# U.S. PASSENGER AIRLINES ARE CRITICAL TO THE U.S. ECONOMY'S ABILITY TO REBOUND FROM THE ECONOMIC TURMOIL CAUSED BY THE COVID-19 PANDEMIC

*The CARES Act's Payroll Support to U.S. Airline Employees Will Yield an Estimated $42.9-$52.7 Billion in Primary Benefits to the U.S. Economy, Plus an Additional $46.2 Billion in Secondary GDP Benefits by Enhancing U.S. Passenger Airlines' Unique Ability to Accelerate the Rebound in the U.S. Economy*

***Eric Amel, Darin Lee, and Ethan Singer***[1]

## Executive Summary

U.S. passenger airlines play a critical role in the United States by enabling commerce and trade, connecting families and friends, transporting armed services personnel, and serving as a vital component for much of the nation's tourism, leisure, and hospitality industry, the largest component of the U.S. economy.[2] According to the U.S. Federal Aviation Administration ("FAA"), civil aviation in the United States drives 5% of U.S. Gross Domestic Product ("GDP") and helps to support over 10 million U.S. jobs (i.e., one of every 14 in the U.S. economy).[3] During the current COVID-19 pandemic, U.S. passenger carriers have played a key role in transporting urgently needed medical equipment, medicine, and personnel to the most affected regions of the country,[4] and have likewise provided emergency flights to repatriate U.S. citizens who were stranded abroad

[1] See last page for author biographies.

[2] *See* https://www.whitehouse.gov/briefings-statements/remarks-president-trump-vice-president-pence-members-coronavirus-task-force-press-briefing-13/ statement of President Trump on March 27th, 2020 ("…I also want to preserve airlines, because that's preserving lots of other jobs. That's preserving the travel and leisure industry, which is perhaps the largest industry in our country, if you add it all up. You add up all the hotels and all of the traveling and all the planes and everything else — probably, by far, the largest industry in our country.)

[3] Source: *The Economic Impact of Civil Aviation in the U.S. Economy*, U.S. Federal Aviation Administration, January 2020, p.14.

[4] On March 28, 2020, United Airlines announced that it would use its planes to transport medical supplies around the United States. *See* https://www.businessinsider.com/united-ceo-thanks-america-bail-out-planes-deliver-medical-supplies-2020-3, statement by CEO Oscar Munoz ("Right now, aircraft flying the United livery and insignia, flown by our aviation professionals, have been repurposed to deliver vital medical supplies and goods to some of the places that need it most.") Delta is providing free flights to medical volunteers to regions in the U.S. that have been highly impacted and operating cargo flights between the U.S. and China to maintain the medical supply chain. *See* https://news.delta.com/supporting-front-lines-medical-volunteers-can-book-free-flights-georgia-louisiana-and-michigan and https://news.delta.com/new-delta-cargo-flights-between-us-china-help-keep-medical-supply-chain-flying. In addition, on March 19, 2020, American Airlines announced that it would operate cargo-only flights to move goods, including medical supplies, between the U.S. and Europe. *See* http://news.aa.com/news/news-details/2020/American-Airlines-Announces-Cargo-Only-Flights-to-Help-Keep-Business-Moving-OPS-DIS-03/default.aspx.

as countries began to close their borders and freeze travel in response to the rapidly spreading pandemic.[5]

Without healthy U.S. airlines that are in a position—both financially and operationally—to quickly restore flights once the pandemic in the United States has been contained, the recovery of the broader U.S. economy will be far slower than it could otherwise be, leaving millions of Americans unemployed or furloughed longer. Recognizing the unique and critical role that U.S. passenger airlines play in the nation's economy—as well as how the need for social distancing and various federal and state-mandated travel quarantines have crippled the industry virtually overnight—the Coronavirus Aid, Relief, and Economic Security Act ("CARES") Act affords U.S. passenger carriers $25 billion to keep their employees on their payrolls until September 30, 2020, when demand is anticipated to have begun rebounding. Without these funds, evaporating passenger demand—which has already resulted in one U.S. carrier liquidating[6]—would leave U.S. carriers with no choice but to furlough a substantial majority of their employees, as many airlines around the world have already done.[7] Because U.S. passenger carriers spend, on average, over $162 million in employee wages and benefits *each day*, beyond the devastating effect these furloughs would have on airline employees, they also would have far reaching ripple effects throughout thousands of U.S. communities where spending by furloughed employees would be curtailed. Likewise, mass furloughs of airline employees would also impose even greater financial strain on

[5] For example, on March 19, 2020, after Haiti closed its two international airports, both American and JetBlue decided to offer repatriation flights (https://www.miamiherald.com/news/nation-world/world/americas/haiti/article241442121.html). In addition, for the week of March 25th, American and United offered repatriation flights from various cities in Central and South America (https://hub.united.com/united-helps-travelers-return-home--2645575499.html and http://news.aa.com/news/news-details/2020/American-Airlines-Operating-Repatriation-Flights-to-Get-Customers-Home-This-Week-OPS-DIS-03/default.aspx).

[6] *See* "Compass Airlines to cease operations in April," *Minneapolis Star Tribune*, March 19, 2020 ("Minneapolis-based Compass Airlines is shutting down operations in April due to the coronavirus outbreak. A statement from the company says Compass Airlines 'has made the difficult decision to cease operations, effective April 7.' According to the statement, 'Radical capacity reductions left Compass without the ability to fly even minimally viable schedules.'")

[7] Several carriers outside of the United States have already announced massive layoffs because of COVID-19. In Canada, for example, the largest three carriers (Air Canada, WestJet, and Air Transat) have all announced massive furloughs. *See "*More than 5,100 Air Canada flight attendants to be laid off amid massive COVID-19 slowdown," CBC, March 19, 2020 (https://www.cbc.ca/news/canada/british-columbia/more-than-5-100-air-canada-flight-attendants-to-be-laid-off-amid-massive-covid-19-slowdown-1.5504051), "WestJet cuts 50% of its staff", FlightGlobal, March 24, 2020 (https://www.flightglobal.com/strategy/westjet-cuts-50-of-staff/137507.article), and "Air Transat to lay off 70% of workforce amid coronavirus pandemic", Global News, March 23, 2020 (https://globalnews.ca/news/6716946/air-transat-layoffs-coronavirus/). Similarly, Australia's largest carrier Qantas is furloughing two thirds of staff (https://www.qantasnewsroom.com.au/media-releases/qantas-group-outlines-customer-and-employee-impact-of-coronavirus-related-network-cuts/) and SAS has furloughed 90% of its workforce. *See* "Airline SAS to half most traffic, temporarily lay off 10,000 staff", Reuters, March 25, 2019.

all 50 states' finances due to hundreds of thousands of additional unemployment claims and reduced tax revenues.

By ensuring that U.S. passenger airlines are able to keep their employees on their payrolls for the next six months, the CARES Act provides a critical and essential bridge for airlines and their employees so that they are in the position to provide the most efficient, effective, and economical air service to fuel the U.S. economy's rebound. Importantly—and as detailed in the remainder of this white paper—the primary quantifiable economic benefits, including direct economic value to the U.S. Treasury, State Treasuries, and the broader U.S. economy of the CARES Act's payroll protection for airline employees will reach between $43 billion and $53 billion, depending on the levels of furloughs in the absence of the CARES Act assistance (and include $14-24 billion of increased state and federal tax revenue, avoided unemployment insurance payments, or increased spending flowing directly from the payment of airline employees' wages over the next six months).

Moreover, the CARES Act will pay countless other dividends to the U.S. economy by incenting and enabling U.S. carriers to restore capacity faster than they otherwise would, resulting in a more rapid, robust, and resilient economic rebound throughout the broader U.S. economy once the COVID-19 pandemic ends. During the last three months of the grant period, for example, assuming that lower marginal costs of operating a flight due to the CARES Act incents and enables carriers to restore 10 percentage points more of their pre-COVID-19 capacity than they otherwise would have, the quantification of just three of the additional benefits of this incremental capacity (i.e., additional supply chain activity, domestic traffic stimulation, and more international visitors) brings the total economic benefit to the U.S. economy *during the period of the payroll support* to $18-28 billion. Another significant—albeit unquantified—benefit of the CARES Act's payroll support to the U.S. airlines is the fact that U.S. airlines will be required to maintain critically important scheduled air service to hundreds of U.S. cities, including many remote small- and medium-size communities that rely on air transportation linkages for critical health and safety needs, as well as for connectivity to the rest of the country (and the world).[8] Absent the payroll assistance, many of

[8] See CARES Act, Sec. 4005, Continuation of Certain Air Services ("When considering whether to exercise the authority granted by this section, the Secretary of Transportation shall take into consideration the air transportation needs of small and remote communities and the need to maintain well-functioning health care and pharmaceutical supply chains, including for medical devices and supplies.")

these small U.S. communities would undoubtedly lose their air service and all of the associated benefits that come with it.

However, these economic dividends will not end on September 30. Because the CARES Act provides U.S. carriers six more months to secure additional private funding which, in turn, will better position airlines to retain their highly-skilled workforces so that they are poised to grow, it will help to minimize the number of involuntary furloughs and pay reductions that may be required in the fall if the negative demand effects of the COVID-19 pandemic persist beyond that time. Put differently, because the CARES Act will position U.S. passenger airlines to emerge from the COVID-19 pandemic with their workforces both intact and highly motivated to lead the economic recovery, there is every reason to believe that carriers will be both incented *and able* to continue supplying more capacity than they otherwise would as the economy's rebound accelerates.[9] Including these longer term incremental capacity benefits (i.e., additional supply chain activity, domestic traffic stimulation, and more international visitors) over the two years following the period of the payroll support brings the total primary economic benefits to the U.S. economy to between $43 billion and $53 billion.

Finally, in addition to the *primary* impacts of a larger and more robust airline industry discussed above, the CARES Act will generate significant secondary (or "spillover") benefits by facilitating more face-to-face business meetings and other economic activity that will no doubt lead to an accelerated economic recovery by spurring investment, employment, and innovation in all sectors of the economy. Even under highly conservative assumptions regarding these spillover effects, the CARES Act-enabled capacity can be expected to increase annual U.S. GDP by an average of 0.1% over the two years following the end of the grant period, equivalent to over $46 billion.

Figure 1 below summarizes both the primary and secondary economic benefits of the CARES Act's employee wage and benefit support under a broad range of assumptions regarding the extent of

[9] On the other hand, in the absence of the CARES Act, carriers would not only be forced to engage in mass furloughs, but would also seek to reduce the wages and benefits of their remaining employees, resulting in disheartened and demoralized work forces. Based on the U.S. airline industry's experience following previous negative shocks (e.g., September 11th), this would leave U.S. carriers severely handicapped in their ability to respond to the anticipated return of demand once the pandemic ends. *See, e.g.*, "Relationships, Layoffs, and Organizational Resilience: "Airline Industry Responses to September 11", by Jody Hoffer Gittell, Kim Cameron, Sandy Lim, and Victor Rivas, *The Journal of Applied Behavior Science,* 42 (3), 2006, pp. 300-329 ("The presence of adequate financial reserves reduces the need to rely on layoffs, thus preserving relational reserves among employees, which boost an organization's ability to bounce back after a crisis has passed.")

furloughs among U.S. passenger carriers in the absence of the grants, and shows that the total primary benefits range from $42.9 billion (assuming avoided furloughs of 50%) to $52.7 billion (assuming avoided furloughs of 85%). Including the secondary impacts on GDP, the total benefits range from $89.1 billion (assuming avoided furloughs of 50%) to $98.8 billion (assuming avoided furloughs of 85%).

**Figure 1: Summary of Quantified Benefits to U.S. Treasury, State Treasuries and Broader U.S. Economy From $25 Billion of CARES Act Payroll Support to U.S. Passenger Airline Employees, Under Various Furlough Avoidance Assumptions**

| Economic Benefit | | | Total ($ millions) Avoid 50% Furlough | Avoid 60% Furlough | Avoid 70% Furlough | Avoid 85% Furlough |
|---|---|---|---|---|---|---|
| Primary Benefits | Taxes and Avoided Costs to Fed/State Treasuries | Additional Federal Income Taxes | **$1,541** | **$1,849** | **$2,157** | **$2,619** |
| | | Additional State Income Taxes | **$247** | **$296** | **$345** | **$419** |
| | | Additional Local Income Taxes | **$3** | **$4** | **$4** | **$5** |
| | | Saved State Unemployment Benefits | **$2,947** | **$3,537** | **$4,126** | **$5,010** |
| | | Saved Federal Pandemic Unemployment Compensation | **$2,887** | **$3,465** | **$4,042** | **$4,908** |
| | | Additional Federal Payroll Taxes | **$1,549** | **$1,859** | **$2,169** | **$2,634** |
| | | Additional State Unemployment Insurance Taxes | **$49** | **$59** | **$69** | **$84** |
| | *Subtotal Direct Benefits to U.S. and State Treasuries* | | ***$9,223*** | ***$11,068*** | ***$12,913*** | ***$15,680*** |
| | Additional Consumer Spending in U.S. Economy Due to Higher Airline Employee Disposable Income | | **$4,715** | **$5,658** | **$6,601** | **$8,015** |
| | *Sub-total Direct Benefits to U.S. and State Treasuries and Additional Consumer Spending* | | ***$13,938*** | ***$16,726*** | ***$19,514*** | ***$23,695*** |
| | Short-Term Incremental Capacity Benefits | Additional Airline Supply Chain Benefits* | **$1,670** | **$1,670** | **$1,670** | **$1,670** |
| | | Additional Spending by Domestic Travelers* | **$2,155** | **$2,155** | **$2,155** | **$2,155** |
| | | Additional Visitor Spending* | **$284** | **$284** | **$284** | **$284** |
| | *Sub-total Capacity Benefits Through Sept, 30-2020* | | ***$4,110*** | ***$4,110*** | ***$4,110*** | ***$4,110*** |
| | *Sub-total of Primary Benefits April 1-Sept, 30-2020* | | ***$18,048*** | ***$20,836*** | ***$23,623*** | ***$27,805*** |
| | Trailing Effects of CARES-Act | Additional Airline Supply Chain Benefits* | **$10,020** | **$10,020** | **$10,020** | **$10,020** |
| | | Additional Spending by Domestic Travelers* | **$12,567** | **$12,567** | **$12,567** | **$12,567** |
| | | Additional Visitor Spending* | **$2,276** | **$2,276** | **$2,276** | **$2,276** |
| | *Sub-total Trailing Effects (Oct 1, 2020-Sept 3, 2022)* | | ***$24,863*** | ***$24,863*** | ***$24,863*** | ***$24,863*** |
| | ***Primary Impacts Total*** | | ***$42,911*** | ***$45,699*** | ***$48,486*** | ***$52,668*** |
| ***Secondary Impacts on U.S. GDP*** | | | ***$46,160*** | ***$46,160*** | ***$46,160*** | ***$46,160*** |
| **Grand Total** | | | **$89,071** | **$91,859** | **$94,647** | **$98,828** |

* Short-Term incremental capacity benefits assume that the CARES Act results in carriers providing 10 percentage points more capacity (relative to pre-pandemic levels) than they otherwise would from July-September 2020, including 15 incremental long-haul international routes restored. Trailing Effects of the CARES Act and secondary impacts on U.S. GDP assume 10 percentage points more of pre-pandemic capacity is restored in the first year following October 1, 2020, followed by 5 percentage points relative to pre-pandemic capacity in the second year, including 15 incremental long-haul international routes restored.

**Prior to the COVID-19 Pandemic, U.S. Passenger Airlines Were the Most Efficient in the World**

Over the past decade, the U.S. airline industry has become *the most efficient* in the world, with (1) capacity utilization and passenger levels at *historically high rates*,[10] (2) airfares at their *lowest* levels in history,[11] and (3) record high levels of customer satisfaction.[12] U.S. carriers' ability to profitably achieve this trifecta—while simultaneously increasing the number of airline employees and average compensation[13]—is a testament to their high degree of efficiency.

In 2019, U.S. airlines carried close to 930 million passengers – the highest number ever.[14] To meet growing passenger demand, U.S. carriers expanded their capacity by 26.2% from 2010 to 2019, and until the COVID-19 epidemic, were on track to expand capacity by over five percent in 2020.[15] During January and February of this year, traffic grew on a year-over-year basis by 2.2% for the two months combined.[16] As a result, U.S. airlines experienced near record high load factors in January and February of 80.2% and 79.5%, respectively, for a combined 79.9% to start the year.[17]

---

[10] Capacity utilization, as measured by U.S. industry-wide load factor, reached 84.2% in 2019—*an all-time high*, and 12.0 percentage points higher than in 2000. Source: Bureau of Transport Statistics, T1 database for all scheduled passenger U.S. carriers. Load factor is a standard industry utilization measure defined as revenue passenger miles (RPMs) divided by available seat miles (ASMs). An ASM is one seat flown one mile, and an RPM is one passenger flying one mile.

[11] *See* https://www.bts.gov/newsroom/third-quarter-2019-air-fare-data, noting that "U.S. domestic air fares in the third quarter of 2019 of $345 were the lowest on record, inflation adjusted, based on Bureau of Transportation Statistics (BTS) records dating from 1995."

