Sleeping on the Job - A Critical Analysis of the FAA's Cargo Carve-out under F.A.R. 117 and the Simple Solution That No One Is Talking about

Kelsey M. Taylor

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SLEEPING ON THE JOB—A CRITICAL ANALYSIS OF THE FAA'S "CARGO CARVE-OUT" UNDER F.A.R. 117 AND THE SIMPLE SOLUTION THAT NO ONE IS TALKING ABOUT

KELSEY M. TAYLOR*

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"MY MIND CLICKS on and off . . . I try letting one eyelid close at a time when I prop the other open with my will. But the effort's too much. Sleep is winning. My whole body argues dully that nothing, nothing life can attain, is quite so desirable as sleep. My mind is losing resolution and control." - Charles A. Lindbergh¹

I. INTRODUCTION

"I'm talking about 150 feet and he would have hit my house and my family would have been dead," said Freddy Carter shortly after a United Parcel Service, Inc. (UPS) cargo plane crashed near his subdivision while on approach to Birmingham-

Shuttlesworth International Airport in August 2013. The plane crashed into a hill just one mile short of its target runway, killing both pilots. The engines and other onboard systems were apparently working correctly, and, despite the fact that the runway lacked an instrument landing system, the runway’s landing lights should have given ample warning that the plane was flying too low. So what caused the crash?

Though the National Transportation Safety Board (NTSB) has not released its official findings, investigators were initially concerned that fatigue may have "impeded cockpit reactions" when the plane’s collision-avoidance system alerted the pilots that the plane was descending too quickly. The pilots had reported for duty the previous night and were about to complete a nine-hour overnight shift at the time of the accident. Not surprisingly, the aircraft’s cockpit voice recorder captured the pilots discussing "how tired they were" and "how fatiguing they felt UPS overnight schedules could be."

A. Fatigue in Aviation

For two decades, the NTSB has identified fatigue as one of the most dangerous issues in the transportation industry. According to sleep expert and NTSB member Dr. Mark Rosekind, "[f]atigue can degrade every aspect of human capability." In the field of aviation, a pilot need not be "asleep at the stick" for fatigue to pose a serious safety threat. Studies have shown that it can impair the basic functions most critical to pilots, such as judgment, attention, concentration, and reaction time, by

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4 Id.

5 Id.

6 Id.

7 Id.


9 Id.

20-50%. In fact, fatigued individuals may be fairly characterized as being in an “unstable cognitive state,” and for pilots a few critical seconds of impaired reaction time may mean the difference between life and death.

The Federal Aviation Administration (FAA) has recognized three different types of fatigue: transient, cumulative, and circadian. Transient fatigue is caused by a singular instance of being awake for too many consecutive hours. Cumulative fatigue, on the other hand, is caused by successive days of “mild” sleep deprivation, which accumulate into “sleep debt”—the difference between the amount of sleep you should have received and the amount of sleep you actually received in the same period. Circadian fatigue occurs when an individual experiences diminished performance during a time when the body normally wants to be asleep (i.e., the “window of circadian low”), which for most people is between 2:00 a.m. and 6:00 a.m.

The frightening thing is that pilots, who frequently operate under one or more of these types of fatigue, may be completely unaware of any impairment. Even when they feel awake and alert, fatigued pilots may lack the “physiological alertness” to respond to an emergency or even perform basic tasks properly. Furthermore, when fatigue is combined with the empty void of the night sky and the steady drone of the plane’s engine, it is no wonder that one in seven pilots admits to having dozed at the controls when flying overnight shifts.

B. THE AIR CARGO INDUSTRY

Many of the features inherent to air travel are the primary factors cited by the FAA as contributing to pilot fatigue: flying

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11 Rosekind, supra note 8.
12 Id.
14 Id.
15 Id.
16 Id.
18 Mark, supra note 10.
19 See id.; Rosekind, supra note 8.
long hours, crossing multiple time zones, and working “on the back side of the clock.” Cargo pilots, however, are particularly vulnerable because of the extreme demands of the all-cargo business model.

In today’s global economy, air cargo carriers must conduct “round-the-clock all-weather operations.” For companies such as UPS, speed is vital. A cargo shipment may comprise pharmaceuticals, medical supplies, perishable goods, and critical industrial components. Thus, when cargo flights carrying these items are delayed or cancelled, not only could the value of the cargo be destroyed, but also, in some situations, lives could be endangered. UPS’s Next Day Air service enables such items to be delivered domestically and is the heart of UPS’s business model. Obviously, this express overnight service is made possible only by overnight flights to these locations.

To meet the demands of the market, cargo pilots must fly long-haul overnight routes, often working more hours and crossing more time zones than their passenger-pilot counterparts. Though many of these routes are scheduled, many are unscheduled. This requires cargo pilots to sleep “on the fly” in the daytime, which further contributes to circadian fatigue.

On top of that, cargo pilots have greater cumulative fatigue as

25 Id.
26 Id.
27 Id. at 6.
28 See id.
29 Sullenberger & Hall, supra note 22.
30 DuBose, supra note 17, at 255–56.
31 Id.
well and, according to one study, can amass a sleep debt of eight or more hours each week.  

As if fatigue was not enough, cargo pilots face additional challenges, such as flying into smaller airports with fewer safety protections (like precision instrument approach technology and proper runway lights), flying older aircraft, and carrying more dangerous cargo. Furthermore, cargo routes may change frequently as a function of demand, which “decreases the safety margins afforded by route familiarization.” Globally, fatal accidents involving cargo planes are eight times more frequent than those involving passenger planes. So what is being done about this?

C. THE NEW REGULATIONS

On January 4, 2014, new FAA regulations went into effect that ostensibly address the dangers of pilot fatigue: Flightcrew Member Duty and Rest Requirements, codified at F.A.R. 117 (the Final Rule or Part 117). The Final Rule, which applies to Part-121 certificate holders, sets the requirements for the amount of rest a pilot must have before duty and places limits on the amount of time that pilots may fly in a duty period. In addition, these requirements can vary depending on certain factors: “the time of day pilots begin their first flight, the number of scheduled flight segments[,] and the number of time zones they cross.”

Although these measures are certainly steps in the right direction, the FAA departed from its original “flight path” by allowing a blanket exemption for all-cargo operations in the Final Rule. Of course, pilots are human and therefore subject to fatigue regardless of the type of plane they happen to fly. Nevertheless,
after an uproar from cargo carriers, “the FAA has determined that this rule would create far smaller benefits for all-cargo operations than it does for passenger operations.”

This comment explores the merits of the FAA’s decision to exempt cargo carriers from the Flight Duty and Rest Requirements under Part 117 of the Federal Aviation Regulations, i.e., the “cargo carve-out.” Part II sets out the factual and legislative history of the Final Rule, including the congressional mandate issued to the FAA in promulgating these new regulations. Part III outlines the arguments made in favor of the “cargo carve-out” and shows how the Final Rule differs from the Proposed Rule in that area. Part IV analyzes the congressional mandate given to the FAA and whether the FAA’s use of a cost-benefit analysis in allowing the cargo carve-out was legally and factually warranted. Part V highlights the Fatigue Risk Management System as a built-in solution for this regulatory challenge.

II. THE AIRLINE SAFETY ACT OF 2010 AND THE PROPOSED RULE

A. FACTUAL HISTORY

Globally, pilot fatigue has contributed to hundreds of deaths and billions of lost dollars in aviation accidents occurring in the last twenty years. The NTSB first cited fatigue as a probable cause of an aviation accident in 1993 at the Naval Air Station in Guantanamo Bay, Cuba. According to the NTSB, the captain and the flight crew suffered from “acute sleep loss, sleep debt, [and] circadian disruption,” which caused the aircraft to crash short of the runway. More recently, in July 2009, a French pilot with only one hour of sleep was unable to regain control of his aircraft when it hit bad weather over the Atlantic Ocean, which resulted in the deaths of 228 people. Then in 2010, a sleepy

capa-refutes-the-new-flightduty-time-regulations.1; see also Proposed Rule, supra note 13, at 55,857 (acknowledging that “[f]atigue factors . . . are universal”).
44 Rosekind, supra note 8.
45 Id.
pilot was blamed for the death of 158 people when his plane overshot his targeted runway in Mumbai, India.\textsuperscript{47}

