

ECONOMIC IMPACT OF HURRICANE SANDY

POTENTIAL ECONOMIC ACTIVITY LOST AND GAINED IN
NEW JERSEY AND NEW YORK

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Economic Impact of Hurricane Sandy

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Economic Impact of Hurricane Sandy

Potential Economic Activity Lost and Gained in New Jersey and New York

Executive Summary

Hurricane/Post Tropical Storm Sandy struck the New Jersey coast on October 29, 2012, inflicting billions of dollars of damage to residential and commercial facilities as well as transportation and other infrastructure along the coastline and well into the interior of the states impacted. This report examines potential long-term economic effects of Hurricane Sandy, in terms of losses and gains in economic activity, in New Jersey and the 13 counties in lower New York that were declared as disaster areas by the Federal Emergency Management Agency (FEMA). This report does not focus on the economic damage directly inflicted by the storm. Instead, this report aims to measure the impact of disruption of economic activity caused by the storm. This impact may be negative (anticipated spending losses in Travel and Tourism in New Jersey), or positive (the potential for increased economic activity from reconstruction projects in New Jersey and New York).

Our measurement of the economic disruptions inflicted on New Jersey and New York by Hurricane Sandy assumes that most businesses faced only short term business disruptions, with the only exception being the Travel and Tourism industry in New Jersey. New Jersey's Travel and Tourism industry is expected to sustain measurable declines, primarily during the third quarter of 2013. Finally, we assume that New Jersey and New York¹ will receive the full amount of the money they estimated to repair and replace damage from the storm. We also assume a time period of four (4) years for completion of the repairs and reconstruction—i.e., through the end of 2016. (See box on next page.)

The assumption that most business impacts were primarily short-term is based on our review of reports, short papers, newspaper articles and discussions with members from FEMA's Joint Field Office (with Federal, state and local members) located in Newark, NJ, that was set up to deal with the crisis. Our assumption that Travel and Tourism impacts in New York were short-term came from various reports and sources, particularly New York Travel Bureaus. Our estimate of impacts to New Jersey Travel and Tourism in 2013 is based on a Rutgers University

¹ This analysis focuses on the effects to New Jersey and certain lower New York counties only, although 12 states and the District of Columbia had counties declared by FEMA as disaster areas from Hurricane Sandy (See footnote 43 for the other states.) As of July 2013, disaster relief funding for these two states accounted for 96 percent of Federal budget obligations for Sandy relief (eligible recipients having legal recourse if the obligation is not fulfilled.)

forecast of spending losses in this sector during the third quarter of 2013. Finally, our estimates of impacts on construction in these two states are based on what each state estimated to be the cost to completely recover from damage resulting from the storm. These estimates were provided to the U.S. Congress for its deliberations that led to the Disaster Relief Appropriations Act, 2013.

The findings of this analysis are based entirely on estimated Travel and Tourism spending losses in New Jersey and projected new construction spending occurring over a four (4) year period in New Jersey and lower New York. The inter-industry relationships in these estimates are based on regional multipliers from the Bureau of Economic Analysis (BEA) Regional Input-Output Modeling System (RIMS II). See the Appendix for a detailed description of methods and data used to make these estimates.

The results presented below assume that reconstruction spending equals damage estimates provided by New Jersey and New York. These output and jobs estimates are directly proportional to the levels received and spent by these states. Actual spending may vary. Therefore, output and jobs estimates would vary proportionally.

Based on these assumptions and timeline, we find that:

- An estimated loss of \$950 million in tourism spending in New Jersey in 2013 will reduce total output in New Jersey by \$1.2 billion this year and reduce employment by over 11,000 workers primarily in the Accommodations, Food Services, Retail, Amusements and Performing Arts and the Transportation Services sectors. These losses are expected to occur in the third quarter of 2013 and would be concentrated in two counties—Ocean and Monmouth.
- The New Jersey state government estimated construction costs of \$29.5 billion to repair and replace the damage caused by the storm. If all of this money is spent on rebuilding, the influx of new spending will result in \$44 billion in total output and about 281,000 new jobs (full-time and part-time²). Thus, the net gain in jobs in New Jersey over the four year period would be 270,000 (281,000 construction-related jobs less 11,000 Travel and Tourism-related jobs). Of the 281,000 construction-related jobs, about 218,000 will be direct construction jobs.
 - If all of the projected new construction spending in New Jersey is spread over four (4) years, the average annual number of jobs supported by this spending would be about 70,000.

² A full-time job would be associated with a 40-hour work week or about 2,000 hours per year. A part-time job could be a job with as little as one hour worked in a week.

- As of July 2013, however, approximately \$5.5 billion in Federal aid had been authorized for projects in New Jersey.³ In addition to Federal aid, insurance claim payments will reach the state. Private insurers are expected to issue \$6.3 billion in settled claims in New Jersey.
- Despite temporary business disruptions during the immediate aftermath of Hurricane Sandy, we did not find evidence of long-term losses in Travel and Tourism spending in New York resulting from the storm. Nor did we find evidence of long-term spending losses in any other industries.
- The New York state government estimated construction costs of \$41.9 billion to repair and replace the damage caused by the storm in lower New York. If all of this money is spent on reconstruction, the influx of new spending will generate \$53.1 billion in new total output in those 13 counties and about 352,000 new jobs. About 299,000 jobs will be construction jobs.
 - If all of the projected new construction spending in New York is spread over a four (4) year period, the average annual number of jobs supported by this spending would be about 88,000 per year.
 - As of July 2013, however, about \$7.8 billion in Federal aid has been authorized for lower New York. Private insurers are expected to issue about \$9.6 billion in insurance payments.

