceived benefits of the closest available airport and approach the decision to purchase an airline ticket with a wide range of personal preferences.

When air travelers consider departure airports for a trip, they routinely place high importance on the closeness of an airport to their homes. Particularly with small airports, air travelers emphasize the convenience of their closest airport’s parking, as well and its security and check-in lines. Conversely, when travelers are asked about their ticket purchase decision, they cite price and schedule considerations as the determining factors. The incongruence in how consumers perceive their selection of an originating airport and purchase of an airline ticket are both necessary parts of the nested decision process. If we
can answer this apparent contradiction, we will better understand how the purchasing decisions of air travelers are resulting in passenger migration. Past research on selection criteria for airline tickets and airports has been extensively analyzed through quantitative models. A qualitative approach to this research area may reveal new insights to consumer preferences, switching behavior, and the future outlook for the nation’s smallest airports and their regional economies.
Article 2: Consumer nested preferences and switching in airport selection

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Abstract

This study applies a nested decision construct and qualitative methods in examining consumer switching and their selection of an originating airport. Focusing on the smallest segment of primary commercial service airports accentuates switching activity and explains why small airports experience greater leakage from their catchment areas and a substantially lower growth rate in the post-deregulation era. Transactional and systemic switching steer travelers away from their preferred hometown airports and, collectively, causes passenger migration from small airports to nearby larger airports and their characteristic advantages of lower airfare and greater flight options. Interview data enable the extrapolation of a conceptual framework consisting of four distinct traveler profiles: traders, simplifiers, gamers and broken. The heterogeneous priorities and purchasing patterns emerging from these profiles offer new insights to the segmentation and redirection of airport marketing initiatives to more efficiently expend marketing resources in minimizing adverse switching and optimizing passenger enplanements.

Keywords: air service industry, airlines, enplanements, nested decision making, nonhub airports, passenger migration, preferred airport, systemic switching, transactional switching, traveler profiles
1. Introduction

Commercial aviation is a prominent industry in the United States, annually generating $1.5 trillion in economic activity and 11 million jobs (A4A, 2016a). Foreign and domestic airlines carried a record 895 million passengers to and from 360 US primary commercial service airports and more than a hundred non-primary airports in 2015 (USDOT/BTS, 2015). This network of publicly-owned airports collaborates with airline companies to stimulate revenue, control costs and expand their mutual base of customers (Choo, 2014). In addition to their primary role of linking passengers to airlines, airports benefit their regional economies as catalysts for tourism and business development (Pita et al., 2013; Zhang and Xie, 2005).

As represented in Figure 1, airports rely upon passenger traffic to generate revenue from parking and commercial leases. In turn, passenger enplanements enable airports to earn revenue from landing fees and leases with partner airline companies. Passenger traffic not only determines an airport’s revenue sources but also positions it to negotiate for service enhancements from partner and prospective airlines. Capturing a maximum share of air travelers from its market area is the primary priority for an airport as traffic is the catalyst for maximizing its revenue sources (Parrella, 2013). An airport’s base of passengers is a chief asset in negotiating with the airlines and, therefore, determines its number of daily flights, seating capacity, other service features and total revenue (Bhadra and Texter, 2004). Retaining current customers is vital, as they are highly profitable and costly to replace (Keaveney, 1995; Zeithaml et al., 1996). Limiting the incidence of consumer switching is complicated and requires the airport to adeptly respond to the contributing causes (Jiang and Zhang, 2014).
Because consumer switching is highly significant to virtually every industry, the extant literature is replete with relevant models, constructs and findings. Regarding the air service industry, researchers have suggested study topics that have received limited consideration and invite further definition: describing traveler decision processes (Graham, 2013), identifying the attributes of small airports served by one airline (Bilotkach and Lakew, 2014), drawing distinctions between airline and airport features and roles (Ishii et al., 2009), building a stronger connection between loyalty factors and customer retention (Cui et al., 2013) and expanding what is known about traveler decisions concerning various airport factors (Johnson et al., 2014). A qualitative study of travelers simultaneously evaluating airport and airline factors promises to contribute to a greater understanding of airport switching in addressing research opportunities.
US airports enjoy symbiotic relationships with national and regional airline companies and air travelers through financial, services and marketing exchanges. Totals are extracted from FAA and USDOT websites.

1.A. Airports compete to retain travelers in deregulated market

Developing this area of research is particularly compelling to proponents of small airports and their respective communities due to transformative market forces permeating the industry since 1978. Airline deregulation shifted market emphasis from government control and legacy airline differentiation to unfettered competition and price wars. In response to the low-price strategy of dozens of new entrants, national airline companies adopted innovations (e.g. hub and spoke distribution systems and rewards programs) to maintain their traditional competitive advantages and retain their customers. Legacy
carriers engaged in aggressive cost cutting plans that allowed them to narrow the price with their low-cost rivals. For decades, major airlines leveraged their accumulated financial strength by incurring annual deficits to retain market share. Battered by a variety of economic forces (e.g. labor strikes, terror attacks, recessions and fuel price spikes), more than a hundred airlines exited the market though bankruptcies and mergers. The net result of this tumultuous period was a substantial reduction in airline ticket prices, the near tripling of annual passengers, the collapse to four surviving major airlines and, most importantly for this discussion, the anemic growth of the nation’s smallest airports.

After the 36-year period of steady national passenger growth, small airports and their communities are well aware that their core advantages of being close and convenient have done little to stem the leakage of travelers from their respective catchment areas. While each airport and market is distinctive (Parrella, 2013), it is a pervasive global dynamic that airline service draws consumers to airports (Infanger, 2010) and that an airport’s ability to capture its market determines the number of daily departures and the extent of its airlines service (Bhadra, 2003). Limited by population and economic constraints, small cities typically offer less air service, and their airports are excessively vulnerable to service reductions from adverse economic conditions (Bhadra and Hechtman, 2004). An airport’s service offerings are vital to regional travelers and the overall prosperity of their host communities (Longman and Khan, 2012). Therefore, it is essential for airport managers, regional stakeholders, economic development organizations and local governments to comprehend the implications of quality air service to their community (Fuellhart et al., 2013). Since many stakeholders have unrealistic expectations about the service potential of their local airport, objective studies serve the
crucial role of disseminating accurate information about traveler preferences and realistic strategies available to their airport (Parrella, 2013).

Findings from extant research offer guidance in establishing protocols for structuring choice criteria and identifying the most appropriate group of interview participants. Studies steeped in choice modeling and logit models assign values to consumer preferences and available options in order to make predictions in various traveler demand scenarios. Research attention began to shift from choice criteria toward the concept of nested decision making, a theory that air travelers jointly and concurrently select an airport and an airline when purchasing trip tickets (Ndoh et al., 1990). As initially conceived, nested decision making only applied to a passenger’s joint selection of an airport and airline, but was later expanded to include the joint analysis of access modes (e.g. trains, taxis, transit) and airports (Pels et al., 2003), and then, the joint consideration of airports, airlines and access modes (Hess et al., 2007). Researchers studying the San Francisco Bay area included the access-modes component in their nested analyses, reflecting the importance of surface transportation linkages to consumers in that metropolitan region, though generally not applicable to small airport markets.

Pels et al. (2001), asserts that these interrelated nested choices reflect consumer intent to maximize utility. Study methodologies that consider airport and airline selection as independent processes errantly interpret the level of complexity and underestimate the extensive range of alternatives facing air travelers. Suzuki (2007) suggests that travelers rely on a two-step process for evaluating their trip options. His logit model posits that passengers first identify acceptable alternatives and then, from these screened possibilities, select the most satisfying choice. Ishii et al. (2009) proposes a nested logit model that presumes the air traveler selects the airport first and then selects an airline
from the carriers that serve the airport. Ryan and Birks (2000) assert that the selected airport must meet the traveler’s personal criteria for proximity, cost and travel time. Because of the compelling logic of the consumer selecting an airport and an airline concurrently, the nested decision making construct will guide this study’s synthesis of interview and analyses methods.

The nature of the respondents targeted for interview in this study merits an advanced explanation. The nation’s smallest airports served only by one airline are underrepresented in the extant research (Bilotkach and Lakew, 2014). Several objective indicators suggest that consumer switching decisions occur with the greatest frequency among the nation’s smallest primary commercial service airports (Hammond and Czaban, 2016a). In addressing the relative size of an airport or a group of airports, it is prudent to rely on standards that are commonly accepted within the industry and government oversight agencies.

Annual enplanement totals indicate how passengers are apportioned among a few dozen large airports and hundreds of considerably smaller airports. With more than 15,000 airports in the United States, confining the study group to airports with a continual record of scheduled commercial service enhances prospects for reproducible findings. The Federal Aviation Administration defines primary commercial service airports as publicly-owned facilities with scheduled passenger service and more than 10,000 annual enplanements. These airports are further divided into four groups based on their respective share of total annual passenger boardings (also referred to as enplanements). Erroneously referred to as hub type, the FAA defines the four airport groups by their number of annual enplanements: Large Hub, 1 percent or more of total US annual passenger boardings; Medium Hub, at least .25 percent but less than 1 percent; Small
Hub, at least .05 percent but less than .25 percent; and Nonhub Primary, more than 10,000 but less than .05 percent of annual enplanements. To understand the nature of the four FAA groups, it may be more helpful to associate each group with their 2015 data, including the number of airports, the range of enplanements in the group, and their largest airports: Large Hub -- 30 airports ranging from 49.3 million to 8.3 million enplanements (Hartsfield – Jackson Atlanta International, Los Angeles International and Chicago O’Hare International); Medium Hub – 30 airports ranging from 7 million to 2 million enplanements (Dallas Love Field, Lambert-St. Louis International and William P. Hobby, Houston, TX); Small Hub – 72 airports ranging from 2 million to 412,000 enplanements (Bob Hope, Burbank, CA, Memphis International, and Will Rogers World, Oklahoma City, OK); and Nonhub Primary – 246 airports ranging from 394,000 to 10,000 enplanements (Lovell Field, Chattanooga, TN, Asheville Regional, Asheville, NC, and McAllen Miller International, McAllen, TX) (FAA, 2016b). In addition to about 380 primary commercial service airports, there are about 120 non-primary commercial service airports. Due to the FAA’s method of assigning airports by their annual share of passengers, the groups experience minor fluctuations in representation, with greater variation among the two smallest groups. For purposes of clarity, this study will refer to these FAA classifications simply as large airports, medium airports, small airports and nonhub airports.

A 36-year longitudinal study of annual passenger enplanement trends for 306 sample airports demonstrates that there have been clear differences in performance among the four size groups since deregulation of the industry (Hammond and Czaban, 2016a). These disparities provide a rationale for focusing on nonhub airports and, more specifically, one-airline airports in this study of passenger switching. In particular, four
findings support the supposition that there is more robust passenger switching among the nation’s smallest primary commercial service airports. During the study period, total passenger enplanements increased an average of 4.4 percent a year, eclipsing the average annual growth in US population of 1.2 percent. Clearly, population growth is not the primary influence on passenger gains. Researchers overwhelmingly attributed the near tripling of passenger traffic to increased airline competition and increased consumer responsiveness to subsequent ticket price reductions. Typically, small airports have the highest ticket prices, reflecting the cost of traveling to the hub and to the traveler’s final destination.

Secondly, medium airports experienced the highest rate of annual enplanement growth of 4.97 percent during the study period, followed by large airports with 4.82 percent, small airports with 3.15 percent and nonhub airports with 1.3 percent growth. The annual growth rate of the nation’s smallest airports was less than a third of the growth experienced by the industry. Nonhub airports saw their share of total passengers fall from 7.45 to 4.29 percent during the study period, while large airports increased their market share from 59.45 to 63.2 percent of total enplanements. Thirdly, a plurality of US airports are served by only one airline company. Of 333 airports examined, 115 are represented by a single carrier (RITA/BTS, 2015). Of the 115 single-carrier airports, 113 are nonhub airports and only two are small airports. Overall, an average airport hosted 3.2 carriers in 2015. Nonhub airports hosted an average of 1.8 carriers, followed by small airports with 4.2, medium airports with 6.7 and large airports with 8.3 carriers. As carrier preferences and flight selection are appealing features to many travelers purchasing trip tickets, featuring fewer carriers is a disadvantage that exposes the smallest airports to increased switching.
Finally, at a time when the industry’s enplanements nearly tripled, 67 airports actually suffered a net reduction in the number of total passengers from the beginning to the end of the study period. All 67 airports with net losses were nonhub airports. Airports with net passenger losses constitute 21.9 percent of all airports sampled, but represented 79.8 percent of all nonhub airports sampled. Perhaps this is the clearest indication that nonhub airports exhibit a growth pattern that is decidedly different than those of small, medium and large airports. Furthermore, large, medium and small airports closely follow the patterns of annual industry growth and decline, while nonhub airports are more volatile and likely to deviate from industry norms (Hammond and Czaban, 2016a). The higher incidence of annual passenger losses and variation from industry growth patterns offer further evidence of a higher incidence of airport switching by travelers.

This study did not exclude interviews with passengers from larger airport markets but focused on travelers from the catchment areas of the smallest primary commercial service airports in structuring a methodology for the study of passenger switching. Drawing data from passengers that frequent small airports served by a single airline is best suited to enhance understanding of the unique competitive pressures they face and provides the most fertile ground for explaining airport switching decisions. Using the nested decision making model as a conceptual framework and by focusing on this group, which exhibits the greatest amount of switching activity, the study is positioned to identify the most influential factors leading to purchase and airport decisions. Clarifying the rationale for consumer switching decisions holds promise for providing valuable insights to airport managers, stakeholders and policy makers in their consideration of effective initiatives to generate adequate passenger traffic and enhance consumer choice.
2. Literature

Substantial extant research explains the complexity of and essential reasons for studying consumer switching decisions. This study focuses on literature that illuminates why travelers select a particular originating airport and, in so doing, identifies triggers that prompt them to switch to an alternate airport. By building on the framework of nested decision making and by focusing on nonhub commercial service airports, the study develops methods that lead to the creation of a conceptual framework of traveler profiles.

Maintaining existing customers is so fundamental to business success that it is applicable to virtually every industry and location. For a firm to develop insightful initiatives to retain customers, it must also cultivate knowledge of the reasons why customers switch to a competitor to purchase merchandise or services. Consumers that exclusively purchase a firm’s products and do not switch are considered to be loyal to the brand (Lin and Sun, 2009). Loyalty is the expression of a biased response acquired over time with respect to a product or a set of acceptable alternatives, and is based on a consumer’s behavioral and psychological predispositions (Jacoby and Chestnut, 1978). Companies recognize that their ability to earn profits depends on nurturing customer loyalty resulting in repeat purchases (Bowen and Shoemaker, 1998; Mellens et al., 1996; Oliver, 1999; Berry, 1995). However, many customers switch service providers even when they are content with their former product (Keaveney, 1995).

Switching represents the loss of a firm’s most profitable customers and necessitates costly processes to acquire replacement customers (Reichheld and Teal, 2001; Zeithaml et al., 1996; Roos et al., 2004). For these reasons, limiting the incidence of consumer switching is an essential business priority, but it is a complicated pursuit that requires a firm to adeptly evaluate and respond to contextual collections of contributing
causes (Jiang and Zhang, 2014). Given the nature of a business sector, consumers perceive satisfaction and loyalty in a highly individualistic context (Baksi and Parida, 2011). Motivated competition and the absence of switching barriers provide a vibrant marketplace for consumers to make comparisons and easily switch between firms in purchasing goods and services (Zikienë and Bakanauskas, 2009). Buyers may even expand beyond one preferred product to develop a set of acceptable options (Uncles et al., 2003). Either as an immediate or delayed determination, switching is an involved process that culminates with the consumer concluding their relationship with the current service provider and opting for another firm’s product (Bejou and Palmer, 1998). Various theoretic models have errantly presented switching as a simplistic causal relationship. These viewpoints are limiting and do not acknowledge the complexity and interconnectivity of the factors involved in switching decisions (Lin and Mattila, 2006).

2.A. Distinguishing between consumer switching and migration

A durable definition of consumer switching posed almost 50 years ago suggests that the aggregation of individual switching decisions forms a pattern of movement by a larger group:

“Consumer switching is a relatively permanent moving of a collectivity. Consumer switching occurs from one service provider to another and is preceded by decision making on the part of the switcher on the basis of a set of values. It results in changes in the interactional system of the switcher (Mangalam and Morgan, 1968, p.8).”

Modern firms must nimbly adjust to changing market conditions, consumer tastes and competing innovations. While the definition (Mangalam and Morgan, 1968) may not fit all industry types, there may be value in drawing a distinction between the individual
consumer’s decision to switch and the general pattern that emerges from a collection of these decisions. In the context of human geography, the term migration describes people moving from one physical location to another. Clark et al. (1996) notes a striking parallel between this geographic flow of people and the movement of consumers from one service provider to another:

“Just as individuals shop for consumer goods, potential migrants compare the attributes of alternative locations and express those preferences by moving to the location that best satisfies them (Njite et al., 2008, p.3).”

Whether a logical extension to the application of the term or a result of the Clark et al. (1996) article, migration is used in several studies to refer to consumer switching in various business sectors, including: service (Bansal et al., 2005), banking (Baksi and Parida, 2011), retail (Vanheems and Kelly, 2009), hospitality (Njite et al., 2008) and airlines (Blackstone et al., 2006). In these studies, the meaning of migration is subject to subtle changes that reflect the unique nature of the sector. Baksi and Parida (2011) apply the term to indicate customer movement from dominant public banks to foreign and private banks. Vanheems and Kelly (2009) use migration to describe customer loyalty responses in a multichannel environment. Njite et al. (2008) asserts that the term has distinct implications for the consumer, the former firm and the new firm now providing the service. Blackstone et al. (2006) defines migration as the outflow of potential travelers from an airport to a competing airport. Despite these industry-related nuances, switching and migration are conceptually similar (Bansal et al., 2005).

For purposes of clarity, this study will enlist the use of the term switching to refer to individual traveler decisions to change from their preferred airport to an alternative airport and the term migration to denote the emergent patterns from passenger boarding
totals of airports. This delineation will be helpful in distinguishing between the decision-making observations of air travelers and the measured patterns of passenger movement at the airport level. The methods section will detail two types of consumer switching identified at the airport level: *transactional switching*, where a traveler occasionally selects an alternate airport because of price or itinerary advantages; and *systemic switching*, where a traveler severs their relationship with their preferred airport and selects an alternate airport as a replacement.

2.B. Migration theory forms basis for switching in general business

Due to the essential nature of retaining customers and their purchasing, researchers have examined various business types for many decades to identify motives that support or repress switching. Geographic migration research dates back to Ravenstein (1885) with the introduction of the push-pull construct that is applicable to contemporary consumer switching theory (Bolton et al., 2000; Jones et al., 2000). Initially, only migrants were studied and, therefore, limited factor identification to the negative reasons that pushed migrants to leave their former locations (Stimson and Minnery, 1998) and the positive reasons that pulled them to their new destinations (Lewis, 1982). Following the expansion of push-pull factors by Herberle (1938), a third category was added to migration theory. Lee (1966) posited that *intervening variables* (e.g. family involvement, personal apprehension) could either have a push or pull effect. Similarly, Longino (1992) presented the concept of *mooring* to represent factors that support or hinder migration decisions.

Migration concepts were carried forward into formative switching research. Generally, authors partition consumer switching factors by whether they contribute to or
repress the decision to switch. Dissatisfaction is a primary factor, as well as a broad descriptor of a number of reasons promoting consumer switching. The topic stimulated research interest and resulted in numerous studies of switching influences. Keaveney (1995) reported eight reasons for switching in service firms: pricing issues, inconvenience, core service failure, service encounter failure, response to service failure, ethics, competition, and involuntary switching. Blattberg et al. (1995) included perceived quality, reliability, brand associations and lower prices. Other factors supporting switching were later added: quality and satisfaction (McDougall and Levesque, 2000), lack of loyalty (Hennig-Thurau et al., 2002), variety-seeking (Bansal and Taylor, 1999), change of service personnel, new product availability and change of customer’s place of residence (Capraro et al., 2003).

Switching costs are a primary influence that prompts a consumer to question the wisdom of changing products. Switching costs may be broadly divided into negotiating, learning and contractual categories (Klemperer, 1987). Switching costs include a range of specific influences that repress a consumer’s inclination to change: switching barriers, economic costs, search and evaluation costs, learning costs and knowledge bonds, and perceived risk and uncertainty costs (Ping, 1993; Jones et al., 2000; Nordman, 2004; Porter, 1998; Johnson, 1982; Colgate and Lang, 2001; Gwinner et al., 1998). Other switching costs include: lack of perceived available or attractive alternatives, geographical bonds (Storbacka et al., 1994), contractual obligations (Arantola, 2003), structural bonds (Berry and Parasuraman, 1991), social costs (Johnson, 1982) and psychological costs (Colgate et al., 1996). Many switching costs occur naturally to consumers, while others are manufactured or bolstered by firms striving to retain their business (Zikienė and Bakanauskas, 2009).
Brand loyalty is another important factor that discourages consumer switching (Copeland, 1923; Jacoby and Chestnut, 1978). A stronger sense of commitment to a firm develops when customers perceive having a positive relationship with the company, understand the costs involved in changing (Meyer and Allen, 1991) and feel a responsibility to continue the association (Meyer and Herscovitch, 2001). Finally, studies identifying intervening variables that act to either expedite or inhibit switching include: value evaluation (Chiu et al., 2005), perceived switching costs (Ping, 1993), corporate image (Grönroos, 1984) and consumer power arising from socioeconomic status (Jiang and Zhang, 2014). These switching findings from a variety of business sectors create a multi-faceted and valuable context for consideration of the air service industry.

2.C. Consumer switching and retention in the air service industry

Switching factors vary by industry (Lovelock, 1983; Berry and Parasuraman, 1993; Zeithaml et al., 1993; Keaveney, 1995). A business sector’s unique attributes create a market context for the expression of consumer responses (Ganesh et al., 2000; Keaveney and Parthasarathy, 2001). Airports and airlines form essential partnerships within the air service network and are mutually motivated to meet the expectations of their shared passengers. Airports are reliant on the performance, perceptions and loyalty engendered by the airlines providing service to their travelers, particularly airports served by only one carrier (Albers et al., 2005). Since major airlines and their surrogates may serve several airports in a region and connect to hubs through differentiated flight and fare schedules, the influence of an airline will vary with each of its partnering airports (McLay and Reynolds-Feighan, 2006).
Consumer switching is a primary concern for airlines and airports due to the cost of attracting new customers (Reichheld and Teal, 1996; Richards and Jones, 2008) and the greater profit margin of loyal customers (Bolton and Drew, 1994; Helgesen, 2006). However, airports and airlines are not similarly equipped to deal with the potential loss of customers. Travelers evaluate airline service failures by their severity and the ensuing loss of money, time, energy or satisfaction (Smith et al., 1999; Kahneman and Tversky, 1979). It is estimated that 20 percent of US commercial flights are delayed (Zhang and Czerny, 2012) and, according to the FAA, weather conditions are responsible for 70 percent of delays (Gajdos and Lubomir, 2013). Travelers may switch airline carriers because of occurrences that may or may not be within the control of the service provider, including delayed and cancelled flights, missed connecting flights, overbooking and other perceived grievances (Nikbin et al., 2012). Consequently, originating airports are also vulnerable to passenger leakage due to airline service failures and other factors outside of their control.

2.D. Airlines manage critical switching factors

Airline carriers play an essential role in a host airport’s overall success in limiting passenger leakage and retaining the largest possible share of travelers in its catchment area. Ticket prices, number of daily flights, aircraft, schedules, rewards programs, national marketing and air services offered at various airports are arguably within the sole discretion of the airline. Airport managers attempt to negotiate service factors with their partner airlines, but small airports in particular have limited leverage to secure more competitive prices or service upgrades. Rewards programs, dynamic pricing and customer satisfaction are among the most visible airline initiatives that influence consumer
purchase intentions for their own customers and also serve to establish passenger intent to fly from the same originating airport or to switch to another airport.

2.E. Rewards programs allow airlines to fight for profitable passengers

Air travelers typically are more loyal to an airline when they are members of its rewards program and demonstrate even greater loyalty when they have elite standing (Warburg et al., 2006). Rewards programs are designed to incentivize customers for the amount and frequency of their purchases (Kivetz and Simonson, 2002; Sharp and Sharp, 1997). Also known as loyalty programs and frequent flyer programs, travelers enroll in airline rewards programs to earn points redeemed for air travel, service upgrades and other appealing inducements. For example, United and American allow members to use their points to access one-stop shopping experiences for leisure travel with a troika of air, hotel and car rental rewards (Sorensen, 2012).

Rewards programs are expensive, but are viewed as a strategic investment that allows participating carriers to minimize switching activity and to acquire valuable data on their most profitable customers (Beal, 2004), particularly full-fare business travelers (Cairns and Galbraith, 1990). For these reasons, frequent flyers are highly coveted in the industry. Defined as travelers who fly 12 or more trips a year, frequent flyers represent only 3 percent of all passengers, but purchase 27 percent of airline tickets (Kearney, 1989). To illustrate this point, 1.25 percent of American Airline’s 64 million frequent flyer members were responsible for 26 percent of the carrier’s worldwide passenger revenue in 2009 (Tykol, 2013). Thus, harnessing the economic power of their most profitable customers is every airline’s primary responsibility (Sorensen, 2011).
All three switching barriers deemed effective in business contexts apply to airline rewards programs. Relational benefits, attractiveness of competing alternatives and perceived switching costs represent barriers that add cost or complexity to consumer consideration of changing service providers (Jones et al., 2000). Most airlines rely on their rewards programs to erect these unobtrusive barriers through enticing benefits designed to promote loyalty and future purchases (Gwinner et al., 1998). When airline deregulation moved the entire industry to cut costs and lower prices, legacy airlines quickly responded by introducing rewards programs to protect their most profitable passengers (Jen et al., 2010). Rewards program became ubiquitous and are offered by every major airline to impose switching costs and barriers upon their best customers (Dowling and Uncles, 1997).

Rewards programs form a competitive advantage for larger airlines that are positioned to exercise market power by offering more flight choices and city connections from airports in close proximity to enclaves of frequent flyers (Borenstein, 1996). Many frequent flyers attain the realization that funneling all of their purchases through one airline’s rewards program will optimize the quantity of travel benefits they can convert to their own travel comforts and priorities (Agostini et al., 2015). Resulting increases in customer retention improve profitability for mature firms in competitive markets, particularly those practicing revenue management (Varki and Colgate, 2001). This is best accomplished when airlines design retention initiatives to increase attitudinal loyalty, leading to more repeat purchases (O'Brien and Jones, 1995). Airline rewards programs also stimulate profitability through the creation of new business stemming from word-of-mouth recommendations and by allowing airlines to cut other programs designed to satisfy customer needs (Bolton, 1998; Rust et al., 1995).
However, a debate over whether rewards programs truly offer any competitive advantage or increased profitability has gone on for decades (Shugan, 2005). It is not sufficient for consumers to be merely satisfied (Deming, 1986). Just satisfying customers is insufficient to keep them loyal (Jones and Sasser, 1995), because satisfaction and loyalty do not move in tandem (Stewart, 1997). The term satisfaction trap describes the notion that customers claiming to be satisfied will defect to a competitor (Reichheld and Teal, 1996). Customers may repeatedly purchase a service for reasons other than an attitudinal attachment and may only remain with a business and its loyalty program until they have obtained their reward (Baloglu, 2002). A customer’s satisfaction with a service experience, including a loyalty program, is not sufficient to outweigh the influence that price has over their intent to purchase from that company again in the future (Noone and Mount, 2008). Similarly, rewards programs are not an adequate barrier to consumer switching and do not induce loyalty if the customer does not already have an emotional bond with the brand (Mattila, 2006). While customer satisfaction and service quality influence retention, price has a much more powerful effect on return intention. Travelers commonly belong to multiple rewards programs, and it is an easy matter to switch providers, particularly if the firms have undifferentiated services and a disparity in price (Noone and Mount, 2008).

Other analysts assert that the success of loyalty programs is conditional. Rewards programs only have a positive result when the airline is enjoying a high market share in a hub airport and has the necessary complementary resources to parlay their loyalty programs into a competitive advantage (Liu and Yang, 2009). The dominant airline at an airport can mute competitors by offering a more attractive loyalty program, leaving rivals to retaliate with lower prices to compensate customers for their loss of points or miles.
Regardless of their perceived effectiveness in promoting loyalty or retention, all major airlines support their own rewards programs, and frequent flyers readily admit that their travel decisions are influenced by the personal benefits they earn.

2. F Dynamic pricing model positions airlines to maximize revenue

Recognizing that price is a primary cause of switching, the survivors of decades of price wars transformed their organizations to compete on the basis of price and customized their own strategic approaches to pursue market share and profit objectives. In determining pricing structures, airlines balance the price sensitivities of their customers with the capability to compete for new passengers. Price elasticity influences a carrier’s decisions on airfares, as the provider typically increases or decreases its prices in response to its customers’ tolerances (Lee and Ng, 2001). Similarly, there is a high likelihood that providers will match or undercut the prices of competitors when a service is homogeneous, as is found in the airline industry (Kimes and Thompson, 2004). Discount airlines and many full service airlines pursue a cost leadership strategy that incites them to minimize costs, permits them to pass on low prices to their customers and creates a barrier to new competition (Lovelock, 1996). This pervasive strategy is largely responsible for perpetuating the prolonged fares war since deregulation (Jain and Cox, 2011; Noone and Mount, 2008).