In the United States, prior to 2009, fatigue was thought to have contributed to over 300 aviation fatalities.\textsuperscript{48} Yet previous proposals by the FAA to independently address pilot fatigue had failed.\textsuperscript{49} Then in 2009, Colgan Air Flight 3407 crashed in Buffalo, New York, killing all forty-nine people on board and one person on the ground.\textsuperscript{50} Once the accident was investigated, it was discovered that both pilots were severely sleep deprived and had made transnational flights prior to beginning their scheduled flight.\textsuperscript{51} At the time, fatigue had been on the NTSB’s “Most Wanted List” since 1990;\textsuperscript{52} however, the Colgan crash brought pilot fatigue to the forefront of the American dialogue and finally motivated Congress to revisit the outdated regulations for pilot duty and rest.\textsuperscript{53}

B. THE CONGRESSIONAL MANDATE

The FAA had previously been unsuccessful in regulating pilot fatigue, largely because such regulations lacked congressional backing.\textsuperscript{54} On the heels of the Colgan tragedy, however, Congress enacted the Airline Safety and Federal Aviation Administration Extension Act of 2010 (the Airline Safety Act).\textsuperscript{55} As part of a larger aviation safety scheme, Section 212 of the Airline Safety Act specifically directed the FAA to “address problems relating to pilot fatigue.”\textsuperscript{56}

Congress gave the FAA six months from the date of the Airline Safety Act to issue a Notice of Proposed Rulemaking (Proposed Rule), and, after a comment period, the Final Rule was to follow six months later.\textsuperscript{57} Most importantly, Congress ordered the FAA to use “the best available scientific information” to draft

\textsuperscript{48} Rosekind, \textit{supra} note 8.
\textsuperscript{49} DuBose, \textit{supra} note 17, at 259–60.
\textsuperscript{50} \textit{Id.} at 260; Rosekind, \textit{supra} note 8.
\textsuperscript{51} DuBose, \textit{supra} note 17, at 258–59.
\textsuperscript{52} Rosekind, \textit{supra} note 8.
\textsuperscript{53} DuBose, \textit{supra} note 17, at 260.
\textsuperscript{54} Brief for Petitioner at 3, Indep. Pilots Ass’n v. FAA, No. 11-1483 (D.C. Cir. filed Dec. 22, 2011), [hereinafter IPA Brief].
\textsuperscript{56} \textit{Id.}
\textsuperscript{57} \textit{Id.}
rules limiting pilots’ flight time and duty time with the ultimate goal of reducing or eliminating fatigue-related fatalities and other losses.58 This congressional mandate has become a source of contention among the various parties affected by these new regulations and will be examined further in Part IV.

C. THE PROPOSED RULE

In accordance with the congressional mandate, the FAA released its proposed rules in September 2010.59 The Proposed Rule began with a sweeping declaration that the “current regulations do not adequately address the risk of fatigue.”60 The FAA then proposed changes to key areas of regulation: flight duty period (FDP), cumulative flight time, total flight time, and rest requirements.61 In addition, the Proposed Rule eliminated all distinctions between passenger and cargo carriers,62 holding each to the same standards for pilot duty and rest.63 Even more remarkably, the Proposed Rule also permitted a carrier to develop its own plan—a Fatigue Risk Management System—to combat fatigue if the carrier was unable or unwilling to operate within the new rules.64 See Table A at the end of this section for a summary of the Proposed Rule.

1. Flight Duty and Rest Requirements

The hallmark of the Proposed Rule was the method of computation for an FDP.65 The Proposed Rule included a matrix that would alter the appropriate FDP on a case-by-case basis depending on variables that are now known to increase pilot fatigue: flying during the window of circadian low, flying routes with several segments requiring multiple takeoffs and landings, and flying at night.66 Thus, where the previous regulations had allowed for FDPs of up to sixteen hours, the new schedule permitted FDPs of only nine to thirteen hours depending on these variables.67 The Proposed Rule also placed limits on the total

58 Id.
59 Proposed Rule, supra note 13.
60 Id. at 55,855.
61 DuBose, supra note 17, at 261–62.
63 Proposed Rule, supra note 13, at 55,853.
64 Id. at 55,874.
65 DuBose, supra note 17, at 261–62.
66 Id.
amount of time a pilot may spend at the controls during an FDP, as well as the cumulative amount of duty time a pilot may work in a seven-day and twenty-eight-day period.

In addition, the Proposed Rule made fundamental changes to the rest requirements for pilots. Previous regulations had required an eight-hour rest period for pilots between shifts, with the rest “clock” beginning immediately when the pilot’s duty ends. The new regulations, however, acknowledged that eight hours of “rest” are not equal to eight hours of sleep opportunity when other factors like commuting, hotel check-in, showers, and meals are considered. The Proposed Rule therefore required that pilots be given a minimum of nine consecutive hours of rest before the next shift, with the rest “clock” starting when the pilot “reaches the hotel or other suitable accommodation.”

2. The Inclusion of Cargo Carriers

In a dramatic departure from the previous regulations, the Proposed Rule proudly declared that, after considering the relevant science, international standards, and industry recommendations, “distinctions between domestic, flag, and supplemental operations are eliminated.” Consistent with its mandate to use the best available science in the interest of safety, the FAA cited the “universal” nature of fatigue in announcing its scientific sleep findings:

Most people need eight hours of sleep to function effectively; most people find it more difficult to sleep during the day than during the night, resulting in greater fatigue if working at night; the longer one has been awake and the longer one spends on task, the greater the likelihood of fatigue; and fatigue leads to an increased risk of making a mistake.

Notably, the Proposed Rule acknowledged that “there are no physiological differences between pilots who fly cargo planes and pilots who fly passenger planes.” Though the FAA was “sympa-
thetic" to the fact that the new regulations may "disproportionately impact [cargo carriers'] business models," it clearly placed a higher priority on safety in its initial proposal.77

3. Fatigue Risk Management Systems

With the understanding that some carriers' operations might not conform well to the new regulatory scheme, the FAA proposed an innovative way to allow specific carriers to essentially self-regulate: the Fatigue Risk Management System (FRMS).78 The FRMS alternative is a "cooperative approach" between the carrier and the FAA that enables the carrier to develop its own methods of mitigating fatigue, which would then require approval and monitoring by the FAA.79

A good FRMS should use scientific data on fatigue to customize its flight duty and rest policies in order to provide an "equivalent level of safety" to the Proposed Rule.80 Toward that end, the FAA provided further guidance for carriers wishing to establish an FRMS by publishing Advisory Circular 120-103, which outlines the FAA's requirements for approval.81 For example, an FRMS should include systems like: (1) education and fatigue awareness training for pilots; (2) a non-punitive reporting system for pilots who are too fatigued for duty; (3) a periodic evaluation of the FRMS; and (4) a non-punitive system for reporting fatigue-induced errors and incidents.82 Moreover, the FRMS provides flexibility because a carrier may use it only as needed for certain routes or segments of their business, or, alternatively, a carrier may opt to apply the FRMS to the entire organization.83 Thus, by making the FRMS a viable and attainable alternative, the FAA effectively provided the opportunity for carriers to exempt themselves from the new regulations for part or all of their operations.84

77 Id. at 55,857.
78 Id. at 55,874.
79 Id.
80 Id.
82 ADVISORY CIRCULAR, supra note 81, at 6–9.
83 Proposed Rule, supra note 13, at 55,874.
84 See id.
Table A: Summary of Final Rule vs. Current Rule, by Provision

<table>
<thead>
<tr>
<th>Items</th>
<th>NPRM</th>
<th>Current/Previous Rule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distinction Between Kind of Passenger Operations</td>
<td>Single rule for all kinds of operations. No distinctions.</td>
<td>Limits are different based upon the kind of operations.</td>
</tr>
<tr>
<td>Fitness For Duty</td>
<td>Joint responsibility between the pilot and airline for ensuring the pilot is fit for duty. The pilot must sign that he or she is “fit” to take the flight. If a pilot reports fatigue, the airline must remove that pilot from duty.</td>
<td>Current rule language requiring the pilot to report fit for duty is not as clear.</td>
</tr>
<tr>
<td>Fatigue Management System</td>
<td>Option to develop an FAA-approved alternative method of compliance.</td>
<td>No option available.</td>
</tr>
<tr>
<td>Fatigue Education and Awareness Training Program</td>
<td>Provide annual fatigue education and awareness education for pilots, dispatchers, individuals directly involved in the scheduling of pilots, individuals directly involved in operational control, and any employee providing direct management oversight of those areas.</td>
<td>Not required by current regulations, but is required as part of public law.</td>
</tr>
<tr>
<td>Flight Duty Period: Split Duty</td>
<td>Applied to night operations requiring at least 3 hours of rest during the flight duty period (FDP).</td>
<td>No limit.</td>
</tr>
<tr>
<td>Flight Duty Periods (FDP)</td>
<td>Limits the length of the FDP based upon the time the FDP starts and the number of segments flown.</td>
<td>Limits do not factor in circadian issues or the number of segments flown.</td>
</tr>
<tr>
<td>Reserve Status</td>
<td>The pilot must be given a rest period of at least 10 consecutive hours immediately before beginning a reserve period, measured from the time the flightcrew member is released from duty.</td>
<td>No limit other than 24 hours free from duty in any 7 consecutive days.</td>
</tr>
<tr>
<td>Cumulative Limitations</td>
<td>Limits the FDP hours during any week and 4-week period. Limits flight time for any 4-week period and any 365-day period.</td>
<td>Limits flight hours on a daily and yearly basis.</td>
</tr>
<tr>
<td>Rest Period</td>
<td>Requires 10-hour rest period of which 8 hours is an uninterrupted sleep opportunity.</td>
<td>9 hours reducible to 8 hours of rest. Does not factor in sleep opportunity.</td>
</tr>
<tr>
<td>Reduced Rest</td>
<td>Eliminated.</td>
<td>Reducible to 8 hours of rest.</td>
</tr>
</tbody>
</table>

