

The Economic Impact of 9/11 on the New York City Region

Overview

Regional Economic Models Inc. (REMI) has developed this comprehensive study evaluating the economic impact of 9/11 on the air industry and the overall economy of New York City and the surrounding region. Using data inputs collected from a variety of sources and REMI's own Policy Insight model for the primary analysis, REMI is able to recreate economic interactions on a regional basis and simulate the economic impact of the events of 9/11. The report will quantify the economic impacts using various economic indicators, including employment, gross regional product, output, real disposable personal income, labor productivity, and population. These impacts are analyzed for New York City (separating Manhattan itself as one region and combining the four other boroughs of the city as another region) and nine other regions of the New York City Consolidated Metropolitan Area. The impacts are also shown for the rest of the USA and combined to show the results for the entire New York City Consolidated Metropolitan Area and the USA as a whole.

REMI utilized their Policy Insight software to conduct this comprehensive analysis. REMI Policy Insight is a structural forecasting and policy analysis model. It integrates input-output, computable general equilibrium, econometric and economic geography methodologies. The model is dynamic, with forecasts and simulations generated on an annual basis and behavioral responses to wage, price, and other economic factors. The overall structure of the REMI model can be summarized in five major blocks: output and demand, labor and capital demand, population and labor force, wages, price, and cost, and market shares.

Methodology / Approach / Data Inputs

Prior to the 9/11 terrorist attacks on the US, the nation's economy had fully recovered from the recessionary and stagnant economic period of the early to mid 1990's. In fact, by 1998 and until 2001, the US was experiencing a period of significant economic expansion. Virtually all industries were growing during this period, as consumer and business spending and confidence levels were at some of the highest levels to date. The robust stock market and real estate markets were producing significant earnings for investors and workers were experiencing high wage and employment growth, leading to significant growth in consumer demand for goods and services and a steady level of general growth in the economy. The New York City region was no exception; in regards to growth the nation was experiencing prior to 9/11. As the largest economy in the nation and a world leading center of finance, insurance, real estate, commerce, entertainment, and culture, New York City and its surrounding region was undergoing a period of substantial economic growth, particularly the regions finance, trade, and tourism sectors.

The events of 9/11 put an immediate stop to much of the growth the nation and particularly the New York City region was experiencing. The initial shock of the attacks and the ensuing fear and uncertainty disrupted the entire economy. Almost all industry

sectors were negatively impacted by the events of 9/11. The travel, especially air travel, and tourism industry was particularly hard hit as many people and businesses choose not to fly for both leisure and business activity. This dramatically impacted the airlines industry, hotels, and other industries that rely on travel and visitors. Directly after the 9/11 attacks, the majority of North American and European airlines greatly reduced both their staff and plane capacities, as the demand for air travel significantly weakened. U.S. airline industries experienced about 80,000 layoffs, a 13% reduction in airline capacity, and reported a \$7 billion net loss in 2001 alone. During the years following 2001 and 2002, the airlines industry began to recover as the initial shock of 9/11 and the fear of air travel subsided, resulting in increasing demand returning to the market.

Another industry that was particularly hard hit was the finance sector. Much of this was a result of the damage caused directly to the financial district in Manhattan. The World Trade Center towers and surrounding buildings that were destroyed were home to many of the city's large financial service firms. Consequently, these firms had to relocate their offices, many choosing to do so outside of Manhattan, given the uncertainty they were facing. Furthermore, the 9/11 attacks destabilized the financial markets, resulting in additional downsizing among financial service firms, particularly securities firms.

To measure the impact of 9/11 on the air travel industry and the economy of New York City and the surrounding region, various data was collected to develop a simulation of the impacts in the REMI Policy Insight model. Data used to determine the impact of 9/11 on the airlines industry was collected from the Research and Innovative Technology Administration (RITA) Bureau of Transportation Statistics. This included data for airline passenger counts under the "T-100 Domestic Market (U.S Carriers). In addition, employment data was collected from a report titled "*Direct Business Interruption Losses and Associated Costs of the 9/11 Attacks on the World Trade Center*", (Chapter 3), by Bumsoo Lee, Tom Szelazek, and Adam Rose. This data was used to project the amount of employment losses or gains, by industry sector, that were a direct result of 9/11, which became the basis of the model simulation and the model inputs. The gains in employment for particular industry sectors largely represent the displacement or relocation of jobs from Manhattan and the rest of New York City to the other regions evaluated in the study.