³ On January 29, 2013, the Disaster Relief Appropriations Act, 2013, a \$50.7 billion package of assistance largely focused on Hurricane Disaster Relief, was enacted. The Act provided budget authority to Federal Departments and Agencies for use in Sandy relief. Each Agency then has to “authorize” the release of these monies for specific projects in the affected states. An authorization, however, does not necessarily mean that Federal money has been dispersed.

Introduction and Purpose

This report examines economic impacts to New Jersey and the 13 FEMA-declared disaster counties in New York which bore the brunt of the damage wrought by Hurricane/Post Tropical Storm Sandy.⁴ The economic impact story of Sandy is immediate, devastating damage primarily to residences, but also to structures and equipment that support industrial production of both goods and services. This report does not summarize those damages. The purpose of this analysis is to estimate the ultimate change in economic activity, such as industry production and employment, resulting from both the large one-time losses in tourism spending in New Jersey and the potential gains in construction spending in both New Jersey and the 13 counties in New York resulting from the storm.

Figure 1 shows all the counties in New Jersey. Each county in New Jersey was declared by FEMA as being eligible for Federal disaster relief. Figure 2 shows the 13 counties in New York declared by FEMA as eligible. Both maps provide highest and lowest counties in terms of unemployment rates and median income.⁵

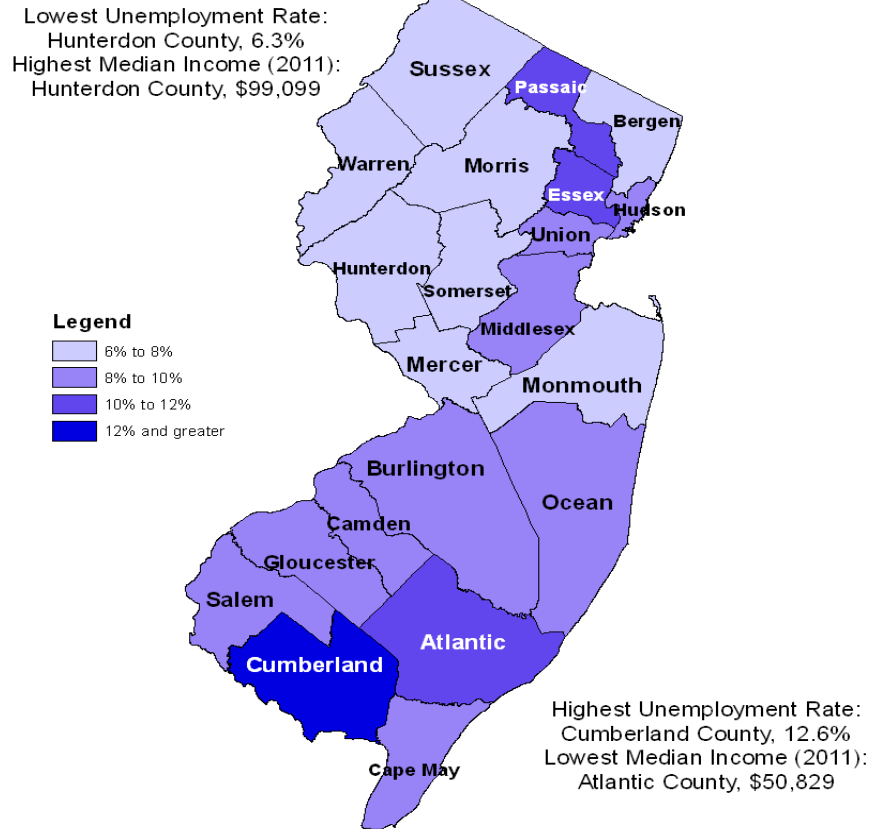
This report begins with a discussion of the business impact of Hurricane Sandy and includes an industry-by-industry summary of reports of disruptions to economic activity in the immediate aftermath of the storm. Following this general industry discussion is a more specific estimate of the impacts of anticipated spending losses in New Jersey for the 2013 tourist season. This portion of the report provides a description of which industries compose the Travel and Tourism industry and the impact to industry output and jobs that these spending losses will likely generate. Industry impacts were estimated not only for the industries that compose the Travel and Tourism sector, but also impacts to the supplying industries (the indirect) as well as impacts to household spending (the induced). The next section of this report discusses anticipated construction spending in New Jersey and New York and the direct and indirect industry impacts this spending is likely to generate. Our analysis did not include estimates of induced effects for new construction spending because (1) we wanted to provide conservative estimates of output and jobs and (2) since we assume that some of the construction workers live outside of the affected areas, the increase in spending resulting from their incomes would not remain in the affected areas. The conclusion of this paper highlights the net positive effects of Hurricane Sandy in terms of gains in construction jobs from rebuilding. However, the size of

⁴ The analysis in this report could also be done in much greater geographical and industrial detail if the data become available. The areas of analysis could include economic-related regions or municipalities (such as the southern Jersey shore counties) or even individual counties. The detail needed to perform the analysis would include, for each of these areas, (1) long-term dollar value loss of economic activity by industry and (2) re-construction dollars spent or planned.