[12] For example, the 2019 *Airline Quality Rating* study by Embry Riddle University was "the best AQR score in the 29-year history of the rating." Embry-Riddle Aeronautical University, "Airline Quality Rating 2019," Brent D. Bowen and Dean E. Headley, April 2019 (page 8). Likewise, JD Power study showed record-high customer satisfaction in 2019, "continuing an eight-year trend of satisfaction improvement." *See* JD Power North America Airline Satisfaction Study, 2019.

[13] Passenger airline employment has been growing steadily since 2010 with approximately 70,000 new jobs added over this period. Over this period, average compensation (wages and benefits) per airline employee has increased from $90,000 to $132,000. Source: U.S. DOT Form41 schedule P1(a) and schedule P-6. Salaries and benefits per employee through full year ending 2019Q3.

[14] Sources: Bureau of Transportation Statistics (https://www.bts.gov/newsroom/december-2019-us-airline-traffic-data); U.S. DOT T1 database; U.S. DOT 298C database.

[15] *See, e.g.,* Cowen Equity Research, "2020 Skyscape: In Line For Another Good Year Despite Concerns Of Max Re-Entry," Jan. 3, 2020," p. 1, predicting a 5.4% capacity increase, Barclays Equity Research, "North America Airlines Through from 4Q2019 Earnings," Feb. 4, 2019, p. 3, forecasting 5.7% growth, and Raymond James, "Global Airlines Outlook: 2020 Vision," p. 13, forecasting 6% U.S. domestic capacity growth in 2020.

[16] Average daily traffic growth for A4A members. A4A members include Alaska, American, Delta, Hawaiian, JetBlue, United, and Southwest. Source: A4A data.

[17] Load factor for A4A member carriers. The January/February 2020 load factor of 79.9% was only previously achieved in January/February 2014 with an 80.0% load factor. Source: A4A data and U.S. DOT T100.

**COVID-19 Pulled the Rug from Under U.S. Airlines' Feet**

Until early March, U.S. passenger airlines were able to weather the impact of COVID-19, as the negative demand impact was limited to certain geographic areas (principally Asia). Over the course of ten days starting around March 8, however, airline demand went into a freefall as the impact of the COVID-19 pandemic in the United States became widely apparent and Federal, state, and local officials across the country began to urge the public to engage in social distancing and to stay at home.[18] Likewise, starting on March 11, the Transportation Security Administration ("TSA") began to issue statements reporting on airport security screeners testing positive for COVID-19, and for the 14-day period ending March 28, 2020, there were 49 TSA screening officers at 17 different airports that tested positive.[19] As a result of these factors, U.S. flights went from being approximately 80% full to less than 20% full on average *even as U.S. carriers cancelled almost half of all flights*,[20] and the few passengers that did travel over this period were primarily those rushing home to wait out the pandemic. Thus, on each of the last six available days of data from TSA (Thursday March 26 - Tuesday, March 31, 2020), TSA security screened *8% or fewer* of the number of travelers that it screened on the equivalent days from 2019.[21]

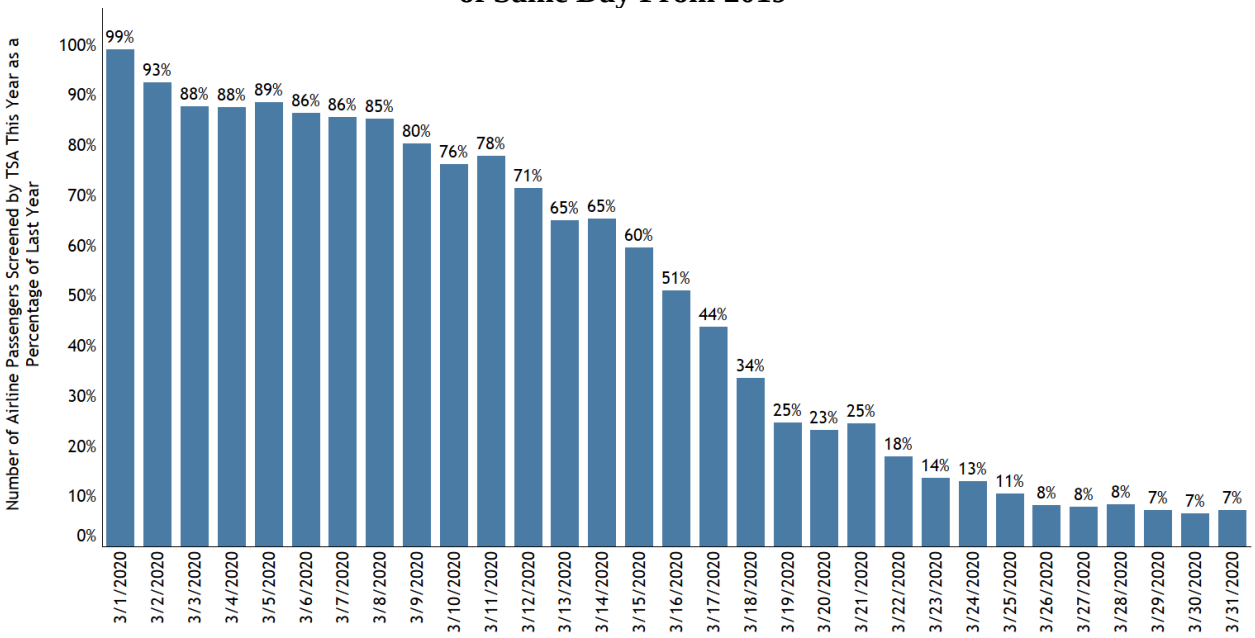
[18] On March 8, Dr. Anthony Fauci—Director of the National Institute of Allergy and Infectious Diseases—advised older adults and those with underlying health conditions to avoid air travel. On March 11, President Trump announced travel restrictions between the United States and Europe (excluding the UK and Ireland), and, three days later, extended those restrictions to all of Europe. On March 12, the CDC began to advise the public to avoid groups of 250 or more people, which was revised to 50 people on March 15 and only 10 people on March 16. On March 16, the White launched its 15 Day to Stop the Spread campaign advising the public to "Listen to and follow the direction of your state and local authorities", many of which subsequently instructed their individuals to either shelter in place and/or quarantine themselves after traveling from another state. *See* https://dhss.delaware.gov/dhss/pressreleases/2020/cdcguidance_030920.html, https://www.whitehouse.gov/briefings-statements/president-donald-j-trump-taken-unprecedented-steps-respond-coronavirus-protect-health-safety-americans/, https://www.whitehouse.gov/briefings-statements/remarks-president-trump-vice-president-pence-members-coronavirus-task-force-press-briefing/, https://www.cdc.gov/coronavirus/2019-ncov/downloads/community-mitigation-strategy.pdf, https://www.whitehouse.gov/briefings-statements/remarks-president-trump-vice-president-pence-members-coronavirus-task-force-press-briefing-3/ and https://www.whitehouse.gov/articles/15-days-slow-spread/.

[19] Source: https://www.tsa.gov/coronavirus/

[20] Source: A4A data and MasFlight, comparing the number of completed flights on March 28th, 2020 versus the average number of completed flights for the week ending February 15, 2020.

[21] *See* https://www.tsa.gov/coronavirus/passenger-throughput.

**Figure 2: Number of Airline Passengers Screened by TSA as a Proportion of Same Day From 2019**




Source: TSA.
Notes: Travelers passing through TSA Checkpoints this year as a percentage of travelers who passed through the checkpoints last year on the same day.

To make matters worse, all evidence points to the demand for air travel all but disappearing in the coming days, weeks and potentially months as more local authorities adopt increasingly aggressive counter-measures on a daily basis (including quarantining out-of-state visitors or attempting to ban them all together) to slow the spread of COVID-19 and travelers continue to heed to the pleas of government and public health officials to engage in social distancing and stay at home to "flatten the curve." Indeed, for the first time in U.S. history, the federal government, along with 37 states (plus Washington, D.C. and Puerto Rico) comprising over 294 million people (about 89% of the U.S. population),[22] have issued "stay at home" orders, and, as of April 1, these orders will be in place until at least April 30. And even if—under the best-case scenario—the United States "re-opens" for business by May, vast portions of the traveling public—including those aged 65 and those that have an underlying health condition—will be reluctant to return to traveling until public health officials can assure them that the risk of contracting the coronavirus is minimal (e.g., when

[22] *See* https://www.nytimes.com/interactive/2020/us/coronavirus-stay-at-home-order.html (accessed on April 1, 2020).

a reliable vaccine has been developed and is widely available),[23] or until other therapeutics or drugs to treat, cure or prevent COVID-19 becomes available.

**The Decline in Passenger Traffic Is Unprecedented in Aviation History and Can Be Expected to Last for Several Months If Not Longer**

Based on the bookings for future air travel of the U.S. carriers,[24] the mass layoffs throughout the economy that have already commenced[25] and are certain to continue,[26] and the fact that governments across the United States and around the globe are placing onerous restrictions on inbound travelers or restricting travel altogether,[27] there is every reason to believe that demand for air travel will be suppressed for the foreseeable future.[28] Sustained declines in airline demand of

[23] The CDC has identified several groups of individuals at high risk of serious complications—including death—should they be infected by COVID-19. These include adults aged 65 years and older, or persons (of any age) with diabetes, chronic lung disease, cancer, immunodeficiency, heart disease, hypertension, asthma, kidney disease, and liver disease. These groups comprise a large portion of the U.S. population. For example, there are approximately 49.2 million people in the United States aged 65 and older (i.e., 15.2% of the population), 26.8 million people in the United States with diabetes, 33.2 million with chronic lung disease, and 23.3 with cancer (CDC, U.S. Census, https://www.census.gov/data/tables/2017/demo/popproj/2017-summary-tables.html, https://www.cdc.gov/diabetes/pdfs/data/statistics/national-diabetes-statistics-report.pdf, https://www.cdc.gov/nchs/fastats/cancer.htm, and American Lung Association, https://www.lung.org/research/trends-in-lung-disease/estimated-prevalence-and-incidence-of-lung-dis-(1)/methodology. It is reasonable to assume that a portion of these high-risk individuals will avoid traveling by air until they are immune (by virtue of recovering from COVID-19) or until a vaccine is available, and as a result will reduce airline demand substantially.

[24] The number of bookings made for *future travel* for U.S. carriers have declined by over 90% for the week ending 3/22/2020 compared to the same week last year. Source: ARC DDS Data.

[25] "In the week ending March 21, the advance figure for seasonally adjusted initial claims was 3,283,000, an increase of 3,001,000 from the previous week's revised level. This marks the highest level of seasonally adjusted initial claims in the history of the seasonally adjusted series. The previous high was 695,000 in October of 1982." U.S. Department of Labor New Release, March 26, 2020.

[26] According to one estimate prepared by the Federal Reserve Bank of St. Louis, the unemployment rate in the second quarter of 2020 could reach 32.1%. *See* https://www.stlouisfed.org/on-the-economy/2020/march/back-envelope-estimates-next-quarters-unemployment-rate

[27] *See, e.g.,* "COVID-19 Updated Impact Assessment", Brian Pearce, Chief Economist, IATA, March 24, 2020 ("IATA COVID-19 Updated Impact Assessment"), page 2, noting that globally "Markets with severe restrictions [quarantine for arriving passengers, partial travel ban, or border closure] cover over 98% of global passenger revenues". On March 14, President Trump extended the European travel ban to include the UK and Ireland (https://www.whitehouse.gov/briefings-statements/remarks-president-trump-vice-president-pence-members-coronavirus-task-force-press-briefing/). Since March 25 and March 26, 2020, Alaska and Hawaii, respectively, ordered that individuals arriving at their airports must self-quarantine for 14 days (https://www.usatoday.com/story/travel/news/2020/03/24/coronavirus-travel-restrictions-isolation-florida-hawaii-alaska/2906751001/). Similarly, on March 27, 2020, Florida extended its 14-day self-quarantine order, currently including individuals coming from New York, New Jersey, and Connecticut, to Louisiana (https://www.usnews.com/news/best-states/florida/articles/2020-03-27/florida-orders-louisiana-arrivals-into-quarantine).

[28] For example, according to IATA, even in countries have successfully contained the coronavirus such as China and South Korea, the number of forward bookings as of March 19 is down approximately 70% year over year. *See* "IATA COVID-19 Updated Impact Assessment, page 7.

this magnitude are simply unprecedented.[29] By way of comparison, in September 2001—in the wake of the September 11th terrorist attacks—U.S. carrier traffic fell by approximately 34% vs. September 2000, but improved (versus the year prior) to -22% in October, -19% in November and -14% in December 2001.[30] Likewise, during the nadir of the Great Recession, passenger traffic for U.S. carriers fell (year-over-year) by *at most* 13% (in November 2008 and February 2009).[31]

In response to the unprecedented decline in demand and uncertainty as to when demand may start to return, U.S. airlines have already announced substantial reductions in capacity. For example, American recently announced that it "will suspend 60% of its capacity in April as compared to the same period in 2019 and is planning to suspend up to 80% of its capacity in May compared to the same period in 2019"[32]; Delta announced a "70 percent pullback of systemwide capacity"[33]; United announced that it has cut April capacity by more than 60 percent and is "planning even to make even deeper cuts in May and June"[34]; and Alaska announced capacity reductions of approximately 70% for April and May.[35]

**Absent the CARES Act Payroll Protection, U.S. Carriers Would Have Had No Choice but to Furlough a Substantial Majority of Their Employees**

With the overwhelming majority of airline passengers indefinitely sidelined due to government or corporate travel restrictions and/or a fear of flying until the COVID-19 pandemic has been contained, most U.S. airlines would have no choice but to furlough a substantial majority of their more than 450,000 employees, as U.S. carriers would quickly run out of cash if they continued to

[29] *See, e.g.,* "Airline bookings: unprecedented slowdown in travel", Bank of America Securities Research Report, March 23, 2020.

[30] Source: U.S. DOT T-100 data.

[31] Source: U.S. DOT T-100 data.

[32] *See,* "American Airlines Announces Additional Schedule Suspensions in Response to Reduced Customer Demand Related to COVID-19", American Airlines press release on March 27, 2020. http://news.aa.com/news/news-details/2020/American-Airlines-Announces-Additional-Schedule-Suspensions-in-Response-to-Reduced-Customer-Demand-Related-to-Covid-19-OPS-DIS-03/default.aspx

[33] *See,* Delta 8-K March 18, 2020 https://d18rn0p25nwr6d.cloudfront.net/CIK-0000027904/66eddca5-a6ab-45b6-add8-ff779c8c5c44.pdf

[34] *See,* "A Message From Oscar Munoz and Scott Kirby", PR Newswire on March 27, 2020. https://www.prnewswire.com/news-releases/a-message-from-oscar-munoz-and-scott-kirby-301031125.html

[35] *See,* Alaska News Release on March 25, 2020. https://investor.alaskaair.com/news-releases/news-release-details/alaska-airlines-announces-schedule-reductions-and-other-changes

fly empty planes.[36] Because the exact amount of likely furloughs absent the employee grants in the CARES Act is unknown and would depend on the speed at which the pandemic is contained and when the unprecedented decline in consumer travel demand abates, we consider a range of furloughs between 50% and 85% of U.S. passenger airline employees when quantifying the economic impact of the employee grants under the CARES Act. Under any of these scenarios, the consequences to airline employees and communities throughout the United States will be immense, with between 225,000-380,000 current airline employees left without jobs, leading to increased burdens on state and federal unemployment programs (and forcing some onto Medicaid), decreased consumer spending, and increased mortgage defaults, and the potential loss of air service to many small communities.