In sum, the proposed regulations represent the FAA's most effective attempt to meaningfully update the flight duty and rest requirements for commercial airline pilots since the 1980s. By attempting to incorporate the latest scientific data on fatigue, while demonstrating a true consideration of business interests, the Proposed Rule was a comprehensive first step toward increasing aviation safety in furtherance of the Airline Safety Act's mandate.

D. THE INITIAL COSTS AND BENEFITS

The Proposed Rule outlined the costs and benefits of the proposed regulations using a combination of historical evidence and statistical derivations.\(^{86}\) In its required regulatory disclosures, the FAA conceded that a "substantial number" of small businesses would be affected,\(^{87}\) and that the new rule was tantamount to an "unfunded mandate" based upon the total costs that would necessarily be borne by state or local governments and the private sector.\(^{88}\) Nevertheless, the FAA concluded that the new rule "[h]as benefits that justify its costs."\(^{89}\)

In its initial cost-benefit analysis (CBA), the FAA identified four primary cost elements that would be borne by the aviation industry in implementing the new regulations.\(^{90}\) These include flight operations, fatigue training, rest facilities, and schedule reliability—all to the tune of $803.5 million.\(^{91}\)

\(^{86}\) Proposed Rule, supra note 13, at 55,876.

\(^{87}\) Id. (disclosing under the Regulatory Flexibility Act of 1980, Pub. L. 96-354, 94 Stat. 1164, which "requir[es] agencies to analyze the economic impact of regulatory changes on small entities.").

\(^{88}\) Id. (disclosing under the Unfunded Mandates Reform Act of 1995, Pub. L. 104-4, 109 Stat. 48, which "requires agencies to prepare a written assessment of the costs, benefits, and other effects of proposed or final rules that include a [f]ederal mandate likely to result in the expenditure by [s]tate, local, or tribal governments, in the aggregate or by the private sector, of $100 million or more annually.").

\(^{89}\) Id.

\(^{90}\) Id. at 55,877.

\(^{91}\) Id. (present value calculated using a 7% discount rate, $1.25 billion over ten years).
Table B: Summary of Costs (in millions)\textsuperscript{92}

<table>
<thead>
<tr>
<th>Cost Component</th>
<th>Nominal Cost (over 10 years)</th>
<th>Present Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flight Operations</td>
<td>$760.3</td>
<td>$484.2</td>
</tr>
<tr>
<td>Schedule Reliability</td>
<td>$4.9</td>
<td>$3.0</td>
</tr>
<tr>
<td>Fatigue Training</td>
<td>$262.3</td>
<td>$167.2</td>
</tr>
<tr>
<td>Rest Facilities</td>
<td>$226.6</td>
<td>$149.1</td>
</tr>
<tr>
<td>Total</td>
<td>$1,254.1</td>
<td>$803.5</td>
</tr>
</tbody>
</table>

The FAA also determined that it would cost $144.9 million\textsuperscript{93} for these companies to develop fatigue risk management systems, but it went on to conclude that these costs "would be more than offset by a reduction in crew scheduling costs."\textsuperscript{94}

In the benefit analysis, the FAA began by citing pilot fatigue as a causal factor in eighteen aviation accidents occurring from 1990 to 2010.\textsuperscript{95} From there, statistical determinations were made regarding the number of accidents occurring from the various types of fatigue as a factor.\textsuperscript{96} Using this data, the FAA projected that pilot fatigue would contribute to 18.8 accidents over the next twenty years: 13 passenger accidents and 5.8 cargo accidents.\textsuperscript{97} In addition, it was estimated that a total of 28.9 accidents would occur over the next ten years, with an average of 174.7 fatalities.\textsuperscript{98} Then, after calculating that the proposed regulations would prevent 40% of passenger accidents and 58% of cargo accidents, the FAA estimated that the total benefits of the new regulations would be approximately $463.8 million.\textsuperscript{99} When this number is combined with the estimated benefit of avoided

\textsuperscript{92} Id.
\textsuperscript{93} Id. ($205.7 million over ten years).
\textsuperscript{94} Id.
\textsuperscript{95} Id. at 55,876.
\textsuperscript{96} Id. [The FAA] statistically identified 4.6 accidents where the flight crew became fatigued during a long flight-duty period[,] . . . three accidents where the pilot became fatigued due to being awake for many hours[,] . . . [and] two accidents where chronic fatigue was a contributing factor. . . . [The FAA] also statistically estimated that some of the 6.2 accidents that occurred between midnight and 6 a.m. involved some degree of pilot fatigue.
\textsuperscript{97} Id.
\textsuperscript{98} Id.
\textsuperscript{99} Id. at 55,877 (all values given are present value).
ground damage, $340 million, the benefits and costs become equal: $804 million.\textsuperscript{100} On top of this, the FAA noted that the benefits from preventing even a \textit{single} catastrophic passenger-aircraft accident—one with 150 passengers and an average load—would itself exceed $804 million.\textsuperscript{101} These conclusions tipped the scale in favor of moving forward with the Proposed Rule.\textsuperscript{102}

\section*{III. BACKLASH FROM THE AIR CARGO INDUSTRY}

Shortly after the FAA released the Proposed Rule, air cargo carriers launched a fiery campaign to voice their disapproval for the proposed regulations.\textsuperscript{103} During the brief window for comment, the Air Transportation Association (ATA), Cargo Airline Association (CAA), Federal Express, UPS, National Air Carriers Association, Atlas Air Worldwide Holdings, Lynden Air Cargo, Omni Air International, Inc., and Southern Air, Inc. filed comments on the Proposed Rule.\textsuperscript{104} Leading the pack, UPS lobbed a host of criticisms at the Proposed Rule, specifically decrying its “‘one size fits all’ approach to fatigue management.”\textsuperscript{105} This section examines both the cargo carriers’ primary complaints about the Proposed Rule and the Final Rule that followed.

\subsection*{A. PRIMARY COMPLAINTS}

In its comments to the FAA, UPS attacked the Proposed Rule from virtually every angle: procedural, scientific, statutory, and even constitutional.\textsuperscript{106} Not surprisingly, however, UPS’s \textit{economic} arguments appear to be of greatest concern to the cargo carrier.