⁵ For a more detailed description of economic conditions in all of these counties before the storm, see DOC report, ["County Summary Report of Areas in New Jersey and New York Affected by Hurricane Sandy."](#)

the positive effects will depend on the amount of construction spending that ultimately occurs in these two states.⁶ Finally, the Appendix describes the data and the methods, including the model used, to reach these conclusions.

Figure 1. July 2013 Unemployment Rate in New Jersey Counties Impacted by Sandy

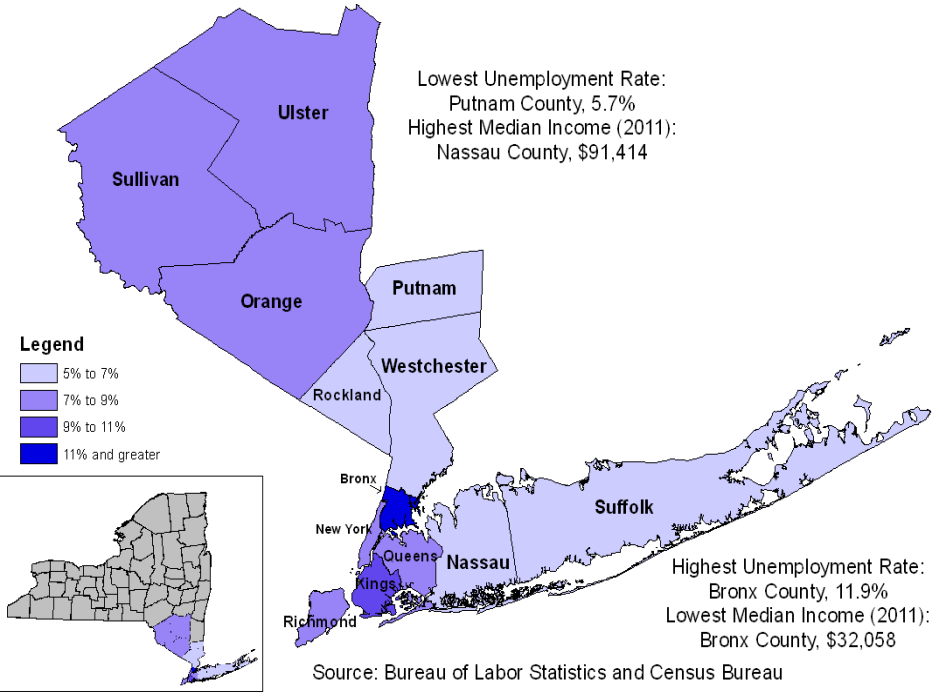


Source: Bureau of Labor Statistics and Census Bureau

Note: Unemployment data is preliminary and not seasonally adjusted

⁶ For example, a workforce training initiative in New Jersey called the Recovery Talent Network was designed to establish a New Jersey workforce focused on the recovery.

Figure 2. July 2013 Unemployment Rate in New York Counties Affected by Sandy



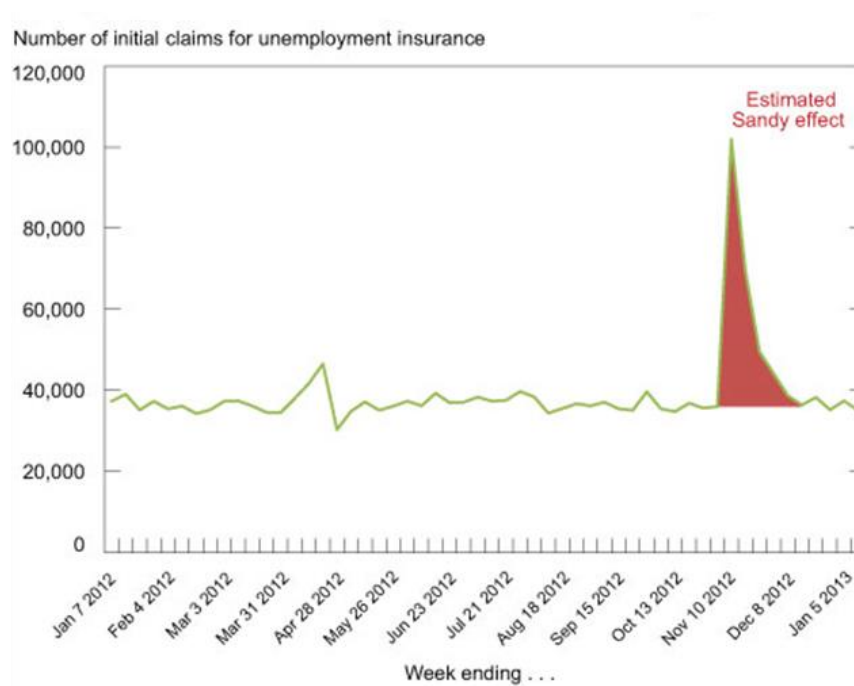
Note: Unemployment data is preliminary and not seasonally adjusted

Business Impact of Hurricane Sandy

Despite the damage to business structures and equipment and business interruptions, particularly from electrical power outages and the inability of workers to commute, a number of economic indicators suggest that disruptions to industry production in the affected areas were short-lived. Changes in unemployment claims, payroll employment and industrial production suggest that economic activity almost fully resumed within a couple of months after the storm.