**The Primary Quantifiable Benefits to the U.S. Treasury, State Treasuries and the U.S. Economy of Guaranteeing That U.S. Airline Employees Remain on Airlines' Payrolls for the Next Six Months Will Range from $43-$53 Billion**

The CARES Act recognizes that through no fault of their own, U.S. airlines and their employees have seen the demand for their service evaporate virtually overnight. And because airlines are the engine of much of the nation's economic activity, the CARES Act provides $25 billion in grants for U.S. passenger airlines to continue to keep their employees on their payrolls. Today, U.S. passenger airlines directly employ over 450,000 people (Full-Time-Equivalents) and pay out, on average, over $162 million of salaries and benefits *each day*. U.S. airlines have employees in all 50 states, plus U.S. territories including Puerto Rico.[37] In addition, each of the U.S. passenger airlines are significant employers of U.S. veterans, and each U.S. airline also has numerous employees—particular pilots—that actively serve in the U.S. Reserves.[38] As shown below in Figure 3, the employees of U.S. passenger airlines are dispersed throughout the entire country, and hence, the incomes they receive and the corresponding local economic impact reaches all corners of the country and is felt in both large urban areas as well as hundreds of smaller U.S. communities. In 2019, there were over 6,000 unique zip codes across the country that were home to U.S. airline

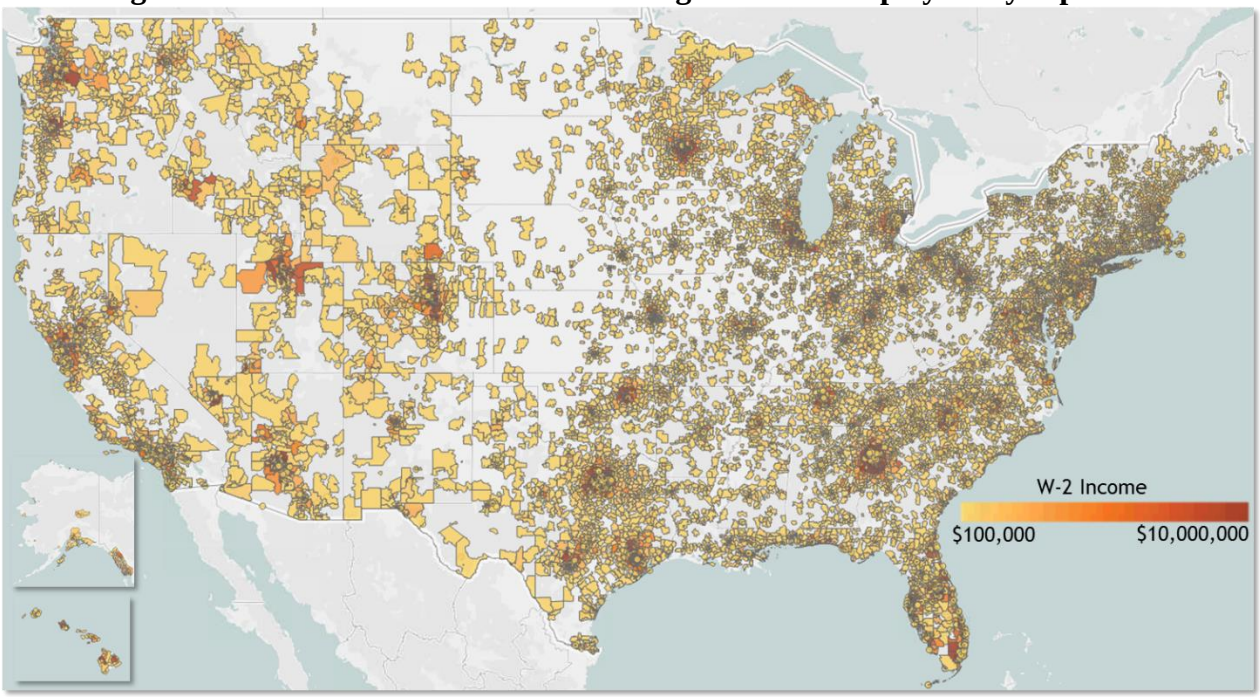
[36] As noted earlier, the coronavirus pandemic has already resulted in one U.S. regional carrier—Compass Airlines—shutting down.

[37] Source: U.S. passenger airline W-2 tax data for 2019.

[38] Alaska, American, Delta, JetBlue, Hawaiian, Southwest, and United, employ a total of at least 38,000 veterans, many of who also serve in the reserves. Source: Alaska, American, Delta, JetBlue, Hawaiian, Southwest, and United.

employees who—collectively—accounted for more than $1 million of annual airline industry income,[39] and over 1,700 zip codes with over $5 million in annual passenger airline employee income. As detailed below, these incomes support the livelihoods of not only airline employees and their families, but also, countless other individuals and small businesses in the same communities (and elsewhere) who benefit from the goods and services airline employees purchase.[40]

**Figure 3: 2019 W-2 Income of U.S. Passenger Airline Employees by Zip Code**




Source: U.S. passenger airline W-2 tax data for 2019.
Notes: Zip codes are colored by W-2 Income. Includes the following carriers: Alaska, American, Delta, Endeavor, Envoy, Frontier, Hawaiian, Horizon, JetBlue, Piedmont, PSA, SkyWest, Southwest, Spirit, and United.

Indeed, when one accounts for all of the quantifiable economic benefits that the $25 billion in airline employee grants yields back to the U.S. Treasury, various state treasuries, and the broader U.S. economy in the form of taxes, reduced unemployment insurance payouts, follow-on economic activity, and increased capacity that will accelerate the rebound of the U.S. economy, the CARES

[39] Source: Analysis of U.S. passenger airline W-2 tax data for 2019.

[40] As discussed below, each dollar of airline wages generates approximately $0.50 in additional economic activity throughout the economy as the wages of the airline employees are spent and recirculate throughout the economy.

Act is "fully funded" from an economic standpoint (i.e., generates federal, state, and other economic benefits that exceed $25 billion by a wide margin).

### A. The Direct Benefits to the U.S. Treasury, State Treasuries and Induced Spending Throughout the U.S. Economy from Guaranteeing That U.S. Airline Employees Remain on Airlines' Payrolls for the Next Six Months Will Range from $14-$24 Billion

The direct quantifiable benefits to the U.S. Treasury and state treasuries due to higher airline employee disposable income are as follows, with the range of estimates reflecting potential furlough assumptions in the absence of the employee grants under the CARES Act varying from 50%-85%:

- **Increased Federal Income Tax Revenues of $1.5-$2.6 billion**: Because the $25 billion in employee grants under the CARES Act are contingent on U.S. airlines not furloughing or reducing the wages or salaries of any of their employees until at least September 30, 2020, airline employees will have much higher incomes for the next six months than if they had been furloughed. These higher incomes are subject to standard Federal income tax, which is estimated to be $1.5-$2.6 billion;[41]

[41] While the employee grants under the CARES Act will provide $25 billion to the U.S. passenger airlines, the employee job and pay protections will protect an estimated *$30.7 billion* in wages and benefits between April 1, 2020 and September 30, 2020. The following estimates assume that in the absence of the employee grants under the CARES Act, between 50% and 85% of U.S. passenger airline employees would face furloughs, consistent with the unprecedented decline in consumer travel demand. The 85% furlough assumption is equivalent to a three-month total shutdown, followed by a three-month period where the industry is operating at 30% of normal capacity with 30% of its workforce. Thus, as a result of the employee grants, it is estimated that $25.9 billion in wages and benefits will be paid that otherwise would have been eliminated, under the assumption of 85% avoided furloughs. The estimates of additional tax revenues and reduced unemployment claims are based on an analysis of employee level 2019 W-2 earnings for the U.S. passenger airlines, which is used to compute the additional taxes or reduced unemployment claims as a result of the employee grants under the CARES Act as a proportion of the "at risk" wages for those employees. These proportions are then applied to the wage component of the $25.9 billion (under the 85% avoided furlough assumption) in "at risk" wages and benefits to obtain an estimated dollar amount of additional taxes (or reduced unemployment claims). Officers and Directors (where the information is available) or the highest paid 1% of employees are excluded from the analysis of employee W-2 data. See Figure 10-Figure 13 in the appendix for estimates of the additional tax revenues and reduced unemployment claims by state under avoided furlough assumptions of 50%, 60%, 70%, and 85%. The estimate of incremental federal income tax revenue includes only tax revenue that would be paid above and beyond the federal income taxes that would be owed for the state unemployment insurance claims and federal pandemic unemployment compensation that employees would receive in the absence of the employee grants under the CARES Act. Federal tax liability is estimated assuming that taxes are paid at the marginal rates for single tax filers and based on each employee's expected income as of April 1, 2020 and assumes that marginal rates increase during the year as each additional dollar of income is earned. Source: Analysis of airline W-2 data and federal income tax rates.

- **Increased State Income Tax Revenues of $246.6-$419.2 million**: Similarly, the additional income will be subject to standard state income tax which is estimated to be $246.6-$419.2 million[42];

- **Increased Municipal Tax Revenues of $3.0-$5.0 million:** The higher incomes protected by the employee grants in the CARES Act will also be subject to municipal income tax in some jurisdictions which is estimated to be $3.0-$5.0 million[43];

- **Reduced State Unemployment Insurance Claims of $2.9-$5.0 billion**: Absent the employee grants under the CARES Act, the airlines would need to furlough the bulk of their employees, who would then be eligible for state unemployment insurance benefits estimated at $2.9-$5.0 billion between April 1, 2020 and September 30, 2020[44];

- **Reduced Federal Pandemic Unemployment Compensation of $2.9-$4.9 billion**: Furloughed workers would also be eligible for the Federal Pandemic Unemployment Compensation contained in the CARES Act of $600 per week through July 31, 2020, at an estimated cost to the federal government of $2.9-$4.9 billion[45];

- **Increased Social Security and Medicare Tax Contributions of $1.5-$2.6 billion**: The incomes protected by the employee grants in the CARES Act would also be subject to the employee and employer paid Social Security and Medicare taxes and protecting these incomes will result in an estimated $1.5-$2.6 billion of additional Social Security and Medicare tax contributions[46]; and

---

[42] State income tax estimate includes income taxes in 42 states plus the District of Columbia, Puerto Rico, and the Virgin Islands and is based on the incremental employee income above and beyond the state unemployment insurance claims and federal pandemic unemployment compensation. Income tax is estimated assuming that taxes are paid at the marginal rates for single tax filers based on each employee's expected income as of April 1, 2020 and assumes that marginal rates increase during the year as each additional dollar of income is earned. Source: Analysis of airline W-2 data and state income tax rates. State income tax rates compiled by the Tax Foundation.

[43] While many municipalities collect income-based taxes, these estimates include only the municipal income taxes in New York City, Philadelphia, San Francisco, Indianapolis, Detroit, Louisville, Baltimore, and Columbus. Analysis of airline W-2 data and municipal income tax rates.

[44] Because the CARES Act extends unemployment benefits by up to 13 weeks, this calculation assumes that all eligible furloughed employees would have received unemployment compensation for the period between April 1, 2020 and September 30, 2020, if the employee grants were not included in the CARES Act. Each employee's estimated unemployment benefits are based on actual 2019 W-2 income. Although some states provide increased unemployment benefits for unemployed works with dependents, these estimates conservatively do not contain increased payments for dependents. Source: Analysis of airline W-2 data and unemployment benefit criteria; U.S. Department of Labor, Employment and Training Administration, "Significant Provisions of State Unemployment Insurance Laws, Effective January 2020."

[45] The estimated Federal Pandemic Unemployment Compensation assumes that all furloughed employees eligible for state unemployment benefits would receive 16 weeks of Federal Pandemic Unemployment Compensation. Source: Analysis of airline W-2 data.

[46] Estimated Social Security and Medicare tax contributions include both employer and employee paid portions, as applicable, for wages estimated to be paid for work between April 1, 2020 and September 30, 2020 that would not have been paid absent the employee grants in the CARES Act. Although the CARES Act has provisions which may allow the deferral of the employer portion of Social Security Taxes, these taxes will continue to accrue as a liability that will need to be paid once the deferral period ends. While some states—including California, Massachusetts, Nevada, and New York—have additional payroll tax deductions, these additional taxes that would be paid to the states are not included in the estimates. Source: Analysis of airline W-2 data and federal payroll tax rates.

- **<u>Increased State Unemployment Insurance Tax Contributions of $49.3-$83.8 million</u>**: Employers, like the U.S. passenger airlines are also required to pay state unemployment insurance taxes and the wages maintained by the employee grants in the CARES Act would result in an estimated $49.3-$83.8 million in additional contributions.[47]

In addition to the benefits that flow directly back to federal and state treasuries, each dollar of incremental income received by airline employees due to the CARES Act (i.e., the difference between the wages they will receive through payroll continuation and what they would have received if furloughed in the form of state and federal unemployment benefits) generates approximately $0.50 in additional economic activity in the U.S economy, an economic effect known as the "induced multiplier".[48] This well-understood economic impact is attributable to the extra income of airline employees being spent in their local communities (and beyond), which then continues to recirculate throughout the economy. Based on this multiplier effect, the payroll support in the CARES Act results in an additional ***$4.7-$8.0 billion of induced economic activity***.

When combined, the subset of benefits discussed above—which are a direct result of the $25 billion in payroll support under the CARES Act—equal $13.9-$23.7 billion and should be viewed as highly conservative estimates, as they exclude other avoided federal and state-level cost such as Medicaid,[49] corporate income taxes,[50] as well as economic benefits related to the incremental

[47] Estimated contributions based on the average state contribution rates applied to the wages maintained as a result of the employee grants in the CARES Act. Source: Analysis of airline W-2 data and unemployment insurance contribution rates; U.S. Department of Labor, Employment and Training Administration, "Average Employer Contribution Rates by State."

[48] The induced multiplier of $0.50 per dollar of airline wages is based on the average of the 0.4 multiplier in a study by Oxford Economics and the 0.6 multiplier from government spending on real private consumption during a recession in a well-cited academic paper estimating multipliers during recessions. *See* Oxford Economics, "Economic Benefits from Air Transport in the US," 2011, p. 14 and "Fiscal Multipliers in Recession and Expansion", by Alan Auerbach and Yuriy Gorodnichnko, Chapter 2 in <u>Fiscal Policy after the Financial Crisis</u>, Alberto Alesina and Francesco Giavazzi, Editors, University of Chicago Press, 2013, Table 2.1.

[49] *See, e.g.,* "Booming Economy Helps Flatten Medicaid Enrollment and Limit Costs, States Report," *Kaiser Health News*, October 25, 2018, reporting that "Medicaid spending and enrollment typically rise during economic downturns as more people lose jobs and health benefits. When the economy is humming, Medicaid enrollment flattens as more people get back to work and can get coverage at work or can afford to buy it on their own. The national unemployment rate was 3.7 percent in September, the lowest since 1969" and that "Overall, the federal government pays about 62 percent of Medicaid costs with state's picking up the rest." Moreover, the costs of additional Medicaid enrollees vary significantly by state and health status, ranging from an average of just under $3,000 per year in some states to an average of over $7,000 per year in others according to Medicaid program estimates. *See* https://www.medicaid.gov/state-overviews/scorecard/how-much-states-spend-per-medicaid-enrollee/index.html.

[50] To the extent it is determined that the employee grants under the CARES Act are taxable income, airlines will face an increased federal and state corporate tax liability (now or in the future depending on each airlines net operating loss carryforwards).

capacity carriers will be incented to add due to the CARES Act (as discussed in the following sections).

### B. The CARES Act Also Ensures That U.S. Passenger Airlines Will Be Prepared to Quickly Restore Flights When Demand Returns, Thereby Stimulating Even More Economic Benefits

If the U.S. economy is to rebound quickly from the economic slowdown the COVID-19 pandemic has caused,[51] it is critical that U.S. airlines be in position to quickly ramp up service once the pandemic shows signs of ending. This is because airlines are the engine for much of the nation's economic activity. Indeed, approximately one third of all U.S. airline travel is for the purposes of conducting business,[52] and to repair the economic damage that has been caused by the pandemic, it is essential that both business and leisure travelers are able to resume their travel plans in order to jump start the U.S. (and global) economy. Moreover, while many other travel-related industries have also suffered because of the pandemic (e.g., hotels, cruise, casinos and gaming, theme parks), each of these industries relies critically on airlines to bring their customers to them. For example, the overwhelming majority of cruise passengers and visitors to Las Vegas or Orlando arrive by air.[53] Likewise, many states whose economies are dependent on tourism rely on plentiful and affordable air service to bring visitors to their states.[54] Simply put, in order for the many other industries, cities, and states that rely on tourism and business travel to get back on their feet once demand returns, U.S. airlines will need to be poised to quickly add capacity to meet that demand.

However, unlike many other industries that can recall furloughed employees and quickly re-open for business once demand returns, it is far more difficult for passenger airlines to quickly restore

---

[51] *See* "Jerome Powell: 'We may well be in a recession'", *Politico*, March 26, 2020.

[52] Source: A4A, Status of Air Travel in the USA, April 13, 2016.

[53] According to Las Vegas Convention and Visitors Authority, in 2019, there were 42.5 million visitors to the city in 2019, and over 51 million enplanements/deplanements at Las Vegas McCarran International Airport, implying that more than half of Las Vegas visitors arrive by air. *See* https://assets.simpleviewcms.com/simpleview/image/upload/v1/clients/lasvegas/Historical_1970_to_2019_ada0164b-b599-4fac-8f7a-eb26bfe17187.pdf. Likewise, according to Orlando's visitor's bureau, the city welcomed 75 million visitors in 2018, compared to 47.7 million arrivals by air. *See* "Orlando Announces Record 75 Million Visitors", May 8, 2019 (https://www.visitorlando.com/en/corporate-blog/post/orlando-announces-record-75-million-visitors).

[54] For example, in 2018, Hawaii welcomed 9.9 million visitors, 9.8 million of which arrived by air, while nearly over 51 million of Florida's 125 million visitors in 2018 arrived by air. *See* https://www.hawaiitourismauthority.org/media/4086/2018-annual-report-final-repost-1-7-20.pdf and https://www.visitflorida.org/resources/research/research-faq/.

operations by recalling furloughed employees. One reason, for example, is that per FAA requirements pilots cannot simply return from furlough and resume flying on short notice. Instead, because furloughed pilots lose their "currency" after 90 days of inactivity, they are required to be retrained before they can be in command of a passenger aircraft.[55] Moreover, because pilots' collective bargaining agreements dictate that furloughs must occur in reverse seniority order (i.e., with the most recently hired pilots being furloughed first), furloughing typically triggers a set of time-consuming pilot training events as pilots get displaced from their original aircraft type to smaller ones, and the process of "bumping" and re-training occurs again once furloughed pilots have been recalled. Furthermore, the process of bumping that occurs when airlines furlough (and subsequently recall) pilots generates additional training needs because many of the pilots that are *not* furloughed are "downgraded" from captain to first officer (which requires a training event), and when furloughed pilots are recalled and start to return, these downgraded first officers are eventually upgraded back to captain, which requires yet another training event. This cycle of furlough- and recall-induced training significantly reduces the speed at which carriers can restore capacity following furloughs. By the same token, depending on the length of the furlough, flight attendants and other employee groups would also need to be retrained, and all employees would need to be re-badged to have access to restricted areas of airports. In addition to the time-consuming process of recalling and retraining employees, maintenance inspections and recertifications required to bring aircraft out of long-term storage also uniquely delay the process of quickly restoring operations for airlines relative to other industries.