\subsubsection*{1. Apples vs. Oranges}

To begin with, UPS claimed that the Proposed Rule lacked a “rational basis” for equating cargo and passenger operations.\textsuperscript{107} “[O]verturning a decades-old regime” that differentiates be-

\begin{footnotes}
\item[100] Id.
\item[101] Id. at 55,878 (when an averted fatality is valued at $12.6 million per person).
\item[102] Id.
\item[103] See UPS Comments, supra note 24.
\item[104] OFFICE OF AVIATION POLICY & PLANS, FAA, INITIAL SUPPLEMENTAL REGULATORY IMPACT ANALYSIS: FLIGHTCREW MEMBER DUTY AND REST REQUIREMENTS, PART 117, FINAL RULE 3 (2012) [hereinafter INITIAL SUPPLEMENTAL RIA].
\item[105] UPS Comments, supra note 24, at 15.
\item[106] See id. at ii–iii.
\item[107] Id. at 15.
\end{footnotes}
between passenger and cargo carriers in many respects, UPS asserted, is "overly simplistic" and ignores the many differences between the business models.\textsuperscript{108} At the core of the argument lies the obvious: under Part-121 certificates, passenger planes may hold hundreds of people while cargo planes hold only a few.\textsuperscript{109} For example, an Airbus A300 may have as many as 324 people on board when pilots, flight attendants, and passengers are totaled.\textsuperscript{110} On the other hand, a cargo Airbus A300 might only have two pilots.\textsuperscript{111} Therefore, with an averted fatality valued at $12.6 million per person,\textsuperscript{112} the value of an averted passenger-plane accident is $4.08 billion, but the value of an averted cargo accident is a mere $25.2 million.\textsuperscript{113} UPS argued that this fact alone should demonstrate the "apples and oranges" nature of the two types of operations.\textsuperscript{114}

2. \textit{Statistical Methods}

Weighing enormously in UPS's favor, the excellent safety record of the airline industry featured prominently in UPS's comments to the FAA.\textsuperscript{115} UPS asserted that the Proposed Rule's statistical analysis, or lack thereof, concerning past aviation accidents was "hopelessly flawed."\textsuperscript{116} In drafting the Proposed Rule, the FAA relied upon just twenty-two aviation accident reports to justify its new regulations.\textsuperscript{117} In fact, the FAA analyzed 250 accidents that were attributed to pilot error (as opposed to other causes like mechanical failure), but its analysis was limited due to the lack of scheduling information for many of the flights.\textsuperscript{118} Of the forty-three accidents for which the pilot's flight schedule history was available, twenty-two were thought to have been caused by pilot fatigue.\textsuperscript{119} Dr. Donald B. Rubin of Harvard University's Statistics Department, a veteran statistical consultant to various regulatory agencies, stressed the extremely small sample size that these twenty-two accidents compose for the correspond-

\begin{thebibliography}{99}
\bibitem{108} Id. at 17.
\bibitem{109} Id. at 19.
\bibitem{110} Id.
\bibitem{111} Id.
\bibitem{112} \textit{See} Proposed Rule, \textit{supra} note 13, at 55,877.
\bibitem{113} UPS COMMENTS, \textit{supra} note 24, at 19.
\bibitem{114} Id.
\bibitem{115} \textit{See} id. at 30.
\bibitem{116} Id. at 29.
\bibitem{117} Id. at 30.
\bibitem{118} Id. at 30 n.33.
\bibitem{119} Id.
\end{thebibliography}
ing time frame: 0.0000066%.\textsuperscript{120} Citing the dearth of data from all the flights that “went right” or “almost went wrong,” Dr. Rubin blasted the small sampling into statistical irrelevance, calling it “random speculation.”\textsuperscript{121}

In essence, UPS insisted that the FAA should have evaluated flight data from more sources, such as incident reports where pilots voluntarily report fatigue on an otherwise safe and successful flight, line checks, and flight data recorder monitoring.\textsuperscript{122} In this way, the FAA could have made better assessments as to the true causes of these accidents, as well as provide data on why the vast majority of flights were successful even in the presence of certain fatigue-inducing factors.\textsuperscript{123}

According to UPS, the best statistical methods would examine successful flights, not just the unsuccessful flights, to determine the real triggers—most likely human factors.\textsuperscript{124} UPS contends that it is not the length of the rest periods that most contribute to fatigue, but pilots’ poor use of those rest periods.\textsuperscript{125} To support this contention, UPS cited examples of flights that would be “legal” under the new regulations, but which nevertheless crashed due to pilots’ misuse of their days off.\textsuperscript{126} On Continental Express Flight 2733, one of the accidents analyzed by the FAA in developing the Proposed Rule, the flight crew had come off of a nineteen-hour rest period prior to their scheduled duty.\textsuperscript{127} On another doomed flight, Federal Express Flight 1478, the pilot had an ample rest period yet had used his time off to care for a sick pet.\textsuperscript{128}

In fact, Flight 1478 was the only all-cargo accident in the FAA’s sampling of aviation accidents.\textsuperscript{129} So, turning the FAA’s derivation methods against it, UPS argued that since zero fatigue-related cargo accidents happened during the last ten years, zero fatigue-related cargo accidents will happen in the next ten years.\textsuperscript{130} Furthermore, the comments claim that even if one accident were to be prevented by the new regulations, in

\textsuperscript{120} Id. at 30.
\textsuperscript{121} Id. at 30–31.
\textsuperscript{122} Id. at 31.
\textsuperscript{123} Id.
\textsuperscript{124} Id. at 55.
\textsuperscript{125} Id.
\textsuperscript{126} Id. at 56.
\textsuperscript{127} Id.
\textsuperscript{128} Id.
\textsuperscript{129} Id.
\textsuperscript{130} Id. at 49.
the best case scenario, that benefit would be less than $30 million when the loss of two pilots and the cargo were considered.\textsuperscript{131}

3. The Cargo Cost-Benefit Analysis

In contrast to the meager benefits to UPS of $31 million for a maximum of one averted cargo crash, UPS estimated astronomical costs to itself.\textsuperscript{132} In direct operational costs alone, UPS projected spending between $960 million and $1.29 billion to comply with the new rule.\textsuperscript{133}

Table C: UPS's Estimated Cost of Compliance\textsuperscript{134}

<table>
<thead>
<tr>
<th>Regulation</th>
<th>10-Year Costs (Low)</th>
<th>10-Year Costs (High)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schedule Reliability (§ 117.9)</td>
<td>$435,425,310</td>
<td>$535,687,717</td>
</tr>
<tr>
<td>Fatigue Training (§ 117.11)</td>
<td>$17,107,560</td>
<td>$17,107,560</td>
</tr>
<tr>
<td>Flight Duty Period Limitations and FDP Extensions (§§ 117.15 and 117.19)</td>
<td>$40,104,9628</td>
<td>$552,875,559</td>
</tr>
<tr>
<td>Reserve Status (§ 117.21)</td>
<td>$151,825,931</td>
<td>$295,057,941</td>
</tr>
<tr>
<td>Cumulative Duty (§ 117.23)</td>
<td>$20,911,873</td>
<td>$25,781,762</td>
</tr>
<tr>
<td>Rest Periods (§ 117.25)</td>
<td>$42,969,603</td>
<td>$80,209,926</td>
</tr>
<tr>
<td>Consecutive Nighttime Operations (§ 117.27)</td>
<td>$63,022,084</td>
<td>$74,480,645</td>
</tr>
<tr>
<td>Implementing Crewmember Carrying Cost</td>
<td>$22,466,250</td>
<td>$33,468,000</td>
</tr>
<tr>
<td>Information Technology Infrastructure</td>
<td>$5,000,000</td>
<td>$8,000,000</td>
</tr>
<tr>
<td>Lost Revenue from and Installation Cost of Onboard Rest Facility (§ 117.3)</td>
<td>$184,750,000</td>
<td>$184,750,000</td>
</tr>
<tr>
<td>Total</td>
<td>$1,344,528,240</td>
<td>$1,807,419,110</td>
</tr>
<tr>
<td>Net Present Value</td>
<td>$960,840,962</td>
<td>$1,290,123,595</td>
</tr>
</tbody>
</table>

In addition, UPS projected other indirect costs like lost goodwill among consumers, diminished value of its fleet of B767 freighter aircraft, and impaired ability to operate internationally.\textsuperscript{135}

\textsuperscript{131} Id. at 19.
\textsuperscript{132} Id. at 38–45.
\textsuperscript{133} Id. at 40.
\textsuperscript{134} Id. at 41.
\textsuperscript{135} Id. at 42–45.
In sum, the UPS comments paint a dire picture of the new regulations and their effect on the air cargo industry: (1) fatigue-related cargo accidents are rare to nonexistent; (2) when they happen they are only a small fraction of the cost of a passenger-plane crash; (3) the fatigue-related cargo crashes which have occurred within the last ten years would not have been prevented by the new regulations; and (4) the costs of implementation would be downright crippling to the industry. For these reasons, UPS asserted that the Proposed Rule was "arbitrary and capricious" and charged the FAA with adopting certain changes or altogether exempting cargo carriers from the new rule.

B. The Final Rule

With little fanfare and seemingly complete capitulation to the complaints from the air cargo industry, the FAA issued its Final Rule for Flight Duty and Rest Requirements on December 21, 2011. Although the new regulations were largely unchanged with regard to passenger carriers, the Final Rule issued a wholesale exemption to all-cargo carriers, making compliance with the Part 117 "voluntary."