In order to derive the number of lost or gained jobs in each industry sector, number of establishments' data was used to calculate weighted averages for each region (by industry sector) in the study area. This formed the basis for determining the amount of displacement or relocation of jobs from Manhattan and the rest of New York City to the other regions in the study. The ensuing results for the number of lost/gained jobs for each industry sector, by each region, were used as the inputs for the model simulation. Twelve regions were evaluated, with the estimated employment losses/gains inputted for each industry sector within each region. Table 1 shows the average yearly direct loss/gain in employment for all industries combined, for each region in the study area, resulting from the events of 9/11. These represent the direct inputs to the REMI model, shown for all industries combined; the actual inputs in the model are inputted by industry sector rather than combined as shown here.

As table 1 shows, Manhattan was estimated to directly lose almost 40,000 jobs due to the events of 9/11. These are the direct job losses and don't include the indirect and induced losses, which are shown later. The financial services sectors were estimated to lose the greatest number of jobs in Manhattan, including banking (-16,641 jobs), securities and commodities (-4,163), and insurance (-3,181). The gain in jobs for all the other regions in the study area, largely represent the relocation of jobs from Manhattan to the surrounding regions. The metro divisions that show no direct loss or gain of jobs were estimated not to be directly impacted by 9/11 as they were no jobs that were directly lost or any jobs that relocated from Manhattan to these regions; however as the results of the simulation will show these areas still experienced an impact resulting from the indirect and induced effects of the loss of jobs in Manhattan. The results of the simulation, showing the direct, indirect, and induced economic impacts will be shown in the results section below.

Table 1: Average Yearly Direct Loss/Gain in Employment for All Industries Combined, by Region, 2006 - 2020 (REMI Inputs)

Region	Average Yearly Direct Loss/Gain in Employment All Industries 2006 - 2020
Manhattan	-39,648
Brooklyn, Bronx, Queens, Staten Island	20,218
Rest of NY-Wayne-White Plains, NY-NJ Metro	8,547
Edison NJ Metro Division	0
Nassau-Suffolk NY Metro Division	284
Newark-Union NJ-PA Metro Division	4,675
Bridgeport-Stamford-Norwalk CT Metro Division	222
Kingston NY Metro Division	0
Poughkeepsie-Newburgh-Middletown NY Metro Div	0
Torrington CT Metro Division	0
Trenton-Ewing NJ MSA	0
Rest of USA	1,013

Several economic indicators were used to evaluate and quantify the impact of the employment losses and gains, resulting from the events of 9/11, on each region's economy; these are direct outputs or results of the REMI Policy Insight model. The results are the difference in values between the simulation and the control or baseline forecast in the model and represent the direct, indirect, and induced impact of the employment loss/gains. The following are the economic indicators and a brief definition of each:

- **Employment:** The REMI model uses the Bureau of Economic Analysis (BEA) concept of employment, which accounts for full-time, part-time, and self-

employed workers. Simulation results capture the direct, indirect, and induced employment impact of the projects (number of jobs created).