By keeping airlines' employees on the payroll (rather than furloughing a substantial majority of them for the next six months), the CARES Act creates the incentive and capability for airlines to add flights back faster than they otherwise would, because the labor cost component of those flights (which typically accounts for a third or more of the operating cost of a flight) are no longer marginal costs. Put differently, by effectively reimbursing U.S. carriers for the labor costs associated with operating flights for the next six months, the CARES Act lowers the hurdle rate for restoring a

[55] *See* 14 CFR § 61.57.(a)(1), requiring that *"*no person may act as a pilot in command of an aircraft carrying passengers or of an aircraft certificated for more than one pilot flight crewmember unless that person has made at least three takeoffs and three landings within the preceding 90 day*"* and that "[t]he required takeoffs and landings were performed in an aircraft of the same category, class, and type (if a type rating is required)" According to FAA regulations, take-off and landings "may be accomplished in a full flight simulator or flight training device that is (i) Approved by the Administrator for landings; and (ii) Used in accordance with an approved course conducted by a training center certificated under part 142 of this chapter."

flight, incenting carriers to restore more flights than they otherwise would over this period. By positioning U.S. airlines to restore capacity far faster than they otherwise would, the CARES Act will help U.S. carriers fuel a faster recovery for the U.S. economy in at least three ways, each of which creates *additional economic benefits* beyond the $14-$24 billion already identified. Specifically, the additional CARES-Act induced capacity will result in (1) airlines' supply chain (i.e., airports, airline catering companies, jet fuel providers, etc.) ramping up more quickly, (2) greater numbers of domestic passengers resuming their travel plans, as increased capacity will result in more convenient (and lower priced) air travel options, and (3) U.S. carriers restoring more long-haul international routes on which they offer the only non-stop service, stimulating inbound visitor travel to the United States.[56] As discussed below, when combined, these three quantifiable benefits alone can be expected to generate approximately $4.1 billion of additional U.S. economic activity between July 1 and September 30, 2020.

1. *Incremental Capacity Restoration Induced by the CARES' Act Will Result in Greater Demand for Products and Services in Airlines' Supply Chain, Resulting in Additional Economic Activity*

Airlines have enormous supply chains, including airports and airport services, jet fuel, catering, and third-party ground handling services, and this supply chain supports hundreds of thousands of jobs in the United States and generates substantial economic activity throughout the economy. Because the CARES Act creates the strong incentive and capability for carriers to restore capacity faster than they otherwise would, this incremental capacity (i.e., the amount of capacity above and beyond what carriers would have deployed absent the $25 billion in employee grants) will generate additional demand by U.S. airlines within their supply chain. And because the incremental demand for these services will support firms in those industries in recalling furloughed employees, this will in turn create additional benefits to the federal government, states, and the broader economy by reducing unemployment costs and inducing further spending throughout the economy.

Figure 4 below summarizes the additional benefits to the U.S. economy from increased economic activity within airlines' supply chains under a range of assumptions as to how much incremental

[56] Moreover, these estimates are conservative because they do not attempt to calculate the value of the additional cargo that the passenger airlines will be able to transport as a result of the CARES-Act induced capacity, which will further enable the restoration of global and U.S. supply chains to the benefit of business throughout the U.S. economy.

capacity U.S. carriers would be incented to add because of the CARES Act. The salaries, wages and benefits at U.S. passenger airlines over the next six months (i.e., from April 1- September 30) is estimated to be approximately $30.7 billion, or $5.1 billion per month.[57] Because the CARES Act will incent airlines to increase capacity faster than they otherwise would, Figure 4 presents a range of incremental capacity additions starting July 1, 2020, and, to be conservative, limits the benefit calculations of the additional capacity through September 30, 2020. As noted above, this additional capacity will increase the spending throughout airlines' supply chain, and this increase is captured by the *indirect multiplier*.[58] Based on a previous study of the economic impact of the U.S. airline industry by Oxford Economics, we assume an indirect multiplier of 1.09.[59] Thus, by way of example, if the CARES Act incents and enables U.S. carriers to restore capacity (relative to pre-pandemic planned levels) by an additional 10 percentage points between July 1 and September 30,[60] through the indirect multiplier effect, this increase of flying translates into a $1.7 billion increase in economy activity through airlines' supply chain.[61] Alternatively, if the CARES Act incents U.S. carriers to restore capacity by an additional 15 percentage points between July 1 and September 30, the supply chain impacts grow to $2.5 billion over this period.

[57] *See* footnote 41 above.

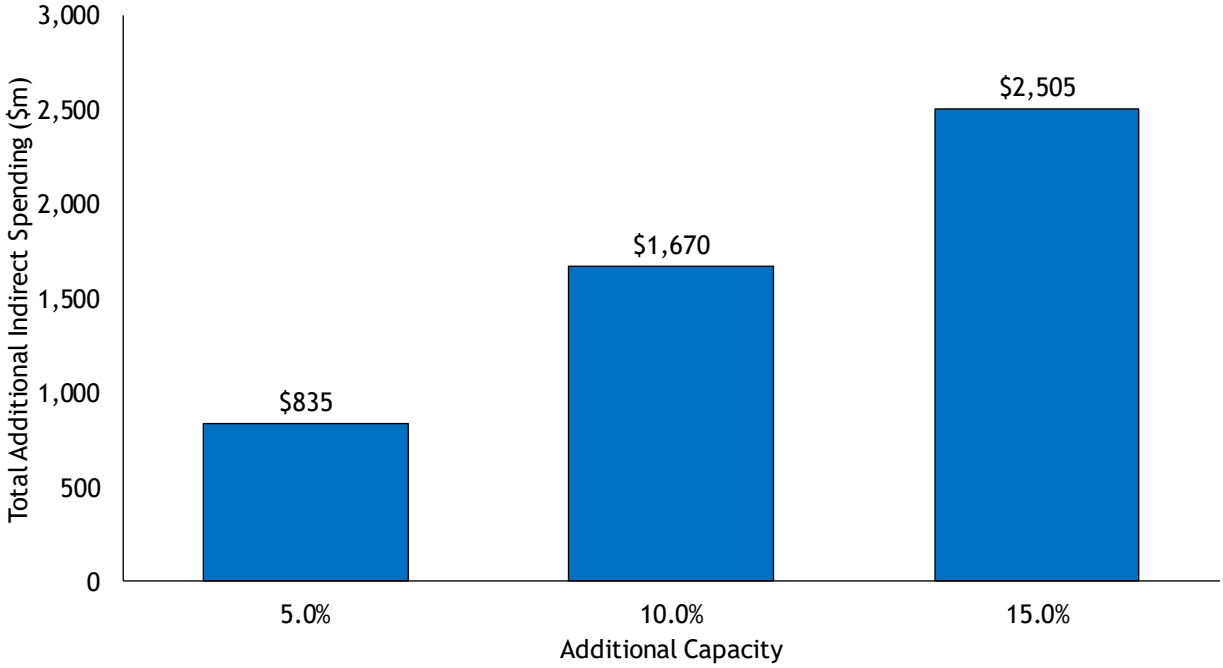
[58] The indirect multiplier captures the downstream economic activity that is generated when firms in an upstream industry (e.g., airlines) purchase the goods and services they need to perform their operations (e.g., operate flights) and is expressed as a ratio of the upstream firms' direct spending.

[59] Oxford Economics, "Economic Benefits from Air Transport in the US," 2011, p. 14.

[60] The assumptions that the CARES Act will incent and enable U.S. carriers to restore 10% incremental capacity and that this incremental capacity begins on July 1, 2020, are highly conservative because as a condition of the CARES Act payroll protections, airlines can be mandated by the Department of Transportation to maintain service to all U.S. cities served as of March 1, 2020, as discussed on page 3 above.

[61] The direct spending by airlines on salaries and benefits needed to produce 10 percent of their pre-pandemic capacity for three months is approximately the $1.5 billion. When multiplied by the indirect multiplier of 1.09, this yields supply chain economic benefits of $1.67 billion, much of which will flow to hard hit sectors such as those that supply jet fuel and airline catering services.

**Figure 4: Summary of Supply Chain Benefits from Incremental Capacity Additions Enabled by the CARES Act**




*2. Incremental Capacity Restoration Induced by the CARES' Act Will Also Incent More Domestic Travel, Resulting in Additional Economic Activity*

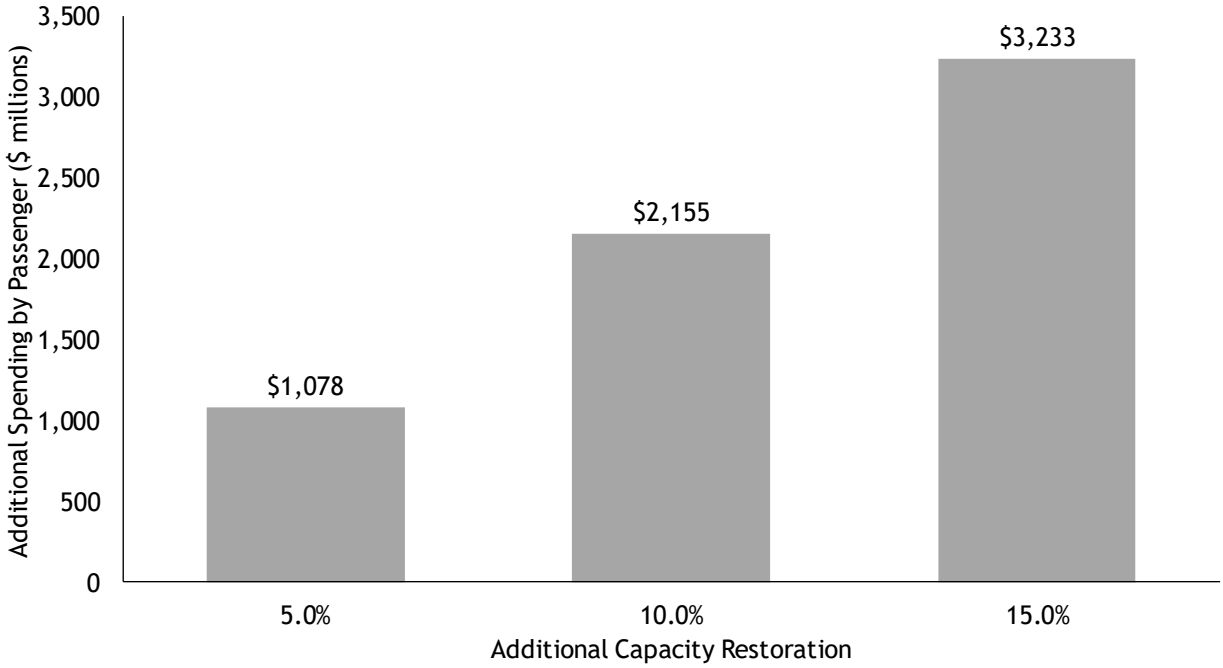
Because the CARES Act creates the incentive and capability for airlines to restore flights back faster than they otherwise would, the availability of more domestic capacity earlier will accelerate the recovery of the U.S. economy by stimulating passengers (either because of lower prices or better schedule options) who otherwise would not have flown.[62] These incremental passengers will, in turn, spend additional money on such items as hotels, car rentals, and restaurants. Based on existing studies of the spending patterns of U.S. domestic travelers, each passenger spends, on average, $420 per trip.[63] To be conservative, we assume that even with the highly discounted pricing that carriers are likely to use to encourage passengers to resume flying, the *incremental capacity* (i.e., that which is enabled because of the CARES Act) will still be relatively empty, with only 50% of the incremental seats filled. By way of example, if the CARES Act incents carriers to restore 10

[62] Initially, some passengers may also be stimulated to travel by air if the incremental capacity results in less crowded flights allowing passengers to—for example—avoid having another passenger sit directly beside them.

[63] A trip is defined as a domestic traveler on a trip away from home overnight in paid accommodations, or on a day or overnight trip to places 50 miles or more, one-way, away from home. Source: US Travel Association, "U.S. Travel and Tourism Overview (2019)," March 2020.

percentage points more of pre-pandemic domestic capacity than they otherwise would have, it would result in approximately 282,551 more domestic seats per day, or an increase of 26.0 million seats between July 1 and September 30.[64] Even at a 50% load factor, these incremental 26.0 million seats result in an increase of 13.0 million passengers, which translates into approximately 5.1 million incremental round-trip domestic travelers.[65] Based on average spending of $420 per round-trip passenger, this incremental 10 percentage points of restored capacity will inject an additional $2.2 billion into the U.S. economy over the period. Alternatively, if the CARES Act incents U.S. carriers to restore an additional 15 percentage points of domestic capacity between July 1 and September 30, the additional passenger spending grows to $3.2 billion over this period.

**Figure 5: Increased Domestic Passenger Spending Attributable to Incremental Capacity Restored Due to CARES Act**




*3. The Restoration of International Routes Will Stimulate Additional Inbound Visitors—and Their Associated Economic Impact—for the U.S. Economy*

Because the COVID-19 pandemic has resulted in numerous foreign travel restrictions, international flights on U.S. carriers have been particularly hard hit. Because the CARES Act will enable U.S. carriers to more quickly restore service on some international routes where, absent the payroll

[64] This figure is based on pre-pandemic full capacity over this period of 260 million seats.

[65] Conversion of onboard passengers to round-trip passengers assumes 26% of these passengers make a connection, based on analysis of U.S. DOT DB1B data.

support, service restoration would have been further delayed, the U.S. economy will benefit from additional inbound visitors, accelerating the pace of recovery for hotels, restaurants, and retail establishments that rely on visitor spending. For example, before the COVID-19 pandemic, U.S. carriers offered the only regular non-stop service on 88 long haul international routes,[66] and it is well understood that the availability of non-stop service on long-haul international routes stimulates traffic between the endpoints because of reduced travel times.[67] Even assuming that the incrementally restored flights because of the CARES Act are only half full at start-up, and only half of these passengers would not have traveled without the availability of non-stop service (consistent with economic studies on non-stop traffic stimulation),[68] each daily long-haul international route that U.S. carriers are able to restore will bring 733 additional visitors to the U.S. per month.[69] And because each overseas visitor generates approximately $8,600 of spending in the United States,[70] the restoration of a single daily frequency on one of these routes will generate $6.3 million in economic activity *per month* at the U.S. endpoint city, or $19.0 million if the reinstatement of these routes is accelerated by three months (i.e., effective July 1 rather than September 1). As shown in Figure 6 below, if 15 routes are reinstated three months earlier than they otherwise would have been, inbound visitors will generate $284.5 million in economic activity, and if 30 routes are reinstated three months earlier than they otherwise would have been, inbound visitors will generate $569.0 million in economic activity. Moreover, in addition to the direct tourism spending by the new visitors on the reinstated non-stop service, the U.S. economy will also benefit from additional economic activity throughout the economy via indirect and induced "multiplier effects."

[66] International city-pairs over 2,500 miles, where U.S. carriers offered at least 200 roundtrips in 2019 and no foreign carrier served the city-pair. Source: OAG 2019.