In its initial press release, the FAA made only the single sweeping statement that "[c]overing cargo operators under the new rule would be too costly compared to the benefits generated in this portion of the industry." The Final Rule itself gave few details about the reasons for this exclusion other than some unsupported data in a single footnote, which read: "The projected cost for all-cargo operations is $306 million . . . . The projected benefit of avoiding one fatal all-cargo accident ranges between $20.35 million and $32.55 million, depending on the number of crewmembers on board the aircraft." Apparently relying solely on this calculation, the FAA determined that the cost of compliance "significantly exceeded the quantified societal benefits."

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136 Id. at 4.
139 Final Rule, supra note 36, at 5, 31.
140 FAA Press Release, supra note 39.
141 Final Rule, supra note 36, at 13, n.1.
142 Id. at 13.
C. The Pilots Respond

The Final Rule went into effect on January 4, 2014.\textsuperscript{143} Despite the initial safety mandate given to the FAA and the "universal" impact of fatigue on pilots, the overall costs of the regulations apparently carried the most weight at the end of the day.\textsuperscript{144} Without issuing any intermediary or updated versions of the proposed regulations, the FAA issued the Final Rule with the blanket cargo exemption, which took many cargo pilots’ organizations by surprise and prevented any opportunity for them to comment on the exemption.\textsuperscript{145}

In response, the Independent Pilots Association (IPA), the collective bargaining organization for UPS pilots, filed a petition for review with the D.C. Circuit on December 22, 2011.\textsuperscript{146} Not wanting to delay implementation of the safety measures for passenger operations by seeking to vacate the Final Rule, the IPA asked the circuit court only to remand the Final Rule for reconsideration of the cargo carve-out.\textsuperscript{147} The FAA responded by asking the court to hold the suit in abeyance while it ostensibly addressed the concerns of the IPA by reviewing the cost-benefit analysis for cargo-only operations and allowing additional time for comments.\textsuperscript{148}

IV. The Cargo Carve-Out Is Legally and Factually Unjustified

A. Congressional Mandate vs. Cost-Benefit Analysis

The IPA’s primary criticism of the Final Rule is that the FAA failed to comply with the clear mandate to prioritize aviation safety above all else when drafting the new regulations under the Airline Safety Act.\textsuperscript{149} Specifically, the IPA argues that it was impermissible for the FAA to solely consider the cost of extending the fatigue regulations to cargo carriers to the exclusion of the acknowledged safety threat that fatigue poses to pilots and the public.\textsuperscript{150} Supporters of the cargo carve-out argue that a

\begin{itemize}
  \item \textsuperscript{143} \textit{Id.} at 1.
  \item \textsuperscript{144} \textit{Initial Supplemental RIA, supra} note 104, at 16.
  \item \textsuperscript{145} See IPA Brief, \textit{supra} note 54, at 42.
  \item \textsuperscript{146} Petition for Review at 2, Indep. Pilots Ass’n v. FAA, No. 11-1483 (D.C. Cir. filed Dec. 22, 2011).
  \item \textsuperscript{147} IPA Brief, \textit{supra} note 54, at 56.
  \item \textsuperscript{148} \textit{Initial Supplemental RIA, supra} note 104, at 1.
  \item \textsuperscript{149} IPA Brief, \textit{supra} note 54, at 15.
  \item \textsuperscript{150} \textit{Id.} at 27.
\end{itemize}
cost-benefit analysis was not only permitted but also required when drafting new regulations.\(^{151}\) This section briefly sets out the legal framework for the congressional mandate and the cost-benefit analysis and argues that the Final Rule fails to comport with the Airline Safety Act's mandate.

### 1. The Congressional Mandate as a Regulatory Guide

The Supreme Court has long held that "[i]t is axiomatic that an administrative agency's power to promulgate legislative regulations is limited to the authority delegated by Congress."\(^{152}\) When drafting a broad piece of legislation that necessarily includes a regulatory component for effective execution, Congress will issue a congressional mandate—or an authoritative command—within the statute to guide the rulemaking agencies as they craft the corresponding regulations.\(^{153}\)

Congress prescribed certain standards for rulemaking under the Administrative Procedure Act (APA) of 1946.\(^{154}\) As part of a congressional effort to "improve the administration of justice by prescribing fair administrative procedure," the APA established the "arbitrary and capricious" standard of review for federal regulations.\(^{155}\) Accordingly, courts are typically deferential to agencies' decisions, but if an agency has "relied on factors which Congress has not intended it to consider" or drafted regulations "that run contrary to the evidence before the agency," such regulations must be set aside as "arbitrary and capricious."\(^{156}\)

Moreover, "[a]n agency acts arbitrarily if it ignores an issue that Congress directs it to address"\(^ {157}\) or inexplicably abandons a scientifically supported premise previously relied upon.\(^{158}\) In this way, the congressional mandate represents an important check


\(^{153}\) See id. at 208–09.


\(^{155}\) Id.; 5 U.S.C § 706(2)(A) (2012).


\(^{158}\) See Motor Vehicle Mfrs., 463 U.S. at 43.
on the powers of the executive branch's rulemaking authority.\textsuperscript{159}

When ruling on substantive regulations according to a congressional mandate, courts consider the authorizing statute and the factors that an agency must consider when drafting regulations.\textsuperscript{160} More importantly, however, the Supreme Court has made clear that it will not uphold regulations in which "ancillary" or inferential portions of the statute override express provisions that are fundamental to the very purpose of the mandate.\textsuperscript{161} In other words, the Court assumes that Congress does not intend to "hide elephants in mouseholes."\textsuperscript{162} Such imbalances, the Court has reasoned, would clearly have been addressed by Congress in the original statute and should therefore not play a role in the resulting regulatory scheme.\textsuperscript{163}

With the goal of "address[ing] problems relat[ed] to pilot fatigue," the Airline Safety Act required the FAA to draft new regulations "based on the best available scientific information" using thirteen enumerated factors.\textsuperscript{164} The first twelve factors are clearly concerned with correlating the duties of a pilot with the current science of fatigue:

(1) Time of day of flights in a duty period.
(2) Number of takeoff and landings in a duty period.
(3) Number of time zones crossed in a duty period.
(4) The impact of functioning in multiple time zones or on different daily schedules.
(5) Research conducted on fatigue, sleep, and circadian rhythms.
(6) Sleep and rest requirements recommended by the National Transportation Safety Board and the National Aeronautics and Space Administration.
(7) International standards regarding flight schedules and duty periods.
(8) Alternative procedures to facilitate alertness in the cockpit.
(9) Scheduling and attendance policies and practices, including sick leave.

\textsuperscript{159} See \textit{id}.
\textsuperscript{161} \textit{Id.} at 468.
\textsuperscript{162} \textit{Id}.
\textsuperscript{163} \textit{Id.} at 469.
\textsuperscript{164} Airline Safety Act, \textit{supra} note 55, § 212.
(10) The effects of commuting, the means of commuting, and the length of the commute.
(11) Medical screening and treatment.
(12) Rest environments.\textsuperscript{165}

Then, as is common in legislation, the Airline Safety Act included one additional "catch-all" factor that the FAA was permitted—some say required—to use in drafting the regulations:
(13) Any other matters the Administrator considers appropriate.\textsuperscript{166}

Both the opponents and the proponents of the Final Rule point to this congressional mandate to support their positions as to the inclusion or exclusion of cargo carriers under Part 117.\textsuperscript{167} Opponents like the IPA and other pilots associations\textsuperscript{168} maintain that the Airline Safety Act has a clear safety focus, as evidenced by the fact that twelve of the thirteen factors address the science of fatigue.\textsuperscript{169} On the other hand, supporters of the cargo carve-out maintain that the thirteenth factor, by itself, broadly authorizes the FAA to consider other factors, the most "appropriate" of which being costs versus benefits.\textsuperscript{170}

2. \textit{The Cost-Benefit Analysis as a Regulatory Tool}

Since the Reagan administration, the CBA has been a fundamental part of the U.S. regulatory landscape and, indeed, is often the primary decision-making tool.\textsuperscript{171} Under a CBA, the projected benefit of a proposed regulation is simply balanced against its projected costs to determine whether total societal value would be increased by its implementation.\textsuperscript{172} Two additional executive orders further solidified the CBA as a ubiqui-