- **Gross Regional Product (GRP):** GRP is an economic accounting method that measures economic activity as a value-added or final demand concept. The value-added concept equals the output of the region, excluding intermediate inputs, and represents the compensation and profits within the regional economy. The final demand concept is equal to regional consumption + investment + government + (exports-imports). GRP is affected by changes in demand.
- **Disposable Personal Income:** This is a measurement of after-tax income. This concept can be loosely interpreted as “take home” pay. Personal Income is primarily derived from wage and salary disbursements (paychecks), transfer payments from government to individuals, dividends, interest, rents, and proprietors’ income. Contributions to social insurance programs and income taxes are subtracted from personal income with the end product being disposable personal income.
- **Output:** Output is defined as the amount of production, including all intermediate goods purchased as well as value added (compensation and profit). Output can also be described as sales or supply. The components of Output are Self Supply and Exports (Multi-regions, Rest of Nation, and Rest of World). Output is affected by changes in industry Demand in all regions in the nation, the home region’s share of each market, and international exports from the region. For example, an increase in Output is caused by an increase in Demand, an increase in market share, or an increase in international exports.
- **Labor Productivity:** Labor Productivity is defined as output per employee, and is calculated as output divided by Employment. Labor Productivity is affected by changes in relative labor intensity, labor access index, and national labor productivity.
- **Population:** Population reflects mid-year estimates of the number of people, including survivors from the previous year, births, special populations, and three types of migrants (economic, international, and retired). Population is affected by changes in Total Migration, Special Populations, Birth Rates, and Survival Rates. For example, an increase in Population can result from an increase in one or more of the variables noted above.
- **Exports to Rest of World:** The amount of local production exported out of the local region to the rest of the world. Exports to Rest of World is affected by changes in the level of international exports, or changes in the Cost of Production in the local region. For example, an increase in Exports to Rest of World can result from an increase in the level of international exports, or a decrease in Cost of Production in the local region.

Results

As mentioned above, the terrorist attacks of 9/11 had significant economic consequences on the New York City. Not only did the city experience a loss of jobs due to the drops in demand for travel and the cut backs in consumer spending, business spending and capital investments, it also experienced job loss due to the relocation of businesses from the City to the surrounding area and elsewhere in the country. The relocations were due to both the destruction of physical space in New York City (the World Trade Centers and other surrounding buildings that were destroyed) and the relocation of other businesses that felt the need to leave the city due to the uncertainty that surrounded the events.

Table 2 shows the average yearly economic impact of 9/11 on Manhattan, the four other Boroughs of the city, and all the other regions evaluated in this study, for the 2006 to 2020 period. These results, and the results shown in the remaining tables of this study, represent the direct, indirect, and induced effects of the employment loss/gains estimated to have been a result of 9/11. Manhattan, directly impacted by 9/11, is projected to lose just over 97,023 jobs as a result of the direct, indirect, and induced economic impacts of 9/11. The multiplier effect of the direct job loss in Manhattan equals 2.45; in other words for every direct job lost in Manhattan due to 9/11 an additional 2.45 jobs were lost. The high multiplier effect is a result of the type of direct jobs lost. As mentioned above, the finance and insurance sector lost the greatest number of jobs in Manhattan directly due to 9/11, a total of almost 24,000 jobs. Finance and Insurance jobs are very high paying in Manhattan, where the average wage was almost \$250,000 per year in 2006. The loss of these high wage jobs will have significant induced impacts on the economy, as the spending of these wages support many other jobs throughout the economy. This induced impact can be seen in such industries sectors as retail trade and food service, where an average of over 5,300 jobs are projected to be lost in each of these sectors in Manhattan, mainly as a result of induced impacts of other direct job loss. The amount of wages lost is represented in the impact on real disposable personal income, which declines by an average of \$5.2 billion in Manhattan.

Gross regional product and output in Manhattan is projected to drop by a yearly average of \$32.6 billion and \$52.8 billion, respectively; also largely made up of the high producing and exporting sectors within the finance and insurance industry. The impact of these export driven and highly productive industry sectors can also be seen in the results for exports to the rest of the world and labor productivity, which are projected to decline by an average of \$35.5 billion per year and \$6,413 per worker, per year, respectively, in Manhattan between 2006 and 2020. Lastly, population is projected to decline by an average of 35,016 people in Manhattan as a result of 9/11. The population drop is a result of lost employment opportunities as workers and their families relocate to jobs outside of Manhattan.

