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THE 1,500-HOUR RULE: WHEN DOES QUANTITY OUTWEIGH QUALITY?

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AIRLINES IN THE United States are currently experiencing what could be described as a modern golden age. In 2015, airlines had a record-breaking year—earning $24.8 billion in after-tax profit.[1] In 2016, airlines earned $14 billion, and in 2017, they experienced their second-most profitable year ever, with after-tax profits of $15.5 billion.[2] It is important to note, however, that the two biggest drivers of airline costs and profits are labor and fuel.[3] Fuel contributes to about 10%-12% of operating costs for airlines.[4] The drop in oil prices from 2014 to 2017 is primarily responsible for the record profits of recent years because labor costs are mostly fixed.[5]

Unfortunately for airlines, it appears that this era of record profits may start to decline as fuel costs are expected to climb.[6] With labor costs accounting for nearly 35% of airlines' total operating expenses, airlines must find ways to reduce these fixed costs during economic downturns.[7] However, labor costs are also beginning to rise at a steady rate, as airlines race to fill the pilot staffing necessary to meet the demand of increasing world

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[1] Bart Jansen, *Airlines Had Second-Most Profitable Year Ever in 2017*, USA TODAY (May 7, 2018), https://www.usatoday.com/story/travel/flights/todayinthesky/2018/05/07/airline-profits/586619002/ [https://perma.cc/97EB-EG7D].

[2] *Id.*

[3] Brian Beers, *Which Major Expenses Affect Airline Companies?*, INVESTOPEDIA, http://investopedia.com/ask/answers/040715/what-are-major-expenses-affect-companies-airline-industry.asp [https://perma.cc/4379-YA2X] (last updated Apr. 30, 2018).

[4] *Id.*

[5] *Id.*

[6] Daniel Shane, *Higher Oil Prices are Taking a Toll on Airline Profits*, CNN BUS. (June 4, 2018), https://money.cnn.com/2018/06/04/investing/iata-airline-profits-oil/index.html [https://perma.cc/9FNN-G3A3].

[7] *See* Beers, *supra* note 3.

air traffic.[8] This hiring race is largely the product of what is considered a worldwide pilot shortage caused by Congress's adoption of the 1,500-hour rule following the crash of Colgan Air Flight 3407.[9] This requirement has begun to force airlines to offer hiring incentives to steal qualified pilots away from other airlines, which puts small airlines at an enormous competitive disadvantage, places a large potential price burden on consumers, and threatens underserved regional routes and private aviation.[10]

Despite the promulgated safety benefits of the rule, the practical threats it poses to airlines' operations are too serious for Congress to ignore. Congress should reduce the flight-hour requirement and focus instead on a standardized flight training education rule because of the 1,500-hour rule's economic consequences and the lack of evidence that the rule actually improves flight safety. Part I of this Comment discusses the background of the airline industry in the United States and the Colgan Air accident. Part II illustrates the legislative response to the Colgan Air accident. Finally, Part III of this Comment analyzes the successes and failures of current legislation and suggests a new focus on quality enforcement for air safety improvement.

I. INDUSTRY BACKGROUND AND THE COLGAN AIR ACCIDENT

A. History of Commercial Aviation in the United States

Aviation in the United States has long been envisioned as a tool for economic development and expedition.[11] Air travel was first commercialized by the Post Office Department in the 1920s for the carriage of mail.[12] United Airlines, American Airlines, Trans World Airlines, and Eastern Airlines all owe their founda-

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[8] Jon Sindreu, *Pilot Shortage Hurts Airlines, but There's a Winner*, Wall St. J. (Oct. 17, 2018), http://www.wsj.com/articles/pilot-shortage-hurts-airlines-but-theres-a-winner-1539780789 [https://perma.cc/NB46-NAFX].

[9] Marisa Garcia, *A 'Perfect Storm' Pilot Shortage Threatens Global Aviation*, Forbes (July 27, 2018), http://www.forbes.com/sites/marisagarcia/2018/07/27/a-perfect-storm-pilot-shortage-threatens-global-aviation-even-private-jets/#7764ec9e1549 [https://perma.cc/68VE-K652].

[10] *See id.*

[11] Paul Stephen Dempsey, *The State of the Airline, Airport & Aviation Industries*, 21 Transp. L.J. 129, 133 (1992).

[12] *Id.* at 134.

tion—at least in part—to the government subsidies offered to private carriers for mail service.[13]

Unfortunately, high levels of danger marred this initial era of commercial travel, as thirty-one of the first forty mail service pilots died in crashes.[14] Because of the high risk of danger, in the 1930s, President Franklin Roosevelt signed the Civil Aeronautics Act, which led to the establishment of the Civil Aeronautics Board (CAB).[15] The CAB was designed "to investigate accidents, determine probable cause, issue reports, and recommend additional safety measures."[16] Continuing the idea of government subsidization, the CAB also had the power to regulate where airlines could fly, what airlines could charge, and certain business practices in light of antitrust regulation.[17] By regulating the industry like a public utility and continuing to offer subsidies, the government was able to prop up the increasingly important industry through economic downturns.[18] As air service expanded, the CAB grandfathered in sixteen original contracted airlines to serve highly-profitable long-haul trunk routes while certificating other, smaller airlines—now known as regional airlines—to service small airports.[19]

Airlines enjoyed rapid technological improvements, including the introduction of the jet engine, through the 1950s and 1960s.[20] The introduction of the jet engine led to a new, more productive and more profitable era of commercial aviation.[21] The jet engine extended the time an engine could operate before needing heavy maintenance and increased the comfort of the aircraft for passengers by reducing vibrations.[22] It also allowed aircrafts to fly at higher altitudes, thus permitting pilots to navigate around weather while promoting more efficient engine use.[23] With continued government regulation in airline route distribution and pricing, these improvements allowed airlines to

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[13] *See id.*

[14] *Id.*

[15] *Id.* at 135.

[16] *Id.*

[17] *Id.* at 139.

[18] *Id.* at 138, 140.

[19] *Id.* at 139–40.

[20] *Id.* at 141.

[21] *Id.*

[22] *See* Swayne Martin, *7 Benefits of Jets Over Piston Powered Airplanes*, BOLD METHOD (Oct. 3, 2017), https://www.boldmethod.com/blog/lists/2017/10/7-benefits-of-jet-engines/ [https://perma.cc/8HQQ-B22J].

[23] *Id.*

flourish in a "golden age of aviation," with a focus on quality of service as more and more passengers sought seats.[24]

However, safety continued to be of great concern. An independent federal aviation agency was created in 1958 to oversee the safety of the national airspace through the use of air traffic control towers.[25] In 1966, Congress authorized the creation of the Department of Transportation (DOT), and the agency, known as the Federal Aviation Administration (FAA), became a subsidiary of it.[26] As more and more aircraft entered the skies, the FAA modernized the national airspace to include radar, computers, radio, and air traffic controllers as well as facilities across the country to monitor system-wide air traffic and weather.[27] With this new technology coupled with the introduction of the jet engine, the aviation industry welcomed a steady decrease in fatality rates in the United States until the terrorist attacks in 2001.[28] In fact, excluding those attacks, from 1998 to 2008, the fatality risk in the United States decreased by 83%.[29]

B. The End of Federal Regulation

With profit margins for the larger carriers soaring, in 1978, President Jimmy Carter signed the Airline Deregulation Act (ADA).[30] The major part of the ADA served to dissolve the CAB and to end the treatment of airlines like a public utility.[31] The government no longer set where airlines could fly or what fares they could charge, and airlines could no longer benefit from a

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[24] Madhu Unnikrishnan, *A Law that Changed the Airline Industry Beyond Recognition (1978)*, Aviation Wk. (June 4, 2015), http://aviationweek.com/blog/law-changed-airline-industry-beyond-recognition-1978 [https://perma.cc/W3AL-T6KL].

[25] *A Brief History of the FAA*, Fed. Aviation Admin., http://www.faa.gov/about/history/brief_history/#atc [https://perma.cc/3L37-3CE5] (last visited May 28, 2019).

[26] Dempsey, *supra* note 11, at 141.

[27] *A Brief History of the FAA*, *supra* note 25.

[28] *See* Dan Reed, *In a Dangerous World, U.S. Commercial Aviation Is on a Remarkable Safety Streak*, Forbes (Dec. 28, 2016), https://forbes.com/sites/danielreed/2016/12/28/in-the-last-7-years-you-were-more-likely-to-be-run-over-by-a-car-than-to-die-in-an-airline-crash/#44d6d8d2428a [https://perma.cc/FKS7-C7TU].