Liberty Street Economics⁷ examined new claims for unemployment insurance in New Jersey and New York before, during, and after the storm. New claims for unemployment insurance, reported weekly, averaged 35,000 in New Jersey and New York combined prior to Sandy (Figure 3). In the first full week of November, they increased above 100,000 and remained elevated for another two to three weeks. After four weeks, unemployment claims dropped back to pre-storm levels.

Figure 3. Weekly Initial Jobless Claims in New Jersey and New York (January 2012 to January 2013)



Source: Liberty Street Economics use of data from the U.S. Department of Labor and Haver Analytics

⁷ Liberty Street Economics Blog, “The Region’s Job Rebound from Super Storm Sandy,” March 11, 2013. <http://libertystreeteconomics.newyorkfed.org/2013/03/the-regions-job-rebound-from-superstorm-sandy.html>

According to payroll employment data from the Bureau of Labor Statistics (BLS), the majority of the jobs lost in the New York–New Jersey area were located in the New York City metropolitan area (which includes storm-affected areas in New York City, Long Island and northern New Jersey.) The New York City metro area lost 32,000 jobs during the second full week of November. Although the number of jobs lost is much lower than the surge in jobless claims in the region, Liberty Street Economics reasoned that after filing unemployment claims, workers may have become re-employed by the time of the payroll survey. Additionally, self-employed workers that became eligible for disaster unemployment assistance (a portion of the jobless claims numbers), but did not show up in the unemployed data because they are not included in the BLS payroll survey. These reasons, plus new jobs from rebuilding and clean-up efforts, would explain the discrepancy.

The Federal Reserve (Fed) reported that Hurricane Sandy held down production in the Northeast region late October and early November 2012, especially in the following sectors: utilities, chemicals, food, transportation equipment and computers and electronic products. Industrial output quickly rebounded in November, which the Fed primarily attributed to a recovery in production from industries damaged by the storm.⁸

These three economic indicators—unemployment claims, payroll employment data, and industrial production reports of the Fed—pointed to a short-term disruption in economic activity.

Industries Affected by Hurricane Sandy

This impact analysis is based on long-term industry disruptions as a result of the storm—primarily in Travel and Tourism and Construction. However, according to a number of separate reports, a broad range of industries were affected:

- **Manufacturing** firms represented a sizable portion of the overall number of businesses that were forced to close due to the storm. An estimated 10,000 separate manufacturing facilities were directly affected by Sandy.⁹ Industrial companies most severely affected faced repairing structural damage, draining flood water, removing debris and waiting for power, phone and Internet restoration, etc. Such delays on the industrial supply chain could have affected productivity of distributors and storage facilities far away from the damaged areas. The period of time that the facilities lost production varied, and once back on-line

⁸ Federal Reserve Statistical Releases g17: Industrial Production and Capacity Utilization, November 16, 2013 and December 14, 2013.

⁹ Ilya Leybovich, “How Hard Did Hurricane Sandy Hit Manufacturers?” Thomasnet.com, November 6, 2012.

production more or less made up for the forced downtime. We found no reports of long-term disruptions that affected an entire manufacturing industry.¹⁰

- **The Gaming industry** (Atlantic City casinos) lost an estimated \$5 million per day in revenue because of closures from Sandy. Even though most casinos and restaurants sustained minimal damage, tourist traffic continued to suffer as media reports incorrectly conveyed that the Atlantic City boardwalk had washed away.¹¹
- An estimated 20 percent of the **Commercial trucking industry** was stalled in the week after the storm with losses of \$140 million per day (as estimated by FTR consulting).¹² However, the American Trucking Association reported that reductions in freight tonnage in October immediately recovered in November and that the industry would benefit as demand for freight trucking services increase with Sandy-related rebuilding.¹³
- **Auto industry** demand increased in late 2012 as consumers sought to replace tens of thousands of cars that were totaled because of area flooding. This increase in demand right after the storm quickly settled back to pre-Sandy levels.¹⁴
- New Jersey and New York both have significant **Commercial and recreational fishing industries** that support coastal communities and contribute to each state's economy.¹⁵ The National Oceanic and Atmospheric Administration (NOAA) conducted a 60-day [assessment of the impact of Hurricane Sandy](#) on fishing communities in New York and New Jersey and concluded that both these states incurred sizable commercial and recreational fishing-related losses. For both commercial and recreational fisherman, the boats and equipment are insured. However, the loss of economic activity (the fishing catch) is not. Most of the losses were to seafood processors. Losses were as high as \$105 million in recreational fishing and almost \$14 million to the commercial fishing sector in New Jersey. In New York, damages to the recreational fishing sector totaled \$58 million while damages to the commercial fishing sector totaled \$19 million, according to NOAA's estimates.¹⁶ Despite these losses, it was determined by NOAA's survey results that these industries did not suffer

¹⁰ Although disruptions were primarily short-term, these impacts can have long-term impacts on smaller businesses in the supply chain where such firms would take a longer time to recover.

¹¹ David Schaper, "Post-Sandy: Atlantic City Wants Its Tourists Back," *NPR News*, December 6, 2012.

¹² Diesel Driving Academy News, "While Devastating, Hurricane Sandy Brings Boost to Trucking Sector," December 13, 2012.

¹³ Mark Solomon, "Truck rates to climb post-Sandy; analysts divided on duration," *DC Velocity*, January 7, 2013.