\textsuperscript{165} \textit{Id.} § 212(2)(A)–(L) (numbering added).
\textsuperscript{166} \textit{Id.} § 212(2)(M).
\textsuperscript{168} Such as the Cargo Airline Pilots Association (CAPA), the Air Line Pilots’ Association (ALPA), the International Federation of Air Line Pilots’ Associations (IFALPA), and the International Civil Aviation Organization (ICAO).
\textsuperscript{169} \textit{IPA Comments, supra} note 167, at 15.
\textsuperscript{170} \textit{See} \textit{Atlas Comments, supra} note 151, at 5.
\textsuperscript{172} \textit{See Exec. Order No. 12,291, § 2(b)–(d).}
tous regulatory device: (1) Executive Order 12,866 under President Clinton, which requires assessment of "all costs and benefits of available regulatory alternatives, including the alternative of not regulating";\textsuperscript{173} and (2) Executive Order 13,563 under President Obama, which requires "a reasoned determination" that benefits justify costs when proposing or adopting a regulation.\textsuperscript{174}

The CBA acquired an "accepted institutional role" within the administrative branch, and this role has been judicially blessed as well.\textsuperscript{175} The D.C. Circuit, which holds original jurisdiction in federal rulemaking review, has routinely held that agencies may use a CBA when drafting regulations absent a "clear congressional intent to preclude consideration of cost."\textsuperscript{176} Then, in 2009, the U.S. Supreme Court sanctioned the CBA as a valid rulemaking factor in \textit{Entergy Corp. v. Riverkeeper, Inc.}.\textsuperscript{177} In \textit{Entergy}, the Court considered a congressional mandate to the Environmental Protection Agency (EPA) that required the EPA to use "the best technology available for minimizing adverse environmental impact" under the Clean Water Act.\textsuperscript{178} Though the Clean Water Act itself is silent on whether the EPA was permitted to consider costs in its rulemaking effort, the Supreme Court conclusively stated: "It is eminently reasonable to conclude that [the statute's] silence is meant to convey nothing more than a refusal to tie the agency's hands as to whether cost-benefit analysis should be used, and if so to what degree."\textsuperscript{179}

On the other hand, the CBA has some important limiting principles as well. Executive Order 12,866 expressly states that it applies "unless a statute requires another regulatory approach," which clearly contemplates a regulatory situation in which a CBA might not be used.\textsuperscript{180} Likewise, Executive Order 13,563, which is merely supplemental to 12,866, reaffirms that it may

\begin{footnotesize}
\item[175] Boutrous, \textit{supra} note 171, at 248.
\item[177] 556 U.S. 208, 226 (2009).
\item[178] \textit{Id.} at 218.
\item[179] \textit{Id.} at 222.
\end{footnotesize}
not interfere or displace "authority granted by a law to a department or agency." Furthermore, the Office of Information and Regulatory Affairs (OIRA) prepared a primer to assist agencies in preparing CBAs as required under these Executive Orders, in which it acknowledged that "some important benefits and costs . . . may be difficult or impossible to quantify." The primer stressed the importance of considering these "non-quantifiable and non-monetized benefits and costs" as a component of the total CBA. The Administrator of OIRA and noted economist Cass Sunstein clarified that the CBA must be "humanized," and further:

[C]ost-benefit analysis should not put regulation in an arithmetic straitjacket; that there are values and morals, distributional, aesthetic, and otherwise, that have to play a part in the overall judgment about what is to be done. . . . [T]here are limits to purely economic approaches to valuation of cost and benefits.

Ultimately, "the President is without authority to set aside congressional legislation by executive order," and therefore, the CBA is but one of many tools for agencies to use when issuing new regulations according to a statutory mandate.

3. The Final Rule Fails to Comport with the Congressional Mandate

With the legal framework established, it is clear that the FAA fell short of its mandate under the Airline Safety Act by excluding cargo carriers from the flight duty and rest requirements.

a. Entergy Does Not Apply to the Airline Safety Act

As stated, the Airline Safety Act includes thirteen factors that Congress authorized the FAA to consider when drafting the new regulations, the thirteenth of which is: "[a]ny other matters the Administrator considers appropriate." Therefore, relying on

183 Id.
185 In re United Mine Workers of Am. Int'l Union, 190 F.3d 545, 551 (D.C. Cir. 1999).
186 Airline Safety Act, supra note 55, § 212(2)(M).
Entergy, proponents of the cargo carve-out maintain that that this thirteenth factor is not merely tacit approval but express authorization for the FAA to consider costs and benefits in its rulemaking.\(^{187}\)

Although Entergy seems to provide strong support in favor of the cargo carriers' position, the statute at issue in Entergy—a portion of the Clean Water Act—was very different from the Airline Safety Act.\(^{188}\) Granted, both statutes order the agencies to use the best technology and the best science, respectively, to achieve their goals.\(^{189}\) The Airline Safety Act, however, provided thirteen factors that it authorized the FAA to consider in drafting the regulations, but the Entergy statute provided none.\(^{190}\) With this legislative backdrop, the Supreme Court had little to work with when issuing its opinion and understandably sought to refrain from "[tying] the . . . hands" of the EPA by precluding the use of a CBA.\(^{191}\)

b. It Is Irrelevant That the Airline Safety Act Did Not Expressly Preclude Consideration of Costs

Congress knows how to authorize a consideration of cost when it wants to, which is something it has seldom directed the FAA to do, likely because of the FAA's duty to make "safety and security . . . the highest priorities in air commerce."\(^{192}\) For example, Congress did expressly authorize the FAA to consider costs when developing regulations for commuter-airport operating certificates\(^{193}\) and when considering certain airport exemptions from various emergency services certifications.\(^{194}\) Furthermore, Congress also authorized a consideration of costs and benefits when legislating duty periods for drivers in another part of the transportation industry—commercial motor vehicles.\(^{195}\)

Here, Congress specifically ordered that twelve fatigue-related factors be considered in drafting the Proposed Rule. Admittedly, there was no express preclusion of cost in the mandate, but neither executive orders nor relevant case law permit the

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\(^{187}\) See, e.g., ATLAS COMMENTS, supra note 151, at 6.


\(^{189}\) See Airline Safety Act, supra note 55, § 212(2); 33 U.S.C. § 1326(b).

\(^{190}\) See id.


\(^{192}\) IPA COMMENTS, supra note 167, at 72 (quoting 49 U.S.C. § 40101(d)).

\(^{193}\) Id. (citing 49 U.S.C. § 44706(d)).

\(^{194}\) Id. (citing 49 U.S.C. § 44706 (c)).

\(^{195}\) Id. (citing 49 U.S.C. § 31136(c)(2)).
FAA to *ignore* the mandated factors in favor of a cost-benefit analysis. Such a conclusion would be tantamount to "hiding an elephant in a mousehole" and goes far beyond what Congress intended in passing this act.

c. The Cargo Exemption Directly Ignores the Congressional Mandate

Based on the language of the Airline Safety Act, Congress clearly intended the FAA to "address problems related to pilot fatigue" using a scientific approach. As the IPA highlights, this approach is supported by the legislative history of the Act, which seeks to update the flight duty and rest requirements to "more adequately . . . reflect scientific research on fatigue."

The Proposed Rule set forth a number findings based on fatigue research, which apply universally to passenger and cargo pilots when operating under known fatigue-inducing circumstances, such as flying at night during the window of circadian low. The Proposed Rule even stated boldly that the "current regulations do not adequately address the risk of fatigue," and further acknowledged that cargo pilots are particularly susceptible to fatigue given the disproportionate amount of nighttime flying in the all-cargo model. Despite these premises, the Final Rule did *nothing whatsoever* to "address the risk of fatigue" in cargo pilots. In sum, by issuing the Final Rule with the cargo carve-out, the FAA clearly failed to comply with the congressional mandate under the Airline Safety Act.

B. A Better Cost-Benefit Analysis

Irrespective of whether the FAA acted according to its congressional mandate, cargo carriers should be included under Part 117. Even if cost is a factor—even the *prime* factor—the cargo inclusion can fit neatly within a standard cost-benefit analysis when benefits are realistically considered and costs are subject to basic economic principles.

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200 *Id.* at 55,855.
201 *Id.*
1. Overstated Costs: Economics 101

After the Final Rule was released and the subsequent petition for review was filed by the IPA, the FAA prepared a supplemental report to address concerns over the cost-benefit analysis used in the Final Rule.\textsuperscript{203} After supposedly conducting a review of its initial findings, the FAA concluded that the total cost to the cargo industry would be approximately $550 million over ten years.\textsuperscript{204} Meanwhile, UPS maintained its assertion that its own costs would be well north of $1 billion over ten years.\textsuperscript{205}

In its supplemental brief, the IPA outlined several areas where the FAA overstated the costs to the cargo industry, such as costs for additional crew scheduling and costs for retrofitting aircraft with rest facilities.\textsuperscript{206} These assertions will not be addressed in this article. Instead, the “cost” portion of the ledger will be broadly addressed using only the “worst case scenario” numbers set forth by the FAA and UPS.