[29] Press Release, Fed. Aviation Admin., FAA Final Rule Requires Safety Management Systems for Airlines (Jan. 7, 2015) (on file with author), https://www.faa.gov/news/press_releases/news_story.cfm?newsId=18094 [https://perma.cc/HEM3-VLJG].

[30] Unnikrishnan, *supra* note 24.

[31] *Id.*

guaranteed revenue stream.[32] For many of the trunk airlines, this meant that they now had massive operating costs while new, low-cost carriers (LCCs) were able to enter previously protected routes and compete on a pure price basis.[33] Consequently, a number of these trunk carriers exited the market via merger.[34] The remaining airlines faced a rapid decrease in airfares and a dramatic increase in passenger demand.[35]

Though passenger demand increased after the ADA, airlines were now ruled by cost, which created huge concerns for areas that came to rely on air service to maintain and grow their local economies.[36] Smaller regional airports were at risk of airlines removing service completely because there was not enough demand to guarantee profit without government contracts.[37] Due to this threat, the DOT founded the Essential Air Service program (EAS).[38] Through the EAS, the DOT subsidizes airlines in two- or four-year contracts for two round trips a day to qualified small communities.[39] To qualify, the communities must be more than 210 miles from the closest large- or medium-sized airport.[40] As of October 2016, the DOT subsidized about 113 destinations across the continental United States.[41]

In addition to the threat toward small communities, the ADA had another unintended consequence. Several trunk carriers were grandfathered into high-revenue, long-haul international and transcontinental routes.[42] With guaranteed profit in high-volume markets, these carriers never had a need to develop an internal network of routes to smaller markets.[43] For trunk carriers incapable of changing their business models quickly enough

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[32] *Id.*

[33] *See* William Charles De Jager, The Effects of Airline Deregulation on Airline Safety: An Econometric Analysis 14 (1993) (unpublished Ph.D. dissertation, Portland State University) (on file with PDXScholar), https://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=2296&amp=&context=open_access_etds&amp [https://perma.cc/8TLS-CEGU].

[34] *Id.* at 13.

[35] *Id.*

[36] *See Essential Air Service*, U.S. DEP'T TRANSP. (Nov. 22, 2017), https://www.transportation.gov/policy/aviation-policy/small-community-rural-air-service/essential-air-service [https://perma.cc/8GKD-HPHG].

[37] *See id.*

[38] *Id.*

[39] *Id.*

[40] *Id.*

[41] *Id.*

[42] *See* Dempsey, *supra* note 11, at 140–42.

[43] *See* Unnikrishnan, *supra* note 24.

to be competitive, the only solution was consolidation.[44] In 2015, four airlines—American, Delta, Southwest, and United Airlines—controlled 85% of flights in the United States.[45] With this level of control, the four major airlines are able to largely dictate who is flying in and out of individual cities and regions as well as the price charged for each individual route.[46] While prices have generally fallen after the ADA, it has led to similar issues that caused the establishment of the EAS.[47] When these airlines come to the conclusion that cities are not meeting expected profits, they are quick to "drastically curtail[ ] airline service."[48] This led to a lack of air service to several mid-major cities that do not qualify for the EAS, such as Cincinnati, St. Louis, Pittsburgh, and Memphis.[49] Over the last four years, thirty-two communities have lost air service.[50] Some cities have attempted to maintain air service by paying the airlines directly to ensure a minimum revenue for the airlines.[51]

Given this minimum revenue, one of the ways major airlines, like American Airlines, continue to serve these smaller markets is by employing regional carriers.[52] Regional carriers are essentially subcontractors for the major carriers that operate under a marketing arrangement known as a codeshare.[53] These codeshare flights make up about half of all domestic flights in the United States.[54] Under a codeshare agreement, an airline can place its name on a flight and sell that flight while another

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[44] *See* Alex Marshall, *How Airline Mergers and Deregulation Hurt Travel*, GOVERNING (Apr. 2015), http://www.governing.com/columns/transportation-and-infrastructure/gov-airline-mergers-deregulation-travel.html [https://perma.cc/4S2K-78AV].

[45] *Id.*

[46] *See id.*

[47] *See* David Morris, *Airline Deregulation: A Triumph of Ideology Over Evidence*, HUFFINGTON POST, https://www.huffing tonpost.com/david-morris/airline-deregulation-ideology-over-evidence_b_4399150.html [https://perma.cc/R78L-HL5L] (last updated Dec. 13, 2013).

[48] *Id.*

[49] *Id.*

[50] Aditi Shrikant, *Why Air Service Is So Crucial for Small Cities*, VOX, https://www.vox.com/the-goods/2018/11/12/18080806/air-service-small-cities-crucial [https://perma.cc/MU2G-8P7K] (last updated Nov. 12, 2018).

[51] *Id.*

[52] *See id.*

[53] *Code Sharing*, U.S. DEP'T TRANSP. (Feb. 10, 2015), https://www.transportation.gov/policy/aviation-policy/licensing/code-sharing [https://perma.cc/A8PX-ZT7E].

[54] Justin Bachman, *U.S. Regional Airlines Out-Do Bigger Rivals in On-Time Flights*, CHI. TRIB. (Sept. 25, 2018), https://www.chicagotribune.com/news/nation

airline actually operates the flight.[55] These agreements contract the routes the regional carriers will fly for the major carriers, the fixed cost the regional carrier will make for the completed flights, and any performance-based incentives that may be included in the agreement.[56] With guaranteed revenue for the regional carrier, the risk of the flight really lies with the major carrier, since profit for major carriers requires them to make enough revenue through ticket sales to overcome the money they are contracted to pay their regional partner.[57] Unfortunately, people from these smaller communities pay higher fares or else face longer commutes to fly out of cheaper, major city airports.[58] These smaller communities are often forced to subsidize service through agreements to guarantee revenue, waive certain airport fees, and market the flights themselves to maintain the major carriers' continued interest in maintaining service to their community.[59] Some more affluent communities are willing and able to take on this burden because commercial air service is vital to the global nature of modern-day business.[60]

For regional carriers with fixed revenue, profit can be guaranteed by keeping operating costs down and by ensuring that as many flights as possible are completed per the contract.[61] The biggest way in which the regional carriers do this is by hiring pilots with little to no *commercial* experience at a low wage.[62] Historically, as part of their employment contract, these pilots are then guaranteed an interview or position with the major carrier partner after the pilot has gained the experience necessary to fly the larger aircraft of the major carrier.[63] With the cost of pilot training often exceeding six figures, working for regional airlines is an ideal path for many prospective professional pilots

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world/ct-regional-airlines-outdo-rivals-20180925-story.html [https://perma.cc/AJM7-J7M9].

[55] *Code Sharing*, *supra* note 53.

[56] Ben Schlappig, *Why Do Major Airlines Outsource Flights to Regional Airlines?*, ONE MILE AT A TIME (July 19, 2016), https://onemileatatime.com/regional-airlines/ [https://perma.cc/GCR8-AK4N].

[57] *See id.*

[58] Shrikant, *supra* note 50.

[59] *Id.*

[60] *See id.*

[61] *See* Schlappig, *supra* note 56.

[62] *See id.*

[63] Marc Cervantes, *The Regional Airline Concept*, AERO CREW NEWS (Oct. 3, 2017), https://www.aerocrewnews.com/education-2/contract-talks/the-regional-airline-concept/ [https://perma.cc/ZJN2-TZLW].

because they can receive the experience on commercial jet aircraft they need while still receiving a paycheck.[64]

C. Colgan Air Flight 3408

One such regional carrier was Colgan Air. The airline was founded in 1989 by Charles and Michael Colgan.[65] In 1997, Colgan Air signed a codeshare agreement with Continental Airlines to operate regional flights in the mid-Atlantic and northeastern United States.[66] Under the codeshare agreement, Colgan Air operated Continental Airlines-branded flights with Continental Airlines-branded flightcrew, but all equipment was owned and maintained by Colgan Air, and all crewmembers were employed by Colgan Air.[67]

Over the course of the next twelve years, there were numerous events that raised concerns regarding the operational safety of the airline.[68] Problems first arose in 1998 when Colgan Air acknowledged to the FAA that significant improvements were needed to comply with the safety requirements set forth by the agency for commercial carriers.[69] However, five years later, a Colgan Air flight crashed off of Cape Cod, killing both pilots.[70] The National Transportation Safety Board (NTSB) found that the accident was caused by "improper plane maintenance" and "inadequate pilot inspection."[71]

In June 2005, Colgan Air's FAA inspector suggested FAA intervention after finding a number of safety concerns, but the FAA declined to act.[72] Later that year, the Department of Defense (DOD) found in their audit of the airline that Colgan Air had inadequate internal audit systems to check and maintain safe operations.[73] Like the FAA, the DOD failed to act and Col-

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[64] *See* Claire Trageser, *The Cost of Becoming a Pilot is Making the Job a Pipe Dream*, Mashable (Apr. 20, 2016), https://mashable.com/2016/04/20/regional-pilot-shortage/#gEarIEnKKGqM [https://perma.cc/8J8P-DMMF].