¹⁴ Tyler Durden, "Domestic Car Sales Decline For Third Month as Hurricane Sandy Replacement Cycle Fades," *Zerohedge.com*, April 2, 2013.

¹⁵ U.S. Department of Commerce, NOAA, Office of Science & Technology and Northeast Fisheries Sciences, "Regional Impact Evaluation: An Initial Assessment of the Economic Impacts of Sandy on New Jersey and New York Commercial and Recreational Fishing Sectors," March 15, 2013.

NOAA reports that in 2011 commercial fishing generated \$5 billion in sales in New York and \$6.6 billion in New Jersey, supporting 42,000 and 44,000 jobs, respectively. Recreational fishing is much larger in New Jersey, generating \$1.7 billion in sales and supporting 10,000 jobs, while generating \$369 million in sales and supporting 3,000 jobs in New York. (NOAA, pp. 1 and 2)

¹⁶ NOAA, pp. 29 and 30.

long-term disruptions to economic activity. NOAA reports that in the week immediately following the storm, all fishing sectors in New Jersey were operating at less than 20 percent of their normal schedule but conditions steadily improved over the four-week period for most sectors. In New York, seafood processors and dealers reported operating at over 80 percent of their usual schedules by the fourth week, but some for-hire operations and commercial fishing vessels were operating at less than 40 percent. Most seafood processing businesses lost income during this period because of reduced schedules; however, the disruptions were not long enough to affect their revenue expectations for 2013.

- According to the Insurance Information Institute, the domestic **Insurance industry** remains solid financially despite Hurricane Sandy and other natural disasters that occurred in 2012. The total payout by the insurance industry is expected to be reduced because much of the storm damage was caused by the storm surge and subsequent flooding which is not covered by standard homeowner or small business commercial policies. Also, reportedly half of all losses of the insurance industry are expected to be covered by reinsurers.¹⁷ The III estimates that insurers will pay \$18.75 to \$25 billion to over 1.5 million policyholders across 15 States and the District of Columbia.¹⁸ Payments will be concentrated in New York (\$9.6 billion) and New Jersey (\$6.3 billion).¹⁹ The majority of claims will come from homeowners (71%), but the highest value of claims will be from commercial property owners (\$9 billion) and will account for almost half of the value of claims paid.

In New Jersey alone, nearly 19,000 **small businesses**²⁰ sustained damage of \$250,000 or more with total business losses estimated at \$8.3 billion as a result of Hurricane Sandy,²¹ about 1.0 percent of New Jersey Gross State Product in 2012. A survey of small businesses in New York, New Jersey and Connecticut was conducted by Hartford insurers which found that while many

¹⁷ Association of Bermuda Insurers and Reinsurers, "International Insurers, Reinsurers to Shoulder Half of Sandy Losses: ABIR," February 28, 2013. <http://www.insurancejournal.com/news/east/2013/02/28/283072.htm>

¹⁸ Preliminary estimates of \$18.75 billion based on claims as of January 18, 2013; could go as high as \$25 billion. III estimates include the states of Maine, North Carolina and Vermont in addition to the 12 states that FEMA-declared as disaster areas.

¹⁹ Dr. Robert P. Hartwig, Insurance Information Institute, "Super Storm Sandy: Impacts for Insurers, Reinsurers and the Debate on Climate Change," March 1, 2013. <http://www.iii.org/presentations/superstorm-sandy-impacts-for-insurers-reinsurers-and-the-debate-on-climate-change.html>

²⁰ The economic impact analysis conducted in this report uses RIMS II multipliers, which provide estimates of the employment and final demand changes across industries in the region of analysis. Therefore, this report addresses industries, not businesses.

²¹ U.S. Congress, House of Representatives, "Floor Statement on Sandy Supplement," by Representative Christopher H. Smith, January 2, 2013. http://chrissmith.house.gov/uploadedfiles/floor_remarks_on_sandy_jan_2_2013.pdf

small businesses were forced to close in the immediate aftermath of the storm, over 80 percent were closed for two weeks or less.²²

Thus, Hurricane Sandy had significant, although short-term, economic impacts on a wide variety of industries. In our analysis, we are assuming that these short-term impacts to revenue will be made up after the storm. The exception is that New Jersey will have revenue losses in the Travel and Tourism industry that the state is not likely to recover.²³ On the other hand, Hurricane Sandy will serve as a stimulant to these states' economies if spending plans are achieved and strategically implemented, using local firms and workforce.

Impact of Hurricane Sandy on New Jersey Travel and Tourism²⁴

The Travel and Tourism industry is a significant driver of growth in the New Jersey economy, generating almost \$38 billion in tourism sales in 2012 and surpassing its pre-recession peak.²⁵ Governor Christie and others have reported that New Jersey tourism increased in 2012 despite Sandy. However, mild weather in 2012 and increased demand for accommodations after Sandy by residents, repair crews and others involved in the Sandy recovery helped to boost tourism during a normally slow period. The true impact of Sandy on New Jersey Travel and Tourism and related industries will depend on how quickly damage is repaired and how many tourists and seasonal residents return during the 2013 summer travel season.