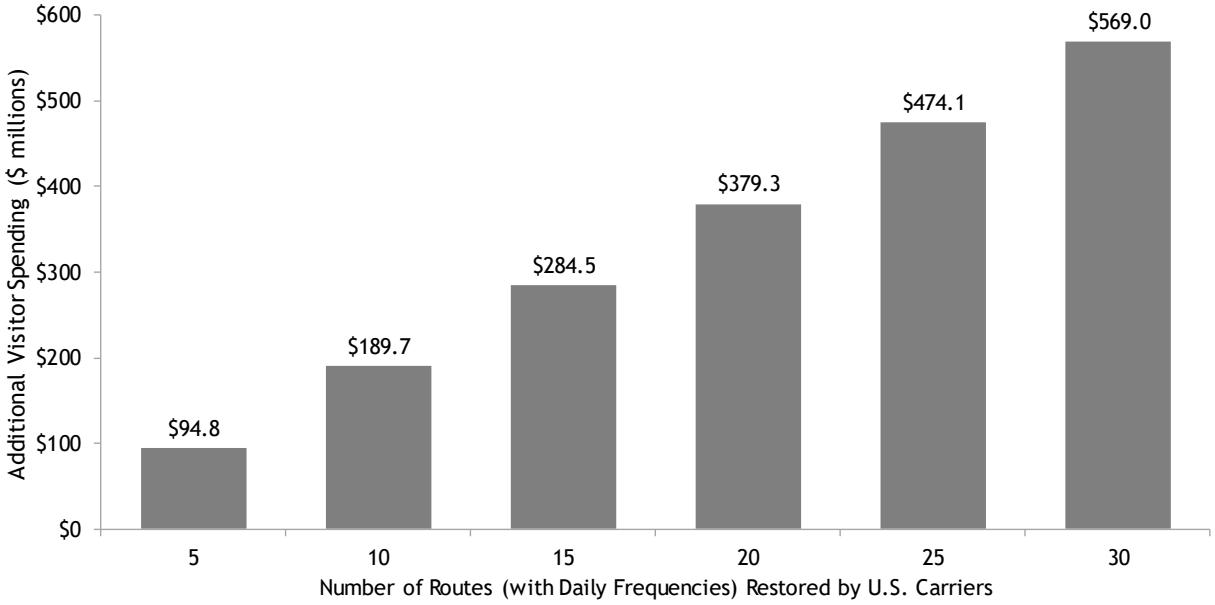
[67] For example, research has shown that when an international route gains non-stop air services, traffic between the endpoint cities is stimulated by a factor of as much as 9.1 for small routes (1,000 passengers per year) and by a factor of 1.3 for routes with 50,000 annual passengers. *See* Market stimulation of new airline routes, SEO Amsterdam Economics, January 2016.

[68] Indeed, because of concerns about coronavirus, some passengers may be reluctant to travel on connecting flights and thus would elect not to travel absent the reintroduction of non-stop service.

[69] The average flight operated by U.S. carriers on these city-pairs had 245 seats in 2019 and in the most recent year of data, approximately 40% of passengers on these flights had foreign a point-of-origin. Source: OAG 2019, U.S. DOT DB1B FYE 2019-Q3.

[70] Visitor spending, excluding education and airfare, is calculated for passengers arriving from Europe as an approximation of long-haul international passenger tourism spending. Source: National Travel and Tourism Office, Market Profile of Overseas Visitors, Europe (2018), https://travel.trade.gov/outreachpages/inbound.general_information.inbound_overview.asp.

**Figure 6: Additional Spending by Inbound Visitors Stimulated to Travel to the United States Due to The Restoration of Non-Stop International Routes (Three Month Earlier)**



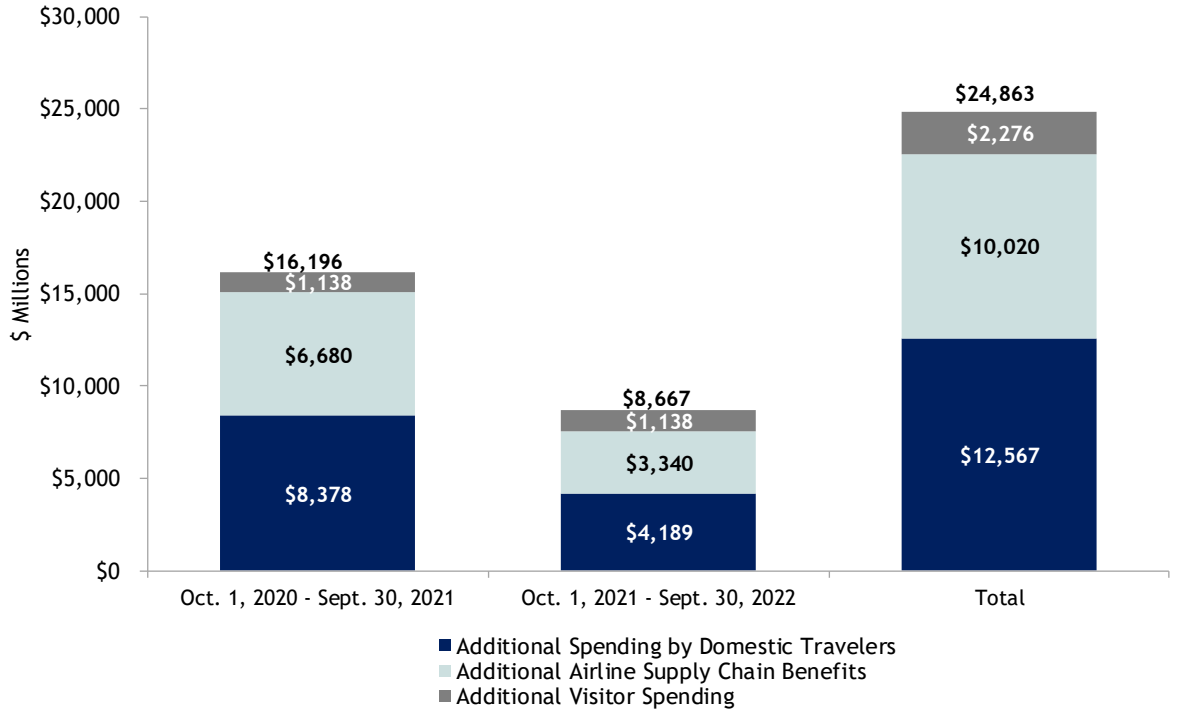

### C. The CARES Act Also Result in Longer Term Benefits from Incremental Capacity, Beyond September 30, 2020

Finally, it is important to note that benefits to the U.S. economy of the CARES Act will not end on September 30, 2020. To the contrary, because the CARES Act will position U.S. passenger airlines to emerge from the COVID-19 pandemic with their workforces both intact and highly motivated to lead the economic recovery, there is every reason to believe that carriers will be both incented *and able* to continue supplying incrementally more capacity than they otherwise would as the economy's rebound accelerates.[71] Indeed, during the first year beyond September 30, 2020, it is reasonable to assume that a stronger and more resilient U.S. industry can be expected to continue supplying 10 percentage points more incremental capacity (relative to pre-pandemic levels) than they would have supplied absent the CARES Act (and the concomitant negative impact on airline employees). In the second full year after September 30, 2020 (i.e., October 1, 2021-September 30, 2022), we make the conservative assumption that the incremental capacity enabled by the enduring effects of the CARES Act's payroll support falls to only five percentage points (relative to pre-pandemic capacity). Under these incremental capacity assumptions, the CARES Act will continue to pay large dividends to the U.S. economy well beyond September 30 of this year in the form of

[71] See footnote 9 above.

more domestic tourism, more economic activity in airlines' supply chain, and additional foreign visitor spending valued at approximately $16.2 billion in year 1 (i.e., October 1, 2020 – September 30, 2021) and $8.7 billion in year 2 (i.e., October 1, 2021-September 30, 2022).[72]

**Figure 7: Additional Benefits to U.S. Economy Beyond September 30, 2020 Based on Incremental Capacity Enabled by CARES Act**




Notes: For the additional spending by domestic travelers and supply chain benefits, the year from October 1, 2020 – September 30, 2021 assumes 10% additional capacity restoration relative to pre-pandemic levels, and 5% for the year from October 1, 2021 to September 30,2021. Incremental capacity restoration based off of year-ending February 29, 2020, capacity. Additional visitor spending assumes 15 incremental long-haul international routes.

## The Primary Quantifiable Benefits from the CARES Act Payroll Support to U.S. Passenger Airlines Range From $43-$53 Billion

In sum, the primary quantifiable benefits resulting from the CARES Act payroll support to U.S. passenger airline employees, namely (1) the direct quantifiable benefits to the U.S. Treasury and state treasuries (in the form of additional taxes and reduced unemployment claims), (2) the additional consumer spending in the U.S. economy due to higher airline employee disposable income, and (3) the direct benefits to the U.S. economy arising from the incremental capacity that the CARES Act enables, both during the period covered by the payroll support and beyond, range

[72] These estimates are conservative because they do not account for the additional employee income and payroll tax revenue and reduced unemployment claims that will result from the larger workforce required to operate the longer term incremental capacity enabled by the CARES Act.

from $42.9 billion under the assumption that furloughs of 50% are avoided to $52.7 billion under assumption that furloughs of 85% are avoided. These primary quantifiable benefits are summarized below in Figure 8 and Figure 9, respectively.

**Figure 8: Summary of Primary Quantifiable Benefits to U.S. Treasury, State Treasuries and The U.S. Economy From CARES Act Grants to U.S. Passenger Airline Employees, Under a 50% Avoided Furlough Assumption**

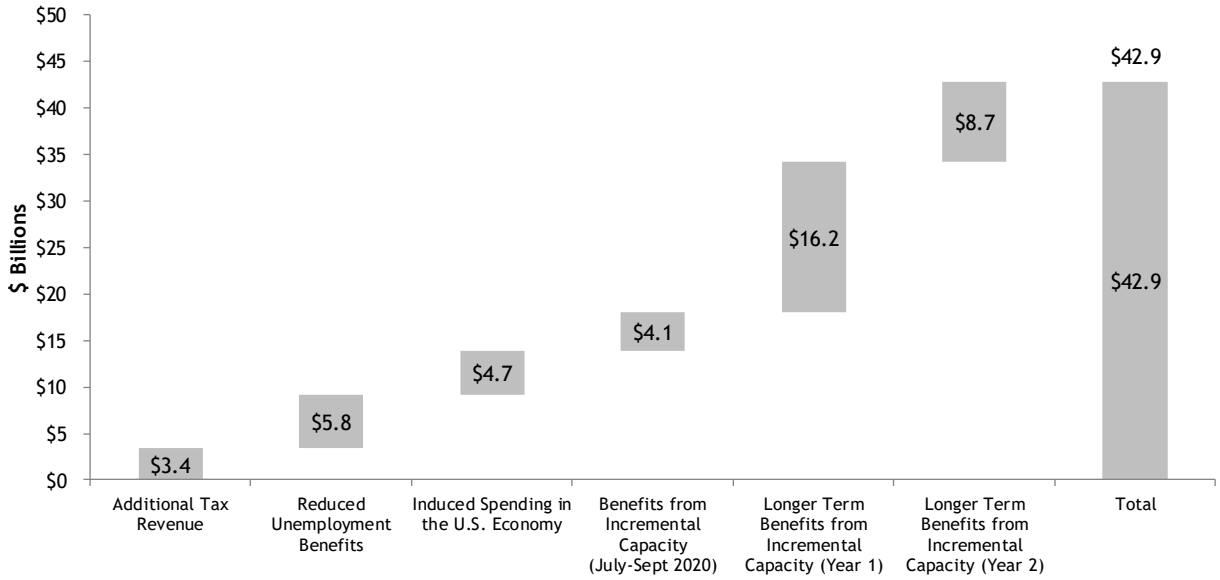
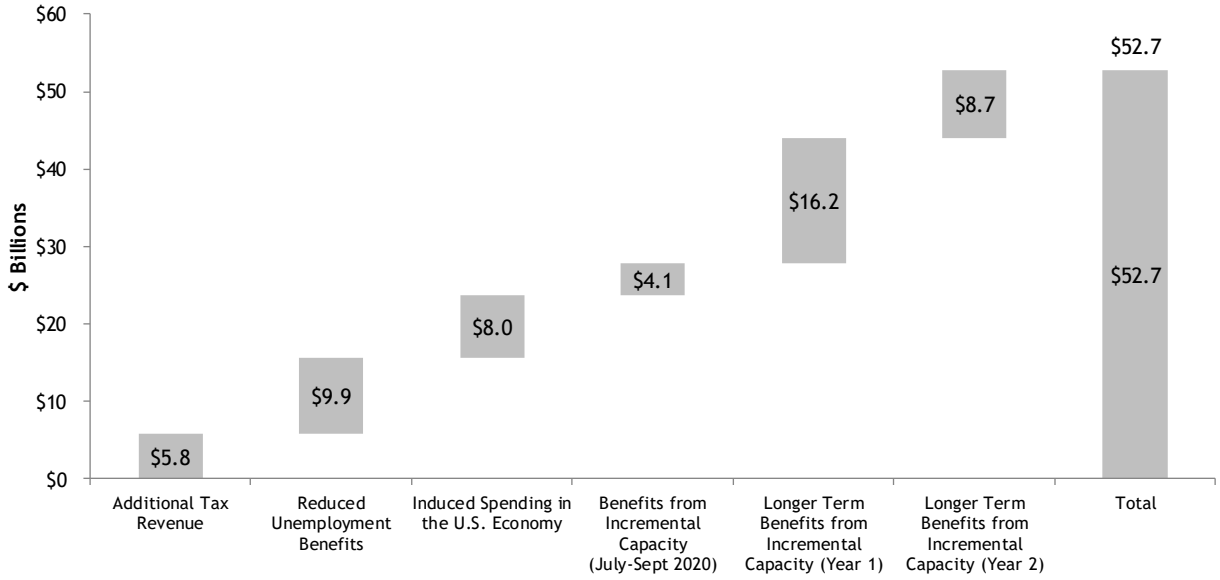



**Figure 9: Summary of Primary Quantifiable Benefits to U.S. Treasury, State Treasuries and The U.S. Economy From CARES Act Grants to U.S. Passenger Airline Employees, Under a 85% Avoided Furlough Assumption**



**The CARES Act Will Also Generate Substantial Secondary GDP Spillover Effects Throughout the U.S. Economy**

Even though the primary economic impacts that flow from the CARES Act enumerated above are substantial, they still dramatically *understate* the true and full economic benefit of the Act's assistance to airline employees on the U.S. economy. This is because the primary economic impacts quantified above do not capture the secondary spillover benefits that a larger and more robust U.S. airline industry provides through facilitating more face-to-face business meetings—that will no doubt lead to an accelerated economic recovery—or the broader societal benefits that come from friends and families being able to more easily resume their normal lives by attendings weddings, reunions, and other events, in all of which traveling by air plays a vital role. Based on FAA's estimate that civil aviation in the U.S. drives roughly 5% of U.S. GDP, even under highly conservative assumptions regarding how the incremental CARES Act-enabled capacity would contribute to GDP by facilitating more business travel—and the commerce and innovation that flows from it—these secondary spillover effects can be expected to be worth at least $46.2 billion during the two years following the end of the grant period.[73]

**Conclusions**

Over the past three weeks, the U.S. passenger airline industry has been sent into a dramatic and unprecedented freefall due to the COVID-19 pandemic that has paralyzed every major economy in the world. In response to the evaporation of travel demand that came as a direct result of public officials' pleas for Americans to stay at home, the President signed the CARES Act into law, which—among many other things—provided grants to U.S. passenger airlines of $25 billion to keep their employees on their payrolls until the end of September. Absent this payroll support, U.S. carriers would have had no choice but to furlough a substantial majority of their employees. Not only would this have crippled the U.S. economy's ability to rebound from the seismic economic shock created by the coronavirus, it would have imposed substantial economic burdens on the U.S.

[73] Assumes that the CARES Act enables U.S. carriers to restore 10 percentage points more pre-pandemic capacity than they otherwise would for the one-year period Oct. 2020 to Sept. 2021 and 5 percentage points more for the one-year period Oct. 2021 to Sept. 2022. Impact of civil aviation on GDP excludes aircraft manufacturing, air couriers, and general aviation, and is based on the fourth quarter 2019 U.S. GDP of $21.7 trillion. GDP impact further assumes that the incremental capacity enabled by the CARES Act contributes to GDP at 50% its average rate (to account for lower fares and load factors throughout the recovery) and excludes $24.9 billion of post-grant period impact that has already been accounted for in primary economic impacts summarized in Figure 1. Sources: *The Economic Impact of Civil Aviation in the U.S. Economy*, U.S. Federal Aviation Administration, January 2020; U.S. BEA press release, "Gross Domestic Product, Fourth Quarter and Year 2019 (Third Estimate); Corporate Profits, Fourth Quarter and Year 2019," March 26, 2020.

Treasury and state treasuries by further increasing the already historic number of unemployment claims and reducing federal and state tax revenues. Moreover, faced with dramatically reduced incomes, the hundreds of thousands of furloughed airline employees would have been forced to curtail their spending, resulting in negative economic spillover effects in countless communities throughout the entire country. All told, these direct impacts of the CARES Act's grants to airline employees will provide approximately $14-$24 billion in quantifiable benefits to U.S. Treasury, state treasuries, or increased spending flowing directly from the payment of airline employees' wages over the next six months.[74]

In addition, by positioning U.S. passenger airlines to be able to restore capacity far faster than they otherwise would, the CARES Act will help U.S. carriers fuel a faster recovery for the U.S. economy by lowering the hurdle rate for restoring flights, resulting in $4.1 billion in economic benefits during the six-month period of the payroll support alone and an additional $16.2 billion and $8.7 billion in the first and second years following the grants, respectively. Including the benefits from the capacity that the CARES Act incents U.S. airlines to restore earlier than they otherwise would bring the total *primary* economic benefits to the U.S. economy to between $43 and $53 billion, plus an additional $46.2 billion in *secondary* GDP spillover effects during the two years following the end of the grant period

[74] As noted earlier, this $14-$24 billion figure is highly conservative because it excludes the potential cost savings to the federal and state governments related to increased use of Medicaid by furloughed airline employees and excludes potential corporate tax liability.