[65] *Timeline: Colgan Air*, Frontline (Feb. 9, 2010), https://www.pbs.org/wgbh/pages/frontline/flyingcheap/etc/croncolgan.html [https://perma.cc/EX4A-6CL8].

[66] *Id.*

[67] *Id.*

[68] *See id.*

[69] *Id.*

[70] *Id.*

[71] *Id.*

[72] *Id.*

[73] *Id.*

gan Air was permitted to continue air service.[74] Two years later, the DOD *again* found that Colgan Air had inadequate safety checks and a "lack of management" and *again* allowed Colgan Air to continue operating, but this time required Colgan Air to perform "corrective action."[75]

Finally, through the majority of 2008, both the FAA and Colgan Air noted improper pilot operations of the new Bombardier Q400 aircraft.[76] Colgan Air had a shortage of supervisory pilots for the new aircraft and brought in supervisory pilots that had never been trained on the Q400.[77] By the end of 2008, Colgan Air had still not finished the Q400's operation guidelines for pilots, which resulted in a knowledge gap for pilots in how to properly operate the aircraft in abnormal or emergency conditions.[78]

These safety concerns came to a head in February 2009 when Colgan Air Flight 3407, a Q400 aircraft operated as a regional carrier for Continental Airlines, crashed outside of Buffalo, New York, killing all forty-nine people on board the aircraft and one person on the ground.[79] Following the accident, the NTSB conducted an investigation to determine the cause and contributing factors of the accident.[80] During their investigation, the NTSB discovered that the first officer, employed by Colgan for nearly a year, had stayed up all night to catch a flight from her home in Seattle, Washington, to Newark International Airport in New Jersey to pilot Colgan Flight 3407 the next day.[81] She had planned to sleep in the crew lounge before the flight.[82] The NTSB also discovered that the captain, employed by Colgan Air for approximately three and a half years with over *3,000* flight hours, was logged on to a computer at 3 a.m.[83] Further, while unsure where he had slept, the NTSB noted that the captain

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[74] *Id.*

[75] *Id.*

[76] *Id.*

[77] *Id.*

[78] *Id.*

[79] Matthew L. Wald, *Pilots Set Up for Fatigue, Officials Say*, N.Y. TIMES (May 13, 2009), http://www.nytimes.com/2009/05/14/nyregion/14pilot.html [https://perma.cc/ZS6E-Y2WQ].

[80] *See id.*

[81] *Id.*; *see also* Richard Collins, *A Double Tragedy: Colgan Air Flight 3407*, AIR FACTS (Mar. 28, 2014), https://airfactsjournal.com/2014/03/double-tragedy-colgan-air-flight-3407/ [https://perma.cc/2BKW-BSLP].

[82] Collins, *supra* note 81; Wald, *supra* note 79.

[83] Collins, *supra* note 81; Wald, *supra* note 79.

had a reputation of sleeping in the crew lounge at Newark despite the airline threatening termination for pilots that used the lounge for overnight stays.[84] The NTSB found that these pilots were fatigued.[85] In addition to the finding of pilot fatigue, the NTSB also found that the pilots were talking incessantly about matters unrelated to the flight when they were meant to maintain a sterile cockpit and that, potentially, the lack of realism in Colgan's flight training resulted in failed recovery attempts from the pilots when they faced the emergency in real life.[86]

However, despite these contributing factors, the NTSB ultimately concluded that the accident was caused by "[t]he accident captain's history of training failures" and actions that were "inconsistent with his training and were instead consistent with startle and confusion."[87] During its investigation, the NTSB found that, prior to his employment, the captain had failed a number of flight tests and had "disapprovals on single-engine and multi-engine commercial check rides but had neglected to mention those" on his employment application.[88] Once actually employed by Colgan Air, he also received unsatisfactory grades on three proficiency checks for abnormal aircraft operations, such as single-engine landings and rejected take-offs, until given the opportunity to pass on rechecks.[89] In fact, these repeated instances of incompetence in abnormal operations made the captain a candidate for remedial training, but that remedial training did not appear to have ever taken place.[90]

Following the accident, the families of the victims began lobbying Congress for greater and more urgent regulation to increase flight safety standards in the United States.[91] Their lobbying led to the Airline Safety and Pilot Training Improvement Act (ASPIA) of 2009 and its partial incorporation in the

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[84] Wald, *supra* note 79.

[85] Collins, *supra* note 81; Wald, *supra* note 79.

[86] Peter Garrison, *Aftermath: The Mystery of Colgan 3407*, FLYING (May 27, 2010), https://www.flyingmag.com/safety/accident-investigations/aftermath-mystery-colgan-3407 [https://perma.cc/MZM5-PNVN].

[87] *Id.*

[88] *Id.*

[89] *Id.*

[90] Frank James, *Colgan-Buffalo Plane Crash: Errors Began Pre-Flight*, NPR (Feb. 2, 2010), http://www.npr.org/sections/thetwo-way/2010/02/colganbuffalo_plane_crash_erro.html [https://perma.cc/V97M-53J8].

[91] *Continental Flight 3407 Families – Their Journey*, PBS, https://www.pbs.org/wgbh/pages/frontline/flyingcheap/continental-3407/ [https://perma.cc/UZ4H-HRT7] (last updated Dec. 8, 2010).

Airline Safety and Federal Aviation Administration Extension Act (FAAEA) of 2010.[92] As a result, Congress, through the FAA, required an overhaul to airline fatigue programs, adoption of safety management systems (SMS), and for incoming airline pilots to have 1,500 hours of flight training experience.[93]

II. THE LEGISLATIVE RESPONSE TO COLGAN AIR FLIGHT 3407

With three of the top ten busiest airports in the world, the United States' airspace must be well managed to maintain safety.[94] The FAA protects the world's largest and busiest airspace through air traffic control and regulatory oversight of airline, airport, and maintenance operations.[95] Due to the size of the airline industry in the United States, for this management to be successful, airlines and their pilots must be directly involved to ensure that they operate in the safest way possible and that no shortcuts are taken in preference of profit. This section of the Comment explores Congress's efforts to increase airline accountability for safety through the requirements of the 1,500-hour rule, fatigue management, and safety management as a result of the Colgan Air accident.

A. THE 1,500-HOUR RULE

The final rule change following the Colgan Air accident moves away from the flexible safety systems offered by fatigue risk management systems (FRMS) and SMS to firm training requirements for new commercial pilots. Following the Colgan Air accident investigation, Congress honed in on the NTSB's finding of lack of training and changed the training required for pilots to become employed at the commercial airline level.[96] Prior to the accident, commercial-airline first officers were required to have accrued a minimum of 250 hours of flight time.[97] Given the NTSB's findings, Congress issued the 1,500-hour rule,

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[92] *Id.*

[93] Airline Safety and Federal Aviation Administration Extension Act of 2010, Pub. L. No. 111–216, §§ 212, 215, 217, 124 Stat. 2348, 2362, 2366, 2368.

[94] *See* James Chrisman, *This Is the Busiest Airport in the World*, THRILLIST (Mar. 13, 2019), https://www.thrillist.com/news/nation/busiest-airport-in-the-world-2019 [https://perma.cc/5VVM-J66E].

[95] *See Air Traffic*, FED. AVIATION ADMIN., https://www.faa.gov/air_traffic/ [https://perma.cc/M93X-G32V] (last visited July 27, 2019).

[96] *See* Garcia, *supra* note 9.