According to *Tourism Economics*, before Hurricane Sandy, in 2012 the New Jersey tourism industry directly and indirectly supported more than 500,000 jobs. *Tourism Economics* also estimated that the Travel and Tourism industry contributed \$34.7 billion or 7.0 percent to the entire state economy and generated \$4.5 billion in state and local tax revenues. In the aftermath of Hurricane Sandy, over two million households in the state lost power and 346,000 homes were damaged or destroyed. New Jersey's major tourist destination, Atlantic City, saw

²² The Hartford Financial Services Group, "The Hartford 2013 Small Business Pulse Survey: Storm Sandy," March 19, 2013.

²³ The commercial fisheries industry may have sustained long-term disruptions, as damaged vessels would need to be repaired or replaced before business could resume, but no data are currently available to support that conclusion. NOAA plans to conduct a one-year assessment of the social and economic impacts of Hurricane Sandy on New Jersey and New York commercial and recreational fisheries, which may yield relevant data.

²⁴ The Travel and Tourism industry includes parts of several industries including accommodations, recreation, air and other transportation, food and beverages and retail trade.

²⁵ Tourism Economics, "The Economic Impact of Tourism in New Jersey: Tourism Satellite Accounts for Calendar Year 2012." <http://www.visitnj.org/sites/visitnj.org/files/2012-nj-tourism-ei-state-counties-v0701.ppt>

the closure of casinos for several days, which led to a 28 percent drop in revenue during the month of November—the biggest monthly drop in 34 years. Tourist destinations along the Jersey Shore saw immense damage to businesses and rental properties.

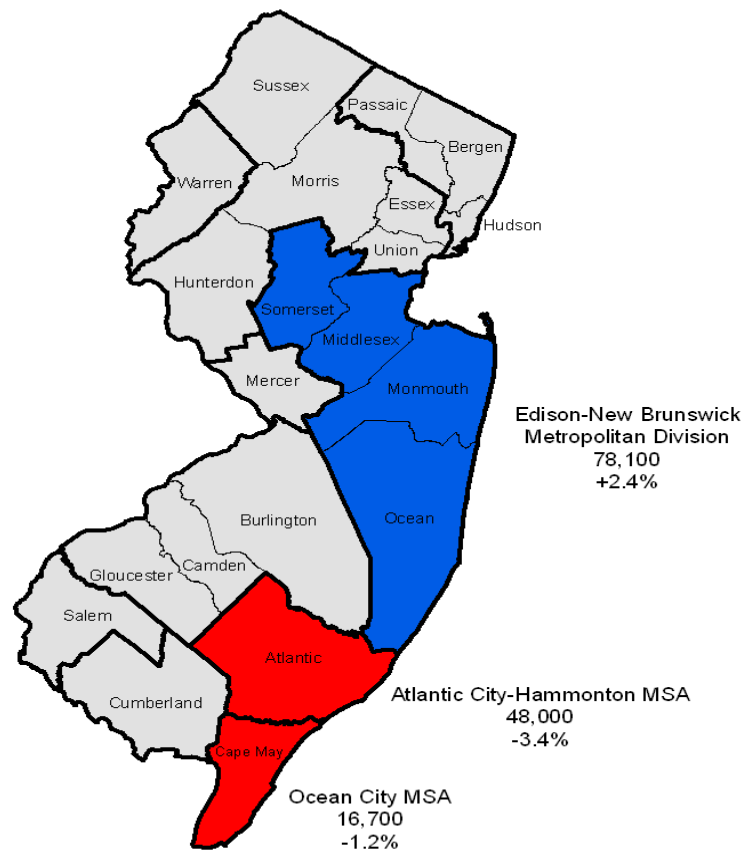
The entire state of New Jersey was declared a disaster area after Hurricane Sandy; however some areas sustained less damage than others and recovered more quickly. The Atlantic City Casinos reopened within a week and the southern shore counties received minimal damage. Some hotels had high occupancy in the aftermath of the storm (which is normally a slow period) because of FEMA occupants and displaced residents. However, a comprehensive analysis of the macroeconomic and fiscal impacts of Hurricane Sandy on the New Jersey economy conducted by Rutgers University revealed that spending losses to Travel and Tourism in some areas of the state could be long-term, particularly during the 2013 tourist season in July, August and September.

The Rutgers analysis estimated the impacts of Hurricane Sandy, both negative and positive, on New Jersey's Gross State Product, employment, income and state tax revenues through 2015.²⁶ The study did not estimate the impacts to individual industries but did incorporate assumptions of losses to the Travel and Tourism industry in New Jersey. Rutgers estimated that New Jersey's tourism industry will have losses of \$950 million by the third quarter of 2013 as a result of Hurricane Sandy. This estimate of the \$950 million spending loss is based on a forecast of tourism spending in New Jersey in 2013 if there were no storm. Based on the pre-storm forecast for 2013 of \$38 billion for Travel and Tourism in New Jersey, the \$950 million in spending loss would lower the forecast to \$37 billion. Rutgers expects most of the spending declines to occur in Monmouth and Ocean counties in the third quarter of 2013. Given the comprehensive nature of their study and our discussion with one of the authors, we use the assumption of Travel and Tourism industry spending losses of \$950 million for our impact analysis.

As shown in Figure 4, in the upper Jersey shore including the counties of Ocean, Monmouth, Middlesex and Somerset, there was an actual employment increase of 2.4 percent in the combined sectors of Accommodations and Food Services (which account for roughly 60 percent of Travel and Tourism industries), between July of 2012 and July of 2013. In the lower Jersey shore, including Atlantic and Cape May counties, there were declines in these sectors, 3.4 and 1.2 percent respectively during this period. Thus, preliminary July 2013 data show that the net change in jobs in Accommodations and Food Services throughout these areas was negligible across the entire Jersey shore.