# Appendix:

## Figure 10: At Risk Wages & Benefits, Saved Unemployment Benefits, Additional Tax Revenues and Induced Spending, By State (50% Avoided Furlough Assumption)

| | 2019 W-2 Earnings ($ millions) | Wages & Benefits at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Wages at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Saved State Unemployment Benefits ($ millions) | Saved Federal Pandemic Unemployment Compensation ($ millions) | Additional Federal Income Taxes ($ millions) | Additional State Income Taxes ($ millions) | Additional Local Income Taxes ($ millions) | Additional Federal Payroll Taxes ($ millions) | Additional Federal Payroll Taxes (Employer) ($ millions) | Additional State Unemployment Insurance Taxes ($ millions) | Induced Spending in the U.S. Economy ($ millions) | Total Direct Benefits and Induced Spending ($ millions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska | $143.0 | $60.6 | $46.4 | $10.6 | $12.3 | $6.0 | $0.0 | $0.0 | $3.1 | $3.1 | $0.3 | $18.8 | $54.3 |
| Alabama | $68.1 | $28.9 | $22.1 | $4.4 | $7.2 | $2.8 | $0.6 | $0.0 | $1.5 | $1.5 | $0.1 | $8.7 | $26.7 |
| Arkansas | $55.2 | $23.4 | $17.9 | $5.1 | $5.9 | $2.0 | $0.5 | $0.0 | $1.2 | $1.2 | $0.1 | $6.2 | $22.2 |
| Arizona | $1,322.9 | $560.8 | $429.7 | $63.9 | $99.3 | $62.0 | $10.7 | $0.0 | $28.7 | $28.5 | $1.2 | $198.8 | $493.3 |
| California | $3,085.5 | $1,308.0 | $1,002.3 | $265.6 | $267.7 | $124.6 | $44.1 | $0.1 | $67.5 | $67.0 | $5.5 | $387.4 | $1,229.4 |
| Colorado | $1,391.2 | $589.8 | $451.9 | $123.8 | $95.5 | $66.6 | $11.6 | $0.0 | $27.6 | $27.2 | $1.8 | $185.3 | $539.4 |
| Connecticut | $119.4 | $50.6 | $38.8 | $10.2 | $8.7 | $5.7 | $1.3 | $0.0 | $2.4 | $2.3 | $0.3 | $15.9 | $46.7 |
| District of Columbia | $32.6 | $13.8 | $10.6 | $3.2 | $3.6 | $1.0 | $0.3 | $0.0 | $0.8 | $0.8 | $0.0 | $3.5 | $13.3 |
| Delaware | $78.0 | $33.1 | $25.3 | $6.5 | $7.0 | $3.0 | $0.8 | $0.0 | $1.8 | $1.8 | $0.1 | $9.8 | $30.8 |
| Florida | $3,290.4 | $1,394.9 | $1,068.8 | $185.9 | $277.5 | $152.5 | $0.0 | $0.0 | $70.7 | $70.2 | $1.1 | $465.7 | $1,223.7 |
| Georgia | $4,052.2 | $1,717.8 | $1,316.3 | $233.3 | $248.6 | $213.5 | $49.3 | $0.0 | $84.8 | $83.7 | $2.9 | $618.0 | $1,533.9 |
| Hawaii | $569.5 | $241.4 | $185.0 | $75.6 | $61.0 | $15.9 | $5.6 | $0.0 | $13.2 | $13.2 | $1.4 | $52.4 | $238.3 |
| Iowa | $42.5 | $18.0 | $13.8 | $3.6 | $3.7 | $1.9 | $0.6 | $0.0 | $0.9 | $0.9 | $0.1 | $5.4 | $17.1 |
| Idaho | $111.8 | $47.4 | $36.3 | $10.3 | $11.3 | $4.0 | $1.1 | $0.0 | $2.5 | $2.5 | $0.2 | $12.9 | $44.9 |
| Illinois | $1,963.1 | $832.2 | $637.7 | $176.2 | $169.7 | $75.2 | $15.5 | $0.0 | $44.4 | $44.2 | $3.4 | $243.1 | $771.7 |
| Indiana | $244.4 | $103.6 | $79.4 | $16.8 | $19.4 | $11.0 | $1.5 | $0.1 | $5.4 | $5.4 | $0.3 | $33.7 | $93.5 |
| Kansas | $51.3 | $21.7 | $16.7 | $3.9 | $3.6 | $2.4 | $0.6 | $0.0 | $1.1 | $1.1 | $0.1 | $7.1 | $19.8 |
| Kentucky | $136.2 | $57.7 | $44.3 | $15.2 | $13.1 | $4.6 | $1.0 | $0.0 | $3.1 | $3.1 | $0.2 | $14.7 | $55.0 |
| Louisiana | $100.7 | $42.7 | $32.7 | $6.6 | $11.0 | $4.0 | $1.0 | $0.0 | $2.3 | $2.3 | $0.1 | $12.5 | $39.8 |
| Massachusetts | $382.2 | $162.0 | $124.1 | $50.7 | $39.6 | $9.5 | $2.0 | $0.0 | $8.9 | $8.9 | $1.1 | $35.8 | $156.5 |
| Maryland | $390.5 | $165.5 | $126.8 | $35.5 | $37.4 | $14.8 | $3.1 | $0.1 | $8.6 | $8.6 | $0.4 | $46.3 | $154.8 |
| Maine | $43.1 | $18.3 | $14.0 | $3.1 | $3.2 | $2.1 | $0.6 | $0.0 | $0.9 | $0.9 | $0.1 | $6.0 | $16.9 |
| Michigan | $1,098.7 | $465.8 | $356.9 | $60.2 | $65.3 | $62.0 | $10.1 | $0.1 | $20.9 | $20.4 | $2.2 | $170.1 | $411.3 |
| Minnesota | $988.4 | $419.0 | $321.1 | $97.9 | $66.7 | $42.6 | $13.3 | $0.0 | $20.6 | $20.4 | $1.8 | $127.2 | $390.5 |
| Missouri | $258.2 | $109.5 | $83.9 | $17.3 | $22.3 | $11.1 | $2.6 | $0.0 | $5.7 | $5.7 | $0.3 | $34.9 | $99.8 |
| Mississippi | $33.2 | $14.1 | $10.8 | $1.9 | $3.5 | $1.4 | $0.3 | $0.0 | $0.8 | $0.8 | $0.0 | $4.3 | $13.0 |
| Montana | $36.0 | $15.3 | $11.7 | $3.2 | $3.6 | $1.5 | $0.4 | $0.0 | $0.8 | $0.8 | $0.1 | $4.2 | $14.5 |
| North Carolina | $900.9 | $381.9 | $292.7 | $72.9 | $96.3 | $33.2 | $7.6 | $0.0 | $20.4 | $20.3 | $0.7 | $106.4 | $357.7 |
| North Dakota | $9.5 | $4.0 | $3.1 | $0.9 | $1.0 | $0.4 | $0.0 | $0.0 | $0.2 | $0.2 | $0.0 | $1.1 | $3.8 |
| Nebraska | $33.3 | $14.1 | $10.8 | $2.7 | $3.1 | $1.4 | $0.4 | $0.0 | $0.7 | $0.7 | $0.0 | $4.1 | $13.2 |
| New Hampshire | $185.1 | $78.5 | $60.1 | $9.4 | $9.0 | $11.0 | $2.1 | $0.0 | $3.5 | $3.5 | $0.1 | $30.0 | $68.7 |
| New Jersey | $748.2 | $317.2 | $243.0 | $98.9 | $68.3 | $21.8 | $5.3 | $0.0 | $17.1 | $17.0 | $1.6 | $75.0 | $305.0 |
| New Mexico | $74.8 | $31.7 | $24.3 | $8.5 | $8.7 | $2.0 | $0.4 | $0.0 | $1.7 | $1.7 | $0.1 | $7.2 | $30.5 |
| Nevada | $645.6 | $273.7 | $209.7 | $51.7 | $49.1 | $29.5 | $0.0 | $0.0 | $13.3 | $13.2 | $2.2 | $86.4 | $245.5 |
| New York | $1,816.7 | $770.2 | $590.1 | $162.8 | $147.4 | $75.2 | $19.0 | $2.2 | $38.6 | $38.2 | $2.2 | $230.0 | $715.6 |
| Ohio | $457.3 | $193.9 | $148.5 | $41.3 | $40.7 | $17.8 | $0.0 | $0.1 | $10.1 | $10.0 | $0.8 | $55.9 | $176.7 |
| Oklahoma | $557.0 | $236.1 | $180.9 | $59.3 | $48.7 | $18.1 | $4.0 | $0.0 | $13.5 | $13.5 | $0.8 | $64.0 | $222.0 |
| Oregon | $172.3 | $73.1 | $56.0 | $22.4 | $17.9 | $5.2 | $2.0 | $0.0 | $3.9 | $3.9 | $0.7 | $16.4 | $72.4 |
| Pennsylvania | $764.7 | $324.2 | $248.4 | $74.4 | $62.2 | $30.1 | $3.7 | $0.3 | $16.5 | $16.4 | $2.7 | $93.8 | $300.2 |
| Puerto Rico | $62.3 | $26.4 | $20.2 | $3.9 | $8.1 | $0.0 | $2.0 | $0.0 | $1.5 | $1.5 | $0.2 | $7.2 | $24.4 |
| Rhode Island | $39.3 | $16.7 | $12.8 | $4.2 | $3.7 | $1.3 | $0.3 | $0.0 | $0.9 | $0.9 | $0.1 | $4.4 | $15.7 |
| South Carolina | $264.9 | $112.3 | $86.0 | $16.8 | $22.7 | $11.9 | $3.5 | $0.0 | $5.8 | $5.8 | $0.4 | $36.4 | $103.4 |
| South Dakota | $26.0 | $11.0 | $8.5 | $1.7 | $2.2 | $1.3 | $0.0 | $0.0 | $0.5 | $0.5 | $0.0 | $3.6 | $9.8 |
| Tennessee | $310.7 | $131.7 | $100.9 | $17.7 | $27.8 | $14.4 | $0.6 | $0.0 | $6.6 | $6.6 | $0.2 | $43.1 | $117.1 |
| Texas | $5,568.3 | $2,360.5 | $1,808.8 | $515.2 | $455.6 | $218.1 | $0.0 | $0.0 | $124.3 | $123.7 | $6.7 | $694.9 | $2,138.5 |
| Utah | $781.8 | $331.4 | $253.9 | $72.3 | $63.7 | $32.7 | $6.3 | $0.0 | $16.5 | $16.3 | $0.6 | $97.7 | $306.1 |
| Virginia | $671.7 | $284.8 | $218.2 | $44.5 | $50.8 | $32.5 | $7.5 | $0.0 | $13.9 | $13.8 | $0.4 | $94.8 | $258.1 |
| U.S. Virgin Islands | $1.4 | $0.6 | $0.5 | $0.2 | $0.2 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.1 | $0.6 |
| Vermont | $22.5 | $9.5 | $7.3 | $1.6 | $1.4 | $1.2 | $0.3 | $0.0 | $0.4 | $0.4 | $0.1 | $3.3 | $8.7 |
| Washington | $1,523.8 | $646.0 | $495.0 | $155.2 | $109.4 | $64.2 | $0.0 | $0.0 | $31.4 | $31.1 | $2.8 | $190.7 | $584.8 |
| Wisconsin | $218.0 | $92.4 | $70.8 | $13.6 | $15.6 | $10.7 | $2.7 | $0.0 | $4.6 | $4.6 | $0.3 | $31.6 | $83.9 |
| West Virginia | $37.7 | $16.0 | $12.2 | $2.7 | $2.7 | $1.8 | $0.5 | $0.0 | $0.8 | $0.8 | $0.1 | $5.3 | $14.7 |
| Wyoming | $25.1 | $10.6 | $8.2 | $1.8 | $3.0 | $1.3 | $0.0 | $0.0 | $0.5 | $0.5 | $0.1 | $2.9 | $10.1 |
| **Total** | **$36,007.2** | **$15,264.3** | **$11,696.3** | **$2,947.4** | **$2,887.1** | **$1,540.8** | **$246.6** | **$3.0** | **$777.8** | **$771.4** | **$49.3** | **$4,714.9** | **$13,938.2** |

## Figure 11: At Risk Wages & Benefits, Saved Unemployment Benefits, Additional Tax Revenues and Induced Spending, By State (60% Avoided Furlough Assumption)