Airlines are knowledgeable about their customer segments and strive to attain the highest possible revenue from the sale of tickets through discriminatory pricing, also known as dynamic pricing and yield management (Glab and Peterson, 1994). Airlines divide seats into fare categories and classify potential customers according to their price elasticity based on the time of booking relative to their date of departure, whether they are
flying for business or leisure, and their desired flight time (Botimar, 1996). Most price discrimination and yield management practices are designed to maximize revenue from relatively price-inelastic business travelers. It is estimated that less price sensitive business travelers represent 46 percent of all passengers and 58 percent of total revenue (Kearney, 1989). Due to lower distribution costs, the ease of shopping for airline tickets on the internet and the demise of the Saturday night stay requirement, ticket prices continue to fall and the annual number of Americans that fly continues to rise (Mason, 2005). The proportion of leisure passengers has been increasing for most of the post-deregulation era, as the market expanded from travelers taking advantage of more affordable ticket prices (Swan, 2002). The industry’s only regressions in annual enplanements coincide with national recessions, when consumers have had less money to spend (Hammond and Czaban, 2016a).

Airlines are increasingly reliant on ancillary revenue to improve their bottom line, but are running into the headwinds of reluctant passengers who believe that their ticket price should include all amenities (O’Connell and Warnock-Smith, 2013). Even so, airlines have raised ancillary revenue through checked baggage fees and are exploring methods for leading passengers into paying for upgraded seating (Mumbower et al., 2015).

It is well established in the literature that price is always an important determinant in consumer decision-making (Herrmann et al., 2007; Lalwani and Monroe, 2005) and is more dominant than the consumer’s perception of quality or their opinion of the service provider in making a final purchase determination (Chang and Chen, 2008). Empirical studies in the service industry conclude that price is one of the most important criteria for customers choosing between competing brands (Huber et al., 2001; Ta and Har, 2000).
Consumers seek the lowest price for what they perceive as similar offerings. Price remains a significant determinant of customers’ return intentions, over and above their satisfaction with the service (Noone and Mount, 2008).

Segmentation is at the heart of airline pricing practices and a critical component of the firm’s marketing strategy (Wedel and Kamakura, 2000) in terms of reducing the total market into a manageable number of groups with similar demands or preferences that are well defined and mutually exclusive (Wind, 1978; Beane and Ennis, 1987). Once these segments are identified, airline pricing departments can predict responses to various scenarios and construct marketing strategies to attain targeted outcomes. Through self-selection of tickets, passengers reveal their purchase preferences and willingness to pay (Jain and Cox, 2011).

It is inevitable that a search for the lowest price for any good or service must conclude at some point. A rational consumer will continue a search as long as the anticipated gain from an additional effort exceeds its cost (Stigler, 1961; Darke et al., 1995). While this sounds reasonable, it is unlikely that the buyer will possess comprehensive knowledge about market pricing conditions or fully understand their own motives involving a product search. Consumers are imprecise in estimating the price they pay for products (Dickson and Sawyer, 1990). Since consumer decisions are not always rational (Simon, 1955; Simon, 1986), it is reasonable to conclude that price search decisions are not completely rational (Darke et al., 1995). For example, the behavior of bargain-hunting consumers cannot be fully explained by the amount of money they save. In the absence of perfect knowledge of prices, how does a consumer know when to conclude shopping for an item? Consumers adapt by learning heuristic methods to reduce their involvement in the search (Darke et al., 1995).
The advent of online booking sites revolutionized ticket sales in the air service industry by appealing to the heuristic inclinations of travelers overwhelmed by the confusing array of seemingly infinite possibilities. Internet sites such as Travelocity, Kayak and Expedia permit consumers to directly compare the best travel deals of multiple airlines simply by indicating basic preferences and clicking through available options. These sites quickly grew in popularity and, by 2008, established themselves as the predominant choice of travelers now empowered to purchase tickets that most closely match their personal price and itinerary priorities (Brueckner et al., 2013). The price transparency of travel sites rewarded airlines offering lower prices, pressuring legacy airlines to make price concessions and fueling the prolonged period of price wars.

2.G. Customer satisfaction -- a challenging mixed bag for the airlines

There is a broad sentiment that the airline industry’s ability to deliver a consistent and acceptable level of service has significantly declined since the passage of the Airline Deregulation Act of 1978 (Kahn, 1990; Longman and Khan, 2012). There appear to be factors endemic to the industry’s culture that prevent airlines from attaining even an average level of customer satisfaction (Reed, 2007). To remain faithful to the scope of this study’s research questions, this study will not plumb behavioral constructs of service quality, customer experience, customer expectations, customer satisfaction, perceived value and their attendant antecedents. A variety of scholarly articles provide an excellent summary of the distinctive properties that form a consumer’s overall impression (LaTour and Peat, 1979; Churchill Jr and Surprenant, 1982; Woodruff et al., 1983; Parasuraman, 1985; Tse and Wilton, 1988; Bitner, 1990; Bolton and Drew, 1991; Cronin Jr and Taylor, 1992; Edvardsson, 1992; Fornell, 1992; Bitner and Hubbert, 1994; Danaher and
If customer service is an essential priority as many researchers suggest and airlines have such a poor reputation for service quality, how does the industry maintain one of the world’s largest customer bases? All airlines are subject to the service failures caused by mechanical difficulties and weather-related flight delays and cancellations. Airlines have opportunities to minimize the potential damage of service failures by effectively training front-line employees to constructively engage irritated customers and by designing protocols to redeploy passengers left behind by flight cancellations (Parasuraman et al., 1988; Pabedinskaite and Akstinaite, 2014).

There is a research basis for believing that time may soften antagonistic attitudes. Individuals are likely to rationalize away poor experiences over time, a condition explained by the theory of cognitive dissonance (Festinger, 1957; Hausknecht et al., 1998). Zeithaml et al. (1993) posits that consumers tend to selectively forget aspects of their negative experiences as their attitudes are influenced by newer related occurrences. Personable, responsive front-line employees may reset an unhappy customer’s dire future expectations through exceptional service (Palmer, 2010).

Passenger anxiety stemming from a flight delay can still be associated with feelings of satisfaction if the service failure is explainable within the context of the situation (Dubé and Maute, 1996; Taylor and Baker, 1994). Passengers frequently experience negative emotions due to the nature of flying and do not necessarily assign their angst to poor service quality on the part of the airline (Le Bel, 2005). In most instances, a carrier will not be made aware that a traveler is upset or has even reached a breaking point. It is not unusual for despondent travelers to remain silent after a negative
air travel experience (Bodey and Grace, 2006). Few consumers are willing to file grievances against service providers, as they increasingly feel that complaining is not worth the effort and will not result in a productive outcome (Goodman, 2006; Helms and Mayo, 2008).

In summary, airline decisions about pricing, rewards programs and customer service practices influence how they are perceived and whether their passengers will purchase from them in the future. Particularly in instances of single carrier airports, a passenger’s collective impressions of an airline may also influence their decision to continue using the originating airport or to switch. Passengers that have resolved to boycott an airline have restricted themselves from airports served only by the offending airline.

2.H. Public and private interests converge to shape airport development

Commercial service airports are essential economic assets and, as such, are the beneficiaries of resources and support from a diverse consortium of public and private stakeholders. By connecting travelers to air carriers, airports function as vital lynchpins for commercial activities, regional economies and consumer mobility. While airports are widely respected for assuming important transportation and economic roles, they face competing pressures in managing complex relationships and maintaining high expectations in a deregulated marketplace.

Commercial service airports in the US are typically locally owned and operated by public bodies. Local governments or their designated surrogates (e.g. airport commissions and independent authorities) work with airport managers in implementing strategic objectives, render policy determinations, fund annual operating shortfalls and finance
debt for capital improvements. Airports develop their own revenue sources through vehicle parking, leasing agreements, advertising, and aircraft landing and parking fees. Further, airports attempt to increase non-aeronautical sources of funding and reduce their reliance on revenue from airlines as a method of ensuring their continued presence as generators of passenger traffic (Graham, 2013).

Airline deregulation overhauled the governance system designated to interact with the nation’s network of airlines and airports. Prior to the passage of airline deregulation in 1978, the Civic Aeronautics Board (CAB) determined the prices, routes and entrants to the airline industry. Policymakers envisioned that deregulation would allow new airlines to enter the market and give all providers the discretion to extend service to any destination, at any time and at any price (Choo, 2014). Facing a backdrop of skyrocketing fuel prices and a developing recession, Congress authorized a short transition for total deregulation and a narrow window for air service providers and aspiring entrants to prepare for the radically new marketplace (Peteraf and Reed, 2008). The new legislation abolished price and entry restrictions, and phased-in replacement of the CAB (Kole and Lehn, 1999). The Federal Aviation Administration retained airline safety regulation, the US Department of Transportation inherited merger, international and small community regulatory oversight, and the Department of Justice was granted regulatory authority over mergers, agreements and anti-trust immunity. CAB was finally decommissioned on Jan. 1, 1985 (Thornicroft, 1989).

Small commercial airports provide consumers with a convenient link to the connecting markets of hub airports and are essential assets for the economic development of their host communities (Zhang and Xie, 2005). Airports facilitate commerce by giving visitors access to local tourism amenities, shopping and professional services, and
families, relatives and friends. Many businesses depend on convenient air service to connect with customers, prospects, vendors and employees from other cities. Community developers concur that airports stimulate job creation and investment in the region (Zhang and Czerny, 2012). The apparent importance of an airport to its community makes it a topic for politicians, air service customers and others whose enthusiasm and lack of knowledge may create unreasonable expectations of their airport’s potential for new airlines, passenger traffic, number of flights and cheaper airfare (Parrella, 2013). While several large airports have achieved admirable successes in the cultivation of air cargo and recruiting low-cost carriers, it is unlikely that these developments are scalable and available to small airports (Zhang and Czerny, 2012).

Airports depend on their partner airlines to generate traffic and revenue. As such, airports must carefully manage relationships with their airlines. Their dominant roles in the air service industry necessitate that airports and airlines collaborate to gain operational efficiencies and maximize profits (Choo, 2014). Airports are generally aware of their limitations and the steep challenges posed by the oligopoly of the four surviving national airline companies. Due to the current market power of the airlines, airports may be compelled to consider new arrangements such as sharing concession revenue (Yan and Winston, 2012), development of non-aeronautical income sources (Zhang and Czerny, 2012), less revenue from airlines (Graham, 2013), and airline lease agreements (Richardson et al., 2014).

2.1. Small airports tout advantages in competition for passengers

While airports and their markets are unique, the research findings generally portray somber realities for the nation’s smallest airports when competing with larger,
adjacent rivals. Travelers that consider starting a trip at their local airport evaluate its
close and convenient advantages against the prospect of lower prices, the number of
airlines and the expanded flight selection of acceptable alternate airports. While it may
appear to be an uphill battle, small airports diligently market their advantages. The
strength of small airports is found in their ability to attract business and leisure travelers
who prefer their close and convenient advantages and are less price sensitive (Parrella,
2013). Proximity is an important consideration for air travelers. Consumers may reject
lower airfare from an alternate airport if other travel costs and conditions (e.g. congestion,
parking, gasoline) compare unfavorably to their hometown airport (Fuellhart, 2007).
Survey findings reveal that both business and leisure travelers rated the distance to the
airport as the second most important selection criteria after ticket price (Brueckner et al.,
2013).

Airline deregulation and economic crises in 2001 (recession, fuel price increases
and 9/11 terrorist attacks) precipitated substantial restructuring of the industry (Bhadra
and Kee, 2008). Deregulation innovations such as hub and spoke networks and fortress
hubs, coupled with price wars and periodic financial stresses, widened disparities in the
service quality of airports. While low airfare enabled the industry to expand its base of
passengers, small airports are often the recipients of service reductions and fare increases
that erode their ability to compete (Goetz and Vowles, 2009). Competitive pressures and
financial problems prompted several airline mergers that resulted in the abandonment of
many smaller markets (Dillingham, 2014b).

A preponderance of the literature indicates that consumers predicate their
purchase decisions on total ticket price and itinerary attributes (Parrella, 2013).
Particularly for smaller airports, there is an inverse correlation between the number of an
airport’s annual enplanements and its ticket prices (Bilotkach and Lakew, 2014). Considered connecting markets, small airports generally feature higher airfare than airports that offer non-stop service and do not generate sufficient passenger traffic to attract low-cost service (Brueckner et al., 2013). Not only do small airports have higher prices for the same destinations, they typically feature less popular aircraft, fewer itinerary choices, fewer airlines and fewer connecting markets.

Concerns of reliability, the presence of a nearby hub airport and reductions in air service are factors that increase passenger leakage (Parrella, 2013). Air travelers are willing to drive substantial distances from their homes for lower airfare prices (Martínez-Garcia et al., 2012; Graham, 2013). Suzuki et al. (2003) reports that the Des Moines International Airport, categorized by the FAA as a small hub airport served by four major airlines, experienced a leakage rate of 31 percent to larger airports. Consumers that prefer low-cost airlines and multiple-party leisure travelers place an even higher priority on lower airfares and are motivated to drive longer distances for cheaper tickets (Suzuki, 2007; Graham, 2013).

Even when pollution and noise are considered, economies of scale create efficiencies for larger airports that improve their ability to attract alliance airlines and low-cost carriers (Scotti et al., 2012). An airport must generate high load factors and a high capture rate of travelers from its catchment area in order to position itself for new service, additional flights or other service upgrades (Graham, 2013). Catchment areas are typically an accurate reflection of an airport’s service potential (Dobruszkes et al., 2011) unless the community features a sizeable tourism industry or hub operation that allows it to draw beyond its local market (Lieshout, 2012). Designating an airport catchment area depends on measurements of access time, population, number of travelers, average
income, location of competitors and other related factors. The current method of drawing catchment area boundaries is a subjective process that would benefit from national standardization to improve market analyses with other airports, efficient land use and management of existing infrastructure (Suau-Sanchez et al., 2014).

Numerous studies have employed various statistical analysis methods to study consumer preferences in selecting among the nation’s largest airports. Studies steeped in choice modeling and logit models assign values to consumer preferences and choices in order to make predictions in various traveler demand scenarios. These research methods have dominated the literature in studies of passenger airport choice (Caves et al., 1991; Doganis, 1992; Thompson and Caves, 1993; Brooke et al., 1994; Windle and Dresner, 1995; Bondzio, 1996; Pels et al., 2003; Suzuki et al., 2003; Başar and Bhat, 2004; Parrella, 2013) and passenger choice in regions with two or more airports (Augustinus, 1974; Skinner, 1976; Augustinus and Demakopoulos, 1978; Ashford and Benchemam, 1988; Harvey, 1987; Innes and Doucet, 1990; Pels et al., 2001; Hess and Polak, 2005; Blackstone et al., 2006; Tierney and Kuby, 2008; Ishii et al., 2009; Luken and Garrow, 2011; de Luca, 2012; Fuellhart et al., 2013). Enlisting the nested decision making model and qualitative methods to examine traveler choice at one-airline airports promises to generate new insights from a fresh perspective of consumer switching.

Finally, in explaining why travelers select a particular originating airport for their trip, the study will reveal triggers that prompt travelers to switch to an alternate airport. Analysis of extant literature and initial passenger interviews leaves unanswered questions about passenger switching that led to the structuring of the study’s research methodology. For travelers indicating loyalty for a specific airport, what would prompt them to switch to an alternate airport? Based on their reasons for selecting a preferred airport or for
switching to an alternate airport, what identifiable patterns emerge from traveler decision making data?

3. Methods

The manner in which researchers dissect a subject will dictate their view and, therefore, their ability to describe the object. In this study, we evaluate the phenomena of travelers selecting originating airports for their trips. What comparative characteristic of the flight experience induces a traveler to abandon the close and convenient advantages of a nearby airport to choose an airline ticket for a flight originating from another airport? The extant quantitative analyses of consumer responses to menus of predicted air travel choice factors (e.g. customer satisfaction, on-time performance, flight amenities) are not designed to provide practical and usable data for this study topic. Methods for this study are designed to probe the nested preferences of travelers that lead to their ultimate purchase decision from all available options.

The study’s task is to explain why travelers select a particular originating airport and, in so doing, identify the triggers that prompt travelers to switch to an alternate airport. This process takes place within a context of astonishing complexity, given the number of options and the immeasurable combinations of flight possibilities available to a consumer with access to a myriad of distribution outlets. Consumers relying on internet travel sites compare and select from prescribed options: airports, airlines, prices, departure and arrival times, layovers, connecting cities, aircraft and schedules. Nested decision making theory provides structure and order to a consumer’s search process as they simultaneously evaluate acceptable options for the originating airport and airline in arriving at their decision to purchase a trip ticket. Airline companies and travel sites
understand consumer tendencies and have designed points of distribution that cater to
nested decisions as central components of their ticket purchase software and computer
screen displays.

While selecting the airport and airline are central aspects of the purchase decision,
there are other factors that may have an even greater influence on the traveler, depending
on the individual’s personal travel and purchasing priorities. Other studies, which have
ignored or suppressed the role of the originating airport in the purchase decision, use
quantitative approaches and weighted lists of airline attributes to explain consumer
decision making. In order to explain passenger migration and the reasons why travelers
switch airports, this study develops research methods that are harmonious with nested
decision theory and identifies consumer switching of airports as a unit of analysis.
Qualitative research methods are ideally suited to provide a fresh perspective to a well-
researched topic as well as a rich source of new insights (Eisenhardt, 1989). Qualitative
data are particularly effective in explaining the dynamics of an emergent relationship,
addressing why the relationship is occurring and, thus, establishing internal validity.

It is a distinguishing characteristic of qualitative methodology to devise an
interpretive approach that allows for the observation of people in their natural settings and
to render a detailed analysis of their conditions. Assuming the role of *bricoleurs* (a term
coined by French social anthropologist Claude Levi-Straus to describe an artist’s creative
assemblage of disparate parts into a useful result), the qualitative researcher enlists a
variety of empirical materials -- interviews, introspection, observations and case studies
to create a patchwork of rich descriptions and a discerning interpretation based on a
thorough understanding of the phenomenon being studied (Denzin and Lincoln, 2013):
“Qualitative inquiry seeks to discover and to describe in narrative reporting what particular people do in their everyday lives and what their actions mean to them (Erickson, 2011, p.43).”

Erickson’s (2011) apt description captures the essence of the research challenge facing this study. Recognizing that qualitative research has been subjected to a long history of resistance and dismissiveness, the benefits of this approach offer the greatest potential for generating new insights about the issue explored in the study.

3.A. Nonhub originating airports and nested methods design

Nested decision theory provides a fundamental basis for including the role of originating airports as an indispensable part of the traveler’s decision process. Airports are not uniform in their offerings, and each one is as distinct as the market it serves. Whether through travel agents, airline distribution channels or internet travel sites, air travelers engage in processes where they must settle upon an originating airport or at least a short list of acceptable possibilities early in their decision process in order to commence a meaningful search for trip tickets. Every primary commercial service airport hosts one or more airline companies that serve its customers with connecting service to other airports, and thus, transportation to their ultimate destinations. Airlines operate unique flight schedules and a network of connecting airports that differentiate them from their air service competitors. With the litany of airline routes and schedules, travelers are faced with infinite permutations of possibilities for how to get from point A to point B.

This complexity of air service choices is reduced once a traveler begins their ticket search process by designating an originating airport or a short list of acceptable options. Airports are limited by the flight schedules and prices offered by the airlines
operating from their facility. Travel agencies, internet travel sites and airline sales desks have access to a national database that enables them to guide travelers through the available possibilities that exist at any given point in time.

This study explores switching within the nation’s smallest airports, a segment that is typically overlooked, but that comprises a substantial portion of commercial service airports. More than one-third of the nation’s primary commercial service airports operate with one airline carrier (RITA/BTS, 2015). As the spokes in airline hub-and-spoke networks, these nonhub airports direct their passengers into larger hub airports that offer additional connections to their desired destinations. As summarized in the literature chapter, nonhub airports are more likely to experience passenger declines and have the smallest growth rate of the four FAA classifications – a growth rate that is less than a third of the industry average since deregulation (Hammond and Czaban, 2016). This group of very small airports provides the most fertile testing ground for an exploration of passenger leakage. Elucidating the specific reasons for traveler switching will also explain much of the growth disparity between small and large airports, as well as the resulting passenger migration patterns.

Semi-structured interviews of travelers were conducted in Lynchburg, VA and Greenville, NC, both featuring airports classified by the FAA as nonhub airports. Both airports operate with a single airline carrier, American Airlines. At the time of the interviews, both airports were served by US Airways before merging with American. Lynchburg Regional Airport (LYH) in central Virginia and Pitt-Greenville Airport (PGV) in eastern North Carolina fly direct to Charlotte Douglas International Airport (NC), classified by the FAA as a large hub airport. In 2014, Lynchburg recorded 150,760 total enplanements and Greenville tallied 115,680 passenger boardings (RITA/BTS, 2015).
Lynchburg’s population is estimated at 78,000 and its Metropolitan Statistical Area with four surrounding counties is projected at 260,000. Greenville’s population is estimated at 89,000 and its MSA with one surrounding county is projected at 176,000 (Census, 2016).

The catchment area for Lynchburg Regional Airport is flanked by the primary commercial service airports of Charlottesville Albemarle Airport (CHO) to the north, Richmond International Airport (RIC) to the east and Roanoke Blacksburg Airport (ROA) to the west, as well as North Carolina’s Raleigh-Durham International Airport and Piedmont Triad International Airport (GSO in Greensboro) to the southwest. Roanoke and Charlottesville are FAA non-hub airports slightly more than an hour away from Lynchburg. The Greensboro and Richmond airports are FAA small hub airports and about two hours from Lynchburg. Raleigh-Durham International Airport (RDU), situated between Raleigh and Durham, is an FAA medium hub airport and is 2 ½ hours south of Lynchburg and 1 ½ hours west of Greenville. The catchment area for Pitt-Greenville Air2port is also bordered by Coastal Carolina Regional Airport (EWN in New Bern) to the southeast and Albert J. Ellis Airport (OAJ in Jacksonville) to the south. New Bern and Jacksonville are FAA nonhub airports located about an hour and 1 ½ hours from Greenville, respectively.

The Pitt-Greenville Airport identifies RDU as its primary source of leakage, while Lynchburg Regional Airport reports its greatest leakage to Roanoke, Raleigh and Richmond. While Lynchburg is surrounded by more competitors, RDU’s greater size and closer proximity siphons away a greater share of the Greenville airport’s market. A casual observer may assume that because they are two airports of similar size, Greenville and Lynchburg would have similar rate schedules for their flights, but such is not the case. US Airways granted a more competitive rate schedule to Lynchburg to allow it to compete
more favorably with its rival airports. These rate schedules have continued since US Airway’s merger with American Airlines. Despite their similarities, differences include their airfare schedules, demographic factors, market population, and the size and location of the rivals surrounding their catchment areas.

### 3.B. Methods summary

Drawing on Eisenhardt’s (1989) process of inducting theory using case studies, methods were constructed to promote the incremental gathering of data, the continuous comparison of data and the development of a conceptual framework. The study set out to collect data through qualitative techniques, i.e., interviews, observations and introspection. The research team, comprised of the researcher and the DBA supervisor, devised and evaluated semi-structured interview scripts and an online purchase scenario. Data were collected and preserved through digital audio recordings, digital video recordings and interview transcripts. The data were precoded, coded and analyzed in accordance with standards reported by Saldana (2009) and Miles and Huberman (1994). By carefully examining the data at each juncture, the research team initiated intermittent adjustments to the data collection tools, implemented multiple data collection phases and evaluated the coded data by lumping similar responses and studying them for similarities and differences.

The technique of convenience sampling was used to select interview participants. Attempts were made to attain a balance of representation from the demographic groups of gender, age, income and trip purpose. Due to the qualitative nature of the study, there was no attempt to achieve statistical sampling through the random selection of subjects. Rather, through the construction of the interview script and interview approach, it was a
primary study objective to solicit genuine, non-prompted responses from the participants. The questions in the interview script and the data gathering approaches were modified during the data collection process in our evolving attempts to generate in-depth information and insights. After reviewing 32 transcripts and 10 videotapes, the research team discontinued interviews when it determined that theoretical saturation had been attained, the point at which the generation of new information is minimal (Glaser and Strauss, 1967).

The initial semi-structured script was tested at the Lynchburg airport on 21 passengers waiting for flights during December of 2013 to January 2014. After a selected traveler consented to the conversation being recorded, an introductory statement was read about the study topic with the assurance that their name would not appear in the article. Each respondent was given a participant information sheet and a consent form. Open-ended questions encouraged unprompted responses pertaining to the traveler’s preferred airport, airports adjacent to their home and work, the reasons for their selection of their preferred airport, alternate airports, the primary reason for purchasing tickets for their most recent business and leisure trips, purchase decisions from other recent trips, participation in airline rewards programs, travel frequency and purpose, sources used for their ticket search and use of travel agents, rational for airport switching and travel observations. Field notes were taken to assist with recall of switching incidents, differences in business and leisure decisions, and observations about their travel experiences. Pseudonyms were created and substituted for the names of all interview participants.

Greenville, NC was selected for the next round of interviews because of similarities to the Lynchburg market. Instead of conducting the interviews at the airport,
11 random individuals were interviewed in May and June of 2014. In the ensuing months, the transcripts were analyzed using first cycle and second cycle coding techniques (Saldana, 2009; Miles and Huberman, 1994). Coded transcripts, field notes and response tabulation were jointly evaluated by the research team. Pseudonyms were created and substituted for the names of all interview participants. To reduce confusion and promote consistency, any respondent references to US Airways have been updated to its new corporate moniker, American Airlines.

Respondents offered 49 primary and secondary reasons for selecting their trip tickets. Based on their commonalities, the reasons were assigned to 11 groups. In turn, the 11 groups were assembled into four categories (see Appendix 2): airport attributes, itinerary attributes, airline preference and participation in reward program, and ticket and pricing criteria. Based on recorded primary purchase motives for business and leisure purposes, the research team ascertained the stickiness of each respondent’s motivations relative to three homogenous groupings. When it was determined that three travelers were exhibiting a different decision pattern, responses were filtered through a Boolean logic model and versus coding to identify competing goals among the participants (Saldana, 2009). The cohesiveness of the outliers led to the recognition of the fourth traveler profile, broken. (See Figure 2)
Utilizing qualitative research methods and the nested decision-making construct in consumer ticket purchases, patterns emerged for four distinct types of traveler profiles with varied approaches to airport switching.

4. Study findings

By designating airport switching as the study’s unit of analysis, new insights are gained about the airport selection portion of the consumer’s nested decision to fly from their preferred airport or to switch to an acceptable alternate airport. Each of the traveler profiles discovered in this study reveals its own pattern of decision making that ultimately leads to the moment of truth when the ticket is purchased. Analyzing airport switching in the context of the smallest classification of commercial service airports accomplishes two
objectives: to accentuate the incidence of switching that will allow us to study the phenomena and to gain a clearer perspective of the specific reasons for the higher passenger leakage rates of small airports.

Other studies have documented differences between business and leisure travelers. This study affirms that many travelers exhibit one decision-making pattern for business travel, but adopt different purchase priorities for their leisure travel. This duality has implications for their attitude toward the preferred airport and the likelihood of switching. This study also demonstrates that two types of airport switching take place among travelers. Transactional switching, the most common form of switching, occurs when a traveler selects an alternate airport because of a price or itinerary advantage. Systemic switching arises when a traveler purges their former preferred airport from consideration as their airport of choice and, in most instances, sublimes their loyalty and primary preference to an alternate airport.

In the 36-year period following airline deregulation, nonhub airports have experienced a higher incidence of passenger losses and a substantially lower annual growth rate. Evaluating traveler prioritization of airline attributes and airport attributes reveals the basis of airport switching and, thus, an underlying force for passenger migration. The four traveler profiles identified in this study shows that their personal purchasing priority influences whether they are more likely to select their preferred airport for a trip or switch to an alternate airport.

The study’s methods align with nested theory and the traveler’s concurrent consideration of airport and airline factors in the purchase decision. Again, what triggers induce airline travelers to select their originating airport? A qualitative approach will not produce results measured by best fit, averages, means or other statistical techniques. By
qualitatively dissecting the travelers’ selection of an originating airport, the study’s interviews serve to reveal individual choice preferences in comparative evaluation of traveler responses for reportable patterns.

As mentioned in the methods section, a fundamental finding is that travelers have a top of mind awareness of their preferred airport for originating flights. In the vast majority of instances, the interview respondents immediately recite the closest primary commercial service airport as their preferred airport. The preponderance of travelers favor the idea of flying from their hometown airport for a variety of advantages they perceive relating to proximity and convenience. There are two exceptions to this strong disposition. First, travelers that are located roughly an equal distance between two commercial airports may not designate one over the other. Second, a group of travelers report switching to a larger, nearby airport as their preferred airport based on negative experiences with their hometown airport, its only airline carrier or both.

While the study was not restricted to travelers that exclusively use small airports, all of the respondents had familiarity with at least one small airport, and most of the respondents live in airport markets served by a single airline. This sample promotes the study’s emphasis on airport switching and spotlights the perceived strengths and weaknesses of the nation’s classification of the smallest primary commercial service airports. The most prevalent pattern of the respondents was to list their hometown airports as their preferred airport and to list larger, nearby airports as acceptable alternatives. Rarely did a respondent list an airport as an alternative if it offered fewer carriers or flights than their hometown airport. In addition to travelers that switched their preferred airport to a larger nearby airport (systemic switching), a second pattern of airport switching emerged. Even when designating their hometown airport as their preferred
airport, most respondents report collecting flight information and purchasing tickets from one or two alternate airports (transactional switching). Therefore, the sample includes travelers who exclusively fly from larger airports, travelers who occasionally fly from larger airports, and travelers who exclusively fly from their hometown airport.

When asked to indicate their primary reason for purchasing an airline ticket, the respondents provide answers that demonstrate their priorities and foretell their differing approaches to searching for and selecting tickets. Categorizing travelers by their primary purchase criteria permits an analysis of similarities and variations among groupings. Subsequent coding and analyses led to the delineation of four profile types that define the basic approaches used by travelers in choosing airline tickets and the role of the originating airport in this nested decision-making process. It is not sufficiently useful to affirm that price, airline loyalty programs and non-stop service to desired destinations are the primary drivers for consumer purchase decisions. The profiles proffer a multi-dimensional characterization of consumers recalling specific instances of evaluating criteria of available options and imposing personal preferences to narrow the alternatives and arrive at the ultimate purchase selection.