²⁶ Rutgers Regional Report, "The Economic and Fiscal Impacts of Hurricane Sandy in New Jersey: A Macroeconomic Analysis," Issue Paper 34, January 2013. <http://policy.rutgers.edu/reports/rrr/RRR34jan13.pdf>

Figure 4. Selected Areas in New Jersey Affected by Sandy
 Employment in Accommodation and Food Services
 July 2013 and Annual Percentage Change From July 2012



Source: Bureau of Labor Statistics

Note: Data is not seasonally adjusted, and July 2013 data is preliminary

Travel and Tourism Industry Impacts

This impact analysis uses BEA's RIMS II multipliers to estimate the direct and indirect effects of a decline in Travel and Tourism spending caused by Hurricane Sandy. We used the estimated \$950 million tourism spending loss from Rutgers and also assumed that included in the \$950 million are the induced impacts (loss of household spending).²⁷ This total expected decline in tourism spending was then allocated among travel and tourism categories according to the *Tourism Economics* estimates and BEA's [Travel and Tourism Satellite accounts](#).²⁸ Retail trade categories were adjusted to reflect the value added by retailers; i.e., we assume that the

²⁷ We assumed this for two reasons: (1) there was no indication that induced impacts were not already included in the Rutgers University report and (2) our goal to preclude double-counting of induced impacts and negating our desire to arrive at conservative estimates.

²⁸ *Tourism Economics*, New Jersey, p. 25.

benefits to the New Jersey region of retail spending consist of local value added categories of wages, taxes, profits and other spending to operate their retail facilities. (See the Appendix.) The resulting distribution of assumed spending losses to the Travel and Tourism sub-sectors are displayed in Table 1.²⁹

Table 1. New Jersey Travel and Tourism Spending Losses

Industry	Decrease in direct spending	Net decrease in direct spending ¹
	(\$Millions)	
Accommodations	287.2	287.2
Food services and drinking places	217.0	217.0
Retail	168.3	46.8
Groceries	117.8	32.1
Apparel, leather, and allied product manufacturing	16.8	8.4
Motor vehicle fuels, lubricants, fluids	33.7	6.3
Recreation	106.5	106.5
Performing arts, spectator sports, museums, zoos, and parks	57.0	57.0
Amusements, gambling and recreation	49.5	49.5
Air transportation	30.1	30.1
Other transportation and support activities	141.0	141.0
Total	\$950.1	\$828.6

¹ Includes adjustments to retail trade categories to reflect value added of retailers.

Sources: Rutgers Regional Report "The Economic and Fiscal Impacts of Hurricane Sandy in New Jersey," January 2013; ESA estimate for distribution of travel and tourism direct spending from *Tourism Economics* and the Bureau of Economic Analysis for retail trade value added adjustments.

After adjusting for retail margins, the net decrease in local purchases (that is, within the state of New Jersey) from Sandy is estimated to be \$828.6 million. Accommodations (hotels and lodging) and Food Services and Drinking places were most affected, with an estimated decline of \$287.2 and \$217 million, respectively. These two industries account for over 60 percent of Travel and Tourism losses in New Jersey. Purchases of recreational services that will not occur are estimated at \$106.5 million or approximately 13 percent of the decline in tourism spending. Spending on Air and other transportation services will decline by over \$170 million. Tourist spending on retail items including groceries, apparel and gasoline will decline by less than \$47 million, a small share of the total.

²⁹ Only retail is adjusted in this way since the multipliers for all the other service sectors such as Accommodations and Food services have multipliers that already take into account the likely economic activity in the area (New Jersey) to produce their intermediate inputs. For example, the multiplier for Food services includes the likely economic activity in New Jersey to produce the groceries and beverages served in eating and drinking places.

RIMS II Type I³⁰ multipliers for the state of New Jersey were applied to the expected tourism spending losses to estimate loss in total output and employment across the region. The total loss in New Jersey tourism industry output from the initial decline in tourism spending (\$828.6 million) will exceed \$1.2 billion when impacts throughout the region are incorporated. (Table 2)

Table 2. Travel and Tourism Total Output and Employment Impacts in New Jersey, 3rd Quarter 2013

Industry	Net decrease in direct spending	Total Output Losses ¹	Total Job Losses ¹
	(\$millions)		(number)
Accommodations	287.2	444.5	3,039
Food services and drinking places	217.0	318.7	3,898
Retail	46.8	65.5	644
Performing arts, spectator sports, museums, zoos, and parks	57.0	88.7	944
Amusements, gambling and recreation	49.5	69.0	1,151
Air transportation	30.1	44.6	140
Other transportation and support activities	141.0	188.5	1,470
Total²	\$828.6	\$1,219.5	11,287

¹Total output and job losses from all industries as a result of net decrease in spending.

²May not sum to total due to rounding.