[97] *Id.*

which went into effect in 2013.[98] The rule requires that first officers applying to commercial airlines have at least 1,500 hours of accrued flight time to qualify for the necessary pilot certificate.[99] This rule results in a 600% increase in required flight hours for pilots to begin their careers with commercial airlines. Then, to become a full-fledged captain, the pilot is required to earn an additional 1,000 flight hours.[100]

The FAA Administrator stated that this increase in flight hours was done to guarantee a "stronger foundation of aeronautical knowledge and experience" before ever being permitted to fly for a commercial air carrier.[101] With this in mind, the FAA has allowed for certain exceptions to this rule.[102] The FAA allows military pilots and university-trained students to acquire a "restricted" commercial air transport license.[103] For U.S. military pilots, this means the flight-hour requirement is cut in half to 750 hours.[104]

The university-trained exception is a bit more complicated and differs between graduates holding a bachelor's degree and those holding an associate's degree. If a pilot acquires a bachelor's degree in aviation at a qualified university, completes 60 academic credit hours in aviation or aviation-related coursework approved by the FAA, presents their transcript to the FAA, and holds a commercial pilot certificate with an airplane category and instrument rating from an FAA approved curriculum, then the required flight hours decrease to 1,000.[105] For a pilot who has acquired an associate's degree in aviation at a qualified university, the flight-hour requirement becomes 1,250 flight hours if the pilot meets the same requirements as above.[106] But rather than 60 academic credit hours, the pilot is only required to complete 30 credit hours in aviation and aviation-related coursework.[107]

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[98] *Id.*

[99] *Id.*

[100] *Id.*

[101] Press Release, Fed. Aviation Admin., FAA Boosts Aviation Safety with New Pilot Qualification Standards (July 10, 2013), http://www.faa.gov/news/press_releases/news_story.cfm?newsId=14838 [https://perma.cc/PV86-8AMY].

[102] *See id.*

[103] 14 C.F.R. § 61.160(a)–(g) (2013).

[104] *Id.* § 61.160(a).

[105] *Id.* § 61.160(b)(1)–(4).

[106] *Id.* § 61.160(c)(1)–(4).

[107] *Id.* § 61.160(c)(2).

While the reductions in training hours alleviated the impact for certain classes of pilots, these are still increases of 300%, 400%, and 500% respectively. Because of this, there is large concern across the industry that there will be unintended, widespread consequences that require immediate remedial action on the part of Congress.[108] These consequences are discussed in Part III of this Comment, along with the combined impact of FRMS and SMS implementation.

B. Fatigue Risk Management Programs

The FAA defines fatigue as "a physiological state of reduced mental or physical performance capability resulting from lack of sleep or increased physical activity that can reduce a flightcrew member's alertness and ability to safely operate an aircraft or perform safety-related duties."[109] As seen in the Colgan Air crash, fatigue is often a contributing factor in accident reports, despite not being listed as the primary cause.[110] Historically, fatigue is so commonplace in aviation because the industry has long work-duty periods with unpredictable hours because weather and other operational impediments—like government shutdowns—can delay or cancel flights.[111] Because of this, fatigue is a growing concern in aviation across the world.[112] In the 1930s, the first attempt at mitigating fatigue was made by instituting sleep recommendations and limitations to flight time and layover periods for flightcrews.[113] However, through 2009, the year of the Colgan Air crash, few changes were made to fatigue management regulations after the initial attempt.[114] In 2011, as

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[108] *See, e.g.*, Garcia, *supra* note 9; Barbara Peterson, *How the Pilot Shortage Could Change the Way We Fly*, Conde Nast Traveler (Aug. 21, 2018), https://www.cntraveler.com/story/how-the-pilot-shortage-could-change-the-way-we-fly [https://perma.cc/U8NJ-7699]; Robert Silk, *Regional Airlines, Hit by Pilot Shortage, Seek Exceptions to 1,500-Hour Rule*, Travel Wkly. (Oct. 1, 2018), https://www.travelweekly.com/Travel-News/Airline-News/Regional-airlines-seek-exceptions-to-1500-hour-rule [https://perma.cc/CJN3-KFDG].

[109] 14 C.F.R. § 117.3 (2012).

[110] *Key Safety Issues*, Flight Safety Found., https://flightsafety.org/safety-issue/fatigue/ [https://perma.cc/Q629-E9E8] (last visited Jan. 15, 2019).

[111] *See* John A. Caldwell et al., *Fatigue Countermeasures in Aviation*, 80 Aviation Space & Envtl. Med. 29, 29 (2009).

[112] *See id.*

[113] *Id.* at 30.

[114] *Id.*

part of the ASPIA, the FAA adopted several changes to the federal regulations regarding fatigue management.[115]

Prior to the rule change, flightcrew rest periods were a "minimum" of 9 hours but could be reduced to 8.[116] This rest period included the local travel time to a suitable rest location and the time it takes to travel back to the airport.[117] Because of the remote location of many airports, many flightcrews found that the travel time to their place of rest interfered with their sleep time and often placed them below the recommended 8 hours of sleep for an average adult.[118] These rest hours varied based on whether the flight was domestic or international.[119] However, after the rule change, the minimum rest period was increased to 10 hours, and those 10 hours must provide the opportunity for the flightcrew to obtain at least 8 uninterrupted sleep hours.[120] Domestic and international flights are also now treated the same in terms of required rest periods.[121]

There were also major changes to the flight-duty period for flightcrews.[122] Previously, flight time was restricted to 10 hours a day and to a maximum duty period of 1,400 hours per year.[123] Under current regulations, flight and duty times are greater segmented to better reflect fatigue as it affects a person over time.[124] Flight-duty periods can now vary between 9 and 14 hours, with a reduction dependent on the crew member's number of flight segments flown.[125]

Perhaps the greatest change to fatigue regulations lies in the FAA's division of responsibility. Pilots, as well as the airlines, are now required to aid in the enforcement of fatigue regulations.[126] Pilots must confirm before they fly both that they are working in compliance with the regulations—by tracking their flight, rest, and duty hours—and that, through compliance, they

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115 *See* Sarina Houston, *FAA's Final Rule for Pilot Duty and Rest Requirements*, BALANCE CAREERS (Dec. 25, 2018), https://www.thebalancecareers.com/faa-final-rule-pilot-duty-and-rest-requirements-282927 [https://perma.cc/4CXV-PM2K].

116 *Id.*

117 Caldwell et al., *supra* note 111, at 31.

118 *Id.* at 31–32.

119 Houston, *supra* note 115.

120 *Id.*

121 *Id.*

122 *See id.*

123 Caldwell et al., *supra* note 111, at 32.

124 *See* Houston, *supra* note 115.

125 14 C.F.R. pt. 117 tbl. B (2012).

126 Houston, *supra* note 115.

are physically fit for duty.[127] This affirmative duty allows pilots to ensure the safety of a flight by self-reporting rather than relying on their employers to make the call regarding a pilot's wellbeing.[128]

Furthermore, as a part of the rule changes, the FAA shifted from suggesting FRMS to requiring FRMS.[129] FRMS are management systems that utilize data in a systematic way to "continuously monitor and manage safety risks associated with fatigue-related error."[130] FRMS should utilize "scientific principles and knowledge as well as operational experience."[131] The FAA requires that, as a part of FRMS, airlines adopt a fatigue risk management policy, a training program, a reporting system, a monitoring system, an incident reporting process, and a way to evaluate performance.[132] FRMS is entwined with the reporting requirements for pilots. It provides an internal system for pilots to report issues to their employer.[133] In turn, airlines should take the data provided to make changes to their operations and ensure both the efficient use of staff and the safety of the flight.[134]

Finally, an important note regarding the requirement is the statute's broad language and vague requirements.[135] The language permits the airlines flexibility in the way they implement FRMS by allowing them to tailor their system to properly meet the uniqueness of their own operation. For instance, airlines with a large, international route network will likely have different fatigue concerns than a regional airline flying short routes.

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127 *See id.*

128 *See* Christopher Freeze, *Fatigue Management: Best Practices and Lessons Learned*, AIR LINE PILOT (Mar. 2018), http://www.alpa.org/news-and-events/airline-pilot-magazine/fatigue-management [https://perma.cc/NYC8-BLTS] (reporting support by both airlines and the Air Line Pilots Association pilots union, while acknowledging that individual pilot willingness to report is going to require more time and further understanding of FRMS processes).

129 14 C.F.R § 117.7(a) (2012); *see also* Houston, *supra* note 115.

130 14 C.F.R. § 117.3.