A majority of the respondents report that utilizing their preferred airport, earning rewards benefits and prioritizing temporal aspects from the available itinerary options are more important than price in purchasing trip tickets. Though this study was not structured to provide statistical observations of consumer behavior, the qualitative data conclusively indicates that non-price factors are powerful influences in the nested selection of an originating airport and airline.

For reasons of convenience, one-word descriptors refer to each of the four profiles based on their unique attributes. Traders emerge as the most common profile type,
consisting of travelers who place the greatest emphasis on either the price of the airline ticket, the specific temporal aspects of the available itineraries or a combination of price and time factors. *Simplifiers* represent another common consumer type that is most likely to travel from their respective hometown airport and is the profile group that places the highest priority on the attributes of the airport, rather than the offerings of the available airlines. Two smaller profile groups, *gamers* and *broken*, each contain strong tendencies that lead them to behave in a different and particular manner.

4.A. The “Trader” traveler profile

No longer beholden to travel agencies and airline hotlines, travelers may choose to sit in front of their computers or their cellphones to sift through the available ticket options for their trip. Unlike the *broken*, *gamer* and *simplifier* profiles, the *trader* group of travelers is less encumbered by a favored airport or airline. *Traders* are more likely to search multiple sources and spend more time considering ticket options. They are likely to search ticket options from more than one originating airport and less likely to rely solely on an airline website to make their ticket purchases.

A majority of the travelers interviewed for this study identify as *traders*. Even so, this group of travelers varies according to diverse search priorities and travel motives. Three subsets of the *trader* profile emerge: time traders, price traders and combination traders. *Combination traders* are individuals who travel for business and leisure purposes. Most report having greater price sensitivity when traveling for leisure and placing a higher priority on time issues when traveling for business. A few *combination traders* indicate the reverse pattern and, due to constraints by their business or personal conscientiousness, are more price sensitive in their business travel and more interested in
itinerary issues for their leisure travel. Time traders are a subset that is primarily interested in temporal issues for leisure and business trips. Similarly, price traders prioritize their ticket purchases on costs for both business and leisure travel.

Rarely are travelers monolithic in applying their personal purchase priority to ticket selection. In recalling recent ticket purchases, few respondents purchased solely on the basis of the lowest available price or a single itinerary criterion. Travelers report making situational tradeoffs based on their current mood, financial condition and the options available to them when they look at their favorite ticket website. Routinely, there are options available that allow a traveler to pay a few dollars more for a ticket that provides them with a more desirable departure time, one less layover, a shorter total travel time or any combination of perceived advantages. Conversely, time traders may concede an ideal departure time for an itinerary that includes a slightly later flight at a substantially reduced price.

With the subset of combination traders, this profile type accounts for discrepancies that arise when a traveler provides different primary reasons for their leisure and business purchase decisions. Outside of traders, there were only two instances of travelers with conflicting purchase reasons. In both instances, the respondents reported that their companies had policies to compel them to fly from the local airport, even though they personally opted for low prices or more favorable itineraries on their leisure trips. Consistent with the prevailing research, business travelers in this study reported greater time sensitivity and lower price sensitivity. Regardless of their travel purpose and primary purchase reason, the respondents universally reported a desire get the best price available. The qualitative methods of this study allowed us to qualify the relative importance of price among the myriad of competing choices faced by consumers. Clearly,
price is an important determinant that situationally competes against a shifting menu of choices and a consumer’s changing financial situation and personal preferences.

4.B. The “Simplifier” traveler profile

Close and convenient is the mantra of a substantial group of travelers who prefer their hometown airport for originating flights. Pel (2001) broke ranks with previous studies by demonstrating that travelers make a nested decision when purchasing airline tickets. Travelers must reconcile their preferred airline itinerary with their preference for the originating airport in order to reach a purchase decision. While this relationship is true in every transaction, it is particularly evident with the simplifier traveler profile because most of their decisions are predicated on their preferred choice of an originating airport. When travelers are predisposed to fly from their preferred airport, they limit their purchase choices to the prices and itineraries of the airlines that service that airport. 

Simplifiers are willing to forego the price and itinerary advantages of larger airports in order to achieve what they consider to be offsetting advantages associated with closer proximity and reduced stress.

Nested decision theory posits that the offerings of the airline (or airlines) meet an acceptability threshold as part of the traveler’s decision to purchase a ticket with an originating flight from an airport. Consequently, if a traveler refuses to use American Airlines, they in turn cannot use Lynchburg Regional Airport or Pitt-Greenville Airport. Therefore, particularly with one-carrier airports, the airport’s success is inextricably linked to air traveler perception of the airline it hosts. Simplifiers value the benefits of their preferred airport above the best price to a destination and the temporal advantages afforded by a wider selection of airlines and daily flights. In the case of single-carrier
airports, many simplifiers belong to the airline’s frequent flier program, but few report actually redeeming their air miles due to participation criteria. Simplifiers are the core of an airport’s customer base, particularly with small airports that are generally not successful in enticing travelers outside their market.

Travelers identifying themselves as simplifiers list several advantages to flying from their local airport: faster gate arrival, fewer delays due to congestion, more accessible and less expensive parking, shorter lines at ticket counters and security checks, easier access to passenger pick up and drop off areas, shorter driving distance between home (or business) and the airport, connection to a hub that has daily service to hundreds of destinations, accessible baggage retrieval, likelihood of knowing airline or security personnel, perception of safety, less confusion about airport layout, airport is closer to the host city, supporting the airport benefits the local economy, access to car rental services, the ability to arrive at the airport closer to the time of the flight, seeing friends and familiar people, acceptable price disparity with other airports, and familiarity with airport facilities. By using the local airport, simplifiers report time savings and feeling less stress from traveling.

Travelers who are familiar with a small airport accept some degree of price disparity and a reduced range of available flight times. Experienced simplifiers know how to plan around aspects of their local airport they may view as unpleasant, such as the scheduled times for turboprop aircraft, flights that fill quickly and avoiding the last flight of the day from the hub airport. Few simplifiers report exclusive use of their hometown airport and are willing to use a larger, nearby airport if the price disparity is too great or if the schedule does not meet their expectations in terms of layovers, flight times or total
travel time. Most simplifiers report using internet ticket sites or the airline website to obtain the best available price and itinerary for their flights.

4.C. The “Broken” traveler profile

Air service is fraught with complexities and unforeseen occurrences that create inconvenience and angst for travelers. Storms, mechanical problems, congestion and human error can lead to delays, cancellations and discomfort. Airline and airport representatives can ameliorate or exacerbate these inevitable occurrences by their treatment of customers during times of hardship. Even so, certain acts of God and misfortunes are endemic by the nature of the air service industry and virtually impossible to manage on a moment-to-moment basis. Furthermore, routine travel occurrences such as running across an airport for an imminent flight, dealing with cranky children on a lengthy layover and even the fear of flying, conspire to elevate emotional responses to real-time flying experiences and turmoil.

The broken profile is descriptive of a group of travelers who have endured a series of adverse air service experiences and, as a result, have elected to discontinue their use of the offending airline or airport, sometimes both. Due to the perceived advantages of proximity and convenience, the three travelers in this group formerly considered Pitt-Greenville as their preferred airport. All three displaced Pitt-Greenville as their preferred airport as the result of a series of negative experiences with the airport or its only airline, American Airlines. From its Greenville airport location, American Airlines only offers service to and from its hub at Charlotte (NC) Douglas International Airport. It is not unusual for travelers from Greenville to drive one-and-a-half hours to the larger Raleigh-Durham (NC) International Airport to access other destination cities and airport hubs. In
these three instances, the travelers’ break with American Airlines and the Greenville airport precipitated their switch to Raleigh-Durham as their new preferred airport.

For Greenville traveler Gavin Miller, the airline’s reliance on small aircraft led to his switch of preferred airports and airlines:

“I actually had an incident occur on a small plane where we went off the runway and I thought we were going to crash. The curtains were put up with paper clips and you start thinking if they’re not spending money on doing things properly on the interior, what steps are they skipping on the engine?”

While this incident was the proverbial last straw, Miller’s switch was predicated by other bad experiences, as well as his assessment that larger airports have superior prices and that the connecting flight from Greenville to Charlotte negates any time advantage over the short drive and direct flight to his destination from the Raleigh airport. Miller no longer includes Pitt-Greenville in internet searches for airline tickets and prefers to fly on large jets with Delta.

Marvin Dunlap recalls unpleasant incidents that triggered his switch from American Airlines and the Pitt-Greenville airport:

“I had so many hassles out of there that I typically just fly (from) Raleigh. The other thing is out of Pitt-Greenville you have your choice of any airline you want as long as it’s (American Airlines).”

He cites canceled flights, uncooperative airline personnel and numerous flight delays for souring his opinion of American Airlines. Dunlap no longer uses Pitt-Greenville for departing or return flights:

“It just made me so mad. It seemed like 70 percent of the time I fly, it’s a hassle. It never comes off the way that I plan, so I end up sitting and reading a book in a terminal. It has happened so many times. I just prefer to drive to Raleigh. They have like six or seven flights a day (to New York). It’s just very easy, lots of choices, direct flights and it’s cheap. They have about three times
the number of departures and arrivals than Pitt-Greenville, which means it’s got more going on, more employees (and) more flexibility."

Dunlap would prefer to fly from Pitt-Greenville because of the shorter drive time from home or work and convenient parking. Despite the aggravating experiences with American Airlines, he said would consider flying from Greenville’s airport even though he has not for several years.

Shortest total travel time is Kiefer Wilson’s top travel priority:

“I have a pretty good system where I don’t have to wait. It’s all about the shortest door to door time... to minimize that.”

In addition to aversions for small aircraft and fewer daily flights, American Airlines is the primary reason why Wilson no longer uses the Pitt-Greenville airport:

“Several flights from Greenville are turboprops... bumpy ride, loud, just brutal and it’s slower. If Delta went out of Greenville, then I would do that. Now? The last resort would be PGV (airport code for Pitt-Greenville) because it’s (served by) American Airlines.”

Like other broken travelers, Wilson clearly recalls the trip that was the catalyst for him switching away from American Airlines and the Pitt-Greenville airport.

“In the past, I would use (American Airlines) but there is one international flight that did not go well at all and so I just stopped using them altogether. What turned me away from (American Airlines) was old aircraft, there were multiple stops with long layovers and there was a delay coming back. All of my travel issues – they hit every single button and that was it. I’m not willing to put myself in that situation again.”

Wilson switched his allegiance to Delta and the Raleigh airport.

Representatives of the broken profile are experienced travelers who fly for business and leisure purposes. All three express a strong preference for air service that allows them to meet their temporal expectations. Price is an important feature in purchasing an airline ticket, but these travelers place an even higher priority on itinerary...
issues and speak in urgent terms about the value of their time. Broken travelers list a variety of time considerations: direct flights, sufficient time to make the next flight, number and length of layovers, total travel time, reasonable departure and arrival times, late flight times, and flight times that are not so late that they are likely to be cancelled.

Miller: “Sometimes in getting the best deal you wind up being inconvenienced the most. Timing is more important than the cost.”

Dunlap: “I want to use my time efficiently. Layovers are a waste of time and money. I just want to get to where I’m going early so I don’t waste a day. When it’s business travel, I do think about time is money because I’m getting paid a certain amount per hour and I need to get there and get what I need to get done and not spend the time in airports.”

Wilson: “I hate layovers. I just want to get to the destination. I would pay more to avoid a layover... maybe, a lot more. The more I travel, the more intolerant I’ve become and I’m trying to find a way to minimize that aspect of it (travel time).”

Dunlap expressed a similar sentiment about his accumulated intolerance for air travel:

“I hate flying. I hate going to airports. I don’t like security. I hate the whole process!”

These broken travelers articulate a deep aversion for issues that add time to their trips and hold American Airlines and, to a lesser degree, the Greenville airport, responsible for not meeting their expectations to provide dependable and reliable air service. Despite their strong preferences for the shortest possible travel times, the three travelers willingly surrender their most accessible air service option and drive three hours each trip for the satisfaction of avoiding an airline that has irritated them to a breaking point. Despite switching to the Raleigh airport for their business and leisure trips, these broken travelers indicate their desire for Delta to begin offering daily service to the
Greenville airport (which has been rumored for several years), allowing them to utilize their hometown airport more frequently and, possibly, restoring Greenville’s status as their preferred airport. Until then, the virtual boycott of American Airlines by this group of travelers means they will not patronize the Greenville airport and will be a source of leakage from its catchment area for the indefinite future.

Virtually all travelers can recall delays, flight cancellations or other irritations. In most instances, the travelers shrug and acknowledge that mechanical or weather problems are sources of disruptions to their carefully planned schedules. However, a few travelers report a flashpoint that triggers a switching response. Anger with an airline or airport may be tempered when that airport presents the lowest ticket price or most favorable terms for their next trip. Broken travelers hold a grudge that increases the leakage from an airport’s catchment area until time heals their frustration or new circumstances invite their return.

A subset of the broken profile arise from a sole respondent. Tammy Simpson moved to Greenville about 10 years ago. She has never used the Greenville airport and does not include it in her ticket searches. She and her family have taken three trips since moving to Greenville and each time selected RDU as the originating airport. She said price is the most important factor in her purchase decision and that a direct flight from Raleigh costs less than flying from Greenville and getting a connecting flight in Charlotte. While Tammy did not exclude the Greenville airport because of an altercation, she represents a group of travelers that assumes that their needs cannot be met by a small airport. This subset lacks the angst of other broken travelers, but they have systematically switched from their hometown airport and, therefore, have more in common with the broken profile than the other three profiles.
4.D. The “Gamer” traveler profile

For this group of experienced travelers, air service is the necessary means to connect to commercial clients, vendors, prospects and opportunities to represent their employers. In order to retain and build a clientele that keeps a company profitable, it relies on sales, service and consulting representatives to meet face-to-face with the most promising audiences. Travel is an expensive business investment that involves substantial costs of transportation, lodging, dining and compensation for the men and women selected to perform these revenue-producing occupations. Consequently, businesses construct a patchwork of policies and protocols to address these important budgetary line items. A company’s business model and shifting complexion of the competitive environment will define the amount of resources it is willing to plow into national and international travel.

Inherently, individuals selected to represent their company in these positions must pass aptitude thresholds of affability, creativity and technical knowledge that enables them to effectively engage external groups in advancing specific business objectives. The gamer profile emerges from the legion of business professionals employed in these roles. Gamers embrace the vital nature of travel to their jobs and seek to acquire knowledge that enhances their enjoyment while away from their families and headquarters. As the profile name implies, gamers approach travel as a challenging puzzle and attempt to balance the expectations of their employer with leveraging available tools and insights that enhance their enjoyment of the travel process. This travel savvy is cultivated through a combination of direct experience, research and acquiring best practices from fellow travelers. While many business travelers acquire and act on measures of accumulated
knowledge, *gamers* make a concerted effort to convert their air service obligations into personal benefits.

Gerard Franklin and Kate Harris are professors for the same college department, are married to each other and travel extensively for their department and consulting opportunities. Taking most of their trips together, each flew more than 40 times in the past year and earned top echelon status in American Airlines’ loyalty program by amassing more than 700,000 air miles. In addition, they earn additional benefits by placing their travel expenses on their American Express travel card. By funneling all of their business and leisure travel activities through the American Airlines loyalty program and travel credit card, they build enormous balances that they convert into personal travel benefits. Free trips, seating upgrades, additional luggage, priority boarding and overhead storage, TSA PreCheck to expedite security processes, automobile rentals and pre-booking of exit rows are benefits enjoyed by Franklin and Harris -- a result of their shrewd management of these travel tools.

Their college and consulting clients pay for their trips. Franklin observes:

> “The vast majority of our trips are combination trips, so we will go somewhere for a business purpose and will springboard off that location to continue on leisure. We never pay cash for an upgrade -- ever. We use miles for upgrades.”

With others paying for their travel expenses and their bank of loyalty program benefits, Franklin and Harris are positioned to attend to another travel priority.

*Harris:* “Fewer stops, the better. The shorter the time on the plane, the happier I will be. If we have to spend six hours in an airport in between flights, we’re not going to be happy, so we’re going to look for another routing or maybe a higher price.”
Franklin: “It’s all cost. Time is a cost and for us time has a value. It’s not just about dollars, it’s also about time. For me, time is more important than price.”

The travel approach utilized by these gamers encourages loyalty to Pitt-Greenville airport, as well.

Franklin: “Greenville has been dependable, close and predictable. We drive from our driveway to the front door of the Greenville airport in 10 minutes. Overall, the airfares are similar to flying out of Raleigh. We’re loyal to Greenville.”

These married travelers believe that the close and convenient advantages outweigh the limitations of connections, equipment and flight times of a smaller airport. Furthermore, any price disparities are paid by their employer and clients.

Simeon Venture also places a high priority on maximizing his benefits by directing all travel transactions through his American Express Platinum card and the vast majority of flights through the American Airlines frequent flier program. This gamer strongly prefers the amenities of the nearby American hub airport and does not consider any smaller airports in his search processes for airline tickets. As a business consultant, he flies almost every week; he uses his travel tools and savvy for trips with the family, as well. Venture admits that being a member of American Airline’s frequent flier program prompts him to purchase tickets from American, so that he will benefit from the accrued air miles:

“I am loyal to my loyalty program. You are better off if you consolidate in one (airline rewards program) and stick with one. A lot is driven by airline loyalty programs and if you’re not part of it, it’s miserable.”

Venture’s personal triad of credit card travel rewards, airline frequent flier program and preferred airport satisfies a range of travel needs for him and his family: airport lounge services, airport shopping, Wi-Fi access, direct flights, specific types of
aircraft, various flight times, adequate connection times, free leisure trips, hotels, seating preferences and upgrades, priority check-in and boarding, checked luggage that comes out first, and other benefits. Venture does not consider price an issue in his business trips because clients pay the cost. He reports being more price sensitive for leisure trips, but willing to pay more to secure a desirable itinerary:

“When we have kids traveling with us, we try to fly direct. Get in, get out. When you’re traveling with little children, you want to get there as soon as possible and it’s less painful for us and them, so we pay a little bit of a premium to meet our criteria.”

Years of travel experience have contoured his search methods for purchasing tickets. Supplanting his original method of searching discount ticket websites, Venture now relies on the American Express travel website and, on occasion, a travel agent. In addition to directing all charges to his travel card, both search options house all of the necessary personal information and travel preferences.

“If I need to make any changes, I have someone to talk to. I used to check prices with other websites but it’s become a trust factor (with American Express).”

Venture used a travel agent for his most recent ticket purchase:

“The reason is time. I get a better search, obviously faster. I get better seating. They know what aircraft I like… and I only pay $25 a ticket.”

The gamers interviewed hold high-paying jobs, fly frequently and approach their trips as creative endeavors to convert ticket purchases into a menu of their most prized travel benefits. By harnessing the airline miles earned through their business trips, gamers enrich their business and leisure travel experiences. Hoping to instill a sense of loyalty that discourages their frequent flier members from purchasing from rivals, airlines and credit card companies covet and attempt to capture high-volume air travelers. This
approach was successful with the gamers interviewed in the study. Typically, gamers funnel ticket purchases to originating airports that host their rewards program airline. This practice helps gamers generate sufficient mileage points to qualify for high status levels and to meet the thresholds of the most valuable benefits offered by rewards programs.

4.E. New conceptual framework reveals distinct traveler profiles

This study set out to explain why travelers select an originating airport and, in so doing, why they switch from small airports to larger airports. Without the aid of prompts or lists of factors, the study respondents were asked to recite the most important reason for selecting their most recent leisure trip tickets and their most recent business trip tickets. The respondents’ self-selection of their personal purchase priority in both instances and subsequent analysis of the rich source of qualitative data led to a deeper understanding of the decisions made by travelers and how their purchase priority allows them to differentiate between all the available airline and airport attributes in their nested decision. The distinct patterns that emerge from varying purchase priorities is the basis for these traveler profiles as a conceptual framework for explaining the switching phenomenon and passenger migration.

While all travelers assigned to a profile group were motivated to purchase airline tickets for the same reason, most indicated secondary tendencies or preferences. Predictably, travelers who place a high emphasis on a second or third criteria for ticket selection will exhibit characteristics of the respective profile type that blend with the characteristics of their primary purchase preference. It is worth noting that experienced travelers are more in tune with their personal preferences than inexperienced travelers and, therefore, typically exhibit more clarity in their recall of decisions and preferences in
travel scenarios. While it is conceivable that a traveler may indicate a purchase preference that falls outside the four profile types, this study anticipates that the vast majority of travelers will self-select one of the foundational criteria for the four profile types and is likely to identify with its summary.

Study participants provided the following non-price reasons for switching from their preferred airport to an alternate airport: perception of fewer delays and cancellations, size and type of aircraft, direct flights or fewer layovers, shorter total air or travel time, preferable flight times, poor customer service treatment, optimal time between flights, negative flight experience with airline or airport, more airlines and flight selections, superior connections to other airports and destination cities, perception of safety, the loyalty program that the airline operates from the airport, airport shopping and amenities, airport lounge, employer requirement or leisure party preference. Undoubtedly, there are additional reasons for selecting an alternate airport, but this list is representative of the most common switching rationales. These reasons for switching largely explain the substantially higher growth rate of medium and large airports, as well as the higher rate of leakage taking place in America’s smallest commercial service airports. Now, a more complete understanding can take place from the switching patterns that emerge from each of the traveler profiles. These switching factors and distinct traveler profiles provide specific reasons and patterns influencing the post-deregulation migration of passenger from small to large airport markets.

This conceptual framework has profound implications for explaining why smaller airports have experienced much lower growth rates in the period since deregulation. It is well documented in the literature that the increased competition fostered by deregulation lowered ticket prices, which, in turn, nearly tripled the number of annual passengers in
the US. Numerous economists and researchers have conducted studies during this period that link price elasticity theory to the growth and movement of passengers in the nation’s air service network of airlines and airports. While price is an important determinant in passenger migration, it does not provide a complete explanation for the growth disparity among the various sizes of airports. This study’s qualitative approach identifies several other critical factors that influence the movement of passengers, the preponderance of which are migrating from small to large airport markets. A majority of the respondents report that utilizing their preferred airport, the ability to earn loyalty program rewards benefits and the temporal aspects of the available itinerary options are more important than price in purchasing airline tickets. Though this study was not structured to provide statistical predictions of consumer behavior, the qualitative data strongly suggest that non-price factors are powerful influences on traveler ticket purchasing decisions.

5. Conclusions

Deregulation set a chain of events in motion. The removal of barriers unleashed the competitive instincts of the airlines and invited a wave of entrants not encumbered by decades of labor concessions and comfortable existences. Predictably, consumers responded favorably to cheaper airfares offered by low cost carriers. Legacy airlines countered with their own price reductions, innovations based on their advanced infrastructure, a patient resolve to cut costs and a dogged determination to maintain market share. Lower airfare is fundamentally responsible for tripling the number of annual passenger enplanements since deregulation, sustaining a prolonged period of cutthroat competition and airline consolidation.
As deregulation proponents feared, greater competition and burgeoning enplanement totals had only modest effects on the quantity of air service and passenger growth of airports serving the nation’s small cities. Air travelers primarily migrated to the 60 largest airports in pursuit of their superior prices and flight selection. The close and convenient advantages of the 250 smallest airports were insufficient to stem the tide of net passenger losses, service reductions and, at best, anemic growth during the study period.

The air service industry and network of airports are influenced by an accumulation of varied interests and external market forces. Federal, state and local government programs support airports through grants, infrastructure and light regulation. Deregulation was designed as a laisse faire approach to stimulate competition, create operational efficiencies, lower ticket prices, increase routes and expand the market. An unintended consequence of deregulation was the consolidation of airlines into four dominant carriers, raising questions about their oligopoly power and plans to involve small airports in future network models.

Whether it is due to personal loyalty, social expectations or a matter of convenience, a vast majority of travelers articulate the desire to use their hometown airport more or even exclusively. However, in their actually purchase decisions, few travelers report exclusive use of their hometown airport. Like Sisyphus, the nation’s smallest airports face the continual uphill struggle of appealing to travelers with their close and convenient mantra while contesting passengers switching to larger nearby airports with substantial pricing and itinerary advantages.

Exploring the factors for passenger migration and the growth disparity between the largest and smallest airports requires a new approach. Understanding the decision
making process for nested ticket and airport selection is not as straightforward as buying a retail product off the shelf. Rather than conjecturing on behavioral theory, using a black box approach to veil elements of psychology enabled the study to focus on consumer decisions, the factors leading to their decisions and predictive patterns. The identification of four distinct traveler profiles (Figure 2) reveals how consumers behave differently and the mercurial nature of trip decisions driven by shifting preferences, current perceptions of economic constraints and intangible thoughts influencing travelers’ decisions.

The methods developed in this study may be used to segment and estimate the representation of each traveler profile within an airport’s catchment area. Applying the conceptual framework in this manner will better equip managers, policy makers and stakeholders to more knowledgably engage in fostering public support for strategies designed to invest scarce marketing resources in effectively educating and targeting persuadable travelers. Optimizing an airport’s market penetration enhances its ability to petition for defendable service upgrades, to attain the largest number of passengers allowed by its capabilities and to impact the economic prosperity of the region to the greatest extent possible.

6. Topics for future study

Two possibilities for future study topics arise from this research. By applying the classification methodology to a statistical sample of travelers from a variety of airport catchment areas, researchers could identify the share of the four profile types present at each participating airport. These findings will enable researchers to compare marketing approaches of each airport and ascertain whether specific marketing approaches are more successful than others in retaining local passengers or poaching travelers from adjacent
markets. These comparisons may also produce insights on how to direct an airport’s available marketing resources to maximize their annual enplanements and, thus, enhance opportunities for increased revenue and additional air service.

Another study option is to collect current information on regulations and programs that affect primary commercial service airports, in particular, nonhub airports. New economic forces, airline consolidation and market conditions threaten to end the industry’s prolonged period of growth. Traditionally, air service reductions have been particularly damaging to small communities. Interviews with air service proponents and small airport advocates will identify current safeguards intended to protect consumers in small markets, initiatives to address threats to nonhub airports and public policy issues associated with the allocation of air service and maintaining an acceptable level of consumer access.
Article 3: Mature deregulated market is purging nation’s nonhub airports

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Abstract

Qualitative and comparative analyses examine the emergence of new threats to the viability of the nation’s smallest commercial service airports. Dominant airlines that survived the prolonged period of bankruptcies and mergers are concentrating resources in metro and international markets while managing uncertainty by limiting inventory and prioritizing profit. Upgauging aircraft, pilot shortages, historic patterns of passenger migration and consumer switching are exacerbating risk factors to jeopardize airline service to primary nonhub airports. The application of risk factors found in extant research identifies 33 airports facing the greatest danger of losing airline service. Oblivious to the existence of the growing threat, the traveling public is content and responsive to reduced airfares. The growing market and the importance of air service to consumers preclude regulators and politicians from altering the terms of competition defined by deregulation. Interviews with airline and airport professionals confirm that the mature deregulated airline industry is entering a phase of airport consolidation.

Keywords: airline deregulation, airport consolidation, at risk airports, capacity discipline, converging market conditions, migration, nonhub airports, pilot shortage, switching, traveler profiles, upgauging
1. Introduction

In the 1960s, traveling by air was deemed one of the ultimate luxuries. Air travelers were served by shapely stewardesses and treated to gourmet meals with linens and silverware. Flights were populated with businessmen on corporate expense accounts flying to meet with clients and wealthy families traveling to vacation at prized destinations. The Civil Aeronautics Board ruled the industry by determining routes, setting prices and presiding over a range of additional regulatory powers. Airlines competed for the limited base of wealthy travelers by differentiating themselves through excellent customer service. In the blink of an eye, deregulation changed everything.

Steeped in laissez-faire discipline, airline deregulation produced results that exceeded the expectations of even its most ardent proponents. The 1978 act of Congress is widely credited with developing a competitive environment that lowered airfare and tripled the national market for air transportation. Despite these laudable outcomes, the subsequent collapse of dozens of competitors into four dominant airlines was an unintended reversal of deregulation’s primary goal of contestability. The architects of deregulation anticipated the potential for service reductions to small markets when they created the Essential Air Service program as a net to ensure that a layer of the smallest airports would continue to receive a subsistence level of air service. However, forty years of competition have inadvertently resulted in the emergence of four dominant airlines and market conditions that are eroding air service to America’s smallest primary commercial service airports and their communities.

Since deregulation, airports have adjusted to constant changes triggered by economic events and business decisions of airline companies, such as new technology, innovations and levels of air service. Airports meet budget objectives by competing
against neighboring competitors and marketing to secure the highest possible number of
travelers for flights originating from their facilities. Public airports in the US are almost
exclusively owned and operated by local governments and surrogates\(^1\). Quite often,
airport construction and improvements are the largest capital expenditures made by local
governments. Public funds are authorized to finance airport infrastructure and operations
with the expectation that the investment will enhance transportation options for air
travelers in the region and provide a variety of economic benefits.

Due to the considerable number of airports with infinitesimal shares of an
enormous national market, airports in small metropolitan markets such as Waco, TX and
Lynchburg, VA receive little attention. Primary commercial service airports constitute a
group of 378 airports that generates between 10,000 to 50 million annual passengers. This
study is most interested in developments affecting the viability of the nation’s primary
nonhub airports, an FAA classification of the smallest airports serving about 250
communities and ranging between 10,000 and 400,000 annual enplanements (ACAIS,
2016). Market conditions are creating risks for nonhub airports that threaten their primary
mission of providing quality scheduled air service. This study purposes to describe these
risks, explain the significance of airports to regional economies, review federal regulatory
authority and programs, provide rational for contemporary events defining the industry,
and cite theories from classic research articles that clarify the decision making of
dominant firms (Cyert and March, 1963) and how government agencies interact with
industries (Van Waarden, 1992). A conceptual framework of this phenomenon will be
developed through the identification of converging market conditions that are hostile to
nonhub airports, the reluctance of regulatory agencies to disrupt the market, and the
consolidation of factors that indicate an airport may be in danger of losing scheduled service.