| | 2019 W-2 Earnings ($ millions) | Wages & Benefits at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Wages at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Saved State Unemployment Benefits ($ millions) | Saved Federal Pandemic Unemployment Compensation ($ millions) | Additional Federal Income Taxes ($ millions) | Additional State Income Taxes ($ millions) | Additional Local Income Taxes ($ millions) | Additional Federal Payroll Taxes ($ millions) | Additional Federal Payroll Taxes (Employer) ($ millions) | Additional State Unemployment Insurance Taxes ($ millions) | Induced Spending in the U.S. Economy ($ millions) | Total Direct Benefits and Induced Spending ($ millions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska | $143.0 | $72.7 | $55.7 | $12.8 | $14.8 | $7.2 | $0.0 | $0.0 | $3.7 | $3.7 | $0.4 | $22.6 | $65.2 |
| Alabama | $68.1 | $34.6 | $26.5 | $5.3 | $8.6 | $3.4 | $0.7 | $0.0 | $1.8 | $1.8 | $0.1 | $10.4 | $32.1 |
| Arkansas | $55.2 | $28.1 | $21.5 | $6.2 | $7.1 | $2.4 | $0.6 | $0.0 | $1.5 | $1.5 | $0.1 | $7.4 | $26.7 |
| Arizona | $1,322.9 | $673.0 | $515.7 | $76.7 | $119.2 | $74.4 | $12.9 | $0.0 | $34.5 | $34.3 | $1.5 | $238.6 | $592.0 |
| California | $3,085.5 | $1,569.6 | $1,202.7 | $318.7 | $321.2 | $149.5 | $53.0 | $0.1 | $81.0 | $80.3 | $6.6 | $464.8 | $1,475.3 |
| Colorado | $1,391.2 | $707.7 | $542.3 | $148.6 | $114.6 | $79.9 | $13.9 | $0.0 | $33.2 | $32.7 | $2.2 | $222.3 | $647.3 |
| Connecticut | $119.4 | $60.8 | $46.6 | $12.2 | $10.4 | $6.8 | $1.5 | $0.0 | $2.8 | $2.8 | $0.4 | $19.1 | $56.1 |
| District of Columbia | $32.6 | $16.6 | $12.7 | $3.9 | $4.3 | $1.3 | $0.4 | $0.0 | $0.9 | $0.9 | $0.0 | $4.2 | $15.9 |
| Delaware | $78.0 | $39.7 | $30.4 | $7.8 | $8.4 | $3.6 | $1.0 | $0.0 | $2.1 | $2.1 | $0.1 | $11.7 | $36.9 |
| Florida | $3,290.4 | $1,673.8 | $1,282.6 | $223.1 | $333.0 | $183.0 | $0.0 | $0.0 | $84.9 | $84.2 | $1.3 | $558.9 | $1,468.4 |
| Georgia | $4,052.2 | $2,061.4 | $1,579.6 | $280.0 | $298.3 | $256.2 | $59.1 | $0.0 | $101.7 | $100.4 | $3.5 | $741.6 | $1,840.7 |
| Hawaii | $569.5 | $289.7 | $222.0 | $90.7 | $73.2 | $19.0 | $6.7 | $0.0 | $15.9 | $15.8 | $1.7 | $62.9 | $285.9 |
| Iowa | $42.5 | $21.6 | $16.6 | $4.3 | $4.5 | $2.2 | $0.7 | $0.0 | $1.1 | $1.1 | $0.1 | $6.4 | $20.5 |
| Idaho | $111.8 | $56.9 | $43.6 | $12.4 | $13.5 | $4.8 | $1.4 | $0.0 | $3.0 | $3.0 | $0.3 | $15.5 | $53.8 |
| Illinois | $1,963.1 | $998.6 | $765.2 | $211.4 | $203.7 | $90.2 | $18.6 | $0.0 | $53.3 | $53.0 | $4.1 | $291.8 | $926.1 |
| Indiana | $244.4 | $124.3 | $95.3 | $20.2 | $23.3 | $13.2 | $1.8 | $0.1 | $6.5 | $6.4 | $0.4 | $40.4 | $112.2 |
| Kansas | $51.3 | $26.1 | $20.0 | $4.7 | $4.3 | $2.9 | $0.7 | $0.0 | $1.3 | $1.3 | $0.1 | $8.6 | $23.8 |
| Kentucky | $136.2 | $69.3 | $53.1 | $18.3 | $15.7 | $5.5 | $1.1 | $0.0 | $3.7 | $3.7 | $0.2 | $17.7 | $66.0 |
| Louisiana | $100.7 | $51.2 | $39.2 | $7.9 | $13.3 | $4.8 | $1.2 | $0.0 | $2.7 | $2.7 | $0.1 | $15.0 | $47.7 |
| Massachusetts | $382.2 | $194.4 | $149.0 | $60.9 | $47.6 | $11.4 | $2.4 | $0.0 | $10.7 | $10.6 | $1.3 | $43.0 | $187.8 |
| Maryland | $390.5 | $198.6 | $152.2 | $42.6 | $44.9 | $17.8 | $3.7 | $0.1 | $10.3 | $10.3 | $0.5 | $55.6 | $185.7 |
| Maine | $43.1 | $21.9 | $16.8 | $3.8 | $3.8 | $2.5 | $0.7 | $0.0 | $1.1 | $1.1 | $0.1 | $7.2 | $20.2 |
| Michigan | $1,098.7 | $558.9 | $428.3 | $72.3 | $78.4 | $74.4 | $12.1 | $0.1 | $25.1 | $24.5 | $2.7 | $204.1 | $493.6 |
| Minnesota | $988.4 | $502.8 | $385.3 | $117.4 | $80.0 | $51.2 | $15.9 | $0.0 | $24.8 | $24.5 | $2.1 | $152.7 | $468.6 |
| Missouri | $258.2 | $131.4 | $100.7 | $20.7 | $26.8 | $13.3 | $3.1 | $0.0 | $6.8 | $6.8 | $0.3 | $41.9 | $119.8 |
| Mississippi | $33.2 | $16.9 | $13.0 | $2.3 | $4.2 | $1.7 | $0.4 | $0.0 | $0.9 | $0.9 | $0.0 | $5.2 | $15.6 |
| Montana | $36.0 | $18.3 | $14.0 | $3.8 | $4.3 | $1.8 | $0.5 | $0.0 | $0.9 | $0.9 | $0.1 | $5.1 | $17.4 |
| North Carolina | $900.9 | $458.3 | $351.2 | $87.5 | $115.5 | $39.8 | $9.1 | $0.0 | $24.5 | $24.4 | $0.8 | $127.6 | $429.3 |
| North Dakota | $9.5 | $4.8 | $3.7 | $1.0 | $1.2 | $0.5 | $0.0 | $0.0 | $0.2 | $0.2 | $0.0 | $1.3 | $4.6 |
| Nebraska | $33.3 | $16.9 | $13.0 | $3.3 | $3.7 | $1.6 | $0.5 | $0.0 | $0.9 | $0.9 | $0.0 | $5.0 | $15.8 |
| New Hampshire | $185.1 | $94.2 | $72.2 | $11.3 | $10.9 | $13.2 | $2.6 | $0.0 | $4.2 | $4.2 | $0.2 | $36.0 | $82.5 |
| New Jersey | $748.2 | $380.6 | $291.6 | $118.7 | $82.0 | $26.2 | $6.4 | $0.0 | $20.5 | $20.4 | $2.0 | $90.0 | $366.1 |
| New Mexico | $74.8 | $38.1 | $29.2 | $10.2 | $10.5 | $2.4 | $0.5 | $0.0 | $2.1 | $2.1 | $0.2 | $8.7 | $36.6 |
| Nevada | $645.6 | $328.4 | $251.7 | $62.0 | $58.9 | $35.4 | $0.0 | $0.0 | $16.0 | $15.8 | $2.6 | $103.7 | $294.6 |
| New York | $1,816.7 | $924.2 | $708.2 | $195.4 | $176.9 | $90.2 | $22.8 | $2.6 | $46.3 | $45.8 | $2.7 | $276.0 | $858.7 |
| Ohio | $457.3 | $232.6 | $178.2 | $49.6 | $48.8 | $21.3 | $0.0 | $0.1 | $12.1 | $12.0 | $0.9 | $67.1 | $212.0 |
| Oklahoma | $557.0 | $283.4 | $217.1 | $71.2 | $58.5 | $21.8 | $4.8 | $0.0 | $16.2 | $16.2 | $0.9 | $76.9 | $266.4 |
| Oregon | $172.3 | $87.7 | $67.2 | $26.9 | $21.5 | $6.2 | $2.4 | $0.0 | $4.7 | $4.7 | $0.8 | $19.6 | $86.9 |
| Pennsylvania | $764.7 | $389.0 | $298.1 | $89.3 | $74.7 | $36.2 | $4.4 | $0.4 | $19.8 | $19.7 | $3.3 | $112.5 | $360.2 |
| Puerto Rico | $62.3 | $31.7 | $24.3 | $4.7 | $9.7 | $0.0 | $2.4 | $0.0 | $1.8 | $1.8 | $0.2 | $8.7 | $29.3 |
| Rhode Island | $39.3 | $20.0 | $15.3 | $5.1 | $4.4 | $1.6 | $0.3 | $0.0 | $1.1 | $1.0 | $0.2 | $5.3 | $18.9 |
| South Carolina | $264.9 | $134.7 | $103.2 | $20.2 | $27.3 | $14.3 | $4.2 | $0.0 | $7.0 | $6.9 | $0.5 | $43.6 | $124.0 |
| South Dakota | $26.0 | $13.2 | $10.2 | $2.1 | $2.6 | $1.5 | $0.0 | $0.0 | $0.7 | $0.7 | $0.0 | $4.3 | $11.8 |
| Tennessee | $310.7 | $158.0 | $121.1 | $21.3 | $33.3 | $17.3 | $0.7 | $0.0 | $8.0 | $7.9 | $0.2 | $51.7 | $140.5 |
| Texas | $5,568.3 | $2,832.7 | $2,170.5 | $618.3 | $546.7 | $261.7 | $0.0 | $0.0 | $149.2 | $148.4 | $8.0 | $833.8 | $2,566.2 |
| Utah | $781.8 | $397.7 | $304.7 | $86.7 | $76.4 | $39.2 | $7.6 | $0.0 | $19.8 | $19.6 | $0.7 | $117.3 | $367.3 |
| Virginia | $671.7 | $341.7 | $261.8 | $53.4 | $60.9 | $39.0 | $9.0 | $0.0 | $16.7 | $16.5 | $0.5 | $113.7 | $309.7 |
| U.S. Virgin Islands | $1.4 | $0.7 | $0.6 | $0.2 | $0.3 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.1 | $0.8 |
| Vermont | $22.5 | $11.4 | $8.8 | $1.9 | $1.7 | $1.4 | $0.4 | $0.0 | $0.5 | $0.5 | $0.1 | $3.9 | $10.5 |
| Washington | $1,523.8 | $775.2 | $594.0 | $186.2 | $131.2 | $77.0 | $0.0 | $0.0 | $37.7 | $37.3 | $3.4 | $228.8 | $701.7 |
| Wisconsin | $218.0 | $110.9 | $85.0 | $16.4 | $18.8 | $12.8 | $3.3 | $0.0 | $5.6 | $5.5 | $0.4 | $37.9 | $100.6 |
| West Virginia | $37.7 | $19.2 | $14.7 | $3.2 | $3.3 | $2.1 | $0.6 | $0.0 | $1.0 | $1.0 | $0.1 | $6.3 | $17.6 |
| Wyoming | $25.1 | $12.8 | $9.8 | $2.2 | $3.7 | $1.5 | $0.0 | $0.0 | $0.6 | $0.6 | $0.1 | $3.4 | $12.1 |
| **Total** | **$36,007.2** | **$18,317.2** | **$14,035.6** | **$3,536.8** | **$3,464.5** | **$1,848.9** | **$295.9** | **$3.5** | **$933.4** | **$925.7** | **$59.1** | **$5,657.9** | **$16,725.9** |

## Figure 12: At Risk Wages & Benefits, Saved Unemployment Benefits, Additional Tax Revenues and Induced Spending, By State (70% Avoided Furlough Assumption)

| | 2019 W-2 Earnings ($ millions) | Wages & Benefits at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Wages at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Saved State Unemployment Benefits ($ millions) | Saved Federal Pandemic Unemployment Compensation ($ millions) | Additional Federal Income Taxes ($ millions) | Additional State Income Taxes ($ millions) | Additional Local Income Taxes ($ millions) | Additional Federal Payroll Taxes ($ millions) | Additional Federal Payroll Taxes (Employer) ($ millions) | Additional State Unemployment Insurance Taxes ($ millions) | Induced Spending in the U.S. Economy ($ millions) | Total Direct Benefits and Induced Spending ($ millions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska | $143.0 | $84.9 | $65.0 | $14.9 | $17.3 | $8.4 | $0.0 | $0.0 | $4.4 | $4.3 | $0.4 | $26.4 | $76.0 |
| Alabama | $68.1 | $40.4 | $31.0 | $6.1 | $10.0 | $4.0 | $0.9 | $0.0 | $2.1 | $2.1 | $0.1 | $12.1 | $37.4 |
| Arkansas | $55.2 | $32.7 | $25.1 | $7.2 | $8.3 | $2.8 | $0.7 | $0.0 | $1.7 | $1.7 | $0.1 | $8.7 | $31.1 |
| Arizona | $1,322.9 | $785.1 | $601.6 | $89.5 | $139.0 | $86.8 | $15.0 | $0.0 | $40.2 | $40.0 | $1.7 | $278.3 | $690.6 |
| California | $3,085.5 | $1,831.2 | $1,403.2 | $371.8 | $374.8 | $174.5 | $61.8 | $0.1 | $94.5 | $93.7 | $7.7 | $542.3 | $1,721.2 |
| Colorado | $1,391.2 | $825.7 | $632.7 | $173.3 | $133.7 | $93.3 | $16.3 | $0.0 | $38.7 | $38.1 | $2.5 | $259.4 | $755.2 |
| Connecticut | $119.4 | $70.9 | $54.3 | $14.3 | $12.1 | $7.9 | $1.8 | $0.0 | $3.3 | $3.3 | $0.4 | $22.3 | $65.4 |
| District of Columbia | $32.6 | $19.3 | $14.8 | $4.5 | $5.0 | $1.5 | $0.5 | $0.0 | $1.1 | $1.1 | $0.0 | $4.9 | $18.6 |
| Delaware | $78.0 | $46.3 | $35.5 | $9.1 | $9.8 | $4.2 | $1.1 | $0.0 | $2.5 | $2.5 | $0.2 | $13.7 | $43.1 |
| Florida | $3,290.4 | $1,952.8 | $1,496.3 | $260.3 | $388.5 | $213.5 | $0.0 | $0.0 | $99.0 | $98.3 | $1.5 | $652.0 | $1,713.1 |
| Georgia | $4,052.2 | $2,405.0 | $1,842.8 | $326.7 | $348.0 | $298.9 | $69.0 | $0.0 | $118.7 | $117.1 | $4.1 | $865.2 | $2,147.5 |
| Hawaii | $569.5 | $338.0 | $259.0 | $105.8 | $85.4 | $22.2 | $7.8 | $0.0 | $18.5 | $18.5 | $2.0 | $73.4 | $333.6 |
| Iowa | $42.5 | $25.3 | $19.3 | $5.0 | $5.2 | $2.6 | $0.8 | $0.0 | $1.3 | $1.3 | $0.1 | $7.5 | $23.9 |
| Idaho | $111.8 | $66.4 | $50.8 | $14.4 | $15.8 | $5.7 | $1.6 | $0.0 | $3.5 | $3.5 | $0.3 | $18.1 | $62.8 |
| Illinois | $1,963.1 | $1,165.1 | $892.7 | $246.7 | $237.6 | $105.2 | $21.7 | $0.0 | $62.2 | $61.8 | $4.8 | $340.4 | $1,080.4 |
| Indiana | $244.4 | $145.0 | $111.1 | $23.5 | $27.1 | $15.4 | $2.1 | $0.1 | $7.5 | $7.5 | $0.4 | $47.2 | $130.9 |
| Kansas | $51.3 | $30.4 | $23.3 | $5.5 | $5.0 | $3.4 | $0.8 | $0.0 | $1.5 | $1.5 | $0.1 | $10.0 | $27.7 |
| Kentucky | $136.2 | $80.8 | $62.0 | $21.3 | $18.3 | $6.4 | $1.3 | $0.1 | $4.4 | $4.3 | $0.3 | $20.6 | $77.0 |
| Louisiana | $100.7 | $59.8 | $45.8 | $9.2 | $15.5 | $5.6 | $1.3 | $0.0 | $3.2 | $3.2 | $0.1 | $17.6 | $55.7 |
| Massachusetts | $382.2 | $226.8 | $173.8 | $71.0 | $55.5 | $13.3 | $2.8 | $0.0 | $12.5 | $12.4 | $1.5 | $50.2 | $219.1 |
| Maryland | $390.5 | $231.7 | $177.6 | $49.7 | $52.4 | $20.7 | $4.3 | $0.1 | $12.1 | $12.0 | $0.6 | $64.8 | $216.7 |
| Maine | $43.1 | $25.6 | $19.6 | $4.4 | $4.4 | $2.9 | $0.8 | $0.0 | $1.3 | $1.3 | $0.1 | $8.4 | $23.6 |
| Michigan | $1,098.7 | $652.1 | $499.6 | $84.3 | $91.5 | $86.8 | $14.1 | $0.1 | $29.3 | $28.6 | $3.1 | $238.2 | $575.9 |
| Minnesota | $988.4 | $586.6 | $449.5 | $137.0 | $93.3 | $59.7 | $18.6 | $0.0 | $28.9 | $28.5 | $2.5 | $178.1 | $546.6 |
| Missouri | $258.2 | $153.3 | $117.4 | $24.2 | $31.3 | $15.6 | $3.6 | $0.0 | $8.0 | $7.9 | $0.4 | $48.9 | $139.7 |
| Mississippi | $33.2 | $19.7 | $15.1 | $2.7 | $4.9 | $1.9 | $0.4 | $0.0 | $1.1 | $1.1 | $0.0 | $6.1 | $18.2 |
| Montana | $36.0 | $21.4 | $16.4 | $4.5 | $5.0 | $2.1 | $0.6 | $0.0 | $1.1 | $1.1 | $0.1 | $5.9 | $20.3 |
| North Carolina | $900.9 | $534.7 | $409.7 | $102.1 | $134.8 | $46.5 | $10.6 | $0.0 | $28.6 | $28.5 | $0.9 | $148.9 | $500.8 |
| North Dakota | $9.5 | $5.6 | $4.3 | $1.2 | $1.4 | $0.6 | $0.0 | $0.0 | $0.3 | $0.3 | $0.0 | $1.5 | $5.3 |
| Nebraska | $33.3 | $19.7 | $15.1 | $3.8 | $4.3 | $1.9 | $0.5 | $0.0 | $1.0 | $1.0 | $0.0 | $5.8 | $18.4 |
| New Hampshire | $185.1 | $109.9 | $84.2 | $13.2 | $12.7 | $15.3 | $3.0 | $0.0 | $5.0 | $4.9 | $0.2 | $42.0 | $96.2 |
| New Jersey | $748.2 | $444.0 | $340.2 | $138.4 | $95.6 | $30.6 | $7.4 | $0.0 | $23.9 | $23.8 | $2.3 | $105.0 | $427.1 |
| New Mexico | $74.8 | $44.4 | $34.0 | $11.9 | $12.2 | $2.8 | $0.6 | $0.0 | $2.4 | $2.4 | $0.2 | $10.1 | $42.7 |
| Nevada | $645.6 | $383.2 | $293.6 | $72.4 | $68.8 | $41.3 | $0.0 | $0.0 | $18.7 | $18.5 | $3.1 | $121.0 | $343.7 |
| New York | $1,816.7 | $1,078.2 | $826.2 | $227.9 | $206.4 | $105.2 | $26.6 | $3.1 | $54.0 | $53.4 | $3.1 | $321.9 | $1,001.8 |
| Ohio | $457.3 | $271.4 | $208.0 | $57.9 | $57.0 | $24.9 | $0.0 | $0.1 | $14.1 | $14.0 | $1.1 | $78.3 | $247.3 |
| Oklahoma | $557.0 | $330.6 | $253.3 | $83.0 | $68.2 | $25.4 | $5.6 | $0.0 | $18.9 | $18.9 | $1.1 | $89.7 | $310.8 |
| Oregon | $172.3 | $102.3 | $78.4 | $31.3 | $25.1 | $7.3 | $2.8 | $0.0 | $5.5 | $5.5 | $1.0 | $22.9 | $101.4 |
| Pennsylvania | $764.7 | $453.8 | $347.7 | $104.2 | $87.1 | $42.2 | $5.2 | $0.5 | $23.1 | $22.9 | $3.8 | $131.3 | $420.2 |
| Puerto Rico | $62.3 | $37.0 | $28.3 | $5.5 | $11.3 | $0.0 | $2.8 | $0.0 | $2.2 | $2.2 | $0.2 | $10.1 | $34.2 |
| Rhode Island | $39.3 | $23.3 | $17.9 | $5.9 | $5.1 | $1.8 | $0.4 | $0.0 | $1.2 | $1.2 | $0.2 | $6.1 | $22.0 |
| South Carolina | $264.9 | $157.2 | $120.4 | $23.6 | $31.8 | $16.7 | $4.9 | $0.0 | $8.1 | $8.1 | $0.6 | $50.9 | $144.7 |
| South Dakota | $26.0 | $15.5 | $11.8 | $2.4 | $3.0 | $1.8 | $0.0 | $0.0 | $0.8 | $0.8 | $0.0 | $5.0 | $13.8 |
| Tennessee | $310.7 | $184.4 | $141.3 | $24.8 | $38.9 | $20.2 | $0.9 | $0.0 | $9.3 | $9.2 | $0.2 | $60.3 | $163.9 |
| Texas | $5,568.3 | $3,304.8 | $2,532.3 | $721.3 | $637.8 | $305.3 | $0.0 | $0.0 | $174.1 | $173.2 | $9.4 | $972.8 | $2,993.9 |
| Utah | $781.8 | $464.0 | $355.5 | $101.2 | $89.1 | $45.7 | $8.8 | $0.0 | $23.1 | $22.8 | $0.9 | $136.8 | $428.5 |
| Virginia | $671.7 | $398.7 | $305.5 | $62.3 | $71.1 | $45.5 | $10.5 | $0.0 | $19.4 | $19.3 | $0.6 | $132.7 | $361.4 |
| U.S. Virgin Islands | $1.4 | $0.9 | $0.7 | $0.2 | $0.3 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.0 | $0.1 | $0.9 |
| Vermont | $22.5 | $13.3 | $10.2 | $2.2 | $2.0 | $1.6 | $0.5 | $0.0 | $0.6 | $0.6 | $0.1 | $4.6 | $12.2 |
| Washington | $1,523.8 | $904.4 | $693.0 | $217.3 | $153.1 | $89.9 | $0.0 | $0.0 | $44.0 | $43.5 | $3.9 | $267.0 | $818.7 |
| Wisconsin | $218.0 | $129.4 | $99.1 | $19.1 | $21.9 | $15.0 | $3.8 | $0.0 | $6.5 | $6.4 | $0.5 | $44.2 | $117.4 |
| West Virginia | $37.7 | $22.4 | $17.1 | $3.8 | $3.8 | $2.5 | $0.6 | $0.0 | $1.1 | $1.1 | $0.2 | $7.4 | $20.5 |
| Wyoming | $25.1 | $14.9 | $11.4 | $2.6 | $4.3 | $1.8 | $0.0 | $0.0 | $0.7 | $0.7 | $0.1 | $4.0 | $14.1 |
| Total | $36,007.2 | $21,370.1 | $16,374.8 | $4,126.3 | $4,042.0 | $2,157.1 | $345.2 | $4.1 | $1,089.0 | $1,080.0 | $69.0 | $6,600.9 | $19,513.5 |