131 *Fatigue Risk Management Systems (FRMS)*, SKYBRARY, https://skybrary.aero/index.php/Fatigue_Risk_Management_System_(FRMS) [https://perma.cc/53U4-BSJP] (last updated May 23, 2019).

132 14 C.F.R. § 117.7(b).

133 *See Fatigue Risk Management Systems (FRMS)*, *supra* note 131.

134 *Id.*

135 *See* David Perecman, *Congress Passes Law to Increase Safety on Commercial Flights*, HG.ORG LEGAL RES., https://www.hg.org/legal-articles/congress-passes-law-to-increase-safety-on-commercial-flights-19803 [https://perma.cc/7KLS-DJ6J] (last visited July 11, 2019).

A flight from Dallas to Sydney, Australia, lasts about seventeen hours.[136] This alone exceeds the new flight-duty period and requires a number of accommodations and planning to meet FAA guidelines that would not be necessary on the vast majority of flights in the United States.[137]

C. Safety Management Systems

SMS takes a similar analytical approach to FRMS but applies it on a wider operational basis. SMS is a concept that has been around at an international level since the turn of the 21st century.[138] Initially designed for occupational safety and health in the workplace, these systems have shifted to reducing all risks associated with operational responsibilities to maintain and streamline a high level of safe performance.[139] As part of the response to the Colgan Air accident, Congress instructed the FAA to develop a rule requiring all commercial airlines to implement SMS.[140] The final rule was issued in 2015 and required that SMS be implemented by the carriers in 2018.[141]

The FAA defines SMS as "the formal, top-down, organization-wide approach to managing safety risk and assuring the effectiveness of safety risk controls."[142] This language requires individuals at the highest levels of the organizational structure to participate in safety and safety management. By requiring the first-hand participation of high-level employees, SMS ensures that the administration and maintenance of safety is a top priority of every airline.[143]

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[136] Courtney McCaffrey, *Could You Survive These 10 Longest Flights?*, FlightNetwork (Dec. 18, 2014), https://www.flightnetwork.com/blog/10-flights-longest-world/ [https://perma.cc/N8C3-Z7B2].

[137] *See* 14 C.F.R. pt. 117 tbls. B, C (2012).

[138] *See Occupational Safety and Health Management Systems*, Int'l Labour Org., https://www.ilo.org/safework/areasofwork/occupational-safety-and-health-management-systems/lang—en/index.htm [https://perma.cc/S4E8-UZCY] (last visited Jan. 18, 2019).

[139] *See id.*; *see also* Brian D. Israel, *Environmental and Safety Management Systems in Large Companies: Avoiding Pitfalls*, Am. Bar Assoc. Trends 4, 1 (2004).

[140] FAA Final Rule Requires Safety Management Systems for Airlines, *supra* note 29.

[141] *See id.*

[142] *Safety Management System (SMS)*, Fed. Aviation Admin. (July 5, 2016), https://www.faa.gov/about/initiatives/sms/ [https://perma.cc/2EGM-G2WN].

[143] *See Safety Management System – Basis*, Fed. Aviation Admin., https://www.faa.gov/about/initiatives/sms/explained/basis/ [https://perma.cc/NKH3-FXVW] (last modified July 14, 2016).

Though technology and system developments serve to improve safety in air travel, safety gaps continue to exist in terms of the human element.[144] SMS is intended to bridge those gaps and hone in on the performance of individuals and flightcrews.[145] To form this bridge, an airline's SMS must utilize data collected from employees in a way that allows for continuous adaptation to meet specific safety needs.[146] Two of the largest benefits of SMS's design are the continuous monitoring of the airline's safety status and the improvement of company safety culture.[147] By continuously monitoring data, it is believed that airlines will be able to act not only reactively and proactively in compliance with existing regulation but also in a predictive way as the data brings potential problems to light.[148] Safety culture should improve within the organization as it becomes apparent to front-line employees—such as flightcrew members—that upper-level management is not only concerned about their safety but also actively seeking their input as to current issues and potential avenues for improvement.[149] SMS is widely supported across the aviation community because of its prospective safety and financial benefits.[150] SMS regulation seeks to meet these benefits by requiring airlines to have four components: (1) safety policy; (2) safety risk management (SRM); (3) safety assurance (SA); and (4) safety promotion.[151]

The safety policy is how airlines communicate upper-level management's "commitment to continually improving safety."[152] Through the safety policy, the airline will "define[ ] the methods, processes, and organizational structure" necessary to meet its safety goals as consistent with the FAA's regulatory goals.[153] The airline will then communicate this throughout the organization and continue to review and edit the policy to adapt to the airline's needs.[154] In defining the safety policy, the airline must

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144 *See id.*

145 *Id.*

146 *See id.*

147 *See id.*

148 *Id.*

149 *See id.*

150 *Id.*

151 *Aviation Safety (AVS) Safety Management System Requirements*, U.S. DEP'T TRANSP. 4 (Mar. 9, 2017), https://www.faa.gov/documentLibrary/media/Order/VS_8000_367B.pdf [https://perma.cc/4WNR-WJWQ].

152 *Id.* at 10.

153 *Id.*

154 *Id.* at 11.

establish a management board responsible for the continued policy, performance, strategy, and allocation of safety resources.[155] The safety policy must also document: (1) a commitment to implementing, maintaining, and improving SMS; (2) a commitment to creating a positive safety culture by allowing non-punitive safety reporting and encouraging employee-proposed solutions; (3) a guideline for acceptable behavior and safety objective setting and review; and (4) the responsibilities that hold management and employees accountable for safety oversight.[156]

SRM is a formal process with five steps: "describing the system, identifying the hazards, analyzing the risk, assessing the risk, and controlling the risk."[157] Despite the formality, SRM still permits airlines to take immediate mitigation measures for any high-risk situations that may arise.[158] For situations that are not time sensitive or after immediate mitigation attempts have been made, the SRM process should occur.[159] In this process, SRM must define an acceptable level of risk and the criteria for determining those levels so that management can make mitigation decisions as necessary.[160] The regulations also require that every step of SRM be documented to increase transparency to stakeholders and ensure compliance with the law.[161]

The SA requirement of SMS is meant to support the "identification of potential new hazards" and to determine whether "implemented risk control strategies are adequately mitigating safety risk."[162] This is done largely through the collection and analysis of data collected through employee reporting, company auditing, and assessments verifying compliance with the airline's own SMS, as well as any FAA orders, standards, and policies.[163] When the airline does find "nonconformance, noncompliance, potential hazards, or ineffective controls," new corrective actions must be taken at a high-priority level to ensure safe operations are being maintained.[164] SA interacts closely with SRM,

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155 *Id.* at 10.
156 *Id.*
157 *Id.* at 12.
158 *Id.*
159 *See id.*
160 *See id.* at 13.
161 *See id.* at 12–14.
162 *Id.* at 15.
163 *Id.*
164 *Id.* at 19.

assessing the planned changes as implemented in SRM that prompt new mitigating changes to the system.[165]

The last element, safety promotion, is the "combination of training and communication of safety information to support the implementation and operation of an SMS in an organization."[166] The FAA mandates safety promotion because it is what creates SMS's objective of "a positive safety culture among all employees" by encouraging "shared values, actions, and behaviors" in demonstration of the airline's commitment to safety over profit.[167] Perhaps the most important requirement is the communication and fostering of a non-punitive, cooperative environment for employees reporting safety concerns.[168] Promotion of this type of positive culture is the only way SMS can work effectively. Since they are in everyday operations, often, frontline employees like pilots and flight attendants are in a better position to identify hazards in a timely way.[169]

III. DOES THE LEGISLATION JUSTIFY THE COST?

Colgan Air Flight 3407 was the deadliest transportation accident in the United States since 2001.[170] In light of the tragedy, it was natural for Congress to push through swift regulations to address what caused it. The legislation has major economic impacts, as seen in the analysis below, but generally follows the fundamental shift in the aviation industry's focus on safety from only technical improvements to improving human and organizational function.[171] However—with the 1,500-hour rule's poten-

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[165] *See Safety Management System – Components*, FED. AVIATION ADMIN., https://www.faa.gov/about/initiatives/sms/explained/components/ [https://perma.cc/9FQL-ENB5] (last modified Sept. 11, 2017).

[166] *Aviation Safety (AVS) Safety Management System Requirements*, *supra* note 151, at 20.