1.A. Airport services dictate a region’s development destiny

In the US and internationally, airports are broadly viewed as economic engines for their economies. In addition to the most fundamental role of transporting travelers to their destinations or connecting hubs, airports are valued for their recognized ability to serve critical business needs and to entice new investments, commercial activity and jobs. In support of this lucrative business activity, local governments fund economic development departments, and corporations hire specialists to search for suitable locations for plant expansions.

An airport’s services determine its ability to attract leisure and business travelers which, in turn, determines its passenger enplanement results that are used in future negotiations for air service. Inbound travelers benefit the local economy through the tax revenue generated by their spending at hotels, restaurants, attractions, professional services and stores. The combined traffic of inbound and outbound passengers and their entourages produces airport revenue from parking, car rentals, landing fees, advertising, leases to vendors and airline fees. This revenue enables the airport to offset its cost of operation and retire capital debt.

In addition to stimulating tax revenue through local consumer spending, airports add demonstrably to a region’s prosperity by helping to attract new industries and retain existing businesses by fulfilling their air transportation needs. Many businesses rely on quality air service to expedite face-to-face contacts with clients, prospective customers, vendors and job candidates at other locations (Zhang and Xie, 2005). These businesses
broaden a community’s tax base through the payroll and jobs they create for the local population as well as their investment in real estate, buildings, equipment and benevolence to numerous community causes. For these reasons, it is the consensus of researchers that airports are essential assets that make significant contributions to a community’s economic development capabilities (Florida et al., 2015) and its overall prosperity (Longman and Khan, 2012) by invigorating job creation and investment in a region (Zhang and Czerny, 2012).

While the specific economic impact of airports is difficult to measure (Mowry, 2014), the evidence suggests that many businesses perceive value in hiring site selection consultants to conduct location searches for new headquarters and plant expansions. Consultants report that a company’s chief executive officer is likely to select a location based on a critical assessment of the lowest total cost of doing business, accessibility to suppliers and customers and efficiency in addressing logistical concerns (Ellis, 2010). Given these priorities, it follows that transportation infrastructure consistently ranks among the top three site-selection factors in an annual survey of corporate real estate executives (McAndrew, 2016). Businesses in growing capital-intensive sectors are reliant on a location’s transportation infrastructure, and the quality of a community’s air service is often the determining factor in relocation decisions. These businesses tend to invest more than $50 million for infrastructure, machinery and equipment (Ellis, 2010). Labor-intensive operations that place a high business priority on remote sales, training or customer service are also more likely to perceive air service as a primary determinant in relocation decisions.

Site selection and economic development publications are replete with examples of aligning the needs of business prospects with the attributes of various locations.
Relocation consultants and economic development professionals are similarly motivated to assist each business in sorting through all the possibilities and selecting a location that best meets its needs. Predictably, firms going through a relocation process have certain expectations of what constitutes adequate air service and their decision is influenced by the evaluation of sites meeting their logistics and transportation criteria. A $24.6 million global training center vii, a new McDonalds headquarters viii, a national defense contractor and a thriving software company ix are just a few recent examples of businesses relocating due to the capabilities and connectivity of the airports adjacent to their host cities. A New Hampshire economic recruiter asserts that airports are one of the principal reasons for business location decisions:

“The success of the airport is critical to the state’s economic development. If you don’t have a strong regional airport, you’re not going to attract companies that need infrastructure, which is pretty much everyone we meet with. It’s essential to attracting new companies to the state (Mowry, 2014).”

Developing transportation access enables a community to reach its economic potential. More consumers and products flowing into a community will expand its production capabilities and opportunities for commerce (Florida et al., 2015). Trade, jobs, wealth, investment and prosperity will ensue. Once a sufficient level of development is attained, acquiring an airport and commercial air service expands the economic opportunities available to a community. The services offered by an airport will grow with its community and, as it grows, so will its contributions to the local economy. Even the smallest airports improve a community’s commercial development prospects (Walston, 2016). Similarly, metropolitan cities with airports accomplish more than cities without airports (Florida et al., 2015). Regardless of its size and breath of services, an airport
expands the range of economic benefits and opportunities available to its regional community.

The inestimable importance of an airport to its community and regional economy makes it an important topic for air service customers, politicians, and community developers whose interests may create expectations about their airport’s potential for new airlines, passenger traffic, number of flights and cheaper airfare (Parrella, 2013). While travelers, airports and airlines cooperatively interact to form the nation’s commercial air service network, airlines hold a presumptive advantage in making business decisions that affect airports and their consumers. Deregulation gives airlines the autonomy to select their domestic markets, the ability to apportion resources to their choice of routes, and the authority to establish a price schedule for their service. Consequently, hundreds of airports compete for the limited air services of three remaining legacy airlines, Southwest, and a handful of smaller low-cost and network providers. In recent years, major carriers have demonstrated negligible interest in expanding into smaller markets, particularly nonhub airports (Boyd, 2016). Contrary to the erroneous perceptions of some airport stakeholders, soliciting new service is not a simple matter of going to an airline store and buying new air service from a shelf. In today’s climate, a small airport’s best hope may be to maintain current levels of air service. Regardless of their growth expectations, it is incumbent upon airports with modest passenger bases to form productive relationships with air carriers and to position themselves as valuable business partners.

1.B. Construct of large corporation decision making

Despite an innate reticence to sharing proprietary information, the dominant airline companies exhibit generalizable behaviors that often can be captured and predicted
by established business theory. Large companies have developed substantial market
control within the airline industry and a variety of other business sectors. *A Behavioral
Theory of the Firm* (Cyert and March, 1963) explains the managerial processes of large,
complex business organizations and the interaction between key players and groups to
prioritize goals. This analysis is broadly applicable to the airline industry in providing a
theoretical context for contemporary issues such as carrier response to reducing
uncertainty and the establishment of capacity discipline practices that are shifting
resources from small to large airport markets. As market consolidation enhanced the
dominance of four airlines, they are better positioned to promote a competitive climate
that instills order and purges market uncertainty. Dominant firms identify their most
pressing problems and apply experiential and material resources to independently
establish goals intended to create resolution (Cyert and March, 1963). These approaches
can be seen in recent airline initiatives of mergers, aircraft upgauging and capacity
discipline as strategies to respond to market uncertainties caused by fuel price spikes,
recessions and events that undercut traveler demand. The authors posit that the most
effective method for managing uncertainty is the creation of a standardized, industrywide
practice communicated to competitors through consultants, trade journals, industry
association groups, vendors and other routine channels. Speeches at industry conferences,
media statements and aircraft orders are signaling the airline industry that profit
maximization and inventory (seating) control are the new market directives
(Schlangenstein, 2017; Shine, 2017). However, new antitrust pressures may emerge from
this tacit cooperation of industry rivals.  

Cyert and March (1963) envision that coalitions of individuals maneuver to
influence important decisions in business, government and nonprofit organizations. The
fluctuating representation of a coalition reflects the unit’s role\textsuperscript{xii} within the organization, and members approach the process of resource allocation within the framework of their own distinct interests\textsuperscript{xiii}. Through a continual process of bargaining\textsuperscript{xiv}, coalitions address internal conflicts that inevitably arise over the preference ordering and resource allocation to individual goals. This aptly describes the decentralization that exists in major airlines and their attempts to accomplish organizational goals by balancing the interests of various executives, departments, unions, shareholders and airport stations. Decision processes for non-business organizations\textsuperscript{xv} and their relationships with the airlines are driven by their own distinct set of motivations. Combined with the theory of satisficing, the bounded rationality construct provides a thorough and satisfying explanation to the evaluation of available options and an individual response to the complexity and myriad of options available in numerous business situations (Simon, 1984).

1.C. Industry adjusts to evolving demands of deregulated market

Deregulation has produced winners and losers. The dominant airlines have strengthened their hold on the industry. More affordable prices have dramatically increased the number of consumers annually traveling by air. Conversely, there is growing evidence that many of the smallest airports have seen their services reduced and fear losing scheduled service entirely.

Having just endured a rigorous cycle of mergers, a deep recession and a meteoric increase in oil prices, the airlines are once again generating profit as the industry continues plans to reduce uncertainty through continued implementation of its unfolding capacity discipline model. While the changes are likely to benefit the industry and, particularly, the dominant airlines, analysts fear that events are in motion that will lead to
many small cities helplessly standing by as their commercial air service vanishes (Wittman and Swelbar, 2013). A convergence of market trends and events signal a difficult and uncertain future for numerous small airports, as well as their communities and regional economies.

Analysts are optimistic about the future of the industry. Reduction of jet fuel prices in 2014 lowered operating costs\textsuperscript{xvi}, increased consumer demand and improved the financial health of all segments of the air service industry. Cheaper fuel prices also increased consumer incomes, stimulated travel spending and improved industry forecasts for passenger growth\textsuperscript{xvii}. Regional airlines\textsuperscript{xviii}, low-cost carriers\textsuperscript{xix} and air cargo operators\textsuperscript{xx} are again profitable and expanding. Several large airports have achieved admirable successes in the cultivation of air cargo business and recruiting low-cost carriers, developments that are typically not available to small airports (Zhang and Czerny, 2012).

After decades of prioritizing market share over operating profitably, deregulation’s legacy survivors embraced more profit-oriented priorities. Suffering through shortfalls of $58 billion from 2001 to 2009 (A4A, 2016a), the industry struggled to emerge from austerity through a stricter adherence to financial performance, market consolidation through four blockbuster mergers and a deliberate plan for reallocating equipment (Boeing, 2015). At the heart of the newly emerging industry gestalt was an unfolding strategy to fill airplanes by redirecting resources to profitable domestic and international routes, as well as cutting seats, routes and aircraft to markets that do not fit the paradigm (Sharkey, 2014a). Fleet and network rationalization, right gauging and capacity discipline are terms introduced to refer to the notion of maximizing profits by systemically reducing inventory and increasing aircraft load factors\textsuperscript{xxi}. 
Historically, steady profitability has eluded the industry as cost cutting, price wars and intermittent economic shocks dominated the deregulated landscape. This aggressive competitive environment and the financial resilience of the surviving four major airlines (American, Delta, Southwest and United) culled the field of competitors with 200 estimated bankruptcies (Calio, 2015) and 39 mergers and acquisitions since deregulation (A4A, 2016b). The four major airlines sell 80 percent of the seats in the US and fly 85 percent of the available seat miles (Boeing, 2015). In addition to sustaining profitability, the major airlines are wagering that using their airplanes more efficiently will enable them to attain greater operational stability and to reduce their subjugation to economic events that have forced them to furlough employees and remove aircraft from scheduled service (McCartney, 2015b).

The historical response of airlines to events such as rising fuel prices or reductions in consumer demand has been to match lowered demand by decreasing capacity. The practical effect of this practice is to reduce flight frequency or assign smaller aircraft to network airports. In instances where service reductions are made to nonhub airports, travelers are more likely to switch to competing airports to avoid reduced flight times and smaller aircraft. The resulting loss of passengers reduces the airport’s income and traffic to its commercial tenants (Smith, 2009). Similarly, the merger of two airlines results in flight reductions, redeployment of aircraft and the elimination of routes. The merged companies have cancelled routes and decreased service to numerous small airports (McCartney, 2015a).

Proportionately, service reductions to small airports have been the most severe. An MIT study of air service concludes that small community airports will not regain the level of service they once enjoyed and will likely experience additional cutbacks in their
access to air transportation (Wittman and Swelbar, 2013). Industry analysts predict that major airlines will continue to consolidate services at large hubs and reduce flights from connecting airports. In many instances, small airports that have lost their only airline have not gone dark for long and had their service replaced by ultra-low-cost carriers or regional carriers (Boeing, 2015). Scheduled service from carriers like Allegiant Air and Spirit Airlines will be a critical alternative for the nation’s smallest airports if network carriers abandon their markets (Wittman and Swelbar, 2013).

There is a growing realization within the industry that prospects for small airports have been fading, and there appears to be no relief in sight (Sharkey, 2014b). Desperate for new flights, small airports have no parity in their negotiating relationship with the airlines. The airlines know that 37 percent of the airports produce 97 percent of enplanements. In the current climate, small airports have virtually no chance of recruiting a new airline (Bachman, 2016) and a miniscule chance of negotiating improvements in airfare, flight times or performance issues in their relentless quest to maintain commercial service (Stone, 2016). To make matters worse, half of nation’s nonhub airports do not generate sufficient revenue to cover their operating expenses and, therefore, maintain a diminished ability to fund capital improvements or augment marketing campaigns to improve their competitive standing (Smith, 2009).

Airports often rely on external means to leverage their appeal to the airlines and consumers. A variety of methods exist to supplement an airport’s budget or reputation through consultant studies, financial incentives to airlines, and state and federal air service grant programs. A plethora of air service consulting companies offer forecasting, marketing and technical expertise to airports. Often led by former airline employees, consulting firms market themselves to airports to assist them in creating airline
presentations, marketing campaigns, community stakeholder presentations, capital improvement initiatives, strategic plans and market analyses. Studies may be particularly helpful to airports facing a substantial change, such as the loss of an airline, declining enplanement trends, a competitor acquiring a discount airline and other emerging issues. Airport management may benefit from having a dispassionate expert framing problematic issues in a rational market context. In many instances, airports and their proponents may be misguided into believing that a study will result in acquiring a new airline (Bachman, 2016). Mike Boyd, the president of an international aviation consulting firm, warns that small airports spending money on studies to attract new service are simply chasing ghosts. Boyd cautions that communities desperate for new airlines, flights or routes will waste their money on consultants that cannot deliver, rather than accept the reality that their prospects are shrinking (Sharkey, 2014a).

Airports solicit various financial incentives from local, regional, state and federal sources to entice new airline service or to persuade an existing carrier to add routes, increase flights or other designated service improvements for a specified period (Sharkey, 2014b). Incentives can take many forms with a participating airline to share the risk of an operating loss or failure to achieve a predetermined performance targets. Some question the wisdom of giving funds to an airport with the intent of taking passengers away from other neighboring airports (Carey, 2014). There are many published articles about airports extending incentives to airlines only to have the participating airline discontinue service within a year of its introduction. A financial inducement may convince an airline to begin service on a new route, but only the profitable routes will survive and determine which airports will continue to be served (Wittman and Swelbar, 2013).
In summary, market disruptions and airline consolidations have congealed the industry’s emphasis on profitability through capacity discipline. As a result, the smallest airports are coping with fewer flights and the progression of mainline airlines abandoning their markets and shifting service to smaller regional carriers. Even the tactic of giving money to an airline is not the panacea it seemed to be a decade ago. For hundreds of the smallest airports, there are no easy answers in sight, and protecting current levels of service may be the most calculated strategy.

1.D. Converging forces portend formidable hazards for nonhub airports

As airlines have adapted to the changing competitive rigors of deregulation, new constraints are looming for the smallest airports. Three converging market conditions cast a pall over prospects for many of the nation’s smallest airports and the communities that rely on them. Though generally recognized within the industry, these emerging trends routinely evade detection by consumers and airport stakeholders who have grown accustomed to cheap prices and easy access of the air transportation network. The unfortunate reality is that these conditions are particularly pernicious to a band of established communities that have invested substantial public resources in their airports and built their economic destinies on their sustained ability to offer scheduled air transportation. In addition to the historically harsh realities of deregulation, nonhub airports are now contending with pilot shortages and upheaval from aircraft upgauging, as well as a pervasive pattern of their travelers leaking to adjacent rival airports.
**1.D.1. Upgauging aircraft**

In a natural outgrowth of the same market forces leading to the industry’s adoption of a capacity discipline model, the airlines are ordering the production of larger mainline aircraft to replace the small regional jets that are in heavy use at the smallest airports. Responding to the volatility of fuel prices, airlines are purposefully replacing their fleets of small regional jets with new fuel-efficient aircraft with increased seat capacity (Wittman and Swelbar, 2013). Carriers and aircraft manufacturers have begun the systemic replacement of 37-50 seat aircraft with 51-76 seat jets. For example, Delta Air Lines replaced one-fourth of its fleet since 2013, plans to replace 20 percent more by 2020 and has retired 410 regional jets and older aircraft since 2009 (Bellamy, 2017). American Airlines reports purchasing 395 larger jets since 2014 (Shine, 2017). Higher fuel prices make small, less fuel-efficient regional jets a costlier choice for providing short-haul service. The industry’s movement toward larger jets will temporarily reduce flight frequency by accommodating the airline fleet plans for more efficient gauging of aircraft to airport routes. Hundreds of nonhub airports will be heavily targeted by the industry’s staged implementation of the capacity discipline initiative, as their service is provided almost entirely by small regional jets.

Through agreements with network carriers, regional airlines operate a large portion of the smaller aircraft that provide scheduled service to small markets. While most regional airlines are owned by and fly exclusively for their network carriers, a few operate as independents (Dillingham, 2014b). Since major airlines have essentially eliminated small aircraft from their fleets, regional airlines are tasked with shuffling the smallest regional jets to their smallest airports (Wittman and Swelbar, 2013). Due to variations in airline fleet inventories and the demand characteristics of the routes in their
networks, the process of providing larger aircraft to all small airports will require many years. Upgauging to larger aircraft and ongoing airline decisions to reduce less profitable flights will ensure that fewer airplanes will be arriving and departing from the nation’s airports, at least temporarily. The industry’s reliance on high aircraft load factors and seat reductions are designed to reduce flight frequency (Governing, 2013).

Aviation consultant Mike Boyd asserts that manufacturers have developed next generation aircraft that feature essential performance improvements in fuel efficiency, maintenance and operating costs that will materially alter the economics and structure of air transportation in the US. Boyd predicts that jets with fewer than 70 seats will disappear entirely from mainline service and, as a result, many small airports will lose scheduled air service when reduced flight frequency drives travelers to larger airports, further exacerbating their load factors (Boyd, 2016). It will take several years of upgauging and retiring small regional jets for this development to work its way through all nonhub airports. While it is impossible to know how the introduction of larger aircraft will affect passenger boarding and load factors results of individual airports, upgauging will create the most operational pressure for nonhub airports that have depended on the greater flight frequency afforded by smaller regional jets (Wittman and Swelbar, 2013).

1.D.2. Pilot shortage

A 2013 rule designed to promote aviation safety is contributing to a nationwide pilot shortage for carriers providing scheduled service to the nation’s smallest airports. Created in response to a Colgan Air crash that killed all passengers and flight crew on board, the Federal Aviation Administration imposed higher standards for pilot training and certification. Industry analysts contend that the new FAA standards worsen other
problems contributing to an insufficient number of qualified candidates entering the industry pipeline for pilots (Dorr, 2013). In just one instance, the shortage forced a small regional carrier for Alaska Air Group to cancel 720 flights in December 2016, 318 flights this summer and more cancelations expected in the months ahead due to insufficient pilots to fly Horizon’s turboprop aircraft (Lamm, 2017). The chairman of the American Association of Airport Executives asserts that the FAA rule aggravates the shortage of pilots in the training pipeline to offset 20,000 pilots scheduled to retire within five years (Risher, 2017).

Federal aviation regulations establish the requirements for the certification of pilots. It is estimated that the rule will add one or two years for candidates to graduate with Air Transport Pilot Certification, prolonging the total training time to six years or more (Dillingham, 2014a). The FAA asserts that the new rule enhances safety by strengthening the aeronautical knowledge and experience of individuals aspiring to be airline pilots. The agency further contends that the rule will improve pilot response in difficult conditions and help address pilot fatigue, blamed as the cause of the 2009 crash (Dorr, 2013). Despite organized opposition and their assertion that the rule prevents discussion of more meaningful reform measures, the policy largely remains in force.

As demand for air travel continues to grow, industry analysts question whether a sufficient number of qualified pilots will be available to sustain airline network plans. The number of retired military pilots and student pilots has been steadily declining since 2001 (Dillingham, 2014a). In addition, the Bureau of Labor Statistics estimates that the average number of annual pilot retirements will create more than 1,900 openings a year through 2022. This cycle of massive pilot retirements and a constricted and elongated pipeline for replacements have exacerbated the shortage by further reducing the
supply of future pilots. Both trends were in motion prior to the FAA’s 1,500-hour training rule. Regardless of the availability of pilots at any given moment in time, airlines are accustomed to making operational adjustments that support their profitability, sustainability and other core priorities. Due to their higher pay structure, mainline airlines are not reporting difficulties associated with a pilot shortage (Dillingham, 2014a). There is growing evidence that regional airlines are experiencing hiring problems that are undermining their ability to provide service to some of their small airport partners. Flightpath Economics, an aviation consultant, identified 239 airports that are vulnerable to the loss of air service based on its analysis of pilot availability, passenger trends, airfare, connectivity and other market dynamics. The study concludes that airlines are reducing service to the smallest markets due to the lack of available pilots willing to accept the lower pay offered by regional airlines (Creedy, 2016). In its study of pilot availability, the GAO reported that new pilots prefer carriers that operate larger aircraft rather than turboprop equipment. Since the 1,500-hour rule began, regional airlines report difficulty in finding pilots to fly their turboprops. Five regional airlines participating in the study indicated that they do not have enough pilots to serve their small airports (Dillingham, 2014a).

The market forces resulting in current and future shortages of pilots will predictably increase the expense for all airlines as they compete for available, qualified personnel to fly their routes. Regional airlines are experiencing the greatest difficulty in filling their vacancies. If a regional carrier is forced to cancel a route, it is likely that the recipient of the reduction will fall upon a nonhub airport, particularly if they are still operating turboprop equipment.
1.D.3. Traveler leakage patterns

The third converging market condition differs from the immediacy of the pilot shortage and upgauging events. Consumer switching by air travelers and the migration of passengers to larger airports are two phenomena that explain a relentless pattern of leakage from the markets of the nation’s smallest airports. The structural dynamics of consumer switching is remarkably consistent from market to market. It is well documented that the price of airfare and wider range of flight options are primary reasons for travelers switching from the close and convenient advantages of their hometown airport to an alternate airport for their trips. The general availability of superior price and schedule selection provides a compelling rationale for travelers to prefer large airports over smaller airports for their originating flights (Lian and Ronnev, 2011). Consumers typically do not discern between the aspects of their flying experience provided by the airlines from those provided by the airport (Everett, 2014). When there are flight disruptions or a perceived failure by the airline, it is not unusual for consumers to hold the airport at least partially responsible (Stone, 2016).

Many travelers strongly prefer direct flights over itineraries with connecting flights even if they must pay more or spend more time accessing a larger airport (Johnson et al., 2014). Other prominent reasons for airport switching and leakage are flight frequency, airline reward programs, departure times, aircraft type, time in the air and service quality (Parrella, 2013). Consumer switching and leakage are grave concerns for airport managers who understand that attracting new airline service is predicated on their operation’s historic ability to capture a maximum number of travelers. Switching results in airport leakage, leakage reduces the total number of passenger enplanements for the airport, and annual passenger enplanements are a major determinant of the number of
airlines, routes, flights, seats, equipment and prices offered to the airport’s customers. As previously discussed, external factors also influence an airport’s aptitude for retaining the travelers in its market. Airline mergers, fuel price increases and falling market populations have resulted in air service reductions to small communities (Dillingham, 2014b). Similarly, the MIT study reports that protracted economic slumps and airline capacity discipline initiatives decrease service to smaller airports. Also, about a quarter of the delayed or canceled commercial flights occur at small airports, leading to reliability concerns and increased switching by travelers (Wittman and Swelbar, 2013). With 37 percent of the airports generating 97 percent of passenger enplanements, it is difficult for small airports to maintain current service levels, and recruiting a new carrier is nearly impossible (Bachman, 2016). Based on their current disadvantages, it would be easy to envision a scenario where small airports lose all network service within a few years (Wittman and Swelbar, 2013).

Consumers approach the purchase of airline tickets as a nested decision where they jointly consider their selection of an originating airport and the airline for their trips (Ndoh et al., 1990). Logically, travelers need a starting point for aircraft to carry them to their destination. Due to the various available airport-airline combinations, the consumer’s selection reflects their personal priorities in maximizing utility (Pels et al., 2001). By applying the nested decision-making construct to one-airline airports, Hammond and Czaban (2016b) uses qualitative methods to gather a list of the primary reasons for travelers switching to larger alternate airports. While the reasons for switching are not unique, the study found that the vast majority of travelers have top of mind awareness and, typically, a preference for the airport that is closest to them, even when they choose to fly from an alternate airport. By designating airport switching as the unit
of analysis, the study identifies four traveler profiles showing distinct patterns of decision-making leading to the ticket purchase: travelers who prefer their local airport, travelers who have systemically switched to a larger adjoining airport, travelers who shop for the best available price and temporal features, and travelers who strategically build benefits through their airline rewards program. Three of the four traveler profiles typically switch from their hometown airport to take advantage of the benefits of an adjacent larger airport that is a better match for their primary preference for purchasing a trip ticket.

The traveler profiles accentuate the challenges that face nonhub airports in battling leakage and retaining the highest possible capture rate to affect future air service. Due to pronounced consumer preferences for lower priced airfare, itinerary selection, direct routes and flight reliability, nonhub airports face substantial competitive disadvantages to larger neighboring airports, particularly if their competition are medium or large airports located within a two-hour driving distance. Since these factors are controlled by their partner airlines, nonhub airports face formidable obstacles in attempting to recapture travelers leaking from their catchment areas. Due to the reasons for travelers switching airports, there is a strong correlation between the size of an airport and its capture rate, particularly if a larger competitor is within a two-hour drive.

While consumer switching is the decision-making activity taking place at the individual level, passenger migration is the macro pattern emerging from a multi-year analysis of the flow of travelers at hundreds of commercial service airports. A 36-year longitudinal comparative analysis of 306 primary commercial service airports reveals that airline deregulation has fostered distinct growth patterns among nonhub, small, medium and large airport classifications (Hammond and Czaban, 2016a). These findings are
consistent with conclusions from the study on traveler switching decisions and emanate from a vast dataset that shows an unrelenting pattern of US airline passenger migration from smaller to larger airports\textsuperscript{xxxv}.

Domestic passenger traffic has nearly tripled since deregulation due to consumer responsiveness to reductions in ticket prices stemming from aggressive airline competition for market share. Coupled with the preference analyses of consumer switching, post deregulation patterns of passenger migration offer compelling evidence that the smallest commercial service airports are not enjoying a level of success comparable to their larger counterparts. The longitudinal comparative analysis finds that nonhub airports have the lowest annual growth rates, are most likely to suffer a net loss of passengers and are most likely to be served by one airline (Hammond and Czaban, 2016a).

Despite the historic growth of the airline industry during deregulation, nonhub airports were more likely to experience a substantially lower annual growth rate, as well as net passenger declines. For the 36-year study period, the industry’s annual 4.4 percent growth rate in total passenger enplanements far exceeds the 1.2 percent annual increase in the US population, while large, medium and small airports enjoyed annual passenger growth rates of 4.82, 4.97 and 3.15 percent, in that order. Conversely, nonhub airports recorded an annual growth rate that was less than a third of the industry average, with 1.3 percent growth\textsuperscript{xxxvi}. The migration study also determined that in the face of enormous market growth, 67 of the 306 airports studied bore reductions in the net number of passengers during the study period – all of which were nonhub airports\textsuperscript{xxxvii}. This is compelling evidence that nonhub airports are behaving differently than other airports groups in the post deregulation era\textsuperscript{xxxviii}. In addition, the migration study observes that
larger airports typically offer more airline selection than smaller airports. Of 333 airports examined, 115 airports are served by one airline, 113 of which are nonhub airports and two small airports (RITA/BTS, 2015)xxxix.

1.D.4. The precarious position of nonhub airports

In summary, airports generate vital transportation services for leisure and business travelers. They are an important source of job and wealth creation for regional economies by fostering commercial activity, retaining current businesses and enhancing prospects for development. While the relationship between an airport and its partner airline(s) is symbiotic in their shared desire to entice passengers, there are not enough airline resources to satisfy airport expectations for carriers, flights, equipment, routes and prices. Deregulation grants airlines the broad latitude to pursue profit and growth objectives. Dominant airlines adhere to predictable patterns of other large, complex organizations in motivating employees and directing resources to accomplish their goals and reduce uncertainty.

After decades of price wars and financial turmoil, the surviving airlines now have the market power to pursue capacity discipline plans to increase profits by reducing supply and lowering costs. The nation’s smallest airports have not experienced the benefits of the industry’s largesse and have experimented with financial inducements to attract more air service. Consultants and airline incentive packages have not been sufficient for nonhub airports to turn back the grinding process of airline capacity discipline reductions and allocation of resources to urban and international markets. The converging market forces (upgauging, pilot shortage and passenger leakage patterns)
identified in this article portend even greater difficulties for a host of nonhub airports serving the nation’s small cities.

2. Literature

Architects of deregulation hoped for expansion of the industry while fearing that airlines would divert their resources from the smallest to large metropolitan markets. Proponents of deregulation conferred considerable power upon airline companies to expand the air service market by dangling the intrinsic rewards potentially gained through head-to-head competition for passengers, profit and growth. Deregulation anticipated and created limited, temporary protection against the immediate abandonment of the smallest airports. When the political will to end the Essential Air Service program buckled, regulators created new criteria to limit the number of participating cities. Subsidies are allocated to rural, small and Alaska airports in recognition of their remoteness or distance from a larger airport. However, it is apparent that regulatory agencies have averted any pretense of responsibility or plans to forestall the abandonment of potentially hundreds of the smallest airports that do not meet definitions for remoteness.