One surprising cost consideration that was altogether omitted from anyone’s analysis was the ability of cargo carriers to raise prices. The reality is, however, that this is precisely what would happen. The likely result: minimal economic impact to the companies or the consumers. The reason for this: low elasticity of demand.

“Elasticity of demand” is defined as the percent change in quantity demanded for an item per every 1% change in the price of the item.\textsuperscript{207} Goods and services are said to have “high” elasticity of demand when the number is greater than 1.0.\textsuperscript{208} This means that consumers will demand substantially less of a good or service when the price increases.\textsuperscript{209} Conversely, for items with a “low” elasticity of demand—a number less than 1.0—consumer demand will be less affected by a change in price.\textsuperscript{210}

Fortunately for the air cargo industry as a whole, the elasticity of demand is considered to be low—estimated to be between .42

\textsuperscript{203} Initial Supplemental RIA, supra note 104, at 1.
\textsuperscript{204} Id. at 18.
\textsuperscript{205} See UPS Comments, supra note 24, at 40.
\textsuperscript{206} IPA Comments, supra note 167, at 54, 59.
\textsuperscript{208} Id. at 66–67.
\textsuperscript{209} Id.
\textsuperscript{210} Id.
This means that consumers will continue to ship packages by air (as opposed to switching to the U.S. Postal Service or some other slower method of transportation) even when prices rise. The likely reason for this is that, as discussed above, society places a high value on shipping things quickly.

“Cross elasticity of demand,” on the other hand, is the measure of a change in demand for one company’s goods or services when another company’s goods or services change in price. Though air cargo services are frequently referred to as “elastic,” this type of elasticity relates to the competitive nature of the industry—its cross-elasticity with its competitors. In other words, when UPS increases its prices, more consumers will switch to FedEx for their shipping needs and vice versa. However, if all air cargo companies must raise prices due to a regulatory change, consumers will have no ready alternatives for overnight shipping. Therefore, the net industry impact will likely be limited.

In addition, a very small change in price would more than offset the air carriers’ projected compliance costs over ten years, even using UPS’s sky-high cost projections of $1.8 billion. Combined, FedEx and UPS deliver over six billion packages each year. UPS alone delivers 16.3 million packages every day, about fourteen million of those in the United States. These companies could raise prices on their U.S. deliveries alone by mere pennies per delivery and completely offset the projected costs—which is precisely what they will do as rational, self-interested businesses. In light of these economic considerations, shifting costs to consumers is to be expected among the cargo carriers, and therefore, this critical offset should be included when considering costs and benefits under the Final Rule.

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212 See id.
213 IPA Comments, supra note 167, at 40.
214 Lipsey & Harbury, supra note 207, at 68.
216 See UPS Comments, supra note 24, at 41.
219 This would allay concerns that the increasing prices would reduce competitiveness among foreign air cargo companies. See, e.g., UPS Comments, supra note 24, at 42.
2. The Real Benefits of Part 117

Just as the costs of including cargo operations under the Final Rule were overestimated, the potential benefits were grossly underestimated. As discussed in Part III, the FAA assumes that applying Part 117 to cargo pilots would prevent only one cargo accident over ten years. The "benefits" of the rule were then extracted from this single accident and limited to: (1) the value of the lost lives of two pilots; and (2) the value of the plane's cargo for a total of approximately $31 million. Not even UPS believes that the likely damage would be this low, holding $1.5 billion of insurance for a single accident. In fact, there are several broad categories of benefits from averting a single cargo accident. Some of these benefits are directly related to the very reasons UPS cites as cause for exemption, namely, the unique role of cargo carriers in the fast-paced global economy. Other benefits relate to "the random nature of accidents and their potential for catastrophic consequences."

a. Avoiding Loss in the Express Cargo Sector

As UPS effectively argued in its comments, when cargo flights are delayed, there can be broad economic consequences stemming from the untimely delivery of vital medical, industrial, and business shipments. The mere fact that a shipper chooses to ship overnight shows that he places value on the quick delivery of the item. So, what if a cargo plane crashes? These deliveries will not arrive, and real economic costs must be attributed to such losses. In addition, the cargo company or its insurer will have to refund both the cost of the shipment and the cost of the item destroyed.

Furthermore, the cargo fleet will lose the services of the destroyed aircraft. This will result in: (1) a disruption in the normal flow of operations for the cargo company while the existing fleet of aircraft accommodates the same amount of cargo; and (2) the addition of another aircraft into the fleet, which will require the purchase of a new aircraft or the refurbishing of an existing aircraft in order to resume normal business operations.

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220 Initial Supplemental RIA, supra note 104, at 3.
221 Id.
222 Sullenberger & Hall, supra note 22.
223 IPA Comments, supra note 167, at 36.
224 UPS Comments, supra note 24, at 5.
225 See IPA Comments, supra note 167, at 40.
Thus, the benefits flowing from an averted cargo crash should include not only the value of the cargo itself but also the societal value associated with express delivery, the benefits from the avoided refunds and loss compensation to shippers, and the avoidance of temporary business disruption from the loss of the aircraft.

b. Benefits on the Ground

The FAA also calculated the costs of a cargo crash in a vacuum, completely failing to consider the innumerable benefits to life and property on the ground. First, if the cargo plane is considerate enough to crash in an open field, there will still be considerable damage to the land which will need to be restored. Not only that, but there will likely be environmental clean-up as well, resulting from jet fuel and other hazardous substances, which are often transported via cargo plane.  

Second, although the FAA limited the loss of human life to two pilots total, cargo planes frequently carry passengers. Most UPS cargo planes are equipped with four or five “jump-seats,” which can be used by a variety of non-revenue passengers like “deadheading crews, mechanics, loaders, animal handlers, company officials and employees, military couriers, and FAA and NTSB officials.”

Third, and most critically, the FAA failed to consider fatalities and injuries on the ground. As Americans are all-too aware, an airplane that crashes into a populated area might as well be a bomb. It is clearly erroneous for the FAA to limit the catastrophic consequences of a cargo plane crash to the pilots alone. Historically, plane crashes yield an average of 5.5 ground fatalities, but the number can be much larger. For example, the 1992 crash of the El Al cargo plane in Amsterdam killed forty-three people on the ground and wounded twenty-six others when it slammed into an apartment building on its final descent.

In addition, there are other benefits like avoiding minor aircraft damage that occurs at airports during taxiing, avoiding

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226 Id. at 23–24.
227 Id. at 33.
228 Id. at 33–34.
229 Id. at 38.
230 Id. at 34.
231 This was actually cited by the FAA in the Proposed Rule, but it was not factored into the Final Rule. See id. at 45.
runway closures at airports due to an accident, and the incidental physical and mental health benefits to the pilots themselves from being well-rested. Though some of these benefits may be difficult to quantify, they should not be disregarded in the decision-making process, as specifically directed by the OMB.

In sum, with part or all of the costs shifted away from the cargo carriers and borne primarily by society—a few pennies per shipment—the focus can turn to the real benefits of the new rule. Even without specifically quantifying the total value, it is clear that even avoiding a single cargo plane crash produces benefits far in excess of the FAA’s initial estimates.

C. Other Considerations

1. Rest: A Health and Safety Concern

When it comes to the health and safety of pilots, the FAA maintains identical requirements for passenger and cargo pilots. For example, all pilots must hold the correct medical certificates, pass identical health examinations, and comport with the mandatory retirement age. All of these provisions are clearly aimed at protecting the pilots and the public irrespective of whether the planes are carrying passengers or people.

The most appropriate comparison, however, is the FAA’s wholesale restriction on the use of drugs and alcohol, substances that the FAA has regulated pilots’ use of for over fifty years. Fatigue studies have conclusively shown that fatigued individuals perform at least as badly, or worse, than individuals with blood alcohol contents of greater than the level of blood-alcohol ratio prohibited by the FAA in pilots (.04).\textsuperscript{240} Given the indisputable dangers associated with operating a vehicle or

\textsuperscript{232} Id. at 41.
\textsuperscript{233} Id. at 48.
\textsuperscript{234} See, e.g., Office of Info. & Regulatory Affairs, supra note 182, at 12.
\textsuperscript{235} 14 C.F.R. §§ 61.3(c), 61.23(a) (2014).
\textsuperscript{236} 14 C.F.R. § 61.23(a).
\textsuperscript{237} 14 C.F.R. § 121.383(e).
\textsuperscript{240} See 14 C.F.R. § 91.17.
airplane while intoxicated, it is easy to see why the FAA uniformly restricts the use of alcohol and drugs for pilots of all civil aircraft.\textsuperscript{241} As such, it is entirely illogical that the FAA would exempt cargo pilots from rules regulating flight duty and rest requirements, much less on the basis of cost. This reasoning flies in the face of the FAA’s congressional charge to “consider . . . the duty of an air carrier to provide service with the highest possible degree of safety in the public interest” when drafting regulations.\textsuperscript{242} Instead, the FAA has opted to provide the “highest possible degree” of shareholder return for the air cargo companies.