[167] *Id.*

[168] *Id.*

[169] *See* Brett Williams, *Creating a Safety Culture Hinges on Buy-In from Frontline Employees*, UL EHS SUSTAINABILITY (Sept. 11, 2013), https://www.ulehssustainability.com/blog/workplacesafety/creating-a-safety-culture-hinges-on-getting-buy-in-from-front-line-employees/#sthash.tP4TixbY.sxZex4Zc.dpbs [https://perma.cc/LQP6-5SRM].

[170] Press Release, Nat'l Transp. Safety Bd., Update on NTSB Investigation into Crash of Colgan Air Dash-8 Near Buffalo, New York; Public Hearing Scheduled (Mar. 25, 2009) (on file with author) https://www.ntsb.gov/news/press-releases/Pages/Update_on_NTSB_Investigation_into_Crash_of_Colgan_Air_Dash-8_near_Buffalo_New_York;_Public_Hearing_Scheduled.aspx [https://perma.cc/5AWZ-QPWG].

[171] *Safety Management System – Basis*, *supra* note 143.

tial economic impact, the lack of quantifiable safety improvement, and the availability of other safety insurance methods—the 1,500-hour requirement should be reduced and high-quality training should be enforced.

A. The Law's Economic Impact and the Impending Pilot Shortage

Since the end of regulation and guaranteed revenue, airlines have become increasingly revenue driven and cost sensitive in their operational decisions.[172] This makes sense considering the sheer size of airline operations in the United States. For instance, in 2017, Delta Airlines incurred $35 billion in operating expenses, while American Airlines incurred $38 billion.[173] Because of these massive costs and the high cost-sensitivity of the airline industry, to fully understand the impact of the FAAEA, an examination of the law's impact on airline operations is necessary.

When the FAA introduces new regulations, operating costs of the airlines are sure to increase as they are required to implement and maintain the requirements.[174] At these beginning stages of the ASPIA's implementation, the pure cost impact on airlines remains unclear.[175] When the Act was passed, there was no estimate as to the cost of implementation.[176] However, in 2015, the FAA produced a cost estimate of SMS implementation.[177] The FAA estimated that commercial airlines would spend $224.3 million in SMS implementation over a ten-year period across the industry.[178] Given the billions spent by airlines

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[172] *See* De Jager, *supra* note 33, at 13.

[173] Delta Air Lines Inc., Annual Report (Form 10-K) (Feb. 23, 2018); Am. Airlines Grp. Inc., Annual Report (Form 10-K) (Feb. 21, 2018).

[174] *See* Cong. Budget Off., H.R. 3371: Airline Safety and Pilot Training Improvement Act of 2009 2–3 (2009), https://www.cbo.gov/sites/default/files/111th-congress-2009-2010/costestimate/hr33710.pdf [https://perma.cc/UF6Z-JH6N].

[175] *Id.*

[176] *See id.*

[177] Peter Okwera, A Cost-Benefit Analysis of Safety Management System Implementation in the Transportation Industry 33 (Aug. 2016) (unpublished M.S. thesis, Middle Tennessee State University) (on file with the Middle Tennessee State University repository) https://jewlscholar.mtsu.edu/bitstream/handle/mtsu/5023/Okwera_mtsu_0170N_10646.pdf?sequence=1&isAllowed=Y [https://perma.cc/7UPD-UBLV].

[178] *Id.* at 34.

every year in operations, this is hardly an economic impact on the airlines.[179]

On top of the relatively low economic investment necessary, if done correctly and to the standards prescribed by the FAA, SMS offers airlines a huge cost savings.[180] The FAA has projected that airlines can benefit from $205 million to $472.3 million over a ten-year period.[181] This monetary benefit is the result of the proactive measures that airlines can take after analyzing front-line reporting.[182] It is believed that these proactive measures will allow an airline to avoid spending the money it would have spent on "damages from accidents, aircraft recovery costs, workplace accident costs, and hikes in insurance."[183] Based on the same proactive nature of FRMS, regardless of the cost of implementation, an assumption can be made that a similar economic benefit will arise.[184]

The 1,500-hour rule presents a more difficult task in terms of quantifying the regulatory cost without the availability of industry or government projections. On its face, the rule simply requires airlines to hire more experienced pilots. However, as with most industries, pilots with more experience demand a higher wage.[185] Across all the domestic airlines, wages have begun to skyrocket.[186] In the regional airlines alone, starting pay has increased from $20,000 to nearly $60,000 since the introduction of the 1,500-hour rule.[187] These increases have largely been attributed to a worldwide pilot shortage in addition to the 1,500-hour rule.[188]

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179 *See* Delta Airlines, Annual Report, *supra* note 173; American Airlines, Annual Report, *supra* note 173.

180 *See* Okwera, *supra* note 177, at 34.

181 *See id.* at 43–44.

182 *See id.* at 2.

183 *See id.* at 53.

184 *See Benefits of FRMS*, FRMSFORUM, https://www.frmsforum.org/about-us/benefits/ [https://perma.cc/3AZZ-G8NV] (last visited Jan. 22, 2019).

185 *See* Mike Arnot, *How Much Do Pilots Make? Salaries from the Regionals to $400,000 Captains in Asia*, POINTS GUY (Oct. 7, 2017), https://thepointsguy.com/2017/10/pilot-salaries-regionals-400000/ [https://perma.cc/DMK8-Q47R].

186 *Id.*

187 *See id.*

188 *See What Do Airline Pilots Earn?*, PHX. E. AVIATION, https://www.pea.com/airline-pilot-salary/ [https://perma.cc/P2FV-KRQK] (last visited Jan. 22, 2019).

Over the next twenty years, the U.S. airline industry will require 117,000 new pilots to meet market demand.[189] As previously discussed, when the ASPIA was passed, it increased the flight-hour requirement from 250 hours to 1,500 hours.[190] This 600% increase in flight-hour requirement put a lot of prospective pilots out of reach from commercial airline employment. A pilot starting with zero experience flying must now spend nearly $100,000 in flight training costs—at a reputable training school—to achieve the experience necessary to become an air transport pilot.[191] For many young pilots, the change in regulation was the end of the road because continuing their training became financially unreasonable.[192]

With the 1,500-hour rule compounding the effects of a worldwide pilot shortage,[193] airlines have begun aggressive recruiting techniques, in addition to increasing pay, to get ahead of the pilot shortage and to sustain market growth.[194] One regional airline has gotten creative and has begun to allow their pilots up to fifteen days off a month with as many as thirty-five days of vacation a year.[195] Other regional airlines have begun offering signing bonuses that can reach as high as $45,000.[196] These bonuses are also coming with promises of quicker promotions—with some pilots moving from first officer to the captain's seat in only two years.[197] For most regional airlines, the current pace at which these incentives are increasing poses a real threat to their

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189 *Airlines Expected to Need 117K Pilots Over Next 20 Years*, FOX 4 NEWS (Dec. 7, 2017), http://www.fox4news.com/business/airlines-expected-to-need-117k-pilots-over-next-20-years [https://perma.cc/3KMW-24FS].

190 Garcia, *supra* note 9.

191 *See How Much Does Pilot Training Cost?*, ATP, https://atpflightschool.com/faqs/pilot-training-cost.html [https://perma.cc/UXY4-FQQJ] (last visited Aug. 13, 2019).

192 *See* Garcia, *supra* note 9.

193 *Id.*

194 *See* Tracy Rucinski, *U.S. Airlines Tap Army Helicopter Pilots to Ease Shortage*, REUTERS (Jan. 23, 2019), https://www.reuters.com/article/us-usa-aviation-shortage-insight/u-s-airlines-tap-army-helicopter-pilots-to-ease-shortage-idUSKCN1PH0CO [https://perma.cc/KEY2-MSBD].

195 *Endeavor Air Announces $80,000 Pilot Retention Program*, COAST FLIGHT, https://iflycoast.com/endeavor-air-retention-program/ [https://perma.cc/XRR9-2QXU] (last visited Jan. 25, 2019).

196 Bill Hethcock, *This Airline Is Offering Up to $45K Signing Bonuses for Pilots*, DALL. BUS. J. (Jan. 10, 2018), https://www.bizjournals.com/dallas/news/2018/01/10/this-airline-is-offering-up-to-45-signing-bonuses.html [https://perma.cc/3Y9H-8ME7].