As previously stated, several factors explain why nonhub airports are vulnerable to loss of air service: the market power and behavior of dominant airlines, converging market conditions that are hostile to the smallest airports, research findings that identify at-risk airports and the reluctance of government agencies to disrupt the industry with new regulation. Based on the roles delegated to agencies after deregulation and their current range of programming authority, it would be antithetical for government to intervene in an industry that carries 900 million passengers from US airports a year (USDOT/BTS, 2015). This section reviews communication constructs linking regulators
to primary players in the air service industry, regulatory oversight provided by government agencies and programs designed to support airports in airline recruitment.

2.A. Dimensions of networks linking government and the private sector

A critical component of a nation’s economy is predicated on the dynamic interaction of its regulatory agencies and businesses. This network dimension is characterized by the nature of the linkages and communication occurring between the government and the private sector in implementing public policy (Van Waarden, 1992). Pluralistic exchanges between governmental entities and the air service industry may be best understood by examining the societal actors involved, the balance of power and the primary function of existing networks.

Born in a climate of rapidly rising fuel prices and a developing recession, Congress authorized deregulation with a short fuse for established and aspiring airline companies to adapt to the new marketplace (Peteraf and Reed, 2008). Signed into law in October of 1978, the Airline Deregulation Act introduced a free market for the commercial airline industry by eliminating federal control of routes, prices and market entry of new carriers. The Civil Aeronautics Board, the agency that had regulated domestic interstate air transportation since 1938, was phased out, and its remaining responsibilities relegated to other federal departments. The Federal Aviation Administration retained its regulatory powers over all aspects of aviation safety. The Department of Justice assumed oversight for mergers, agreements and antitrust investigations. The Department of Transportation was given dominion over international and small community regulations, and also plays a role in reviewing airline mergers and acquisitions (Kole and Lehn, 1999). While the air transportation regulatory authority
granted by legislation is largely static, its interpretation and implementation are subject to the shifting ideological positions of the Administration and Congress, projected through influence, staff appointments and appropriations. There are too many permutations of agencies, programs and air service players to neatly define each policy network; however, helpful insights are gained from Van Waarden’s (1992) research observations when applied to the essential nature of the industry’s interaction with regulatory agencies.

The type of capitalism practiced in the US provides a weak state of economic intervention by the federal government and a higher level of participation by economic interest groups in public policy determination. With the dismantling of the Civil Aeronautics Board, authoritative control by a single government agency was replaced by a disbursed system of leverages accomplished through reporting, funding and general oversight. The concept of an issue network, a specialized form of policy network that depicts a public-private link based on many participants with expert knowledge (Heclo, 1978), may be the most appropriate typology for labeling the air service industry. The issue network portrays a relationship that is open, informal, fragmented, complex, lacking a central authority, and has difficulty in arriving at decisions. The public aspect of the linkage involves authority primarily disbursed among three government agencies. The private interests are represented by consumers, stakeholders, large and small airports and airlines with varying geographies, demographics, cost structures, distribution models and travel motivations.

Several policy network types between state agencies and organized interests have been proposed by researchers. While the issue network aptly explains much of the deregulation relationship between the industry and the government, a blending of two seemingly conflicting policy network types lends additional understanding to the model.
Statism pantouflage presumes an antagonistic relationship between agencies and the industry. Clientelism describes a policy network where the administrative agency perceives the industry as the object for the activity of the agency, and bureaucrats are sensitive to the needs of the interest group. While deregulation’s intent is to minimize the role of government and empower the market to make allocation determinations, rules for reporting and implementation have become increasingly arduous. Airlines and airports shoulder the burden of increased paperwork as the industry’s regulatory agencies fortify their compliance expectations. Most network transactions between regulatory agencies and small airports are limited to their involvement in applying for grants for a variety of marketing, capital improvement and airline recruiting activities. There have been instances when the airport community has opposed FAA initiatives, such as increased training requirements for pilots, attempted closures of small airport air traffic control towers, and shifting costs to airports for the operation of terminal towers.

Perhaps Van Waarden’s (1992) research can best be applied to the air service industry with this summation. The industry has grown into one of the largest business sectors in the world and is led by a plethora of highly knowledgeable executives and regulators. The industry wants the least amount of regulation possible. Regulators are incentivized to justify their jobs and budgets by providing timely information and aptly administering their programs. Through deregulation, the airline industry has substantially lowered prices in real terms and vastly expanded the number of travelers utilizing the national air transportation network. By objective measures, air transportation is safer than ever. These successful outcomes create a political climate that makes it extremely difficult to advocate for any shift in regulatory power that would threaten to increase prices, reduce demand or undermine the financial health of carriers. In this climate, the
regulators and the airlines will not benefit from provoking each other or seeking to make substantial changes to the prevailing conditions and balance of power.

2.C. Federal support for small airports

While the architects of deregulation were convinced that a free market would produce substantial price and access advantages to consumers, there was broad concern that airlines would shift resources to the most populated markets and lead to the abandonment of airports in small communities (Borenstein and Rose, 2014). Congress passed the EAS Program to ensure a basic level of air service to small airports that may have lost service without subsidies (Çağrı Özcan, 2014). Administered by the Department of Transportation, the program provides subsidies to incentivize regional airlines to serve unprofitable routes and connect very small airports to larger hub airports. Initially, airports offering scheduled service on October 24, 1978 met the sole criteria for establishing eligibility for the program. It was intended that the competition for routes would expand service into the smallest markets and that the EAS program would phase out of existence in the 10 years. After extending EAS in 1988, Congress extended it indefinitely in 1996 (Tang, 2015). The ubiquitous appreciation for the economic importance of air service to small communities has fostered a paternal attitude by elected officials of rural states to protect airports with smaller catchment areas and less developed economies (Sharkey, 2014b). These political forces have sustained the program and expanded the subsidies available to eligible small communities.

The EAS program provides subsidies for scheduled air service to 115 eligible small communities in the lower 48 states (Tang, 2015). Through a competitive bidding process, the DOT solicits proposals from air carriers and awards a two or four-year
contract to the airline that demonstrates reliability, an effective marketing strategy and support of potential users (Martin, 2016). After considering the proposals for an EAS community, the DOT selects an airline and designates the subsidy level and service pattern (hubs, frequency and aircraft size). Eligible communities must produce an average of at least 10 daily enplanements, with exemptions granted to airports in Alaska, Hawaii and communities that are more than 175 miles from a large or medium hub. Amidst periodic criticisms of the program’s efficiency, the Congress and DOT made the funding and qualifications criteria more restrictive and reduced the number of eligible communities (Çağrı Özcan, 2014). Of 746 nationwide communities originally eligible for the program, only 159 currently receive subsidies (Tang, 2015). However, funding for the program continues to rise with total funding of $193 million in 2012 to $283 million proposed for 2016.

The second federal program designed to improve air service to small communities is the Small Community Air Service Development Program (SCASDP). Program participants can be no larger than a small hub airport, and must meet criteria as having insufficient service and air fares that are unreasonably high. For the 2013 fiscal year, the program awarded 25 grants for $11.4 million to entice new airline service and for marketing initiatives and infrastructure improvements (Wei and Grubesic, 2015). The IRS defines rural airports as having fewer than 100,000 annual enplanements and meeting one of three criteria: located more than 75 miles from another airport with 100,000 annual enplanements, received EAS subsidies as of 1997, or is not connected to another airport by paved roads. Congress’ motivation to create SCASDP was like the rationale for starting EAS – the importance of air service in small, isolated communities and the fear that airlines are shifting resources away from rural communities (Grubesic et al., 2016).
The effectiveness of these programs has been repeatedly studied and debated, exposing their budgets to continual political tugs-of-war (Wittman, 2014). Though the results of economic impact studies have been inconclusive, small communities and their stakeholders maintain that the programs are valuable and necessary. The DOT asserts that the EAS is valuable to a community’s ability to recruit business, attract tourists and generally contribute to its economy. Studies (Brueckner et al., 2013; Çağrı Özcan, 2014) conclude that the traffic generated by the EAS program increases service-related employment, population and overall job growth, and growth of per capita income. Conversely, the EAS subsidies may diminish a community’s ability to recruit a second airline (Parrella, 2013). Most recently, when the Trump Administration proposed to eliminate subsidized air service in its 2018 budget, rural state congressmen rallied to oppose the cut and to keep the program alive (Olson, 2017).

Congress has directed the Secretary of Transportation to issue a report with the findings and recommendations of a group convened to study the topic of improving air service to small communities in 2017. Intended to operate independently of the DOT, the committee of 25 individuals from industry stakeholders is tasked with making funding recommendations for the EAS, the SCASDP and the Airport Improvement Program. The FAA’s Airport Improvement Program has awarded more than $3 billion to more than 1,400 airports as of September 2017 for aviation infrastructure projects (Alexander-Adams, 2017). The group has also been directed to identify ways to increase the supply of certified pilots and to discuss several current impediments faced by the industry.
2.D. Roles of regulatory agencies

During the intervening 40 years, the roles of federal regulatory agencies have adapted to mirror the changing conditions of the industry, but largely remain true to their deregulation origins. The FAA, DOT and DOJ contribute to the nation’s air service industry by providing regulatory oversight, data and funding for industry infrastructure, airport improvements and airline subsidies. The FAA accomplishes its mission through safety and noise regulation, airport and pilot certification, airspace management, air navigation improvements, foreign aviation coordination, and research and development of aviation technology (FAA, 2016c). The FAA’s Airport Improvement Program provides funding for the planning and development of public airports that are part of the National Plan of Integrated Airport Systems. After the FAA’s determination that a project meets civil aeronautical demand criteria, the Airport Improvement Program extends grants to airports for a variety of infrastructure improvements related to safety, security, capacity and environmental issues. Airports may also apply for funding for improvements to airfields, terminals, hangers, rehabilitation projects and designated professional services (FAA, 2016a). The Passenger Facility Charge Program, the Airport and Airway Trust Fund, and many state aviation departments also produce substantial funding for airport improvement projects.

2.E. Merger and antitrust oversight role of the DOJ

Tasked with handling criminal prosecutions and civil suits for the federal government, the Department of Justice manages more than 60 bureaus, divisions and major programs with missions spanning drug enforcement, prisons, civil liberties, the FBI and numerous other law enforcement matters (DOJ, 2017a). The Attorney General is the
head of the DOJ as the chief law enforcement officer and advises the President and key department executives. As an appointee of the President, the Attorney General and the DOJ are subject to the shifting political ideologies of the individuals serving as President. Despite the supposed resolute nature of the law, the DOJ is susceptible to political influence on matters that involve evaluating the interests of consumers and businesses. In terms of providing oversight to the airline industry, the DOJ has been accused of being too lenient in approving the merger of airlines (Kahn, 2001) and too political in investigating airline price collusion (Reuters, 2016).

Providing oversight to the airline industry comprises a miniscule portion of the DOJ mission of ensuring public safety, controlling crime, punishing unlawful behavior and ensuring justice (DOJ, 2017d). Typically, legal concerns emanating from the airline industry are delegated to the DOJ’s Antitrust Division, purposed to promote competition among a wide range of consumer interests. The division boasts recent settlement resolutions in industries as diverse as advertising, banking, beer, cable, movie theaters and railroads (DOJ, 2017b). Historically, the Antitrust Division demonstrates interest in the airline industry when it detects activities that may restrict competition and, as such, it reviews allegations of price collusion and reviews proposals for mergers of major airline companies.

The department was persuaded into acting against the four major airlines shortly after completing their mega-mergers. The DOJ began its investigation in 2015 at the behest of Senator Richard Blumenthal and consumer groups that file more than 150 lawsuits claiming that the airlines conspired to increase prices and limit the number of seats available for sale (Reuters, 2016). However, in 2016, a DOJ investigator stated that there is no evidence of collusion, and no formal action is expected against the airlines.
Delta and American representatives contend that the carriers independently develop pricing and capacity decisions, and they are confident that the DOJ will not take legal action. With the current market power accorded to the largest four airlines, it is likely that legal charges of price collusion will be occur with greater frequency and that their legal advisors will be prepared to defend against future assaults.

Reviewing the terms of proposed airline merger agreements is also within the purview of the DOJ and its Antitrust Division. While the DOJ does not approve airline mergers, its available options allow it to file suit to block a merger, sign a consent order, or not file suit. More than 100 mergers and acquisitions of airline companies since deregulation have resulted in four huge survivors and numerous smaller low-cost and network carriers. In 2013, DOJ moved to block the merger of American Airlines and US Airways, the first and only merger opposed by the Department. The current oligopoly of airlines and reduced contestability of the industry are cited as the most egregious outcomes of deregulation. Cutthroat tactics by the powerful major airlines were designed to weaken their competition and force them into mergers and bankruptcies (Kahn, 2001).

In the period leading to the mega-mergers, J. Bruce McDonald, the Deputy Assistant Attorney General of the Antitrust Division, asserted that the DOJ has no specific guidelines to scrutinize airline mergers:\textsuperscript{1} However, the Antitrust Division demonstrated its airline merger policy in 2001 when the DOJ filed suit to block the application for the United-US Airways merger, asserting that the merger would injure consumers by reducing competition and raising prices (DOJ, 2001)\textsuperscript{li}. The next three mergers advanced without DOJ consent decrees or litigation. In 2008, the DOJ ended its investigation of the proposed merger of Delta Air Lines and Northwest Airlines, the nation’s third and fifth largest airlines, with public comments supporting the
consolidation. The Antitrust Division predicted that the proposed merger would create operational efficiencies that would reduce costs and benefit consumers without reducing competition. The DOJ asserted that the airlines were in competition with numerous carriers on the vast majority of their routes (DOJ, 2008).

After giving up takeoff and landing slots at Newark Liberty Airport, the 2010 merger proposal moved forward for United Airlines, the nation’s third largest carrier, and Continental Airlines, the fourth largest US carrier. The DOJ closed its investigation when the merger partners agreed to the transfer of assets to Southwest Airlines to ensure competition at Newark. The department concluded that the networks of the two airlines were complementary and would lessen competition on only a few overlapping routes (DOJ, 2010). In 2011, the DOJ closed its investigation and allowed Southwest Airlines’ merger with AirTran Airways. At the time of the merger, Southwest was the nation’s third largest airline, while AirTran was the eighth largest in the US. The division determined that the consolidated airline would add new routes and connecting service at Hartfield Jackson International Airport in Atlanta. Furthermore, the division indicated that any route overlaps would be offset by consumers benefiting from the discount carrier’s expanded service and lower price structure (DOJ, 2011). Assurances that the consolidated airline would penetrate more small markets did not materialize when fuel prices spiked and Southwest sold AirTran’s smaller aircraft. Southwest made extensive cuts to AirTran’s former network, eliminating service to its smallest airports (CAPA, 2015).

In the final megamerger, the DOJ initially litigated to block the proposed merger of US Airways and American but then removed its objections when the parties agreed to a 2014 settlement that made the consolidated airline the largest in the world. The merger
both allowed American to exit Chapter 11 bankruptcy and enhanced the competitive position of US Airways, long considered by the industry to be a marginal competitor (Mutzabaugh, 2015). The two airlines spent $13 million on lobbyists to combat about 30 lawyers and economists hired by the DOJ to block the merger (Gulliver, 2016). The airlines ultimately prevailed with their assertion that the merger would benefit consumers through the establishment of new routes and the industry by galvanizing its capacity discipline strategy. These mergers reshaped the air service industry, created four huge airlines that control 80-85 percent of the US market, and most likely concludes the major mergers that will be approved by the DOJ. Including the 2005 merger of US Airways and American West, the eighth largest airline in the nation at the time, the era of merging large airline companies purged five of the nine largest carriers by revenue in 2004. Industry analysts observe that the industry is now more stable, ending a prolonged period of carriers in bankruptcy and positioning airlines to focus on operations and capacity discipline plans (Mutzabaugh, 2015).

In the period prior to the 1978 Act, regulations under the Civil Aeronautics Board provided a safe harbor for airline survival and, as a result, bankruptcies were rare. Dozens of mergers taking place since deregulation have resulted in reduced competition at many airports (Deppe et al., 2012). Deregulation architect Alfred E. Kahn laments that federal regulators have allowed this consolidation to take place without opposition and have refused to prosecute predatory market tactics of dominant airlines (Kahn, 2001). It is widely conceded that small airports are the hardest hit by the reduction of competition stemming from airline bankruptcies, mergers and acquisitions (Oster Jr and Zorn, 1983). Today, major airlines rarely compete directly against each other in the nation’s nonhub
airports, which are most commonly served by regional surrogates contracting with the major airlines, Delta, United and American.

3. Methods

Evidence indicates that small airports are not keeping pace with the industry’s prolonged period of growth and prosperity. Converging market conditions are reducing air service for many communities and may eliminate it entirely for an indefinite portion of the smallest airports. The elimination of air service reduces current and future options for communities to sustain and expand their regional economies. The industry continues to be driven by deregulation’s mandate that authorizes airline companies to compete, develop, and pursue profit objectives. As described, various aspects of organizational and consumer behavior form underlying constructs that explain the motivations and decision-making processes guiding airline companies, government agencies and consumers in this era of airline competition. Consumers rely on bounded rationality and sufficing processes (Simon, 1955) to help them sort through a myriad of travel options to arrive at acceptable nested decisions on airline and airport selection. Large complex airline companies prioritize objectives through the involvement of coalitions of influential individuals, side-payment bargaining, and contractual agreements to manage potential agency conflicts (Cyert and March, 1963). Deregulation authorized specific government agencies to play limited roles in regulating the industry, primarily through activities to support the industry with grant programs, regulatory guidance and disseminating industry information. These air service participants are each playing the roles delegated to them and are responding to industry challenges through attendant motivations framed by deregulation legislation. The industry’s recent shift into a state of oligopoly has disrupted the traditional interaction of
these players, and the new market power exerted by the big four airlines raises concerns about the current level of competition, consumer welfare and other outcomes espoused by the architects of airline deregulation.

This study proposes to identify and describe substantial hazards facing the nation’s smallest primary commercial service airports, to review federal regulatory agency authority and to utilize research findings and secondary data sources to create a list of airports that are exposed to risk factors for losing air service. Developed to expand upon the evidence presented in previous sections, this study will employ comparative analysis and qualitative analysis techniques to advance its research objectives.

2.A. Expert interviews

Qualitative methods are helpful in providing new perceptions of a topic that has been extensively researched and are beneficial in clarifying the underlying forces of evolving relationships (Eisenhardt, 1989). Qualitative inquiry relies on empirical methods such as observation, interviews and interpretive analysis to assemble a collage of vivid descriptions and perceptive explanations of the phenomenon being examined (Denzin and Lincoln, 2013). Face to face, telephone, and internet techniques are used to interview the chairman of a congressional judicial committee and several air service professionals to gain their informed observations, adding new insights and depth to the study’s objectives. The participants selected for interviews possess relevant technical and contextual knowledge of the issues explored by this study. Expert testimony serves a valuable research validation purpose by verifying or rejecting suppositions from other data sources. In many instances, expert interviews support interpretations of a condition, but in
others, serve to refute claims in literature or their findings, prompting researchers to reconsider their assessment of the situation (Prasad, 1993).

The research team, consisting of the researcher and thesis supervisors, created and assessed the semi-structured interview scripts used in questioning the air service professionals and extracted data from more than 10 hours of recordings. Data from the interviews were collected through digital audio recordings and transcribed for analysis. Five airport managers, an airline executive and a United States Congressman participated in the interviews. These industry experts are interviewed to supplement, confirm and contrast views presented from the literature and findings of this study. The participants possess a range of experiences pertinent to the research objectives and subject matter discussed in previous sections. The expert interviews section accentuates the relationships between the primary actors and respective viewpoints based on their varied roles within the air service industry as they relate to this study’s research objectives: large airports, nonhub airports, abandoned airports, network airline carriers and government regulatory oversight. A pseudonym is given to the airline executive who consented to be interviewed. For reasons of corporate policy and the proprietary nature of the information discussed, this individual requested that their name and employer not be used in the article. Special arrangements were necessary to secure the participation of the Congressman due to the demanding and unpredictable nature of his schedule. A written interview script was devised and sent to the Congressman. Data from his written responses were received and analyzed for this publication.
2.C. At-risk airports

Appropriate methods are designed for a rigorous comparative analysis of secondary data sources that identify airports meeting the specific criteria referenced in the research as indicators of airports at risk of losing commercial air service. By designating primary nonhub airports as the study’s unit of analysis, new insights will be created in fostering understanding of this large group of the nation’s smallest commercial service airports, their importance to regional economies and their precarious position in a mature deregulated environment. Insights gained through comparative analysis, expert interviews of industry professionals, and the literature section’s regulatory analysis will allow the fulfillment of the study objective to assess the current market conditions for nonhub airports.

This study focuses on primary nonhub airports, the FAA classification of airports that is the largest numerically and most homogeneous in terms of annual enplanements and service offerings to travelers in their catchment areas. In addition to the qualitative interviews with professionals in the air service industry, a comparative analysis extracted from secondary data sources will enable the study to develop new insights about specific airports that possess characteristics that demonstrate a higher probability of losing air service. As stated previously, the elimination of an airport’s scheduled service will have far-reaching effects on the air transportation accessibility of its residents and regional economy, as well as current and future implications upon the community’s ability to retain and recruit many types of desirable employers and investment opportunities.

The correlating research objective is to identify a group of airports that is particularly vulnerable to losing airline service. Extant literature references several factors that indicate that an airport may be in jeopardy of losing its service. By ascertaining
which factors are supported by sources of secondary data, the means exist to filter airports through designated criteria to arrive at a list of airports possessing the risk factor attributes. Four of the identified risk factors are independent variables and are binary in nature. The at-risk airports identified in Table 1 meet each of the four attributes, as well as other study criteria. This theoretic approach enhances prospects for reproducible findings and uniformity for future comparative studies to measure the explanatory power of this methodology.

While all of the factors are supported by secondary data, three of them lend themselves to binary treatment and it is a simple matter to interpret whether an airport possesses the attribute or not. As the study’s unit of analysis, all primary nonhub airports are identified through FAA’s listing of airport categories. The second risk factor is airports offering service from only one airline company, data that can be extrapolated from DOT’s T-100 reports. The third attribute is airports that are not eligible for the Essential Air Service program, with the data populated on the DOT’s EAS website. The fourth risk factor is airports within two hours driving distance of one (or more) competing airport that is primary nonhub or larger. Arriving at this binary determination is an involved process as it requires a rationale for establishing a two-hour driving threshold and using T-100 data and Google Maps software to identify competing airports meeting this criterion. The methods designed for this analysis draw from research findings and established secondary data sources that are reputed to be reliable and accurate.

This comparative evaluation identifies 33 at-risk airports. As a second phase of the study’s analysis, three additional measurements are utilized to place the airports in rank order. These measurements are used to rank the identified at-risk airports based on this study’s interpretation of the magnitude of competition faced by each airport. Again,
the three measurements are supported by sources of secondary data with rationale for their inclusion existing in literature. The process developed for ranking the at-risk airports is reproducible for purposes of future updates and analyses of the explanatory ability of this methodology. Placed in order of weighting importance on Table 1, the three measurements include: the number and FAA classification of competing airports with a two-hour driving radius\textsuperscript{viii}, the total number of airlines operating in competing airports within this radius\textsuperscript{lix}, and the annual passenger enplanement totals for the at-risk airport\textsuperscript{lx}. 
<table>
<thead>
<tr>
<th>At-risk Airports</th>
<th>Competing Airports</th>
<th>Total Competitor Airlines</th>
<th>2015 Enplanements</th>
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<tr>
<td>Tweed New Haven Airport, East Haven, CT</td>
<td>2L, 2M, 1S</td>
<td></td>
<td>30,943</td>
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<tr>
<td>Waco Regional Airport, Waco, TX</td>
<td>1L, 2M, 1S</td>
<td>24</td>
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<td>Jack Brooks Regional Airport, Beaumont, TX</td>
<td>1L, 1M, 1N</td>
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<td>Columbus Metropolitan Airport, Columbus, GA</td>
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<td>Pitt-Greenville Airport, Greenville, NC</td>
<td>1M, 3N</td>
<td>13</td>
<td>55,017</td>
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<td>Valdosta Regional Airport, Valdosta, GA</td>
<td>1M, 3N</td>
<td>12</td>
<td>39,544</td>
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<tr>
<td>Dubuque Regional Airport, Dubuque, IA</td>
<td>3S, 1N</td>
<td>16</td>
<td>38,240</td>
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<tr>
<td>Florence Regional Airport, Florence, SC</td>
<td>3S, 1N</td>
<td>15</td>
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<td>Williamsport Regional Airport, Montoursville, PA</td>
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<td>15</td>
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<td>Lea County Regional Airport, Hobbs, NM</td>
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<td>Hilton Head Airport, Hilton Head Island, SC</td>
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<td>5</td>
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<td>Chippewa County International Airport, Kinchloe, MI</td>
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<td>Roswell International Air Center, Roswell, NM</td>
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<td>Wichita Falls Municipal Airport, Wichita Falls, TX</td>
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<td>Pangborn Memorial Airport, East Wenatchee, WA</td>
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<td>San Angelo, San Angelo, TX</td>
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<td>63,842</td>
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<tr>
<td>Abilene Regional Airport, Abilene, TX</td>
<td>1N</td>
<td>1</td>
<td>85,994</td>
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</table>
4. Study findings

Identifying specific airports that are in danger of losing airline service expands upon the ordinary conceptualization of individual at-risk factors referenced in literature. The methods developed for this analysis enable the application of known determinants to sift through hundreds of airports and provide a face or identity to actual communities whose futures may be irrevocably altered by unchecked market forces. Acknowledging that a powerful trend or event (e.g., a strong national recession, spikes in fuel prices, weather catastrophe, terrorist attack) has the potential to devastate the fortunes of hypothetical locales is quite different than visualizing specific cities that elicit emotional responses from knowing individuals who live there, from having visited in the past, or from holding impressions about the locale. By merging the research findings and secondary data sources, the resulting cohesive listing of at-risk airports forms the basis of a reproducible, explanatory model that makes theoretical inferences more tangible by adding a humanizing dimension to unfolding events.

A total of 33 airports meet the four prescribed criteria to qualify for at-risk status as defined by the study methodology. There is substantial disparity for competition faced by the 33 airports. Surrounded by two large hubs, two medium hubs and one small hub competitors, the Tweed New Haven Airport (East Haven, CT) has 28 airlines operating within its two-hour perimeter. At the other end of the continuum, six airports in Table 1 meet all four at-risk criteria but have only one primary nonhub airport and one competitor airline with which to compete.

There are a variety of strengths and limitations in developing a listing of at-risk airports based on secondary data. The critics of this methodology may assert that econometric and logit models may be crafted from a comprehensive list at-risk factors.
and more accurately predict airline service loss for specific airports\textsuperscript{lxiii}. An econometric study could include information that is specific to each subject airport and their competitors\textsuperscript{lxiv}. Certainly, additional study factors are conceivable. However, as many of these conditions are fluid, it would be a formidable challenge to measure and maintain the accompanying flow of data. It is likely that such a comprehensive study would require multiple usage analyses and consumer surveys to ascertain and assign appropriate values to each factor identified. Researchers have gone to such extensive detail in assessing market conditions for multiple-airport urban markets, but no one has attempted to apply such ambitious standards to the entire airport network.

There are practical advantages to using secondary data for a comparative analysis that identifies at-risk airports. In addition to the visualization of the specific communities made possible by the creation of this list, secondary data sources enable reproducible findings and are based on the most reliable data available by the government’s requirement for airline carriers to report DB1B and T-100 information. Reporting standards have remained fundamentally unchanged since deregulation, which makes these sources and reports the most historically accurate in the industry over the period of almost 40 years. Because passenger enplanement totals are arguably the most important measuring stick for the relative success of airports, they are durable and reflect the ever-changing nature of the air service industry. A compelling argument can be made that various demographic and airport data sources are imbedded in an airport’s passenger enplanement results as the culmination of possible inputs into the most definable measure of airport performance. By coupling secondary data with research findings identifying at-risk factors, this analysis benefits from decades of observed trends on the phenomenon of airports losing airline service. The factors used in this analysis (airport size, single-airline
airports and close proximity to a competitor) are specifically referenced in the research and, therefore, provide a rationale for the methods developed to measure at-risk factors.

Due to the incalculable economic value associated with a community’s commercial air service, an airline’s business decision to discontinue service to an airport will be highly politicized. Faced with the loss of scheduled airline service, an airport will predictably mobilize political support from stakeholders and elected officials to contest abandonment. Since this analysis of at-risk factors is based on objective sources, it does not anticipate unquantifiable factors, such as the magnitude of a community’s political response to an abandonment announcement or the airline’s anticipated net benefits of shifting aircraft to different markets. An airline’s business decision to sever its relationship with an airport is best understood within the context of corporate behavior and processes within the firm as described by Cyert and March (1963), namely the rational pursuit of profit, growth, prioritized goals and reduction of uncertainty.

4.A. Expert interviews

As described in the findings of the previous section, small airports languish when their limited annual enplanements and encroached catchment areas restrict the choices available to their passengers. The converging market conditions and risk factors discussed in this study threaten the viability and future of numerous nonhub airports. Possessing between 18-43 years of professional experience, seven individuals from different facets of the air service industry were interviewed to supplement, confirm and contrast views presented in this study. Their observations on the outlook for small airports and assessments of the marketplace after almost 40 years of deregulation are particularly poignant to the study’s research objectives.
4.A.1. Outlook for small airports

Chris Brown\textsuperscript{lxv}, the airport manager for the large hub Washington Dulles International Airport, asserts that the domestic route structure is saturated, that most carriers see international destinations\textsuperscript{lxvi} as the greatest opportunity for growth, and that it is inevitable that many small communities will lose their air service:

“It is not a question of whether these small communities deserve scheduled service. Just as there are fewer post offices in communities, there will be communities that lose service because they don’t have the critical mass to drive scheduled operations.”