The Boroughs of Brooklyn, Bronx, Queens, and Staten Island are projected to experience gains in employment as a result of 9/11, as many firms impacted by the events relocate to these Boroughs from Manhattan. As was shown above, these four Boroughs of New York City experienced a gain of over 20,000 direct jobs directly following 9/11, largely

the result of jobs that were relocated to these areas from Manhattan (mainly consisting of jobs in finance). As shown in table 2, the net impact of direct, indirect, and induced employment in Brooklyn, Bronx, Queens, and Staten Island average a gain of 16,015 jobs per year; this is lower than the direct job gained because of the induced impact of job loss in Manhattan impacting the entire labor market region; many workers who lost jobs in Manhattan live in these four Boroughs. As a result of the relocation of jobs from Manhattan, Brooklyn, Bronx, Queens, and Staten Island, are projected to increase their gross regional product, output, and exports by \$2.6 billion, \$4.2 billion, and \$4.9 billion respectively. It is interesting to note that real disposable personal income, which is measured at place of residence, declines in the Brooklyn, Bronx, Queens, and Staten Island region, despite the increase in jobs. This can be the result of the fact that many of the workers employed at the relocated jobs in these Boroughs live outside the Boroughs, likely in Manhattan or other places within the region.

Many displaced jobs from Manhattan also located in the region immediately surrounding New York City, represented by the rest of New York-Wayne-White Plains NY-NJ metro area region. Table 2 shows that this region gained 1,092 direct, indirect, and induced jobs as a result of 9/11. Consequently, gross regional product, output, and exports are projected to increase by an average of \$858 million, \$1.6 billion, and \$2.9 billion, respectively, in the rest of New York-Wayne-White Plains, NY-NJ Metro Area.

The only other area experiencing a net gain in economic impact from the relocation of jobs from Manhattan is the Newark-Union NJ-PA Metropolitan Division, where employment is projected to increase by an average of 986 jobs per year. Although three other regions, Nassau-Suffolk NY, Bridgeport-Stamford-Norwalk CT, and the rest of the USA, experience direct employment gains from the relocation of jobs from Manhattan, the indirect and induced impacts of the job loss in Manhattan outweigh the benefits of the small number of relocated jobs. The net direct, indirect, and induced economic impacts of 9/11 are, thus, negative for these regions.

The remaining Metropolitan Divisions, Edison NJ, Kingston NY, Poughkeepsie-Newburgh-Middletown NY, Torrington CT, and Trenton NJ did not gain any direct employment as a result of the displacement of jobs from Manhattan and, thus, only experienced the negative impacts of the indirect and induced effects of job loss in Manhattan; many workers in Manhattan reside in communities in these areas.

In total, the New York City Consolidated Metropolitan Area, represented by all the regions listed in table two, with the exception of the rest of the USA, is projected to lose an average of almost 90,000 jobs across each year of the study period, as a result of 9/11 and the USA as a whole is projected to lose an average of almost 106,000 jobs.

Table 2: Average Yearly Economic Impact by Region 2006 – 2020, Direct, Indirect, and Induced Impact, (Fixed 2008 \$'s)

	Employment	Gross Regional Product (millions)	Real Disposable Personal Income (millions)	Output (millions)	Labor Productivity	Export to Rest of World (millions)	Population
Manhattan	-97,023	-\$32,568	-\$5,168	-\$52,804	-\$6,413	-\$35,488	-35,016
Brooklyn, Bronx, Queens, Staten Island	16,015	\$2,567	-\$285	\$4,171	\$1,029	\$4,921	-30,343
Rest of NY-Wayne-White Plains, NY-NJ Metro	1,092	\$858	-\$1,368	\$1,625	\$591	\$2,871	-19,059
Edison NJ Metro Division	-5,991	-\$608	-\$984	-\$864	\$241	\$34	-14,325
Nassau-Suffolk NY Metro Division	-203	-\$156	\$281	-\$295	-\$127	\$63	4,029
Newark-Union NJ-PA Metro Division	986	\$536	-\$786	\$912	\$569	\$1,536	-10,880
Bridgeport-Stamford-Norwalk CT Metro Division	-807	\$9	-\$232	\$53	\$447	\$246	-1,994
Kingston NY Metro Division	-384	-\$23	-\$47	-\$27	\$73	\$1	-1,182
Poughkeepsie-Newburgh-Middletown NY Metro Div	-1,874	-\$126	-\$296	-\$140	\$457	\$14	-5,948
Torrington CT Metro Division	-503	-\$31	-\$97	-\$42	\$181	\$2	-1,564
Trenton-Ewing NJ MSA	-1,190	-\$110	-\$191	-\$116	\$225	\$6	-2,556
Total NYC Metro Region	-89,883	-\$29,651	-\$9,172	-\$47,527	-\$2,727	-\$25,794	-118,839
Rest of USA	-15,960	-\$2,237	\$1,408	-\$4,589	-\$3	\$1,057	120,187
Total All Regions (USA)	-105,833	-\$31,888	-\$7,763	-\$52,116	-\$204	-\$24,737	1,363