197 *Id.*

survival.[198] This threat exists because regional airlines are operating on fixed revenue through codeshare agreements.[199] As discussed in Part I of this Comment, because regional airlines have no ability to change routes or influence pricing, a sharp rise in labor costs will require other operational changes in an attempt to reduce costs.[200] For the carriers that cannot make the necessary changes, it is likely that they will be unable to continue operations, and the young pilots looking to gain experience for the larger airlines will have one less option for employment.[201]

The Air Line Pilots Association International pilots union argues that there is not a true shortage of pilots, but rather, starting pilots have been perpetually underpaid and this is the market stabilizing.[202] In 2016, the union stated that the number of incoming qualified pilots was over double the number of hired new pilots for that year.[203] However, this snapshot into the job market may be too shortsighted. Pilots from the Baby Boomer generation are quickly heading into retirement.[204] With so many pilots exiting the job market, it is important to note the 1,500-hour rule will likely exacerbate the market for pilots over the course of the next few years. While the monetary response of the airlines to address staffing could be looked at as the free market stabilizing itself, the practical implications on the rest of the country could be startling.

B. Practical Effects of the 1,500-Hour Rule

As discussed in part in the introductory material of this Comment, the commercial airline industry is one that has a massive economic impact across the country. Airline operations drive over 10 million jobs, 5 cents of every dollar of the United States' gross domestic product, and $1.5 trillion in domestic economic

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198 *See* Brian Sumers, *U.S. Pilot Shortage Claims a Casualty: Will More Airlines Shut Down?*, Skift (Mar. 30, 2018), https://skift.com/2018/03/30/u-s-pilot-shortage-claims-a-casualty-will-more-airlines-shut-down/ [https://perma.cc/5N2P-QNXY].

199 *See* Schlappig, *supra* note 56.

200 *See* Sumers, *supra* note 198.

201 *Cf.* Cervantes, *supra* note 63.

202 *See* Hethcock, *supra* note 196.

203 *See id.*

204 *See The American Airline Industry Is Heading Toward a Pilot Shortage*, Wings J. (Oct. 24, 2017), https://www.wingsjournal.com/american-airline-industry-heading-toward-pilot-shortage [https://perma.cc/9WM9-QJRW].

activity.[205] These numbers are produced by "transporting 2.4 million passengers and more than 58,000 tons of cargo daily."[206] It was exactly this type of role in the economy that led the federal government to subsidize and regulate airlines like a public utility under the belief that airlines had to be able to survive economic downturns to encourage economic growth and development.[207] This concern about survival has become increasingly important as a volatile oil market looms over the airline industry and labor costs—35% of all operating expenses—are expected to climb in light of the airlines' economic response to the pilot shortage.[208]

This rise in operating expenses, especially if oil prices increase, poses a lot of the same risks to the market as the end of regulation. When faced with economic downturns, airlines first look to decrease any unnecessary cost and if that fails, they attempt to consolidate.[209] Four airlines in the United States already control around 85% of the country's air traffic.[210] Based on the current structure of the industry, further consolidation is particularly dangerous to a prospective passenger's choice in travel.[211] Coupled with rising labor costs, if an economic downturn of this type appeared imminent, it would likely require action on the part of the government to expand the EAS program.[212] This would ensure that smaller markets continue to see air service as airlines look to cut their less profitable routes and regional carriers cease operations.[213]

An expansion of EAS would not only effectively pass the cost of the 1,500-hour rule to federal taxpayers, but cities like Pittsburgh and St. Louis—that would unlikely qualify due to their size—would face a real risk of continued service degradation.[214] This means that smaller city governments will likely have to offer

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[205] *See The Airline Industry – Is a Critical Economic Engine*, AIRLINES FOR AM., http://airlines.org/industry/#economic [https://perma.cc/63M8-L4BF] (last visited June 21, 2019).

[206] *See The Airline Industry – Connects Communities*, AIRLINES FOR AM., http://airlines.org/industry/#communities [https://perma.cc/VWX4-WBDB] (last visited June 21, 2019).

[207] *See* Dempsey, *supra* note 11, at 140.

[208] *See* Beers, *supra* note 3.

[209] *See* De Jager, *supra* note 33, at 14, 140.

[210] *See* Marshall, *supra* note 44.

[211] *See id.*

[212] *See id.*

[213] *See* Morris, *supra* note 47.

[214] *See id.*

airlines monetary incentives to maintain air service.[215] Without doing so, these cities face the risk of losing their local businesses as they choose to move to locations better equipped to conduct modern business.[216] Under this circumstance, it will be local taxpayers paying the price of the legislation rather than just airline consumers.[217] Because of these practical threats, it is necessary to evaluate whether the 1,500-hour rule's benefits are worth the costs and to analyze potential ways that the government can meet similar goals without those threats.

C. The Benefit of the 1,500-Hour Rule and Potential Alternatives

Following the Colgan Air accident, the families of the deceased lobbied Congress for more stringent training requirements under the belief that the pilots were inadequately prepared to handle irregular operations.[218] The ASPIA was introduced to improve airline safety by ensuring that pilots receive higher quality training and, by virtue of that training, have a "strong[ ] foundation of aeronautical knowledge and experience."[219] To see the benefit of the legislation, it must be determined whether airline safety in this country has improved since it was passed and whether that improvement can actually be attributed to the rule change.

From the time of the Colgan Air accident to 2018, nearly 100 million U.S.-operated airline flights carried billions of people without a single passenger fatality caused by an accident.[220] In fact, across the globe, flying is now safer than "driving, taking a bus or a train, riding a bike or a motorcycle, or even walking."[221] However, improved aviation safety is not a new trend. Fatal accidents have decreased in the United States every decade since the 1950s as technology, understanding of human behavior, and

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[215] *See id.*

[216] *See* Shrikant, *supra* note 50.

[217] *See* Morris, *supra* note 47.

[218] *See* Jerry Zremski, *Aviation Safety Group Appears to Break with Flight 3407 Families*, Buffalo News, https://buffalonews.com/2018/03/07/flight-safety-group-appears-to-break-with-flight-3407-families/ [https://perma.cc/EQF5-YLVA] (last updated Feb. 8, 2019).

[219] *See* FAA Boosts Aviation Safety with New Pilot Qualification Standards, *supra* note 101.

[220] *See* Reed, *supra* note 28.

[221] *Id.*

government oversight has improved.[222] For the ten years prior to the Colgan Air accident, the risk of air travel fatalities in the United States dropped 83%.[223]

Though fatality risk has decreased, it is true that when aviation accidents do occur, they are predominantly the result of pilot error due to: "poor actions or decisions, often caused by fatigue, inebriation or lack of experience; and operational errors, related to problems with flight instruction and training."[224] It is also true that an increase in flight training hours could at least help reduce the lack-of-experience element of pilot error.[225] However, the Flight Safety Foundation, an independent international flight safety group, believes that flight hours by themselves are not an accurate reflection of pilot knowledge, skills, or professionalism.[226] The NTSB and the FAA agree.[227] Government studies have suggested that more experienced pilots do not always outperform those with fewer hours and that a minority of accidents actually involve pilots with less than 1,500 hours on the job.[228] In fact, the Colgan Air captain had over 3,000 flight hours.[229]

Without any true support in accident history, government studies, or the recent safety record, it appears that the 1,500-hour rule may have been made too hastily and does not provide the benefit Congress was seeking to establish. What is apparent is that the 1,500-hour rule is going to exacerbate an existing and growing pilot shortage that will threaten the economies of smaller communities as well as customer choice. Congress should move to remedy the situation and instead control for accident risk factors that are quantifiable.

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[222] *How Aviation Safety Has Improved*, ALLIANZ (2014), https://www.agcs.allianz.com/insights/expert-risk-articles/how-aviation-safety-has-improved/ [https://perma.cc/KJH4-XYQD].

[223] FAA Final Rule Requires Safety Management Systems for Airlines, *supra* note 29.

[224] Husna Haq, *How Human Error Can Cause a Plane Crash*, BBC (May 22, 2013), http://www.bbc.com/travel/story/20130521-how-human-error-can-cause-a-plane-crash [https://perma.cc/S4BX-43GL].

[225] *See id.*

[226] *See* Zremski, *supra* note 218.

[227] Ashley Nunes, *Regulations Should Help Americans. This One Doesn't*, FORBES (Mar. 13, 2017), https://www.forbes.com/sites/ashleynunes/2017/03/13/regulations-should-help-americans-this-one-doesnt/#111c1994445f [https://perma.cc/GH47-SZNX].

[228] *See id.*

[229] *See* Collins, *supra* note 81.