As the executive staff coordinator for the Metropolitan Washington Airports Authority, Todd Sheller\textsuperscript{lxvii} directs executive level activities and communicating with the Dulles Airport’s primary constituencies. With limited opportunities in the mature domestic market, Sheller states that airlines determine a market’s viability from an assessment of its passenger yield and airport operating costs. He indicates that Dulles compensates for its higher cost structure by providing numerous competitive advantages over less resourced airports\textsuperscript{lxviii}. He estimates that Dulles will eventually double its annual passenger total, capturing substantial market share from smaller airports within a three- to four-hour driving radius. While consolidating small airports may benefit the airline industry and largest airports, Sheller questions its potential for harming effected communities and their consumers.

“Airports are working hard to ensure that their communities are provided with service that they deserve. I’m a very strong proponent of free market, but I do think you reach a point where consolidate, consolidate, consolidate only works from a carrier’s perspective. If we’re going to allow the free market to do that, you could see a point in time when all that’s going to exist are flights from Dulles to Atlanta to Chicago to San Francisco to Houston. For (the airline industry), it is the most economically viable and efficient method of generating the greatest profit.”
As the manager of the Roanoke-Blacksburg Regional Airport, one of the largest nonhub airports, Jacqueline Shuck\textsuperscript{lxix} contends that the hub-and-spoke model that emerged from deregulation provides service to too many airports. She states that the industry’s new emphasis on larger aircraft and higher load factors will make larger airports more dominant and the smallest airports expendable. Shuck is confident that its distance from larger competitors will protect the Roanoke Airport from losing service anytime soon but that neighboring airports in Lynchburg and the Shenandoah Valley will not be as fortunate. She observes:

“The loss of airline service to the smallest markets will provide business opportunities for larger airports. As this consolidation of airports continues to happen, and it is happening, my intention is to be the survivor. We’re perfectly situated to serve the (region) and, if need be in the future, Bedford and Lynchburg as well. We’re going to be the surviving airport, and we’re going to do all that we can to be available and maintain our capacity of seats, if not grow them. This transition from a lot of small airports to a few medium-sized airports will be a good thing for travelers.”

Mark Courtney\textsuperscript{lxx} manages the Lynchburg Regional Airport, a nonhub airport that has suffered the losses of Delta\textsuperscript{lxxi} and United\textsuperscript{lxxii} since 2001. It has been challenging to convince community stakeholders that it is better to maintain a positive relationship with the airport’s remaining airline than to aggressively pursue a second carrier. Courtney observes:

“Attracting another airline has become problematic. As a nonhub, maintaining what you have is a victory. As they put in more expensive assets and upgrade to larger jets, it’s not good if we don’t continue to fill them. With upgauging, if we just maintain our loads and revenue performance, they might end up making us part of the next wave of consolidation among their spoke cities\textsuperscript{lxxiii}. You worry about getting in that spiral where (the airline) reduces capacity and your traffic goes down. Then, management makes fewer low fare seats available and your traffic goes down again. Then, they drop another flight and it’s the old death spiral\textsuperscript{lxxiv}. That’s the key to surviving. You have got to make that transition.”
Courtney posits that the airports at the most immediate risk of losing scheduled service will not be able to support 250 daily departure seats, a standard that will be difficult for many small airports to achieve with reduced frequency and larger aircraft. Small airports with regional airlines may also run afoul if they cannot fill their positions because of the pilot shortage. Courtney indicates that the transition to the larger equipment will mean that regional airlines will assign the smallest, oldest aircraft to the smallest airports, posing a problem for travelers with strong aversions for turboprops and older, small jets. These industry practices will also worsen leakage.

Marc Adelman was hired to manage the Danville Regional Airport six months after it had lost its final carrier and tasked with finding a replacement airline. He likens his task to the enigma imposed on Sisyphus:

“We’ve actually gone backwards with respect to recruiting commercial service. There are a lot of factors that contributed to why Danville’s situation did not succeed. We’ve been a general aviation airport for 20 years now. The perception is that it’s a dead airport. There have been no discussions as far as the need to recruit commercial air carriers. You can’t fully understand the challenge associated with establishing commercial air service in a small, rural area. It's tremendous.”

The pseudonym, Jeff Beasley, is used here for a department manager with a major airline who consented to be interviewed under conditions of anonymity. He observes that the airline industry is healthy with profit margins as high as they have been since deregulation. However, the growth of ultra-low-cost carriers is hindering the development plans of the major airlines by attracting the most price sensitive travelers, who are willing to drive greater distances to access the cheaper airfare. Beasley predicts that ultra-low-cost carriers will continue to capture market share until travelers factor in the higher associated costs of driving, parking, and baggage.
warns that the growth of ultra-low-cost airlines may be particularly pernicious to small airports within driving distance of substitute airports that host these carriers:

“It may do more to drive people out of their nearby airport. There’s not much you can do if the megacities get so cheap that (the local airport) just can’t keep people at home.”

Beasley said his airline is currently focused on upgauging aircraft, working with regional carriers to fill pilot vacancies and shifting capacity to international markets. The pilot shortage and retiring small aircraft are discouraging the airline from adding cities to their network or expanding service to small airports. He posits:

“The (pilot) retirements are so vast, there may be problems where regional airlines vanish because they can’t supply themselves. That’s the next conversion, trying to keep the same number of seats with fewer pilots. It’s likely that upgrading planes will probably (result in) lower frequency and larger planes at our small airports. If they can’t get enough revenue, the service may just disappear or be consolidated to other cities.”

Beasley asserts that there are many in the airline industry that feel there are too many airports to sustain, and the pilot shortage may provide a convenience excuse for them to go away. He notes that criteria have been developed to help his company sort through small airport requests for new and expanded service. The criteria include: isolation from other cities, total population within 120 to 150 miles, and distance to a medium or large airport. He contends that very small airports are particularly vulnerable to service reduction or abandonment if they are within two hours driving distance of a larger airport or within three hours of a Spirit airport.

Congressman Bob Goodlatte has served as the chairman of the House Judiciary Committee since 2013 and was the ranking member of the committee’s Antitrust Task
Force. Goodlatte asserts that he is primarily interested in ensuring that that the national air transportation system deals equitably with rural communities\textsuperscript{xci}. He asserts that deregulation has proved that competition promotes commerce and protects the consumer:

“\textit{Competition and free markets breed innovation and competitive pricing to the benefit of consumers. I will continue to advocate for policies that promote increased competition. I believe it is important for members that represent rural communities and small airports to have conversations with their colleagues about the different economic factors these communities face.}”

\textbf{Status of deregulation}: Interview participants were also asked to conjecture about the regulatory environment and whether it requires adjustments. Goodlatte points to the success of deregulation in reducing prices and making air travel affordable for untold millions of consumers. He admits mixed feelings over the EAS program but now believes that continuing the program will protect air service for many rural airports\textsuperscript{x civ}. Goodlatte states that Congress works closely with the regulatory agencies and remains alert in monitoring airline competition and the viability of small airports:

“\textit{Rural communities should have continued access to convenient and competitive air travel. I will continue to conduct oversight of the Department of Justice to ensure that they are administering the antitrust laws appropriately to ensure the greatest level of competition. The House Judiciary Committee routinely conducts oversight of the antitrust laws and the antitrust enforcement agencies to ensure that the competition laws are being administered appropriately and with the goal of maximizing competition in all markets, including air transportation.}”

Airport managers universally acknowledge the powerful effect of deregulation in expanding the national market but that decades of bankruptcies and mergers have vested tremendous authority upon the four dominant airline companies. Sheller (Dulles) contends that even the largest airports feel that they are “the tail being wagged by the dog” with little control over schedules, equipment and fares. Interviewees varied in their opinions of subsidies and the consolidation of airports.
Courtney (Lynchburg) contends that the EAS program has been a failure, and that federal funds could better be spent on incentives available to more airports. He asserts the current method for distributing subsidies and grants rewards the most marginal airports at the expense of airports that have a demonstrated ability to serve an adequate market base of travelers. He submits that taxpayer money would be better spent on grants to expand air service by offsetting an airline’s cost of initiating service at a new airport. It would be understood that the grant is for developmental costs of establishing a new station and would not be an ongoing subsidy. Courtney opines that government intervention into a free market environment typically is not efficient and does not maximize the number of competitors serving an open market, nor does a cabal of large corporations consider public welfare in their business decisions.

“At what point do a handful of airline executives get to determine the economic future of a community, access to air transportation, to global networks, and a region’s economic potential? They have so much power but they don’t have much of a buy in or any connections to the community, so they tend to be oblivious to smaller airports.”

Shuck (Roanoke) asserts that deregulation encouraged airlines to provide air service to too many marginal airports, and that the market is finally preparing to cull unnecessary airports:

“When the airlines deregulated, they also began to serve cities that had never been served before, so every Tom, Dick, and Harry city had an airport with (an) amount of service and they were all feeding the new hub structure. (Now), the airlines are saying we’re going to keep knocking down seats until we get the money we want. The truth is, if you’ve got an airport that is running 60 percent loads, it’s not going to last very long. A lot more of the very small ones are going to lose all their service. The question is what an airline will decide is a reasonable amount of travel time. I think that people are easily willing to drive an hour. The issue is how much money we can make with each airplane. The airlines do not see themselves as public service agencies.”
Sheller (Dulles) suggests new regulation may be necessary to protect national priorities that may not be held by airline investors. Since the federal and state governments pay for roads and subsidize city buses and trains, he suggests it may be time to expand protection for consumers served by small airports that goes beyond the Essential Air Service providing cash for service. Sheller asserts that new protections should ensure that communities will have access to a hub airport for a reasonable airfare:

“If a community is going to be negatively impacted by decisions that are solely driven by shareholders, then to me it’s not out of the realm for us as a nation to (consider) communities that are being disadvantaged or harmed by these decisions. That’s reasonable for that community.”

Brown (Dulles) states that deregulation’s inclusion of the EAS program was recognition that some communities would be unable to provide the necessary passengers to justify scheduled service. Now that consumers have grown accustomed to inexpensive airfare, he doubts there is public appetite for returning to regulated pricing mechanisms based and fictitious fares that do not reflect the cost of the actual flight or the cost to the airline. Brown observes:

“The ultimate success of deregulation is that the industry has been able to respond painfully and it’s not been pretty. Some people look at all of the consolidation (airline bankruptcies and mergers) and think we have just returned to where we were (prior to) deregulation. We’ve come (through) this big circuitous route where we now have surviving carriers that are able to provide service.”

If an airline discontinues service to a community, Brown asserts that it should be a political determination of the federal government to consider providing the necessary subsidy to entice an airline to restore basic air service:

“(However,) given the industry’s current direction, the federal government has a diminishing capacity to fund the nonhub airports that may be left out of the business plans of today’s consolidated carriers.”
5. Conclusions

The convergence of market conditions and risk factors are endangering the future of commercial air service for the nation’s smallest primary airports. One of the greatest fears of the architects of deregulation is being realized -- the dominant airlines are concentrating their considerable resources in the largest metro and international markets, leaving nonhub airports to struggle with increasingly tenuous conditions. While the unfolding consolidation of airports is widely acknowledged within the industry, is has yet to emerge as a point of deliberation for unsuspecting stakeholders and lawmakers.

Representing about 250 of 380 primary airports in the US, the nonhub classification is a large, homogenous group with the greatest exposure to market shocks and risk factors. Most of these airports are served by one carrier, which places them on the precipice of having no commercial service. Regional economies depend on airports for transportation services, commercial activity and job creation. Airports are an essential asset in the sorting process that takes place when site consultants consider communities for placement of high growth capital- and labor-intensive corporations looking for low cost, accessible and logistically-connected locations. Even the smallest commercial airport makes their community eligible for a range of economic benefits and opportunities that are not available to non-airport communities.

The era of competition created markedly new roles for the airline companies and regulatory agencies. Deregulation vaulted legacy airlines into a nationwide, head-to-head competition among themselves, Southwest and other rivals that mimicked the low-cost leader, instigating a price war that persisted for decades. While throngs of consumers responded to lower prices, market shocks and brutal competition decimated the field. Nearly 200 bankruptcies and dozens of mergers reduced the contestants to four dominant
airlines and a small pack of challengers. Driven by cyclical spikes in fuel prices, the industry began replacing small regional jets with larger fuel-efficient aircraft. Led by the surviving legacy airlines, the industry is also embracing the capacity discipline plan to reduce inventory and improve profitability. Classic business theory (Cyert and March, 1963) predicts that dominant firms in an industry will respond to market turmoil by dedicating their resources to goals that purge uncertainty and instill order. Through signals in various communication channels, advancing these goals can be amplified through their acceptance within the industry. Bankruptcies, mergers, upgauging and capacity discipline are recent examples of collaborative responses of dominant firms to mutual problems.

Architects of deregulation set the tone for government’s new role in the airline industry when the Civil Aeronautics Board was phased out of existence soon after the act’s implementation. Regulatory oversight was limited and specific for the agencies delegated with residual authority. Subsequently, the Congress funded and agencies implemented programs to support the development of air transportation infrastructure and a broad array of airport requests, particularly among small and remote airports. Capitalism, weak federal intervention and an economic interest group (air service industry and stakeholders) with many knowledgeable participants create an issue network between the government and private sector groups involved in the industry (Van Waarden, 1992). The ensuing relationship is open, complex, fragmented and lacks a central authority. While this typology makes it difficult to effect regulatory changes, it enables airlines to innovate and compete with little regulatory interference. In the face of tripling of the number of total annual passengers and sustained low prices, politicians have shown little
appetite to disrupt the industry or upset consumers with additional oversight or aggressive interpretation of current regulations.

Despite the prolonged period of harmony between the industry and federal government, two of the stated objectives of deregulators have collapsed – contestability and prospects for the smallest airports. First, it is estimated that four airlines control between 80-85 percent of the market and have unprecedented power to dominate their competitors. Secondly, the plight of the smallest commercial service airports is bubbling to the surface. Offshoots of deregulation and the current state of oligopolistic competition, this study identifies evidence of converging market conditions and risk factors that imperil the viability of nonhub airports. The pilot shortage, upgauging of aircraft augmented by the capacity discipline plans of the major airlines, and the historic patterns of migration and switching away from hometown airports are disruptive developments for the smallest airports. In addition, a shuffling process is taking place where the smallest airports are being cast off by the three major airlines and picked up by regional and low-cost carriers, companies that are susceptible to the negative impacts of pilot shortages, aircraft upgauging and financial challenges. For the smallest airports and their carriers, market shocks are inevitable and threaten to intensify the converging conditions and risk factors identified in this study. The continued viability of a nonhub airport now depends on maintaining its current airline and that its carrier can secure the pilots, aircraft and finances that it needs to survive.

Table 1 identifies 33 airports possessing the four attributes identified with airports in danger of losing airline service: small passenger base, single-carrier, located next to a competing airport, and ineligible for EAS protection. Single-airline airports within two hours of large or medium airports and numerous competing airlines are at the highest risk
of airline abandonment and face the involuntary prospect of converting their operations into general aviation airports. Previously, small airport studies that have documented risk factors have not attempted to correlate the factors with airports. This study’s methodology identifies airports with all four attributes and ranks them in order of their exposure to the risk factors. The study of at-risk airports takes the discussion beyond the purely theoretical and personalizes the topic by identifying the airports and communities that may soon face the painful loss of a critical asset. Little-known cities such as East Haven, CT; Waco, TX; Beaumont, TX; Columbia, GA; and Greenville, NC provide tangible examples of communities with airports facing the most risk. It is likely that people who live in, work in or are familiar with these communities are unaware of any objective criteria that place their airport at the top of an endangered airports list. These physical reference points help those studying the issue to visualize the human element of research findings on risk factors.

As findings from this study’s expert interviews attest, it is common knowledge among airport and airline professionals that the consolidation of the smallest airports is underway. All five interview participants with daily exposure to the national air service network have reached the same conclusion. Although they approach the issue from various perspectives and verbalize the situation differently, each of the air service professionals acknowledge that market events are leading to the reduction of nonhub airports. Their conclusions are based on rationale that is consistent with research findings and media articles. Large airports have international flights, ultra-low-cost carriers and a myriad of other competitive advantages that continue to siphon market share from nonhub airports. Upgauging aircraft and pilot shortages are disrupting and endangering the air service of small communities. Airlines are expanding into foreign and urban markets,
leaving fewer aircraft for small airports. Elected officials and regulatory agencies are monitoring competition in the industry and are entrusting the EAS and grant programs to rescue airports that are threatened with the loss of service. Some see the EAS as a valuable safety net, while others perceive it as a wasteful canard that prevents the market from finding equilibrium. Industry experts hold divergent opinions on whether there are too many airports for the airlines to economically sustain. Finally, industry insiders question whether dominant airlines have grown too powerful and whether airport consolidation is a public policy matter that deserves closer Congressional, consumer and stakeholder scrutiny.

There is an obvious disconnect between industry professionals who are aware of the looming threat to nonhub airports and the lack of public awareness. Individuals outside of the industry are likely to be oblivious to the threats posed upon the smallest airports. While this article cites numerous sources that substantiate the imminent hazards facing nonhub airports, the media articles about the industry typically reference singular issues and fail to indicate how the effects will be inflicted upon airports with distinct characteristics. To minimize public blowback, airlines exercise proprietary discretion and rarely discuss their plans for service reductions prior to their being announced. Similarly, airport managers avoid doomsday prophesies of a suspected loss of airline service because of the resulting fallout from critical stakeholders and passengers. Rather, airport managers maintain job security by publicly positioning themselves as problem solvers and clinging to ubiquitous plans to increase passenger enplanements and air service. While it is an existential impossibility to prove what does not exist, there is no physical evidence that consumers know that their airport’s commercial service is in danger. There is no evidence of citizens mobilizing opposition through petitions, protests, public
hearings, news reports or letter writing campaigns. In absence of public recognition of these threats, the abandonment of nonhub airports will be gradual and virtually invisible to those unfamiliar with the communities.

Air service actors are all playing their parts. Each of the agents are pursuing their individual interests and we see the results of their collective actions in the marketplace. Airports want more passengers to segue into more airlines, flights and better aircraft. Consumers want inexpensive, reliable and accessible air transportation options to destinations of their choice. Regulatory agencies seek to administer rules, manage programs, interpret data, position for budget funding and maintain an awareness of the shifting winds of the Administration and Congress. Community stakeholders want the airport to meet their specific air transportation needs and expand as a source of economic benefits for the region. Airlines strive for profit, growth and, whenever possible, to make the market more predictable. In addition, each airline entertains a lengthy line of domestic and international communities requesting new air service. The inescapable reality is that airline companies have finite resources and are unable to satisfy this deluge of competing goals.

Having achieved its primary objectives of driving down prices and tripling the number of annual air travelers, the 40-year-old deregulated marketplace has matured and followed a circuitous path back to original concerns about contestability and the uncertain fate of the nation’s smallest airports. With no court of intervention or appeal, an inestimable number of at-risk airports face an ignominious ending resulting from the caustic market conditions described in this study that ultimately lead to airport consolidation. Though its social and economic costs have not been publicly discussed or
explored, the next phase of deregulation and their unintended consequences are underway.

6. Topics for future study

As upgauging and capacity discipline practices continue to permeate the air service industry, it will be instructive to monitor two developments discussed in this study. Extant research has identified critical signals that may indicate when airports are at risk of losing scheduled air service. This study identifies 33 airports that meet the four criteria. Furthermore, these at-risk airports are ranked by their proximity to large and medium airports, the number of competitors within two hours, and their passenger bases. A subsequent review of the 33 airports and the criteria used to identify the at-risk airports accomplish several objectives: to determine the number of airports losing service during the study period, identify the attributes most culpable for the airports losing air service, and whether airports would be added or deleted from the at-risk list after evaluating them with updated market data. This analysis will demonstrate whether the identified risk factors are reliable indictors or whether such market decisions are made by airline companies with more subjective or alternate criteria.

Secondly, as an integrated or as an independent study, it would be useful to measure the distribution approaches of low-cost carriers and network carriers (and their regional surrogates) in terms of employing airports of various sizes in their networks. This analysis will establish the occurrence of major airlines and other network carriers shifting resources away from nonhub and small airports as indicated in the literature. The intent of this study would be to ascertain whether upgauging and capacity discipline practices are having observable effects on hub-and-spoke patterns, specifically as they
pertain to the smallest commercial service airports. This approach will provide additional objective data and enhance understanding of what impact changing market conditions are having on the viability of the smallest airports and their changing role in the national air service network.

**Thesis discussion**

As detailed in Article 3 (1.A. Airport services dictate a region’s development destiny), passenger airports position regional economies to compete for a premium tier of jobs and investment that require air transportation. Conversely, the loss of commercial service has dire consequences in terms of business contraction and the community’s elimination from consideration for future development opportunities. Airline deregulation substantially expanded the annual flow of travelers and the network of airports required to transport them. As the marketplace matured, the industry and consumers aligned their interests into a cohesive behavior that is detrimental to nonhub airports. The three articles in this thesis present four methodologies that provide divergent forms of evidence and reveal that airport consolidation is the emerging phase of airline deregulation.

**Research objectives:** The research questions guiding the development of the three articles triangulate methods that cross verify and facilitate the validation of the finding to the phenomenon examined by this thesis. The mixed methods used in the articles address different aspects of the overarching study question: what is the viability of nonhub airports in the current air service industry? The initial article seeks to quantify the post-deregulation performance of airports of various size in determining the pattern of consumers selecting airports for their originating flights. With the knowledge that nonhub airports are growing at a fraction of the rate of their larger counterparts, Article 2 explores
the rationale that prompts travelers to switch from their hometown (preferred, in most instances) airport to an alternate airport. The article also explores the identifiable patterns that emerge from analyses of consumer preference data.

Building on the foundation of passenger migration data from Article 1 and consumer switching behavior from Article 2, it can be confidently asserted that nonhub airports face a significant disparity in passenger growth and the ability to retain travelers in their catchment area. Article 3 seeks to explain the discrepancy by addressing the specific hazards facing nonhub airports and predictive factors indicating that an airport is in danger of losing commercial air service. The article also explores theoretical models of dominant firms and the range of relationships of government agencies in their dealings with private sectors interests. Exploring these issues is designed to provide a contextual basis for the competitive environment in which nonhub airports are currently operating.

Methods are developed to pursue the research questions for each article in the study. In Article 1, the longitudinal, comparative analysis of airports used mathematic means to standardize the data for airports representing the four FAA classifications and to measure growth rates of individual airports and airport groups, as well as generating market share shifts between groups indicating passenger migration. The comparative growth rates provide an objective basis for reporting the post-deregulation performance of nonhub, small hub, medium hub and large hub airports. The market share analysis demonstrates a smaller share of passengers migrating to nonhub airports at the end of the 36-year study period. The semi-structured qualitative interviews of passengers led to the creation of a conceptual framework of traveler profiles to differentiate the purchasing priorities of air transportation consumers. Methods designed for Article 2 provide specific switching preferences that work against nonhub airports and result in the creation
of profiles that can be used to analyze the markets of individual airports. Two complimentary methods are developed to address the research aims of Article 3. Qualitative semi-structured interviews of established industry professionals provide confirmation for the converging conditions and factors that are threatening the viability of an indeterminable number of nonhub airports. Similarly, the comparative analysis of at-risk factors identifies a group of airports that face the greatest threat of losing airline service. Additional secondary data allows the airports to be ranked according to their relative exposure to risk factors. The questions and methods designed for this study provide internal validity to results indicating that market forces are undermining the viability of nonhub airports.

**Contributions and implications:** A summary of the findings and contributions of the individual research articles creates a context for the implications stemming from the study in its entirety. The nature of the inquiry designed for this thesis may be most relevant to airport practitioners and a constituency of interests that rely on the continued operation of their regional airport. Knowledge created from this study may benefit these audiences through more highly informed future actions. Airport professionals can operationalize findings to gain efficiencies in marketing to the various motivations of the traveler profiles. Airport proponents include customers, economic developers, community leaders, media, local governments and elected officials that benefit from this regional asset or represent members of the public that support the airport. Study findings may enable airport proponents to revise their current assumptions or review their own situation. As the full range of findings is captured in each article, this summary will focus on the contributions that can lead to actionable knowledge. Findings from the topics that
differentiate the articles have been condensed into three themes on passenger migration, airport switching, and converging conditions that threaten the viability of nonhub airports.

**Passenger migration:** An extensive period of familiarization with the literature revealed the existence of a gap that held potential for other areas of discovery. Assembling a matrix of passenger enplanement data for almost 700 airports for a period of 36 years was an arduous, time-consuming undertaking (*Article 1*: 3.2. Study findings). Isolating a group of primary nonhub airports with homogenous characteristics was essential for drawing accurate conclusions from the FAA classification that can be attained with a low threshold of only 10,000 annual passengers. The quantitative and comparative analysis for Article 1 concludes there is a 1.3 percent annual growth rate for nonhub airports for the period of deregulation, compared to growth rates of 3.2, 5 and 4.8 percent for the larger airport groups. This disparity demonstrates that the smallest airports are not sharing the same degree of success from the expanded market. In fact, the only airports to suffer a net loss of passengers during the study period are nonhub airports, as occurred with 67 of 184 of this sampled classification. In a comparison of market share of total passengers at the beginning and end of the study period, Article 1 concludes that large and medium airports absorbed almost 90 percent of the growth in passenger enplanements, while the more numerous nonhub airports attracted only 2.2 percent of the expanded market. Similarly, from the beginning to the end of the study period, the market share of large and medium airports grew from 79 percent to 85 percent during the study period, while nonhub airports shrank from 7 to 4 percent. Article 1 reports that more than one-third of nonhub airports, 113 of 333, are served by one airline and only two small airports are served by a single carrier. In addition, large airports average 8.3 carriers, while medium airports average 6.7 airlines, small airports average 4.2 and nonhub
airports average 2.2. By all measurements, nonhub airports are at a distinct competitive
disadvantage to their larger rivals. Article 1 is the first study to examine enplanement
totals for the entire post-deregulation period and demonstrates that nonhub airports are
experiencing an erratic existence relative to their larger competitors.

**Airport switching:** While there is a plethora of articles on airport switching, this
study focuses on unprompted, qualitative responses of travelers and their nested
preferences that lead to purchasing decision. Article 2 places emphasis on nonhub
airports, however, its findings are generally applicable to larger airport groups – basic
switching motives remain the same for all groups. The article introduces new vocabulary
to clarify traveler movement in the air service industry and graphic representations to
illustrate relationships of the actors. The study draws a distinction between *switching* and
*migration* in the context of air travelers and airport selection (*Article 2: II. Literature:
examining implications of consumer switching research: Distinguishing between
consumer switching and migration*). The concept of geographic *migration* dates back to
1885 and describes the reasons for the flow of migrants from one location to another.
*Migration* and *switching* are used synonymously in research articles about various
business sectors. This study proposes using the term *switching* when referring to
consumer-level decisions to select an alternative airport over their preferred airport and to
apply the term *migration* to the aggregate flow of travelers to network airports. Similarly,
this study’s qualitative research discerns a useful delineation between two basic consumer
switching motives (*Article 2: IV. Findings: Traveler profiles capture varying approaches
to airport selection, switching*). *Transactional switching* describes occasions when a
consumer chooses a substitute airport due to its features (e.g. price, aircraft, and
schedule). *Systemic switching* depicts a condition where a consumer dissolves their
preference for an airport and selects another airport as their primary, top of mind choice. Two relational diagrams appear in Article 2. Figure 1 depicts the fundamental financial, service and marketing relationships between US airports, airlines and air travelers. Figure 2 is a diagram of the conceptual framework of traveler purchasing profiles identified by qualitative research methods. The vocabulary proposals and diagrams in this study are developed to enhance understanding of consumer decision making in the air service industry with emphasis on nonhub airport markets.

The theory behind the traveler purchasing profiles and other findings in Article 2 are the products of extensive analyses of semi-structured interviews of air travelers from two nonhub airport markets. The process produces non-price reasons for consumer switching and rationale for the top-of-mind preference for an airport, usually due to the close and convenient advantages of the nearest primary commercial service airport. The presentation of online booking choices signals that price is a highly-rated factor, however, most travelers interviewed in this study assert that flying from their preferred airport, using their airline rewards program, and temporal aspects are even more important factors in purchasing a trip ticket. With airport switching as the study’s unit of analysis, four traveler profiles emerge from the primary stated preferences and their varied approaches to airport switching. Traders emphasize price and temporal aspects of the airline ticket. Gamers are typically heavy business travelers who seek to convert their obligations into personal rewards program benefits. Simplifiers are most likely to remain loyal to their preferred airport with its close and convenient advantages. Conversely, the Broken profile indicates a group of travelers who have endured unfavorable experiences, leading them to reject the offending airline and airport. This study explains why travelers select an originating airport and the primary reasons for systemic and transactional switching. The
qualitative methods used here generate new knowledge and theory to address the question of why travelers switch from small to large airports.

**Converging conditions:** A central theme of Article 1 and Article 2, the anemic growth of nonhub airports in the burgeoning post-regulation market and the numerous consumer advantages of larger airports provide a pessimistic backdrop for the viability of the smallest primary airports. Article 3 introduces literature on adverse conditions, expert interviews on the state of the industry, an analysis of at-risk airports, decision-making theory for dominant corporations, and communications models for regulatory agencies. These topics paint an integrated picture of the multi-faceted conditions leading to the instability facing small airports and forces leading to airport consolidation.