Table 3 takes a closer look at the economic impact of 9/11 on employment in each region, showing the results by industry sector. As mentioned earlier, the finance sector in Manhattan experienced the greatest impact from 9/11, as the ground zero area contained large amounts of office space occupied by many of the city's finance companies. As table 3 shows, Manhattan is projected to lose a yearly average of almost 31,000 finance and insurance jobs over the 2006 to 2020 period. The professional and technical services sector is projected to lose the second most jobs in Manhattan, an average of almost 11,000. A total of 2,661 direct professional and technical services jobs were lost in Manhattan due to 9/11; the remaining job loss in this sector is largely the result indirect losses, as many of the industries in professional services such as legal services and accounting services rely heavily on the finance industry for business. Another industry sector that is projected to lose a significant number of jobs due to the indirect effects is administrative and support services, 6,488 jobs. The administrative and support services industry is almost entirely reliant on business-to-business services, particularly with financial services.

As discussed earlier, the induced impacts of job losses, particularly among high wage jobs, also play a large roll in measuring total economic impact. Two industry sectors that exemplify this more then most are retail trade and food services, as these sectors rely heavily on consumer spending. When high wage jobs are lost, retail and food service are significantly impacted. As a result of the induced impacts of 9/11 in Manhattan, retail trade and food services are projected to lose an average of roughly 5,300 jobs each.

The travel and visitor dependent industry sectors were also greatly impacted by the events of 9/11. The accommodations (hotels) sector in Manhattan is projected to be among the hardest hit, with an estimated average employment loss of over 4,500 jobs. To access the impact of 9/11 on the air travel sector in the New York City area, the Brooklyn, Bronx, Queens, and Staten Island region and the Newark region are the focus

of analysis. The New York City region contains three major airports: Kennedy, LaGuardia, and Newark International Airports. Kennedy and LaGuardia airports are both located in Queens, NY and Newark is the Newark-Union NJ-PA metro division. The Brooklyn, Bronx, Queens, and Staten Island region is projected to lose an average of roughly 150 air transportation jobs and Newark-Union Metro Division is projected to lose an average of around 40 air transportation jobs during the 2006 to 2020 time period. It is important to note that the job losses in air transportation were much greater in the period immediately following 9/11, in the years 2001-2003. As mentioned earlier, the U.S. airline industries experienced about 80,000 layoffs alone in 2001, immediately following 9/11, as demand for air travel plummeted. By 2006, the start of the study period in this report, air travel had made a significant recovery in the US (including the New York City area), as the initial shock of 9/11 and the fear of air travel subsided. To illustrate the recovery that the airline industry made in the years following 9/11, passenger count data can be studied. The estimated round-trip passenger loss for the first three quarters of 2002 totaled 14.3 million in the US compared to a loss of only 9.5 million passengers for the same period in 2003. By 2006 the airlines industry continued to regain the passenger travel loss experienced in the period immediately after 9/11. Furthermore, although many jobs were lost at airline companies as a result of 9/11, many security jobs were added at airports; which helped to minimize the total employment impact on the air travel sector.

Another significant point shown in table 3 include the impact on the finance and insurance sector in the Bronx, Brooklyn, Queens, and Staten Island region, the rest of New York-Wayne-White Plains NY-NJ metro region, and the Newark-Union NJ metropolitan division. These are the regions that were the major recipients of finance jobs relocating from Manhattan. It is projected that the Bronx, Brooklyn, Queens, Staten Island region will gain an average of almost 15,000 finance and insurance jobs during the study period and the rest of New York-Wayne-White Plains NY-NJ metro region, and the Newark-Union NJ metropolitan division, will gain 4,200 and 3,400 finance and insurance jobs, respectively.