## Figure 13: At Risk Wages & Benefits, Saved Unemployment Benefits, Additional Tax Revenues and Induced Spending, By State (85% Avoided Furlough Assumption)

| | 2019 W-2 Earnings ($ millions) | Wages & Benefits at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Wages at Risk April 1, 2020-Sept 30, 2020 ($ millions) | Saved State Unemployment Benefits ($ millions) | Saved Federal Pandemic Unemployment Compensation ($ millions) | Additional Federal Income Taxes ($ millions) | Additional State Income Taxes ($ millions) | Additional Local Income Taxes ($ millions) | Additional Federal Payroll Taxes ($ millions) | Additional Federal Payroll Taxes (Employer) ($ millions) | Additional State Unemployment Insurance Taxes ($ millions) | Induced Spending in the U.S. Economy ($ millions) | Total Direct Benefits and Induced Spending ($ millions) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Alaska | $143.0 | $103.0 | $79.0 | $18.1 | $21.0 | $10.3 | $0.0 | $0.0 | $5.3 | $5.3 | $0.5 | $32.0 | $92.3 |
| Alabama | $68.1 | $49.1 | $37.6 | $7.5 | $12.2 | $4.8 | $1.0 | $0.0 | $2.6 | $2.6 | $0.1 | $14.7 | $45.5 |
| Arkansas | $55.2 | $39.8 | $30.5 | $8.7 | $10.0 | $3.4 | $0.9 | $0.0 | $2.1 | $2.1 | $0.1 | $10.5 | $37.8 |
| Arizona | $1,322.9 | $953.4 | $730.5 | $108.7 | $168.8 | $105.5 | $18.3 | $0.0 | $48.8 | $48.5 | $2.1 | $337.9 | $838.6 |
| California | $3,085.5 | $2,223.6 | $1,703.8 | $451.5 | $455.1 | $211.8 | $75.1 | $0.1 | $114.7 | $113.8 | $9.4 | $658.5 | $2,090.0 |
| Colorado | $1,391.2 | $1,002.6 | $768.3 | $210.5 | $162.3 | $113.2 | $19.7 | $0.0 | $47.0 | $46.3 | $3.1 | $314.9 | $917.1 |
| Connecticut | $119.4 | $86.1 | $66.0 | $17.3 | $14.7 | $9.6 | $2.2 | $0.0 | $4.0 | $4.0 | $0.5 | $27.0 | $79.4 |
| District of Columbia | $32.6 | $23.5 | $18.0 | $5.5 | $6.1 | $1.8 | $0.6 | $0.0 | $1.3 | $1.3 | $0.1 | $5.9 | $22.5 |
| Delaware | $78.0 | $56.2 | $43.1 | $11.1 | $11.9 | $5.1 | $1.4 | $0.0 | $3.0 | $3.0 | $0.2 | $16.6 | $52.3 |
| Florida | $3,290.4 | $2,371.3 | $1,817.0 | $316.0 | $471.8 | $259.3 | $0.0 | $0.0 | $120.2 | $119.3 | $1.8 | $791.7 | $2,080.2 |
| Georgia | $4,052.2 | $2,920.3 | $2,237.7 | $396.7 | $422.5 | $362.9 | $83.7 | $0.0 | $144.1 | $142.2 | $4.9 | $1,050.6 | $2,607.7 |
| Hawaii | $569.5 | $410.4 | $314.5 | $128.5 | $103.7 | $26.9 | $9.5 | $0.0 | $22.5 | $22.4 | $2.5 | $89.1 | $405.1 |
| Iowa | $42.5 | $30.7 | $23.5 | $6.1 | $6.3 | $3.2 | $1.0 | $0.0 | $1.5 | $1.5 | $0.2 | $9.1 | $29.0 |
| Idaho | $111.8 | $80.6 | $61.7 | $17.5 | $19.2 | $6.9 | $2.0 | $0.0 | $4.2 | $4.2 | $0.4 | $21.9 | $76.3 |
| Illinois | $1,963.1 | $1,414.7 | $1,084.0 | $299.5 | $288.5 | $127.8 | $26.3 | $0.0 | $75.5 | $75.1 | $5.9 | $413.3 | $1,312.0 |
| Indiana | $244.4 | $176.1 | $134.9 | $28.6 | $32.9 | $18.7 | $2.5 | $0.1 | $9.1 | $9.1 | $0.5 | $57.3 | $159.0 |
| Kansas | $51.3 | $37.0 | $28.3 | $6.6 | $6.1 | $4.1 | $0.9 | $0.0 | $1.8 | $1.8 | $0.1 | $12.1 | $33.7 |
| Kentucky | $136.2 | $98.2 | $75.2 | $25.9 | $22.3 | $7.8 | $1.6 | $0.1 | $5.3 | $5.3 | $0.3 | $25.0 | $93.6 |
| Louisiana | $100.7 | $72.6 | $55.6 | $11.1 | $18.8 | $6.8 | $1.6 | $0.0 | $3.9 | $3.9 | $0.2 | $21.3 | $67.6 |
| Massachusetts | $382.2 | $275.4 | $211.0 | $86.2 | $67.4 | $16.1 | $3.4 | $0.0 | $15.1 | $15.1 | $1.8 | $60.9 | $266.1 |
| Maryland | $390.5 | $281.4 | $215.6 | $60.3 | $63.7 | $25.2 | $5.2 | $0.1 | $14.6 | $14.6 | $0.7 | $78.7 | $263.1 |
| Maine | $43.1 | $31.1 | $23.8 | $5.3 | $5.4 | $3.6 | $1.0 | $0.0 | $1.5 | $1.5 | $0.1 | $10.2 | $28.7 |
| Michigan | $1,098.7 | $791.8 | $606.7 | $102.4 | $111.1 | $105.4 | $17.1 | $0.1 | $35.5 | $34.7 | $3.8 | $289.2 | $699.3 |
| Minnesota | $988.4 | $712.3 | $545.8 | $166.4 | $113.3 | $72.5 | $22.6 | $0.0 | $35.1 | $34.7 | $3.0 | $216.3 | $663.8 |
| Missouri | $258.2 | $186.1 | $142.6 | $29.3 | $38.0 | $18.9 | $4.4 | $0.0 | $9.7 | $9.6 | $0.4 | $59.4 | $169.7 |
| Mississippi | $33.2 | $24.0 | $18.4 | $3.3 | $5.9 | $2.3 | $0.5 | $0.0 | $1.3 | $1.3 | $0.0 | $7.4 | $22.0 |
| Montana | $36.0 | $25.9 | $19.9 | $5.4 | $6.1 | $2.5 | $0.7 | $0.0 | $1.3 | $1.3 | $0.1 | $7.2 | $24.6 |
| North Carolina | $900.9 | $649.3 | $497.5 | $123.9 | $163.7 | $56.4 | $12.9 | $0.0 | $34.7 | $34.6 | $1.1 | $180.8 | $608.1 |
| North Dakota | $9.5 | $6.9 | $5.3 | $1.5 | $1.7 | $0.7 | $0.1 | $0.0 | $0.3 | $0.3 | $0.0 | $1.8 | $6.5 |
| Nebraska | $33.3 | $24.0 | $18.4 | $4.6 | $5.2 | $2.3 | $0.7 | $0.0 | $1.2 | $1.2 | $0.0 | $7.1 | $22.4 |
| New Hampshire | $185.1 | $133.4 | $102.2 | $16.0 | $15.4 | $18.6 | $3.6 | $0.0 | $6.0 | $6.0 | $0.2 | $51.0 | $116.9 |
| New Jersey | $748.2 | $539.2 | $413.2 | $168.1 | $116.1 | $37.1 | $9.0 | $0.0 | $29.1 | $28.9 | $2.8 | $127.5 | $518.6 |
| New Mexico | $74.8 | $53.9 | $41.3 | $14.5 | $14.8 | $3.4 | $0.7 | $0.0 | $3.0 | $2.9 | $0.2 | $12.3 | $51.8 |
| Nevada | $645.6 | $465.3 | $356.5 | $87.9 | $83.5 | $50.1 | $0.0 | $0.0 | $22.7 | $22.4 | $3.7 | $147.0 | $417.4 |
| New York | $1,816.7 | $1,309.3 | $1,003.2 | $276.8 | $250.6 | $127.8 | $32.3 | $3.7 | $65.6 | $64.9 | $3.8 | $390.9 | $1,216.5 |
| Ohio | $457.3 | $329.5 | $252.5 | $70.3 | $69.2 | $30.2 | $0.0 | $0.1 | $17.1 | $17.0 | $1.3 | $95.1 | $300.3 |
| Oklahoma | $557.0 | $401.4 | $307.6 | $100.8 | $82.9 | $30.9 | $6.8 | $0.0 | $23.0 | $22.9 | $1.3 | $108.9 | $377.4 |
| Oregon | $172.3 | $124.2 | $95.2 | $38.1 | $30.5 | $8.8 | $3.3 | $0.0 | $6.7 | $6.7 | $1.2 | $27.8 | $123.2 |
| Pennsylvania | $764.7 | $551.1 | $422.3 | $126.5 | $105.8 | $51.2 | $6.3 | $0.6 | $28.0 | $27.9 | $4.6 | $159.4 | $510.3 |
| Puerto Rico | $62.3 | $44.9 | $34.4 | $6.6 | $13.7 | $0.0 | $3.4 | $0.0 | $2.6 | $2.6 | $0.3 | $12.3 | $41.5 |
| Rhode Island | $39.3 | $28.3 | $21.7 | $7.2 | $6.2 | $2.2 | $0.4 | $0.0 | $1.5 | $1.5 | $0.2 | $7.5 | $26.7 |
| South Carolina | $264.9 | $190.9 | $146.3 | $28.6 | $38.7 | $20.2 | $6.0 | $0.0 | $9.9 | $9.8 | $0.7 | $61.8 | $175.7 |
| South Dakota | $26.0 | $18.8 | $14.4 | $3.0 | $3.7 | $2.1 | $0.0 | $0.0 | $0.9 | $0.9 | $0.0 | $6.1 | $16.7 |
| Tennessee | $310.7 | $223.9 | $171.5 | $30.2 | $47.2 | $24.6 | $1.0 | $0.0 | $11.3 | $11.2 | $0.3 | $73.2 | $199.0 |
| Texas | $5,568.3 | $4,012.9 | $3,074.9 | $875.9 | $774.5 | $370.7 | $0.0 | $0.0 | $211.4 | $210.3 | $11.4 | $1,181.3 | $3,635.4 |
| Utah | $781.8 | $563.4 | $431.7 | $122.9 | $108.2 | $55.5 | $10.7 | $0.0 | $28.0 | $27.7 | $1.0 | $166.1 | $520.3 |
| Virginia | $671.7 | $484.1 | $370.9 | $75.6 | $86.3 | $55.3 | $12.8 | $0.0 | $23.6 | $23.4 | $0.7 | $161.1 | $438.8 |
| U.S. Virgin Islands | $1.4 | $1.0 | $0.8 | $0.3 | $0.4 | $0.1 | $0.0 | $0.0 | $0.1 | $0.1 | $0.0 | $0.2 | $1.1 |
| Vermont | $22.5 | $16.2 | $12.4 | $2.7 | $2.4 | $2.0 | $0.6 | $0.0 | $0.8 | $0.7 | $0.2 | $5.6 | $14.9 |
| Washington | $1,523.8 | $1,098.2 | $841.5 | $263.8 | $185.9 | $109.1 | $0.0 | $0.0 | $53.4 | $52.8 | $4.8 | $324.2 | $994.1 |
| Wisconsin | $218.0 | $157.1 | $120.4 | $23.2 | $26.6 | $18.2 | $4.7 | $0.0 | $7.9 | $7.8 | $0.6 | $53.7 | $142.6 |
| West Virginia | $37.7 | $27.2 | $20.8 | $4.6 | $4.7 | $3.0 | $0.8 | $0.0 | $1.4 | $1.4 | $0.2 | $9.0 | $24.9 |
| Wyoming | $25.1 | $18.1 | $13.9 | $3.1 | $5.2 | $2.1 | $0.0 | $0.0 | $0.8 | $0.8 | $0.1 | $4.9 | $17.1 |
| **Total** | **$36,007.2** | **$25,949.4** | **$19,883.7** | **$5,010.5** | **$4,908.1** | **$2,619.3** | **$419.2** | **$5.0** | **$1,322.3** | **$1,311.4** | **$83.8** | **$8,015.4** | **$23,695.0** |

## Author Biographies

Eric Amel is a Vice President with Compass Lexecon (and previously Sr. Managing Economist at LECG). He has worked on numerous aviation cases including conducting extensive analysis for regulatory clearance in airline mergers, alliance antitrust immunity filings, analysis for independent expert reports in numerous labor disputes for U.S. airlines, analysis of government slot proposals, and analysis for expert reports in numerous airline bankruptcies. Prior to his current position, Dr. Amel was the Chief Economist at Delta Air Lines and prior to that he was the Chief Economist at Continental Airlines. He also held a position at Federal Express. Dr. Amel was also an Assistant Professor of Finance at Arizona State University College of Business and has also been a Lecturer in Business Economics (MBA) at Boston University School of Management. Dr. Amel received his Ph.D. in Economics from Washington University where he specialized in Finance, Industrial Organization, and Public Finance. He also holds an M.A. in Economics from Washington University and a B.A. in Economics and Government from Oberlin College.

Darin Lee is an Executive Vice President at Compass Lexecon and has published numerous articles on various aspects of airline economics in journals such as *The Journal of Law & Economics*, the *Journal of Labor Economics*, *Economics of Transportation* and the *Journal of Competition Law & Economics*. Dr. Lee is also the editor of volumes I and II of the *Advances in Airline Economics* book series published by Elsevier. Dr. Lee has over 20 years of experience in the airline industry analyzing issues such as alleged anti-competitive behavior, bankruptcy reorganization, codesharing, joint ventures and antitrust immunity, labor disputes and business interruption. Dr. Lee has frequently testified as an expert on the airline industry in U.S. Federal Court and before numerous arbitration panels, and has also presented empirical analyses of airline competition issues before the U.S. Departments of Justice, State, and Transportation, as well as and numerous foreign competition bureaus. Dr. Lee holds a Ph.D. in Economics from Brown University, an M.A. in Economics from Queen's University and a B.Sc. in Economics from the University of Victoria.

Ethan Singer is a Senior Vice President at Compass Lexecon. He has over ten years of consulting experience in the airline industry as a consultant to the aviation practice at Compass Lexecon, and previously, as a Senior Associate at LECG. Dr. Singer holds a Ph.D. in Economics from the University of Minnesota, an M.A. in Economics from the University of Minnesota and a B.A. in Economics with Distinction from Carleton College. Dr. Singer specializes in the analysis of airline economics and has worked extensively on a broad range of airline engagements including mergers, joint ventures and antitrust immunity, labor arbitrations, bankruptcy restructuring and financial damages. His research focuses on airline competition and the cost structure of international trade and he has published articles on airline economics in *Economics of Transportation*, the *Journal of Competition Law & Economics*, *Review of Industrial Organization*, and the *Journal of Economic and Management & Strategy*.