A convergence of adverse market conditions foreshadows a prolonged period of difficulty for the smallest airports (*Article 3: I. Introduction: Converging forces portend formidable hazards for nonhub airports*). The migration and switching findings, the pilot shortage and industry plans for upgauging aircraft have ominous implications that are disproportionately aimed at nonhub airports. Punctuated by the mega-mergers, the consolidation of airlines enhances the market power of the four surviving dominant airlines. Three of the four national carriers operate hub-and-spoke networks that include hundreds of very small airports across the nation. The industry’s capacity discipline plans, intended to reduce market uncertainty, have placed additional hardships on nonhub airports. The literature identifies other factors that are increasing the potential for airports losing airline service (*III. Methods development for qualitative and comparative analyses: At-risk airports*). Extant research findings form the basis of a rigorous comparative analysis that leads to the identification of a group of airports at the greatest risk of losing air service. A weighting of the study criteria ranks these 33 airports. Identifying at-risk
airports in this manner goes beyond the ordinary recitation of individual risk factors. This analysis provides a face to the communities whose economies may be affected by the future loss of air service. These methods and analyses provide a framework for reproducible findings that allow for the measurement of the predictive power of this research approach.

In-depth interviews with various professionals in the air service industry are beneficial to this study in explaining the underlying forces of evolving relationships and contributing perceptive insights of the phenomenon being examined (Article 3: III. Methods development for qualitative and comparative analyses: Expert interviews). The industry experts with daily exposure to the airlines acknowledge that market events are having an adverse effect on many small airports and that airport consolidation is currently taking place. Having survived airline consolidation, the dominant carriers are battling ultra-low-cost rivals, striving to improve profitability and attempting to expand their presence in foreign and urban markets. Large and medium airports feature ultra-low-cost and international carriers in addition to numerous price and scheduling advantages to entice travelers from the catchment areas of nonhub airports. Capacity discipline, pilot shortages and upgauging aircraft are market developments that conspire to undercut the smallest airports in numerous ways. These trends are disrupting operations and leaving fewer aircraft for nonhub airports.

**Implications:** Passenger airports are important economic assets to the communities they serve. As described in this study, the systemic elimination of an indeterminable number of nonhub airports will have unknown social costs and unintended consequences for their regional economies. The blending of qualitative and quantitative methods in this study has introduced new theory on traveler switching patterns (profiles)
and new knowledge about post-deregulation airport growth rates, converging market conditions and identification of airports at the greatest risk of losing airline service. Interviews with air service professionals confirm many assertions found in extent literature and provide candid insider assessments of the hazards facing nonhub airports – analyses that are essentially unavailable to the public. This thesis is a collection of information, theory and evidence that describe the attendant market threats and a compelling rationale that airport consolidation is underway.

For the interest groups cited at the beginning of this section, there are practical applications to the knowledge generated in this study. For the airport practitioner, the study provides an objective evaluation of growth characteristics that may confirm or amend their understanding of the post-deregulation pattern of passenger distribution. The conceptual framework of traveler profiles may be applied to individual airport markets to estimate the segment representation of traders, simplifiers, broken and gamers. Based on an assessment of the airport’s attributes and how its strengths match with preferences identified in the various types, a marketing approach could be devised to emphasize attributes to capture a greater share of an identified segment. Specifically, a single-carrier airport could make a marketing priority to encourage enrollment in the airline’s rewards program to their frequent fliers with suggestions on the most popular options for redeeming their miles as a method for building reliance on the carrier (gamer). The airport could research the pricing patterns of a particular destination that appeals to its trader segment, such as a billboard next to a rival airport that says, “Lynchburg flights to Charlotte 37% cheaper than Roanoke!” The airport may not have an overall pricing advantage but may have cheaper prices on particular popular routes that appeal to price-conscious traders. Perhaps, an airport research identifies that its on-time record is better.
than a rival airport. Conceivably, an airport could place this finding into an advertising channel to recapture a share of its broken travelers. There are infinite message and marketing channel possibilities that can be conceived to increase airport enplanements from information contained in the traveler profiles after an audit of its market makeup.

Airport practitioners could fall back on knowledge created in the converging conditions portion of the study to defend the airport after a negative notice from its carrier. For example, after an announcement of the airport discontinuing one of its routes, the airport manager could cite study reasons why this type of development is occurring to small airports across the country. An airport’s appearance on the study’s listing of at-risk airports could be used selectively to rally community support to increase enplanements in a “use it or lose it” campaign. If a rival appears on the at-risk list, an airport manager could petition for increases in it advertising budget within the catchment area of the at-risk airport or start a whisper campaign to erode confidence in the rival.

For the stakeholders, the study contains a variety of information that is conducive to creating more realistic expectations of the airport’s capabilities. Published findings on national growth patterns, the difference between systemic and situational switching, the primary motivations of travelers, the factors that endanger an airport’s commercial service, the candid comments of other airport managers or the converging conditions that are making it difficult for nonhub airports to operate – these portions all present knowledge that can reinforce, expand or alter the beliefs of open-minded stakeholders. Uninformed and unrealistic expectations by the public or stakeholders are an airport manager’s greatest enemy.

**Reflexivity:** Entering the domain of air service research is daunting with the existence of a depository of tens of thousands of articles seemingly covering every
conceivable aspect of the industry. Designing a triangulated inquiry process that addresses nonhub viability began with identified gaps in airport growth measurements, a qualitative nested approach to understanding small airport switching, and a compilation of market threats. This section provides personal reflections on influential literature selected for this thesis, research limitations, professional development constraints and opportunities, and commentary on how our study fits into existing research.

Two of the 400 nearly citations were especially significant in designing the research framework for this study. Extant literature is rife with airport studies using preconceived lists of attributes and quantitative methods to identify personal primary preferences in the selection of airports. Nested decision making departs from choice criteria as a method of defining the process involved in consumer selection of airports by recognizing that air travelers jointly and concurrently select an airport and an airline when purchasing a trip ticket. Research methods that approach airport and airline selection as separate processes errantly construe the complexity of the innumerable options confronting consumers. Each article in this thesis cites researchers that have developed the concept of airport choice in their studies (Ndoh et al., 1990; Pels et al., 2001; Suzuki et al., 2003). The advent of internet travel sites reflects the nested process in its approach to selling airline tickets by prompting consumers to begin their search process by designating their preferred originating airport and then presenting a range of airline, itinerary and price options. With consumer switching as the unit of analysis for Article 2, nested decision theory was instrumental in designing an interview script and analyzing response data that led to the creation of the conceptual framework of traveler profiles.

The second influential study describes decision-making process of large, complex corporations in setting goals and distributing resource. This classic study delivers a
theoretical outlook of dominant companies in recognizing its most urgent situations and assigning resources to mitigate them (Cyert and March, 1963). It states that dominant firms enlist the support of competitors and their industry in supporting and directing resources toward mutual goals involving market uncertainty. This cooperative approach explains a variety of developments that have taken place in the airline industry: mergers, bankruptcies, aircraft upgauging and plans to reduce seating inventory by increasing load factors. A prolonged period of bankruptcies and mergers has created an oligopolistic competitive environment with four dominant national carriers and a few dozen smaller rivals. The enhanced market power and recent initiatives of the three remaining legacy airlines have disproportionately created disruptions and service reductions to nonhub airports. The Cyert and March (1963) study supplies the motivation behind changes that are redefining the market and threatening the viability of the smallest airports. Combined, the two studies provide solid rationale for two of the underlying phenomena of our research – the behavior of the dominant airlines and a foundational aspect of airport switching theory.

**Limitations:*** The limitations that provide the framework for my thesis are largely unrelated. First, is the absence of an objective standard to compare the performance of airports and classifications of airports. This gap prevents a meaningful assessment of airport growth and an informed interpretation of passenger migration in the deregulated marketplace. The longitudinal comparative analysis of 306 airports during a 36-year period and the formulation of criteria for their evaluation was the focal point for my research. Second, the scarcity of resources is a primary determinant in the development of the airline industry. Airlines are limited by their fleet of aircraft, finances, network of routes and competition. Airports universally desire more airlines, more flights, better
aircraft, more destinations, more direct flights and lower prices. Airports are beholden to the airlines to provide these assets and it is impossible to satisfy the aggregate wants of the nation’s network of commercial service airports. As such, deregulation grants airlines the authority to apportion their limited resources to serve their own goals of profit, growth, reputation and market predictability. Dominant airlines that operate hub-and-spoke networks no longer have a level of competition that drives them to prioritize market share above profit or to maintain their investments in marginal markets.

Third, there is a palpable void of information about the inner workings of the nation’s most successful airlines. In particular, the dominant airlines are disinclined to share proprietary information about their prices, plans, network decisions, operations or the research and development knowledge that allows them to maintain an advantage in the marketplace. This guarded demeanor by the airlines creates a void of information for airports, communities, media and other airport stakeholders. In the context of this study, airport managers are reticent in speculating about negative developments at their airport or adverse trends in the industry. This suppression of knowledge by airlines and airports leads to superficial reporting by the media and fosters unrealistic expectations by airport stakeholders.

**Professional development:** I have concluded that there is never a perfect time to make the commitment of time and money required by the participation in a doctoral program. It is part of the human condition that we face multiple options of where to spend our money or how to spend our time. My involvement in the DBA program began while employed at the Lynchburg Chamber. The transition from my job, my career, my community, my friends, my home, my church and the security that results from 15 years in one location. The stress of moving to Greenville in 2014 affected my health but
allowed me to spend much more time with my young children. Dedicated to completing my thesis, I chose not to find another job in this interim period. This decision has created financial challenges but has simplified the demands on my time and allows me to nurture my relationship with my children and cater to the start-and-stop nature of pursuing this degree.

While I was one of the oldest students in my cohort, I consider my age to be a neutral determinant. A long career in management, advocacy and business development was invaluable to my involvement in the program. However, time has made me more rigid in my preferences and I had to accept that I could not delegate the unpleasant aspects of my course work and research. As I write this, I have begun my seventh year in AMBS. Earning my doctorate has been at the top of my list of aspirations for many years. Regardless of what happens tomorrow, I am content with my decision to enter the program and the immense work, stress, motivation and perseverance required to complete my thesis.

My career path carried me from journalism, to politics and, finally, to a 30-year career in managing business associations. The research abilities that I have acquired through Manchester’s DBA program represent the culmination of developing my skills in communications, business management and civic affairs. I may teach at the university level but I may not. Regardless, I feel fortunate for my involvement in a doctoral program as prestigious as the University of Manchester’s. The professors and students have been a tremendous source of enlightenment about matters of curriculum and knowledge. These invaluable interactions with professionals from other countries have enhanced my appreciation and understanding for the views of colleagues from other countries. Many classes, breaks, dinners and late nights with my band of international classmates were
refreshing, surprising, entertaining, instructive and irreplaceable. I feel that I have gained a more complete global perspective at Manchester and am comforted in knowing that I have a network of friends and acquaintances in countries around the world.

**Contextualizing:** A metaphor attributed to Bernard of Chartres suggests that we may see further by standing on the shoulders of giants. It is my ardent hope that my contribution provides valuable assistance to future researchers and that it adds to the body of knowledge built through generations of thought and struggle. My study concentrates on the smallest classification of primary commercial service airports and uses mixed methods to provide an ample source of evidence about the next phase of airline deregulation and the viability of nonhub airports. In particular, this study has created valuable knowledge: post-deregulation growth measurements of airports and classifications, new vocabulary to enhance understanding of airport switching (e.g. passenger migration, systemic switching and transactional switching), the conceptual framework of traveler profiles and preferences, an explanatory model of at-risk airports, a comprehensive compilation of converging conditions facing nonhub airports, and the candid assessments of air service professionals predicting that airport consolidation is underway. This knowledge is original or an extension of findings generated by other researchers. While volumes have been written about the nation’s largest airports, there is a dearth of information about the smallest primary airports. Due to the assortment of research questions and use of mixed methods, this study produces a wide range of new and relevant information about this overlooked group of airports that strength the regional economies of about 200 US cities.

The previous section considers operationalizing the findings of this study and the section that follows addresses future research on this topic. After completing the three
articles, I hope the study’s findings are used in the public arena to initiate open discussion about the perilous future of an indeterminate number of nonhub airports, economic assets that are vital to their region’s ability to maintain and recruit high-paying jobs and investments. While deregulation gives the airline industry the authority to pursue its own operational objectives, there should be public discussion on the implications of the elimination of commercial air service from 20 airports, or 50 airports, or 100 airports. Airport consolidation has a range of economic, social, infrastructure and cultural implications that should be examined before the process is irreversible. Perhaps, elevating the perilous situation facing nonhub airports to a plane of public discussion is the first and most difficult step in addressing a matter that involves tens of millions of travelers and citizens of potentially impacted communities.

**Future research:** The articles constituting this thesis present various forms of evidence about the viability of the nation’s nonhub airports. Designed to be replicable, three of the research methods lend themselves to follow-up studies based on updates of the data from secondary sources. An update of the longitudinal, comparative analysis of airports developed in Article 1 would reveal the relative growth rates of the various classifications and, therefore, the subsequent migration of passengers following further implementation of the dominant airlines’ capacity discipline plans. Similarly, an update of the data used in identifying the 33 airports at greatest risk of losing airline service (Article 3: Table 1) would extend the explanatory timeframe of this study. Five or ten years from now, the criteria can be evaluated on the basis of how many of the airports actually lost commercial service with additional analysis of which factors have the greatest predictive power and whether there are more reliable variables for identifying at-risk airports.
A case study that applies the conceptual framework of traveler purchasing profiles (Article 2: Table 2) to one or more actual airport markets will allow for the operationalization of the theory. A single airport study could be structured to enable the identification of the each of the four traveler profiles in its catchment area and contrasted with the market share of passengers actually utilizing the airport. Various marketing concepts could be developed to target profiles that are the most conducive to patronizing the airport and a study conducted to determine the effectiveness of advertising in increasing enplanements. A multi-airport study of the representation of traveler profiles could be structured to study the implications of contrasting market mixes of the four types. Finally, the methods used in creating the theoretic framework of traveler profiles may be applied to other business sectors in determining whether the approach could successfully create efficiencies in identifying customer motivations and designing marketing messages that expand the firm’s market share.
Appendix 1: EAS airports meeting three at-risk factors

<table>
<thead>
<tr>
<th>Essential Air Service Airports</th>
<th>Competing Airports</th>
<th>Total Competitor Airlines</th>
<th>2015 Enplanements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hattiesburg-Laurel Regional Airport, Moselle, MS</td>
<td>1M, 1S, 2N</td>
<td>16</td>
<td>12,947</td>
</tr>
<tr>
<td>Sioux Gateway Airport, Sioux City, IA</td>
<td>1M, 1S</td>
<td>10</td>
<td>26,096</td>
</tr>
<tr>
<td>Lebanon Municipal Airport, West Lebanon, NH</td>
<td>2S</td>
<td>9</td>
<td>10,140</td>
</tr>
<tr>
<td>Bert Mooney Airport, Butte, MT</td>
<td>1S, 2N</td>
<td>13</td>
<td>27,448</td>
</tr>
<tr>
<td>Muskegon County Airport, Norton Shores, MI</td>
<td>1S, 2N</td>
<td>11</td>
<td>17,087</td>
</tr>
<tr>
<td>Waterloo Regional Airport, Waterloo, IA</td>
<td>1S, 2N</td>
<td>8</td>
<td>26,950</td>
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<tr>
<td>Joplin Regional Airport, Webb City, MO</td>
<td>1S, 1N</td>
<td>8</td>
<td>28,302</td>
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<td>Watertown International Airport, Watertown, NY</td>
<td>1S</td>
<td>5</td>
<td>18,650</td>
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<tr>
<td>Ford Airport, Kingsford, MI</td>
<td>4N</td>
<td>7</td>
<td>12,672</td>
</tr>
<tr>
<td>Rhinelander-Oneida County Airport, Rhinelander, WI</td>
<td>2N</td>
<td>4</td>
<td>20,673</td>
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<tr>
<td>Williamson County Regional Airport, Marion, IL</td>
<td>2N</td>
<td>3</td>
<td>10,570</td>
</tr>
<tr>
<td>Delta County Airport, Escanaba, MI</td>
<td>2N</td>
<td>3</td>
<td>16,665</td>
</tr>
<tr>
<td>Falls International Airport. International Falls, MN</td>
<td>2N</td>
<td>2</td>
<td>14,706</td>
</tr>
<tr>
<td>Bemidji Regional Airport, Bemidji, MN</td>
<td>2N</td>
<td>2</td>
<td>24,765</td>
</tr>
<tr>
<td>Pellston Regional Airport, Pellston, MI</td>
<td>2N</td>
<td>2</td>
<td>25,195</td>
</tr>
<tr>
<td>Cedar City Regional Airport, Cedar City, UT</td>
<td>1N</td>
<td>2</td>
<td>14,334</td>
</tr>
<tr>
<td>Alpena County Regional Airport, Alpena, MI</td>
<td>1N</td>
<td>1</td>
<td>10,409</td>
</tr>
<tr>
<td>Chippewa Valley Regional Airport, Eau Claire, WI</td>
<td>1N</td>
<td>1</td>
<td>19,332</td>
</tr>
<tr>
<td>Barkley Regional Airport, West Paducah, KY</td>
<td>1N</td>
<td>1</td>
<td>21,027</td>
</tr>
</tbody>
</table>
Appendix 2: Primary, secondary reasons for traveler ticket purchases

Interview respondents were asked to identify the most important factor in purchasing trip tickets. Both primary and secondary reasons were gathered from each participant’s answers and added to a master list. Similar responses were lumped together. The resulting 49 reasons were assigned to 11 groups and divided into four categories. The reasons, groups and categories are listed below.

I. **Airport attributes**: features or perceived advantages of the originating airport
   a. Close or proximity
      1. Time from door to airport
      2. Close to home or work
      3. Close to originating city
   b. Convenience (time savings or stress reduction)
      1. Parking
      2. Check-in (counter or kiosk for tickets and checked luggage)
      3. Security
      4. Transit connectivity (taxis, train, buses, car rental, Uber)
      5. Layout accessibility (gates, baggage claim, compactness)
   c. Lower airport access costs
      1. Airport parking cost and alternatives (hotel, acquaintance, satellites)
      2. Mileage and other automobile costs to airport
      3. Cost of other transit options to airport
   d. Airport amenities (commercial options, waiting for flight and baggage)
      1. Restaurants and bars
      2. Shops
      3. Airline lounge
      4. Technology (Wi-Fi, charging stations, computer counters)
   e. Traveler perceptions of airport (safety, reliability)
      1. Impressions of airport
      2. Combined impressions of airlines at airport
   f. Originating city offerings
      1. Hotels, shopping and dining
      2. Events, sites, recreation and cultural offerings
      3. Family and friends connections
   g. Airline dynamics (if more than one airline at the originating airport)
      1. Number of carriers
      2. Offers preferred carrier
      3. City pair connections from all carriers
      4. Aircraft equipment options
II. **Ticket price**
   1. Lowest or low price
   2. Multiple tickets (family or traveling party)
   3. Within budget range

III. **Itinerary attributes**: schedule factors, features of selected airline
   a. Itinerary features
      1. Flight times
      2. Flight frequency
      3. Direct flights
      4. Minimum layovers
      5. Layover cities
      6. Layover duration
      7. Flight duration
   b. Equipment and seating
      1. Turboprop aversion (noise, air conditioning, fear)
      2. Large aircraft or preferred aircraft type
      3. Seating comfort and flight amenities
      4. Preferred manufacturer

IV. **Airline preference and loyalty programs**
   a. Frequent flier or credit card reward programs (co-branded or multiple airlines)
      1. Free or discounted travel
      2. Free checked bags
      3. Priority boarding, overhead storage access
      4. Airport lounge access
      5. Seating upgrades
      6. Priority bookings
      7. Food or merchandise
      8. Dining and hotel purchases
   b. Airline reputation
      1. On time
      2. Safety
      3. Customer service

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**Endnotes**

1 Roughly one third of airports are controlled by cities, one-third by airport authorities and the balance by counties, port authorities, states and a fraction by special arrangements and private ownership (Wyman, 2013).

2 It is estimated that 30 percent of enplanements are derived from passengers who visit family and friends, 30 percent from vacations and 40 percent from business purposes (Appold and Kasarda, 2013).
Without airline traffic and revenue, an airport would likely be forced to transition its existing assets into a general aviation operation to meet the needs of local aircraft and corporate business jets.

Two researchers add a cautionary note when assessing an airport’s economic contributions and confusing issues of causality. There is speculation on whether airports are responsible for economic gains to a region or if it is more likely that dynamic local growth results in a greater demand for air travel that creates larger airports (Sheard, 2014). Similarly posed, are airports responsible for a community’s gains in productivity or do industrious areas invest more of its resources in airports (Button et al., 2010). This causality loop resists a satisfying answer and benefits from the anecdotal experiences of practitioners for additional insights.

The growth sectors include manufacturing, distribution, life science and bioscience, research and development and data centers.

Labor-intensive operations prioritize investments in workforce training, particularly in the growth sectors of financial services, business services, healthcare, information, insurance, and outsourcing.

Deloitte Consulting helped the National Business Incubation Association select Orlando to relocate its headquarters (from its birthplace of Athens, Ohio) and new global training center for its 2,200 worldwide members. A group of 38 candidate cities met the initial accessibility thresholds based on passenger volumes of airports within 30 miles. Accessible and affordable national and international transportation was then given a weight of 20 percent among six index factors that determined the winning site. The travel analysis considered the location of the association’s members and determined the round-trip airfare costs to and from the airports of the finalist cities. Orlando International Airport earned top scores for accessibility and convenience, and was a major factor in Orlando’s selection. Similarly, air transportation was a primary factor when Deloitte Consulting relocated its US Delivery Center to Lake Mary, FL, just 35 miles from Orlando International Airport. Closing its locations in Tulsa, OK and Hattiesburg, MS, the company estimated that it will create 1,000 jobs and invest $24.6 million at its new location (Bruns, 2014).

McDonald’s moving its headquarters from Oak Brook (population of 8,041) across town to Chicago is symptomatic of businesses relocating from fading suburbs to booming metropolises. Ned Hill, professor of public affairs and city and regional planning at the John Glenn College of Public Affairs at Ohio State University, has spent four decades writing and speaking on Midwestern economic growth. Hill says public policy and finance has created a fiscal crisis for many states in the region and that poor pension management and corruption in Illinois has resulted in political gridlock and tax increases. However, based on the magnitude of services offered by O’Hare International Airport, Hill says the Chicago region is the only part of the state that can justify state economic grants. Similarly, he predicts that investment growth into logistics, export services and mass customization manufacturing will migrate to areas in close proximity to quality air service. As a hub airport for American and United airlines, Hill indicates that O’Hare gives Chicago an enormous competitive advantage and that the role of hub airports is growing in importance (Starner, 2016).

State economic development officials credit Manchester-Boston Regional Airport, New Hampshire’s largest airport, for its essential contributions to the state’s economy, business recruitment and tourism development. After the airport’s enplanements peaked in 2005 and began a steady decline, the state Department of Transportation began subsidizing an east-west commuter route with 20 round trips a day. State officials were quick to react because of the airport’s recent influence in relocating a software company and defense contractor from Massachusetts to New Hampshire. Manchester’s mayor posits that these business recruitments will prompt airlines to add flights and destinations to the airport (Mowry, 2014).
In media interviews, American Airlines CEO Doug Parker asserted that airline consolidation, upgauging and capacity discipline actions have fundamentally and structurally transformed the industry. He suggests that the strategies have enabled the industry to abandon continuous boom and bust cycles. Parker told investors that economic cycles will continue but less severe and more manageable. He challenged investors to think long-term and assured them that the airlines are no longer cutting costs to earn a profit.

Cyert and March (1963) perceive the dilemma implicit in dominant competitors acting cooperatively to solve common problems. With each airline asserting that it is acting independently and in its own individual interests, normal cooperation may not seem to meet the legal definition of a collusive agreement. Consumer attorneys may, however, perceive such incidents differently and begin an exploration of antitrust patterns of behavior. The essence of oligopoly theory anticipates that competitors will be collecting information, generating expectations and planning strategies regarding other dominant players in the industry. While complete collusion between the firms of an oligopoly would afford the greatest amount of information sharing, the approach would expose participants to the highest risk of antitrust prosecution. Regardless of whether they may attract legal scrutiny, industry channels and normal business practices are defendable methods for collecting information. The authors list leasing common computer systems, salesmen sharing information, customers collecting product information from common vendors, public speeches, news articles quoting company representatives, industry association newsletters and events, and widely shared best practices are common to many industries.

Regardless of its cohesiveness in outlook, a coalition’s members fluctuate by region, function and temporal circumstances.

For example, business coalition members may include executives, employees, customers, unions, shareholders and vendors, while government coalition members may consist of elected officials, administrators, legislators, staff, judges and clients. Nonprofit coalition members may be made up of paid staff, volunteers, donors and agencies.

The authors admit that it is difficult to develop theory that predicts organizational decision making due to the asymmetrical influence of coalition members and the reality that internal conflicts are never fully resolved. Organizations push through this uncertainty by structuring negotiation processes for identifying objectives, methods for operationalizing objectives and processes for making timely adjustments to changes in the competitive environment. Termed as side-payment bargaining, conflicts are addressed through a continuous bargaining process for money, authority, policy commitments and other items of perceived value.

Large, complex organizations are also found among professional associations, labor unions, and government agencies. While all organization types are familiar with budgets as a measurable and recurring device for resource allocation, nonbusiness organizations possess fundamental dissimilarities in folklore, traditions, standard operating procedures, learning behavior, and the nature of their interactions with external control groups that result in critical differences in the processes developed to make decisions. Concepts such as price, profit, sales, cost, inventory and production are metrics that are intrinsically unique to business organizations. The success of business organizations is largely dependent on their ability to gather information and make accurate predictions of the behavior of customers, rivals, unions, government agencies, vendors and a myriad of additional multifaceted decision-making entities. The authors confess that their predictive models are limited by the proprietary protectiveness and general refusal of business organizations to provide detailed information of their internal operations.

Representing about 40 percent of total operating costs, lower fuel prices saved the airlines tens of billions of dollars in 2015 alone, improving their balance sheets and their ability to expand into the most profitable domestic and international routes (Standard, 2015).
As more consumers prioritize air travel as an essential expenditure, demand becomes more inelastic and solidifies the annual average growth rate of about 5 percent (Boeing, 2015).

Carriers which transport about 22 percent of air travelers and conduct half of all domestic flights, have been profitable since 2009. Regional airlines are either independent or owned by a network airline (Dillingham, 2014b).

Low-cost carriers, which operate about 30 percent of short-haul flights, continue to operate profitably and expand their point-to-point routes. Paced by Spirit Airlines and Frontier Airlines as the most rapidly growing carriers in the US, ultra-low-cost carriers are penetrating the domestic market with double-digit growth.

The air cargo segment also restored traffic levels and its prior commercial growth trajectory (Boeing, 2015).

The practice is largely credited with five years of uninterrupted profitability and industrywide load factors exceeding 80 percent, 15 percent higher than the decade before (Boeing, 2015).

The US Department of Transportation does not maintain official records of mergers and acquisitions activity. This data is extracted from a table compiled by Airlines for America. The figure is derived from completed mergers between the enactment of deregulation and 2017. As it cannot be verified by a government source, the data is unofficial and is from the only known source of information available to the public.

The merger of eight major airlines into four dominant airlines explains why airlines flew 11,475 fewer flights than the previous year, a 7 percent reduction in domestic flights.

For example, United dropped 20 cities from its Dallas hub when it merged with Continental, representing 20 airports that no longer offer service to Dallas and its connecting cities.

From 2007 to 2011, airlines reduced service to the largest 29 airports by 9 percent and to smaller airports by 21 percent. During the same period, 24 of the smallest airports lost all service from network carriers.

Fee and lease moratoriums, marketing support and revenue guarantees are popular enticement approaches.

Faced with the loss of hundreds of thousands of passengers to a nearby hub airport, Huntsville-Madison County Airport secured a $1 million federal grant and matched it with $1.5 million in local funds to recruit a low-cost carrier to add service to Baltimore and Orlando. The incentive package waived the airline’s landing fees and airport rent, provided marketing assistance and guaranteed revenue if the new service did not produce sufficient passengers.

Horizon agreed to pay increases for its pilots in May, 2017 but the deal ended in a lawsuit by the union. Horizon provides service to 39 communities in the US, Canada and Mexico.

The Air Transport Pilot Certification, the highest level of aircraft pilot certificate, is required for airline captains and first officers. Most individuals earn commercial pilot certificates by graduating from pilot schools at universities, colleges, vocational schools or the military. They must then accrue flight time and complete additional testing to earn an ATP certificate. The new FAA rule increases the ATP requirement for flying time from 250 hours to 1,500 hours for first officers (also known as co-pilots) and requires additional training and testing to earn an aircraft rating for the airplanes they fly. The new rule also
mandates that first officers accrue 1,000 hours as co-pilots before they are allowed to serve as airline captains (Dorr, 2013).

xxx Opponents of the rule, particularly the new 1,500-hour standard, contend that grief-stricken families of the accident victims and airline labor unions rallied support from powerful politicians, who coerced the FAA to adopt the 1500-hour minimum and abdicated the opportunity to focus on more expansive reform measures (Creedy, 2016).

xxxi Safety advocates point out that both Colgan Air pilots exceeded the new training minimum and condemn the FAA rule as arbitrary, futile and counterproductive. The FAA and the National Transportation Safety Board admit that the training minimum in isolation is a poor predictor for improving safety. Industry analysts contend that the specifics of the rule were prescribed by pilot unions hoping to shift air service away from regional airlines because of their lower pay structure (Creedy, 2016).

xxxii In 2001, retired military pilots represented about 70 percent of the pilots hired by airline companies. Currently, about 30 percent of pilot hires are former military.

xxxi Similarly, the pool of prospective students seeking pilot education has been shrinking since 2001. Reasons given for the reduced appeal among young job seekers include: the rising cost of training, difficulty in obtaining financial assistance and an increasingly adverse outlook for pay, stability and working conditions.

xxxv In 2015, Seaport Airlines indicated that the pilot shortage was responsible for its decision to discontinue service to the communities of Tupelo, MS and Muscle Shoals, AL (Silk, 2016). Silver Airways and Great Lakes Airlines cited the lack of available pilots for their decisions to end air service at 11 small airports.

xxxv There are abundant studies that support the phenomenon of small airports losing market share to larger airports. Consumers switch from their closest airport to acceptable alternative airports for a variety of reasons: direct flights (Johnson et al., 2014), frequency of flights, perceived quality of service, avoidance of turboprops, itinerary choices (Parrella, 2013), airlines exercising airport dominance and appealing to frequent fliers through rewards programs (Borenstein, 1996), discount airlines and full service carriers pursuing cost leadership and offering lower airfare (Lovelock, 1996), larger aircraft that generate lower airfare (Bitzan and Chi, 2006), most desired flight times, and the availability of cheaper seating to attract leisure travelers (Botimar, 1996). Internet travel sites make it easy for travelers to compare prices, flight choices and other prescribed options for their hometown airport and alternatives. Larger airports typically have more competition, cheaper airfare, more direct routes, bigger aircraft, and a greater selection of flight and itinerary options.

xxxv During the study period, the market share of nonhub airports fell from 7.45 to 4.29 percent of total US passenger boardings, while large airports grew from 59.45 to 63.2 percent of total passenger enplanements.

xxxvii While airports with a net loss of passengers represented 21.9 percent of all airports, they were 79.8 percent of all nonhub airports in the study sample.

xxxviii The greater probability of passenger losses and variation from industry growth patterns also support the incidence of higher switching at nonhub airports (Hammond and Czaban, 2016a).

xxxv While the average airport features 3.2 airlines, an average nonhub airport is served by only 1.8 carriers.
Typically, the program maintains a link between these small markets and the national air service network by providing two round trips a day to a medium or large hub airport.