Table 3: Average Employment Change per Year by Industry Sector, Direct, Indirect, and Induced impact, 2006 - 2020

Industry Sector	Manhattan	Bronx Brooklyn Queens Statan Island	Rest of NY- Wayne- White Plains Metro Area	Edison NJ Metro Div	Nassau- Suffolk NY Metro Div	Newark- Union NJ-PA Metro Div	Bridgeport- Stamford- Norwalk CT Metro Div
Forestry, Fishing, Other	0	-3	-1	-5	-3	-2	-1
Mining	-4	0	-1	-1	-2	-1	-1
Utilities	-70	-81	-40	-18	-4	-13	-5
Construction	-1,254	-52	-418	-503	14	-227	-102
Manufacturing	-367	-279	-389	-119	-130	-169	-22
Wholesale Trade	-1,289	-48	-60	-108	-34	-51	-21
Retail Trade	-5,256	148	-1,125	-1,148	216	-683	-195
Transp, Warehousing	-453	-942	-625	-192	-115	-188	-23
Information	-4,907	2,073	764	-58	5	218	-14
Finance, Insurance	-30,907	14,971	4,198	-72	-149	3,407	236
Real Estate, Rental, Leasing	-404	-446	-417	-434	-314	-322	-144
Profess, Tech Services	-10,863	641	1,092	-99	1	442	14
Mngmt of Co, Enter	-640	16	32	-3	-13	14	6
Admin, Waste Services	-6,488	190	-557	-428	-145	-118	-37
Educational Services	-1,432	-63	-158	-83	-25	-89	-29
Health Care, Social Asst	-4,743	-1,354	-1,189	-777	158	-654	-176
Arts, Enter, Rec	-1,927	-12	-161	-196	-36	-93	-47
Accom, Food Services	-9,835	263	1,545	-476	88	-240	-74
Other Services (excl Gov)	-3,867	-147	-296	-467	46	-397	-78
State & Local Gov	-12,314	1,143	-1,102	-805	240	152	-94

Industry Sector	Kingston NY MSA	Poughkeepsie- Newburgh- Middleton NY Metro Div	Torrington CT MSA	Trenton- Ewing- NJ-PA MSA	Total NY City Region NY-NJ-CT-PA	Rest of USA	Total All Regions USA
Forestry, Fishing, Other	0	0	-95	0	-110	-184	-199
Mining	0	0	-1	0	-10	-203	-213
Utilities	-2	-8	0	-3	-245	-13	-258
Construction	-39	-201	0	-61	-2,940	558	-2,382
Manufacturing	-6	-4	-6	-5	-1,495	-1,560	-3,056
Wholesale Trade	-2	-8	-3	-12	-1,636	-217	-1,853
Retail Trade	-80	-397	-109	-212	-8,839	-1,315	-10,154
Transp, Warehousing	-4	-37	-4	-15	-2,598	-2,007	-4,605
Information	-3	-9	-2	-8	-1,943	-511	-2,454
Finance, Insurance	-2	-8	-5	6	-8,326	-5,365	-13,691
Real Estate, Rental, Leasing	-12	-65	-26	-50	-2,635	-4,296	-6,931
Profess, Tech Services	-4	-18	-9	-8	-8,812	-1,863	-10,674
Mngmt of Co, Enter	0	2	0	1	-585	-323	-908
Admin, Waste Services	-16	-65	-18	-55	-7,735	-3,553	-11,287
Educational Services	0	-12	-2	-23	-1,917	-618	-2,535
Health Care, Social Asst	-45	-279	-55	-164	-9,277	2,089	-7,188
Arts, Enter, Rec	-12	-52	-11	-31	-2,577	-734	-3,311
Accom, Food Services	-37	-169	-44	-109	-9,088	-3,171	-12,260
Other Services (excl Gov)	-31	-156	-46	-92	-5,531	-336	-5,867
State & Local Gov	-90	-388	-67	-349	-13,675	7,657	-6,016