Supporters of the 1,500-hour rule—like the Air Line Pilots Association pilots union—are resolved that the 1,500-hour rule remain as is.[230] Some unions believe that, rather than minimize the value of experience, Congress can address the perceived pilot shortage by raising the mandatory retirement age from sixty-five to sixty-seven.[231] This is a strategy that was first used by Congress five years ago when it raised the mandatory retirement age from sixty to sixty-five.[232] While this would provide a potential solution to staffing problems and guarantee that experienced pilots are in the cockpit, it seems to undermine the integrity of the rest of the ASPIA.

SMS and FRMS, at their core, are designed to identify safety hazards and mitigate those hazards in a way that allows pilots to effectively do their jobs. Unfortunately, increased age brings with it inherent safety hazards. Reflexes slow down as people age.[233] While allowing older pilots to continue flying does increase the likelihood that the pilot can identify safety hazards more quickly, it also increases the likelihood that they will be slower to react.[234] Additionally, increased age brings a greater risk of associated memory impairment.[235] Some studies have suggested that chronic stress can exacerbate memory impairment problems.[236] Being a pilot for a major airline can easily be put into the category of chronic stress.[237] These pilots are operating machines at 30,000 feet with direct responsibility for other peoples' lives.[238] When they are on the ground, they are subject to constant rescheduling as weather and operational issues become apparent and often find themselves the target of customer complaints. If an older pilot faces an emergency, potential memory

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230 *See* Silk, *supra* note 108.

231 *See* Marisa Garcia, *What to Know About the Mandatory Pilot Retirement Age*, TRAVEL & LEISURE (June 7, 2018), https://www.travelandleisure.com/airlines-airports/pilot-retirement-age [https://perma.cc/C88K-DPQS].

232 *See Airlines Expected to Need 117K Pilots*, *supra* note 189.

233 *A Quick Look at Reflexes*, UNIV. ROCHESTER MED. CTR., https://www.urmc.rochester.edu/encyclopedia/content.aspx?ContentTypeID=1&ContentID=562 [https://perma.cc/U5TV-59Y8] (last visited Jan. 24, 2019).

234 *See id.*

235 Gary W. Small, *What We Need to Know About Age Related Memory Loss*, 325 BMJ 1502, 1502 (2002), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1123445/ [https://perma.cc/Y9LW-NWAL].

236 *Id.* at 1503–04.

237 *See* J.C. Santos, *Being a Pilot the Most Stressful Career this Year*, TRAVELERS TODAY (Jan. 20, 2017), https://www.travelerstoday.com/articles/35568/20170120/being-pilot-stressful-career-year.html [https://perma.cc/BZQ5-9EL3].

238 *See id.*

loss becomes a massive liability in terms of responding to the safety hazard quickly. Finally, older pilots are more susceptible to cardiovascular disease.[239] While this is something that can be detected in annual physicals, there remains a risk that disease will go undetected or could develop within that year of time.[240] If a cardiovascular event were to take place in the cockpit, the safety of the flight would be immediately compromised, as the co-pilot now must deal with the operation of the flight as well as responding to the medical emergency.

Furthermore, the use of retired pilots does not alleviate the issue of rising operational costs. As previously discussed, more experienced pilots require more pay.[241] By increasing the age of retirement, airlines will still be required to increase their operational costs. Though it may not end up costing as much as the recruiting incentives have, it still poses the risk that airlines may face greater consolidation, and the public will see a reduction of air service. Because of this and the continued risk of loss of service, the option of increasing the mandatory retirement age is not a risk that should be taken.

Instead, Congress should focus future legislation on increasing safety standards and ensuring pilot qualifications by regulating the *quality* of training rather than focusing purely on the quantity of flight training hours. As previously discussed, one government study has suggested that experience does not necessarily correlate to higher quality performance.[242] In fact, Congress already seems to have acknowledged that high-quality training is preferable and more likely to ensure safe operations through the hour reduction it allows for university-trained pilots.[243] One of the biggest reasons the government can be sure that these pilots have the foundation that it wants is because the government has a heavy hand in training these pilots.[244] It is likely that it is this high level of training as well as the potential high-stress flight environments—like war zones—that makes the government feel comfortable enough with military pilots' expe-

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[239] *See* Ravi Dhingra & Ramachandran S. Vasan, *Age as a Cardiovascular Risk Factor*, 96 MED. CLINIC N. AM. 87 (2012), https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3297980/ [https://perma.cc/WP2B-PGA6].

[240] *See id.*

[241] Arnot, *supra* note 185.

[242] Nunes, *supra* note 227.

[243] 14 C.F.R. § 61.160(b) (2013).

[244] *See* FAA Boosts Aviation Safety with New Pilot Qualification Standards, *supra* note 101.

rience to require only half that of a regularly-trained pilot. The government also has a heavy hand in training university pilots. The university must meet FAA-mandated curriculum standards and the student must finish actual coursework approved by the FAA to be eligible for the hour reduction.[245]

This is the logic that Congress should follow in addressing the problems caused by the 1,500-hour rule. Currently not all training schools must be FAA-approved institutions.[246] This results in a wide variety of training quality amongst pilots, as some schools choose only to meet the bare minimum required by law.[247] Rather than allow for this variation and count on the revenue-focused airlines to make up for the slack, Congress should require all flight training schools to meet FAA approval.[248] By doing so, Congress can ensure that all incoming pilots have the same foundation of knowledge. While this may require greater up-front cost on the part of incoming pilots, it will better guarantee that those pilots have success when they take their qualifying exams and enter the workforce. By decreasing the variance in flight-training schools, Congress can then decrease the flight-training hours across the board to at least 1,250.[249] In turn, Congress should consider a continued decrease in hours of university-trained pilots, as the required curriculum provides a level of depth to flight training that may not be available in a regular flight school. These flight-hour reductions will help mitigate the pilot shortage and reduce the risk of service loss. Unlike increasing the mandatory retirement age, this is a solution that ensures foundational knowledge and supports the rest of the ASPIA. The same foundation for all pilots allows an airline—through its SMS—to focus on training concerns that are more particular to their own operations, rather than fixing deficiencies that may have been developed while the pilot was trained in a less-reliable flight school. While the pilots operating the Colgan Air accident were heavily fatigued at the time of the accident, if a more stan-

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[245] *See* 14 C.F.R. § 61.160(b)(1)–(2).

[246] *See Types of Pilot Schools & Choosing a Pilot School*, FED. AVIATION ADMIN., https://www.faa.gov/training_testing/training/pilot_schools/ [https://perma.cc/3MTZ-9KM4] (last modified Nov. 28, 2016).

[247] *See Ask the Captain: Local Flight School or College Aviation Program?*, USA TODAY (Oct. 20, 2013), https://www.usatoday.com/story/travel/columnist/cox/2013/10/20/pilot-training-flight-schools-aviation-college-degree/3004727/ [https://perma.cc/E5WX-DTZQ].

[248] U.S. GOV'T ACCOUNTABILITY OFF., GAO-12-117, BETTER MANAGEMENT CONTROLS ARE NEEDED TO IMPROVE FAA OVERSIGHT 1, 45 (2011).

[249] *See* 14 C.F.R. § 61.160(c).

dardized knowledge base had been in place at the time of the accident, it is more likely that the pilots would have been able to respond to the emergency. With all airlines now utilizing SMS, airline travelers can rest easy because, if done properly, both airlines and the FAA will proactively discover any training deficiencies and other safety hazards that may arise, and they will be able to address these hazards before any danger impacts an actual flight.

IV. CONCLUSION

Airlines operate in a highly cyclical economic market.[250] Because of this, airline profit margins are highly sensitive, and in times of downturn, airlines will often cut flight service to any routes they find unprofitable, which puts the economy's smaller communities in danger.[251] While made with the noble intention to improve flight safety, the ASPIA and FAAEA have exacerbated this risk by adopting the 1,500-hour rule. With the economic risk the rule poses and the lack of evidence that the rule has improved safety or that this number of hours is required to ensure adequate foundational knowledge, Congress should require all flight schools meet FAA approval and lower the flight-hour requirement to better reflect FAA and NTSB studies.[252]

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[250] *See* Kawika Piersona & John D. Sterman, *Cyclical Dynamics of Airline Industry Earnings*, 49 SYS. DYNAMICS REV. 129, 129–30 (2013).

[251] *See Essential Air Service*, *supra* note 36.

[252] *See* Nunes, *supra* note 227.