Currently, EAS participants must operate within subsidy guidelines of $200 to $1,000 per passenger.

Historically, eligibility requirements have not applied to airport communities in Alaska and Hawaii due to their unique geographic circumstances.

EAS communities within 40 miles of a small hub airport must negotiate a cost-sharing arrangement with the DOT.

Proposed proximity criteria to major hub airports eliminated many communities from subsidy eligibility. In 2000, communities within the continental US lost funding eligibility if they were within 70 miles of a medium or large hub airport, while accommodations were made for communities that were more than 210 miles from a medium or large hub airport. In 2011, the DOT could no longer provide support to communities with average subsidies exceeding $1,000 per enplanement and allowed airlines to use aircraft with fewer than 15 seats. As of 2012, communities that lose unsubsidized service are no longer eligible for EAS, now or in the future (Tang, 2015).

EAS subsidies have increased by more than 500 percent since 1997. Each of the 115 EAS subsidized airports in the continental US received funding between $434,411 and $4,710,683 in 2015 and per passenger subsidies between $10 and $977. The DOT estimates that less than 300 of the eligible communities ever received funding during the life of the program.

During the program’s existence, average annual grant amounts for airports have varied from $340,000 to $567,000.

Though the DOT list includes 3,661 rural airports, only 719 have IATA identifier codes, and the majority of those do not provide commercial service.

Its mission statement: “Federal antitrust laws apply to virtually all industries and to every level of business, including manufacturing, transportation, distribution, and marketing. They prohibit a variety of practices that restrain trade, such as price-fixing conspiracies, corporate mergers likely to reduce the competitive vigor of particular markets, and predatory acts designed to achieve or maintain monopoly power (DOJ, 2017c).”

In response to falling stock prices in 2015, airline executives from the major airlines publicly announced similar strategies of protecting profit margins by controlling growth. By carefully reducing supply, the airlines can reduce costs, raise their average revenue per passenger mile and increase their profit margins (Dillingham, 2014a). Senator Richard Blumenthal objected to these slow growth declarations, contending that the airlines are abusing their market power by cutting services and raising fares. Prompted by Sen. Blumenthal’s written complaint, the antitrust division of the Department of Justice opened an investigation on whether the four major airlines are colluding on pricing by coordinating limits on seating capacity (Nicas et al., 2015).

Consumer groups promptly responded in kind with class-action lawsuits in two federal courts, claiming that the carriers are signaling each other on limitations to seats and flights in order to keep airfares artificially high. Within three months of the DOJ’s announcement, consumer lawsuits against the airlines grew to 75 (Maxon, 2015) and to 130 within seven months (Morin, 2016). The US Travel Association suggests that the federal inquiry is injurious to the industry and merely symptomatic of the heightened awareness of regulators in response to the market power acquired by the major airlines through the mergers and their control of 85 percent of domestic routes (Maxon, 2015).
“The Department of Justice Antitrust Division is responsible for enforcing the federal antitrust laws, and we have the authority to review mergers to determine if they may lessen competition. In that context, you will not be surprised that DOJ does not have a merger policy that is specific to the airline business, or any other particular industry for that matter (McDonald, 2005).”

At the time, United was the nation’s second largest airline and US Airways was the sixth largest, serving many of the same routes. The DOJ stated that the merged airline would have a monopoly or duopoly on more than 30 nonstop routes, many of which were on densely traveled routes between major East Coast cities. The DOJ contended that the proposed acquisition would violate antitrust laws and cited several hub airports and city pairs that would be dominated in the new arrangement. After extensive analyses by agency economists and lawyers, McDonald stated that DOJ models predicted that the merger would enhance the market power of the airline to raise prices without losing sales and that passengers in these affected markets could not turn to competitors for alternative service.

The settlement required American and US Airways to give up slots, gates and ground facilities at five large airports to low-cost rivals to provide consumers with additional choices to fly at more competitive airfares. The assets were divested to low-cost airlines that primarily fly to large and medium airports, and currently none of the gates are designated for flights to nonhub markets (DOJ, 2014). Initially, the DOJ opposed the proposed merger on the grounds that it would reduce competition, lower service quality and increase prices. It asserted that the merger would give the new airline a monopoly over 63 percent of the nonstop routes from Washington Reagan National Airport, would result in higher ancillary fees to consumers and would make it easier for the major airlines to work cooperatively against smaller carriers (DOJ, 2013). These objections were removed when the airlines agreed to the DOJ terms, clearing the way for the final megamerger.

Airline and airport data for this analysis are reported in the US Department of Transportation’s domestic air service sources, DB1B and T-100 reports. Airlines are required to report specific commercial performance data to the Bureau of Transportation Statistics, with the results made available to the public through the DOT and FAA websites. For this analysis, domestic air service data are omitted for airports located in US possessions and territories. Alaska airports are omitted due to substantially varied behavior stemming from its own federal program, participation in federal subsidies, distance from continental locations and other geographic anomalies. Data from 2015 will be used in creating the list of at-risk airports to make the measurements uniform in a temporal context and because the data has been vetted for missing values and conformity with established study protocols.

Primary nonhub airports: This FAA category features the smallest airports with scheduled commercial service and represents about 245 airports ranging between 10,000 and 400,000 enplanements with an average of about 203,000 annual passengers. Nonhub airports typically experience more robust consumer switching, a higher likelihood of net passenger losses, and an average growth rate that is less than one-third of the industry’s (Hammond and Czaban, 2016a). Small airports offer less air service, are more vulnerable to cutbacks due to their lower regional populations and have fewer economic resources (Bhadra and Hechtman, 2004), charge higher ticket prices than airports offering non-stop service, and lack sufficient enplanements to attract low-cost airlines (Brueckner et al., 2013). Prospects for small airports are fading (Sharkey, 2014b) and are likely to suffer further service reductions as major airlines continue to cut flights from connecting airports (Wittman and Swelbar, 2013). As the study’s unit of analysis, all airports identified as being at-risk meet the FAA’s classification as primary commercial service nonhub airports.

Single-carrier airports: Another factor for at-risk airports is that each airport is served by a single airline. More than a third of primary commercial service airports are served by only one carrier and all but two of them are nonhub airports (RITA/BTS, 2015). This attribute is viewed as potentially precarious and deserving of further study (Bilotkach and Lakew, 2014). Since travelers evaluate their trip satisfaction from a variety of services delivered by the airline (Smith et al., 1999), airports rely on the performance of their
partner airline for customer retention and loyalty (Albers et al., 2005). Particularly in instances when an airport is served by only one airline, a traveler may decide to switch to another airport for future trips because of dissatisfaction with the airline (Hammond and Czaban, 2016b). This situation is exacerbated when airlines underestimate airport leakage and use the erroneous data in their calculations to charge premium fares (Suzuki et al., 2004). The number of single carrier airports represented half of 30 airports notified they were losing air service during a two-year period (Phillips et al., 2005). In assessing the probability of an airport losing all network airline service, the MIT study identifies airports with only one airline as one of three potentially fatal characteristics, along with airports recently abandoned by an airline and airports located near a large or medium hub airport (Wittman and Swelbar, 2013).

Non-EAS airports: Finally, Table 1 will only include airports that are not EAS eligible. As enumerated in the literature section, EAS airports have a safety net of government protection against the total loss of scheduled commercial air service. Non-EAS airports have no such protection. A table has been prepared of EAS airports that meet the other three criteria for at-risk airports as defined by this study. It appears in Appendix 1.

Proximity to competing airports: Proximity to the originating airport, cost and total travel time are important trip aspects that must be reconciled by the traveler before final decisions can be made (Ryan and Birks, 2000). Business and leisure travelers indicate that distance to the airport and airfare are the most important reasons for their purchase decision (Brueckner et al., 2013). Consumers will drive considerable distances for cheaper trip tickets (Martínez-Garcia et al., 2012; Graham, 2013). Travelers motivated by low airfare will endure even longer driving distances when they are part of a multiple-party leisure group or to connect to low-cost carriers (Suzuki, 2007; Graham, 2013). However, travelers will elect to fly from their hometown airport if airfare savings of an alternate airport are offset by higher access costs or greater inconvenience (Fuellhart, 2007).

The MIT study contends that numerous small airports have lost commercial air service because of their close geographic proximity to medium and large hubs and speculates that the proximity issue places small airports at the precipice of losing their network carriers (Wittman and Swelbar, 2013). As with other researchers reaching similar conclusions, these studies deal with the matter conceptually and do not designate a specific distance for increased switching. In the absence of a predetermined barometer, this study prescribes a two-hour driving limit from an assortment of interview and research findings. A study of Wyoming airports concludes that airports nearest to large airports have the highest leakage rates and their travelers drive up to four hours to access a larger airport (Phillips et al., 2005). Travelers from four Wyoming communities drive an average distance of 261 miles to large airports to reduce their time spent in airports and in the air (Phillips et al., 2005). Similarly, an airport in Ashville, North Carolina has created a marketing campaign from its leakage research to dissuade its travelers from driving four hours to a large hub airport (Suzuki et al., 2003). For many years, it was assumed that leakage in single-carrier airport markets was limited to a radius of 75 miles (Dresner et al., 1996), but more recent studies have widened the leakage radius to 150 and even in excess of 200 miles (Suzuki et al., 2003) as the Wyoming and Ashville, NC studies demonstrate.

While a four-hour driving distance may apply to extreme situations, the Dresner and Suzuki studies suggest that a two-hour driving distance is more reasonable and applicable to driving tolerances for average travelers. The two-hour standard was commonly referenced by airport managers and travelers interviewed in the (Hammond and Czaban, 2016b) study. In the absence of a standard with a more compelling rationale, it seems prudent to adopt the moderate two-hour driving distance at the standard, as it places a competing airport within a reasonable and accessible distance of the traveler’s origin. As this study is interested in identifying airports at the greatest risk of losing network airline service, the two-hour standard reflects a leakage radius that is experienced in typical airport markets. For this purpose, Google Maps and MapQuest were evaluated for measuring the drive time between airports. With the results being nearly identical, this study opted to use Google Maps to estimate the drive times between airports. The comparative analyses will consider for inclusion any primary nonhub, single-carrier airport that has a competing airport (primary nonhub or larger) within a two-hour driving distance. In instances when an
airport meets all three qualifications, Table 1 will identify the competing airports within two hours driving
distance and designate them by FAA classification: large, medium, small and nonhub.

Competition airports: The corresponding column in Table 1 reflects the FAA classifications and number of
competing airports for each subject airport. Airports with one or more large hubs within two hours driving
distance are ranked as facing the greatest risk of loss of network service. After subject airports with large
hub competitors are identified and ranked, airports with medium hub competitors are ranked next,
followed by airports with small hub competitors and, finally, airports with only nonhub competitors. For
obvious reasons, an airport is considered at greater risk if it has two or more large competitors rather than
one. The same standard will be used in assessing multiple medium and small competing airports. In
instances in which two subject airports feature the same size (large, medium and small) and number
of competing airports, the airport with a greater number of total competitor airlines will be ranked higher.
In instances when the subject airports have the same number of competing airports (large, medium and
small) and the same number of total competitor airlines, the airport with the lesser number of
enplanements will be considered at greater risk. Finally, at-risk airports with only nonhub competing
airports will be differently ranked. Since the at-risk airport and the competing airports are the same FAA
classification, these at-risk airports will be ranked by the total competitor airlines to reflect the greater
choice available to travelers.

Total competitor airlines: For this measurement, the number of unique airlines serving each competitor
is ascertained from 2015 T-100 data. This step entails that regional carriers owned by or contracting with a
network airline be counted only once. For example, if an airport is served by two regional carriers under
contract to United Airlines, only one would be added to total competitor airlines as they are part of the
major airline’s service network. Also, the study counts a network carrier (including its regional surrogates)
for each competing airport it serves. For example, if three competing airports for an at-risk airport are
each served by Atlas Airlines, all three are included in the count for total competitor airlines. Legacy
airlines and their regional carriers may provide air service to several airports in a region. The service
provided to each airport may vary in terms of the connecting hub, aircraft, flight frequency, airfare
charged, and other factors (McClay and Reynolds-Feighan, 2006). An airline’s service to multiple airports is
sufficiently differentiated to justify including each in the total competitor airlines count as the consumer
can evaluate the airline options available at each airport and purchase a ticket originating from any of its
partner airports.

2015 enplanements: Table 1 reflects each at-risk airport’s annual passenger enplanements. O&D (origin
and destination) data measure the number of passengers that start and end their trips at an airport and
are often used in research articles about airport selection and the air service industry (Brueckner et al.,
2013; Goetz and Vowles, 2009; Bhadra and Kee, 2008; Goolsbee and Syverson, 2008; Morrison, 2001;
Gillen et al., 2008; Kahn, 1988b; Oster Jr and Zorn, 1983) O&D data are reputed as a more reliable
indicator of passenger activity than broad economic indicators such as gross domestic product (Bhadra,
2003). An airport’s demonstrated ability to attract travelers and capture its market is reflected in its
annual enplanement total. It provides an objective and standardized means for negotiating daily
departures and other airline services. Unfortunately for small airports, low annual passenger totals
typically translate into higher airfare, less popular equipment, less connectivity and fewer flight choices
(Bilotkach and Lakew, 2014; Brueckner et al., 2013).

Ranking the at-risk airports by the size and number of adjacent competing airports, four airports have at
least one large hub competitor, two more have one medium hub competitor, seven additional airports
have small competitors, and the remaining 20 airports have primary nonhub competitors within the two-
hour driving zone.

The list includes six airports from Texas, four from Washington, three from Georgia, and one or two
from 16 additional states.
Such data could include a host of demographic measurements for the market area of each subject airport and their airport competitors, such as: population, income bands, age bands, education levels, industry makeup, tourism and shopping assets, surface accessibility and transit options, distance to competing airports and cities, and growth trends for employment.

Such attributes could include: airport services, attractiveness of facilities, airport shops and attractions, distance to population centers, intermodal transportation options, leisure and business ratio of travelers, parking cost and accessibility, available airlines and rewards programs, daily flights and schedule, aircraft selection, convenient access (pick-up, baggage, check-in, gates, security), airfare schedules, financial condition of airport, and landing fees and other costs assessed to airlines.

Brown managed a staff of more than 500 employees, $400 million in revenue, and 13 consecutive years of international growth. The Dulles Airport is one of the most important international hub airports in the US with service from 10 domestic and 27 international airlines with 10.4 million domestic enplanements and 7.2 million international enplanements. Prior, Brown served as airport manager and in operations at Ronald Reagan Washington National Airport.

Brown: “Even the low-cost (carriers) are asking how to get into that. Then what you will see is more of the domestic service supporting and connecting to the international.”

Sheller has also managed the Richmond (VA) International Airport for 12 years. The Authority operates the Dulles Airport and the Ronald Reagan Washington National Airport as part of a 50-year lease and the only instance of the federal government owning commercial airports.

The advantages include: numerous airlines, low-cost carriers, a growing regional population and massive catchment area, advanced market research capabilities, a comprehensive federally-funded transportation infrastructure (the 91-station Metrorail network, trains, buses and highways), a vast potential for physical growth, DC’s tourism and commercial attractions, an international hub, and access to the Star Alliance and Oneworld global networks.

Shuck recently retired and remained in her position until a replacement had been hired. Prior to Roanoke, Shuck was the airport director at Cleveland Hopkins International Airport for seven years. The Roanoke Airport provides daily nonstop service to nine major cities and is served by American, United, Delta and Allegiant Air. The Roanoke Regional Airport Commission owns and operates the Roanoke Airport as an independent subdivision of Virginia. The Commission is financially independent and does not derive revenues from local taxes.

Prior to his current position in Lynchburg, Courtney has a lengthy professional relationship with Shuck as the deputy executive director at Roanoke Airport, the director of planning and market development at Roanoke, and the manager of the marketing and communications at the Cleveland (OH) Hopkins International Airport. Though located in adjoining Campbell County, the Lynchburg airport is owned by and operates as a department of the City of Lynchburg with the Lynchburg Regional Airport Commission operating in an advisory capacity. In 2015, US Airways completed its merger with American Airlines, which continues its presence at the Lynchburg Airport. American schedules six flights a day to and from Charlotte/Douglas (NC) International Airport.

In 2001, the Lynchburg Airport offered daily service from three major airlines, Delta, United and US Airways. United abandoned Lynchburg shortly after the 9/11 attacks. Delta departed Lynchburg in 2011. The loss of the airlines severed nonstop service to hubs at Washington Dulles and Hartsfield Atlanta. Lynchburg salvaged much of its market when US Airways responded by increasing its daily flights, substituting regional jets for much of its turboprop equipment, and implementing an aggressive pricing schedule. Courtney recalls that United’s departure followed a prolonged period of high fuel prices, the 9-11 attacks and the beginning of a national recession.
Delta stated that it lowered the cost of providing service to western Virginia when it eliminated the Lynchburg station to concentrate service to its stations in Roanoke and Charlottesville. Delta told its customers that they could drive to Roanoke and get better prices and flight choices. According to Courtney: “(Delta’s) flights were performing fine. You can’t attribute it entirely to the recession. It was the Northwest merger that killed us. That made them look at ways to integrate Northwest and rationalize their routes. They wanted to reduce the amount of congestion at Atlanta. Delta’s position to pull out was more systemic than it was market. The kiss of death. When an airline pulls out, especially in a smaller market, that’s not exactly a really good incentive for another airline to come in and take their place. US Airways was a little leery of what was going on here.”

Courtney recalls that United’s departure followed a prolonged period of high fuel prices, the 9-11 attacks and the beginning of a national recession: “We lost United and saw a huge decline (in enplanements). People were afraid to fly.”

“The airport is so incredibly dependent upon the presence of scheduled airline service. About 85 percent of our total revenues are dependent upon airline service. About 96 percent of the airport’s eligibility for capital project funding is a direct result of scheduled airline service. (Losing airline service) doesn’t mean we can’t survive, but it makes us a completely different airport.”

Most of the larger regionals have a lot less of a problem with recruiting available crews, and they’ve all begun to offer signing bonuses and increased their pay levels. The new hires that are available tend to go to the larger regionals first. The money is better and the equipment is better. We are trying to get away from (a regional carrier) as much as possible (due to) pilot shortages that it has been having with the turboprops. The pilots have a sense of which of the regionals are healthier or have a better future than the others.”

“More flight choices, more airlines, more nonstop destinations... what travelers want has changed from being predominantly fare-driven. Now, the leakage we have is because of insufficiency of capacity, flights are being completely sold out close to departure time and, more significantly, the number of additional airlines serving Roanoke. Take the hour drive to Roanoke and you have nonstop jet service to Chicago, Philadelphia and New York. That’s pretty compelling.”

As director of transportation services for the City of Danville (VA), Adelman manages its airport and mass transit system. Adelman was tasked with replacing CC Air, a regional carrier for US Airways, when it withdrew from the market and connecting service to the Charlotte (NC) Airport. Danville has not been able to secure another commercial carrier for its airport and currently operates as a general aviation facility. Due to a change in Danville’s status in the Essential Air Service program, it was determined that it would be dropped from the program and its annual $700,000 subsidy. Danville’s proximity to the Greensboro Airport and its upgrade to a Medium Hub airport made Danville ineligible for EAS participation. Danville is surrounded by larger commercial airports in Raleigh, Greensboro, Roanoke and Lynchburg — all within a 1 ½ hour driving distance.

The government’s regulatory agencies do not publish information about airports that have lost commercial air service. Through acquisition of industry or individual initiatives, some communities have been successful in enticing a replacement carrier. When an airport falls below the threshold of 10,000 annual enplanements, it becomes problematic for communities to convince airlines to dedicate resources to their market. It is particularly challenging because of the layer of the smallest nonhub airports that receive EAS subsidies, leading many regional carriers to invest in the airports that can offer government payment. Even though the funding has grown for EAS airports, criteria has become increasingly restrictive, many struggling nonhub airports fall outside of EAS qualifying criteria and must rely on their own means to convince carriers to provide service.
Adelman turned to the Virginia of Aviation and the Shenandoah Valley Regional Airport to help develop a relationship with Chautauqua Airlines. A plan was devised to begin service in Danville, connect at the Shenandoah Valley Airport and proceed to Pittsburgh. Danville leaders scuttled the proposal, which was deemed too cumbersome for its travelers and too expensive. He followed with an origin and destination (O&D) analysis with area travel agents to ascertain the destination airports for Danville’s base of travelers. Due to the presence of several large corporations located there, a substantial amount of international travel was taking place. Unfortunately, the analysis determined that the destinations of local travelers were scattered. He observes: “Danville did not strongly support flying to one hub. There was no airport in this area that would help financially with creating a situation because the market in Danville was so dispersed. (Prospective carriers) wanted to have an agreement where there was no financial risk to the commuter... and it wasn’t supported.”

Danville would soon endure a succession of hardships from the decline of the tobacco and textile industries, the loss of major industries, a growing unemployment rate and its population falling below 50,000. Prior to CC Air’s departure, the airport was in line for a runway expansion. A subsequent FAA review determined that the airport’s operations no longer justified a longer runway. Adelman is convinced that any wisp of hope for regaining commercial service is based on an expansion of the airport runway. Although its 5,900-foot runway has been adequate in meeting local aviation needs, there are reoccurring conversations in the community about gaining FAA approval for expanding the runway to 6,500 feet to support business development activities. It is estimated that a 600-foot extension will cost $11 million, a price tag so hefty that Danville would require federal funding assistance.

Circumstances have depleted Danville’s will to apportion energy and resources toward this endeavor at the expense of other successful initiatives taking place there. The inertia to recruit a new airline is formidable: Danville’s proximity to large airports and cheap airfare, the funding necessary to upgrade its runway, consumer reliance on neighboring Greensboro, pushback from state and federal aviation agencies, lethargy by regional leaders, and unsatisfying remembrances of its last airline experience. Adelman has witnessed the beneficial impact of vibrant commercial airports on regional economies and is sometimes frustrated over attitudinal obstacles to restoring service. Even so, he maintains optimism that commercial service will again emerge as a regional priority: “I will never say never. Airline service is directly related to economic development.”

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Beasley serves as a manager in the planning department and has worked for the major airline and a regional carrier that merged with a major airline. For 17 years, Beasley has worked in planning and revenue management departments.

“Bag fees are most of the profit, at least among the legacy carriers. Southwest to a certain extent gets the benefit of some market share that comes their way because they don’t have bag fees. If they had bag fees, they may be better (more profitable) than where they are now.”

After carefully managing their cost structures for decades, the carriers have narrowed the price gap with Southwest and have driven most of their rivals out of the market.
“The new pricing models of Spirit and Frontier have disrupted some of the drive (feeding into) our airports. When people search for a ticket, it’s part of the buying process that pulls people in. With Spirit and Frontier, I see my $29 fare, but the (additional fees) I get charged for bags, parking and everything else doesn’t hit me until later. People migrate to that and say it’s such a great deal. They don’t think about anything except the actual price to get on the plane. They are seeing it (cheapest airfare) from anywhere that’s drivable, from any airport that pulls people into the places where Spirit and Frontier exist.”

Spirit primarily serves large airports at about 35 domestic locations, while Frontier provides service to a mixture of large, medium and small airports at about 55 destinations.

“A lot of the planes that are smaller than 50 seats will be going away fairly soon. The pilot shortage is removing our ability to have as many small planes. The pay rates are going up because the supply is short. Some of the shortage is the pay distortion, some of it is the training distortion. We increased the pay rate but even doing that is going to force the planes to be bigger to cover the pay. (Upgrading aircraft) is happening anyway, but it’s certainly made worse by the pilot shortage.”

He refutes that international flights are more profitable than domestic flights but confirms that major airlines continue to shift capacity to markets in Asia, Europe and South America. He asserts that it is too early to ascertain whether these investments will pay off.

The pilot shortage is also compelling the majors to hasten implementation of plans to retire smaller aircraft and replace them with larger jets.

Depending on its severity and duration, the pilot shortage may make it increasingly problematic to service marginal markets.

“If you’re within three hours of a mega hub, (EAS airports) are going to vanish. The customers aren’t going to take a low frequency, connect only schedule. If (travelers) don’t use it, and we can’t charge a fare that covers cost or covers enough for some small margin – or even a margin that’s as good as other routes – then there’s nothing anybody can do. The behavior of the local customer has to balance out with whatever the government does to try to keep the flights in place. We always have seen customers driving three hours for leisure airports. It’s going to dry up (markets for small airports close to major hubs) even if the government tries to incentivize the service to exist. People just aren’t going to pay for service with high fares. I don’t know of a different method that would actually (attract more revenue) because the customers still have to show up.”

“Once revenue gets below $5 million, it gets pretty tough (for an airport) to exist because you just can’t cover your cost for two flights a day to a hub, even on a regional jet. That number is only going to get higher if pilot costs go up in order for the carriers to actually get pilots out of the workforce and competing foreign carriers. It just makes it harder as costs go up because of pilot issues or passengers leaving town.”

Goodlatte was elected to the US House of Representatives 24 years ago. The judiciary committee has jurisdiction over legislation on federal law enforcement agencies, courts and administrative bodies. Protection of trade and commerce against unlawful restraints and monopolies is listed among the committee’s areas of responsibility. To better understand his motivation, it is important to note that Congressman Goodlatte is an attorney and represents Virginia’s Sixth Congressional District, which includes the Roanoke Airport, the Lynchburg Airport and the Shenandoah Valley Regional Airport, a non-primary airport that receives EAS support. Congressman Goodlatte played a key role in resisting an Administration initiative to close or reduce hours of operation to numerous contract air traffic control towers across the country. He has also worked with airport stakeholders in qualifying for federal grants programs, contesting the loss of airline service, and supporting the Shenandoah Airport’s participation in the beleaguered EAS program.
"I am keenly aware of the important role air transportation plays in our communities. They want to see affordable commercial air service available to them. They also want reliable service, not flights that are regularly prone to delays or cancellations. Air transportation quickly connects individuals to other cities both across the United States and the world. There are a number of factors that influence a nation’s well-being, and you can’t isolate one factor. You could have fantastic air service that connects American businesses overseas, for example, but if you have astronomically high corporate-tax rates, the air service isn’t as effective as it could be."

"EAS was created to provide a continuation of service to those small communities that were served by certified air carriers before deregulation in the late 1970s, with subsidies if necessary. Since that time, Congress has acted multiple times to limit and narrow the scope of the EAS program by imposing geographic restrictions, passenger requirements, and subsidy caps. In the past, I have supported efforts to phase out, over time, the EAS program in the contiguous states. However, I believe it is a responsibility of the airline industry, which has received federal support, to provide service to as many Americans as possible. Certainly, without EAS, rural communities would likely feel a larger impact of deregulation. Though, it is hard to project what innovative companies or solutions would come to those regions to meet the demand for travel. We have seen air carriers remove service at certain small airports both seasonally and permanently. Serving small airports can be more financially challenging as larger hub airports can be more consistent in profit. It is important that we continue to exercise oversight of the air transportation system to ensure that small airports are not systematically discriminated against."

"Courtney: "Some would say, (EAS is) a waste of money. That’s $250 million that the EAS program spends a year, in addition to the small community air service program, another $6 million a year. We’re laying down too much. They end up awarding grants to airports with ideas that they know don’t have a chance in hell in the current environment."

"Courtney: "It’s risk sharing. The airlines will be more responsive if you’re willing to share the risk with them in that first year. Let’s face it. An airline that comes in and provides service and then pulls out in a year has just lost a bunch of money. They have to lay people off and get bad press. Putting up $750,000 or $1 million, at least you’re covering a good part of their starting cost.”
Consolidated references


Bruns, A. (2014). Downtown Ain’t What It Used to Be. Site Selection


DOJ (2001). Department of Justice and several states will sue to stop United Airlines from acquiring US Airways. *In: Justice, D. o. (ed.). Washington, DC.*

DOJ (2010). United Airlines and Continental Airlines Transfer Assets to Southwest Airlines in Response to Department of Justice’s Antitrust Concerns. Washington, DC.


DOJ (2017b). Division preserves competition in industries spanning the U.S. economy In: Justice, D. o. (ed.).


Author. (2015). Guess how many antitrust lawsuits have been filed against the Big 4 airlines (No, more than that - guess again). Dallas Morning News.


Morin, G. 2016. 4 airlines are being challenged for collusive pricing by DOJ and consumers. 2017.


Author. (2017). Pilot shortage, predictable funding are among commercial aviation's most pressing issues. USA Today.