2. \textit{Past Erroneous Exemptions}

Furthermore, the FAA has erroneously exempted cargo carriers from important safety measures in the past, only to then reverse itself and apply the regulations uniformly.\textsuperscript{243} For example, in the 1990s, cargo carriers were not required to be equipped with collision avoidance systems (TCAS).\textsuperscript{244} 1996 brought the tragic midair collision over India between a Saudi Arabian jumbo jet and a small Kazak Airlines charter plane, which killed 349 people.\textsuperscript{245} Then, in 1997, a UPS cargo plane had a near miss with Air Force One—while President and Mrs. Clinton were on board—just off the Irish coast.\textsuperscript{246} These incidents apparently “woke the FAA up,”\textsuperscript{247} and soon thereafter, the FAA extended the TCAS requirement to all cargo planes.\textsuperscript{248}

3. \textit{The Safe Skies Act}

Regardless of the musings over the potential judicial interpretation of the Final Rule, or the cargo carriers’ alarmist predications about the downfall of the air cargo industry, one thing is certain: most people want pilots to be well-rested and fit for duty. After the Final Rule was rolled out at the end of 2011, in

\begin{footnotesize}
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\item \textsuperscript{241} IPA Comments, supra note 167, at 76 (discussing 14 C.F.R. § 91.17).
\item \textsuperscript{243} See Sullenberger & Hall, supra note 22.
\item \textsuperscript{245} Sullenberger & Hall, supra note 22.
\item \textsuperscript{247} Sullenberger & Hall, supra note 22.
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April 2012, Representatives Chip Cravaak (R-MN) and Tim Bishop (D-NY) introduced the Safe Skies Act in the House.249 This Act would eliminate the cargo carve-out and require that all pilots be held to the flight duty and rest requirements established by the Final Rule.250 A similar bipartisan bill was introduced the following June in the Senate by Senators Barbara Boxer (D-CA) and Olympia Snowe (R-ME).251

Though the 2012 bills did not make it out of committee before the end of the year, they were quickly reintroduced in 2013 with the strong support of the Air Line Pilots Association (ALPA), the Cargo Airline Pilots Association (CAPA), and other pilots’ organizations, as well as aviation safety advocate Captain Chesley Sullenberger, the noted pilot who safely landed in the Hudson River in 2011 after a bird strike killed his engines.252 Time will tell if the political process will produce any meaningful regulatory changes in 2014. However, the swift legislative response to the Final Rule should at least put the FAA on notice that many Americans are upset with the cargo carve-out and want all airline pilots held to one standard of safety. As Captain Sullenberger puts it: “When a large plane flies over your house in the middle of the night, it doesn’t matter whether it’s carrying cargo or passengers, whether you are a Democrat or a Republican – the danger is all the same if the pilots are fatigued.”253

V. FRMS: THE SIMPLE SOLUTION THAT NO ONE IS TALKING ABOUT

After all the discussion about congressional mandates and cost-benefit analyses, is this perhaps all much ado about nothing? The debate is really about making an exception to the general rule. The question should be: What kind of exception is being made?

250 Id.
253 Sullenberger, supra note 252.
Under the Final Rule, a blanket exception is being made for the entire air cargo industry. Part-121 carriers, however, can range from large multi-national companies to small domestic companies with only a single airplane. Just as the cargo industry has understandably complained that a “one-size-fits-all” regulatory scheme is inappropriate, indeed a “one-size-fits-all” carve-out is inappropriate as well.

Fortunately, the FAA already anticipated that different companies would have different structures and business needs, and it introduced a unique solution in the Proposed Rule: the Fatigue Risk Management System. As discussed in Part II, the FRMS provides an opportunity for companies to develop their own strategies to deal with fatigue that best complement their individual businesses.254 Is an FRMS more expensive than doing nothing? Sure. However, by providing companies the ability to design their own fatigue strategies, the FAA is in fact acknowledging that “one-size-fits-all” regulations might unduly burden some businesses. The FRMS, therefore, allows companies to achieve better cost efficiency because they are not hemmed into a rigid regulatory scheme and can work to achieve safety goals and manage fatigue by developing their own “regulations,” so to speak.

Passenger carriers have already embraced the concept of the FMRS, and many airlines have already implemented them successfully.255 The International Air Transport Association (IATA), which is the trade association for most of the world’s major airlines, has published an informational guide to assist airlines in developing their own FRMS.256 IATA touts the FRMS as a step in the right direction “from prescriptive to performance based regulatory oversight” and presents it as an effective way to manage fatigue while accounting for operational differences among businesses.257

In its comments to the FAA regarding the Proposed Rule, UPS went to great lengths to explain its own methods of managing fatigue, calling them “demonstrably better” than the methods put forth in the Proposed Rule.258 It first discussed the UPS

254 See supra Part II.C.3 and accompanying notes.
256 Id.
257 Id.
258 UPS Comments, supra note 24, at 7.
It then explained its fatigue mitigation program, which includes eight separate prevention methods: (1) duty period restrictions during the window of circadian low; (2) prohibitions against "swapping" of daytime and nighttime flying schedules; (3) time-zone crossing restrictions and increased rest for international flights; (4) circadian rhythm parameters in bid line construction; (5) fatigue training for pilots; (6) voluntary non-punitive self-reporting system; (7) non-punitive crewmember reporting system; and (8) state-of-the-art sleep facilities. Good for UPS! It sounds like they are on their way toward a first-rate FRMS. Of course, the FAA would have to individually approve it, but if the system adequately addresses pilot fatigue, as UPS maintains, then it may be able to be approved with only minor tweaks. This is precisely how an FMRS is supposed to work.

However, it would be illogical to simply conclude that, because one large cargo carrier is making great strides toward managing fatigue, all cargo carriers should be exempt from the Final Rule. Such a conclusion ignores the many potential differences between operations of different sizes, including personnel, rest facilities, and training systems. Yet this is exactly what the FAA did in issuing the Final Rule with the cargo carve-out.

In sum, the FAA capitulated too easily to the cargo industry giants without requiring them to thoughtfully consider the FRMS as a meaningful alternative to the Final Rule. With a cooperative effort between the FAA and cargo businesses, the FRMS provides the best option for maintaining business efficiency without sacrificing safety.

VI. CONCLUSION

Despite its well-intentioned Proposed Rule, the FAA succumbed to intense lobbying by the cargo industry and exempted cargo-only operations from the Final Rule. In doing so, the FAA failed to comply with the congressional mandate of the Airline Safety Act by relying solely on cost considerations and ignoring the statute's enumerated safety factors. However, even if a cost-benefit analysis were appropriate, a cargo inclusion would be easily justified when costs and benefits are realistically considered, especially when viewed in the context of FAA precedent and the legislative response of the Safe Skies Act. Finally, Part

259 Id.
260 Id. at 8–11.
117 need not result in burdensome regulatory restriction because of the unique option of the FRMS, which offers a simple solution to meet business goals and safety goals in the most efficient way possible.

Fatigue is a debt that must be paid, and it can only be paid with sleep. All humans are susceptible to fatigue in certain situations like working on the "back side of the clock." Air carriers and the government have a special duty to the public to ensure that all pilots are well rested and fit for duty due to the profound and catastrophic consequences that could result from even a momentary lapse in judgment or response time. Accordingly, Part 117 should apply to passenger and cargo pilots alike.

Just a few hours before he died, Cerea Beal, captain of the ill-fated UPS cargo plane that would soon crash in Birmingham, made a prescient—chilling—remark to his co-pilot, which was captured on the cockpit voice recorder as they discussed the inexplicable differences between passenger and cargo flight and duty regulations:

*I don’t get that . . . . [I]t should be one level of safety for everybody.\textsuperscript{261}

\textsuperscript{261} Chesley Sullenberger, \textit{A Warning We Must Not Ignore}, \texttt{SULLYSULLENBERGER.COM} (Feb. 21, 2014), http://sullysullenberger.com/#/blog.
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