Source: ESA calculations using RIMS II Type I multipliers

The majority of declines will occur in the Accommodations (\$444.5 million) and Food and Drinking places sectors (\$318.7 million). Thus, a decline in direct spending of \$287 million on Accommodations will result in a total decline in output of \$444.5 million as the industry spends less on intermediate purchases from supplier industries. For example, the Accommodations sector is composed of hotels, motels, bed and breakfast rentals and rental vacation homes. A reduction in their revenue will result in lower purchases by this sector for energy products such as electricity and other fuel products, food for consumption supplied by the facility, repair services, linen services and so on. Thus, the revenue loss will affect many industries in the area.³¹

³⁰ Type I multipliers are used to estimate direct and indirect effects. Type II multipliers are used to estimate direct, indirect and induced (household) impacts. Type I multipliers were used in this case for two reasons: we already assumed that the induced spending losses were part of the \$950 million loss estimate from Rutgers and a desire to be conservative in our output and job loss estimates.

³¹ In this example, additional lost revenue impacts (the induced effects) are assumed to be negligible since we already include an estimate of impacts on the retail sector in the table above.

Total direct, indirect and induced job losses in the New Jersey Travel and Tourism sector as a result of Hurricane Sandy are estimated at 11,287.³² The majority of job losses will be in Accommodations (3,039) and Food and drinking places (3,898). Although over a third of the total job losses are in Food and drinking places, it has only about one-quarter of the total loss in output (a measure of revenue) indicating that this sector is particularly labor intensive and may employ relatively more part-time workers. Similarly, job losses in the Amusements, gambling and recreation industry is larger than its proportional loss in output—1,151 fewer jobs is more than 10 percent of the total job losses, while it accounts for less than 6 percent of the total output decline.

Further impacts of a decline in New Jersey Travel and Tourism spending can be seen across a variety of other industries (Table 3). Employment losses that appear to be concentrated in Travel and Tourism sectors in Table 2 include losses from several other industries that provide intermediate goods and services. The Accommodations industry according to Table 3 will suffer a loss of 2,114 jobs, but Table 2 shows a total direct and indirect loss of 3,039 jobs. Thus, the loss of just over two-thousand jobs in the Accommodations industry will result in an additional 925 jobs lost in other industries that support that sector. Non-travel and tourism industries (the indirect industries) expected to see job losses as a result of lower Travel and Tourism spending include Administrative and waste management services (438 jobs), Professional and technical services (298 jobs) and Real estate and rental leasing (179 jobs).

The RIMS II impact analysis finds that, although devastating, Hurricane Sandy on average has had a minor impact on New Jersey Travel and Tourism-related output and employment. A \$1.2 billion loss due to the storm amounts to a potential dollar loss of perhaps 3 percent of annual tourism sales of almost \$40 billion. A potential loss of 11,287 full-time and part-time jobs is slightly more than 2 percent of total tourism industry jobs of over 500,000.³³ This represented 0.4 percent of total state employment in 2012. The Rutgers study suggests that the majority of losses will occur in two counties, Ocean and Monmouth. While this analysis did not examine county by county multipliers, we expect the share of the loss in output and jobs to be proportionately larger in these two counties.

Discussions with local tourism representatives provided some insight into the prospects for recovery of tourism demand. According to New Jersey tourism representatives, shore counties with large rental markets continue to be adversely affected because thousands of homes remain uninhabitable and rebuilding has been slow as residents await finalization of FEMA

³² The total includes both full-time and part-time jobs.

³³ Tourism Economics estimate of 500,000 jobs includes workers in industries that indirectly support Travel and Tourism as well as jobs “induced” by spending of income earned by these workers.

flood plains for the area.³⁴ They have also observed that since 2007, tourists have become more bargain-conscious and adjust the length of stay based on economic factors. Some New Jersey counties have experienced the loss of major corporate employers and military installations that have affected their local economies. Thus, it may be difficult to separate the impact of Hurricane Sandy on tourism demand from an overall economic decline in some New Jersey tourist areas.

Table 3. New Jersey Total Industry Job Losses¹ from Hurricane Sandy-Related Travel and Tourism Spending Losses

Industry	Number of Jobs
Agriculture, forestry, fishing, and hunting	11
Mining	1
Utilities	16
Construction	46
Manufacturing	169
Wholesale trade	84
Retail trade	599
Transportation and warehousing	1,492
Information	73
Finance and insurance	137
Real estate and rental and leasing	179
Professional, scientific, and technical services	298
Management of companies and enterprises	95
Administrative and waste management services	438
Educational services	10
Health care and social assistance	2
Arts, entertainment, and recreation	1,880
Accommodation	2,114
Food services and drinking places	3,496
Other services	147
Total Jobs Lost	11,287

¹Total job losses including direct, indirect and induced.

Source: ESA calculations using RIMS II Type I multipliers; induced impacts assumed to be part of the \$950 million direct spending reduction.

The New Jersey tourism officials agree that a primary factor behind a successful tourism season is successive periods of good weather, especially at beach destinations. The state’s aggressive advertising campaign, including displacing misperceptions of damage to the Jersey shore, and perhaps a stretch of mild, sunny weather will help mitigate tourism losses expected because of Hurricane Sandy.

³⁴ Just as happened after Hurricane Katrina in the Gulf Coast states, New Jersey shoreline construction permits may include new construction guidelines because of the storm.

Impact of Hurricane Sandy on Travel and Tourism in New York City and Long Island

New York City and Long Island were hit hard by Hurricane Sandy. Electricity outages, flooding, and property damages were widespread. Lower Manhattan and the Rockaways were particularly devastated. Large numbers of houses and other structures were destroyed in Long Island.

Travel and Tourism is a major industry in New York City and in Long Island. According to *Tourism Economics*, in 2012, tourism generated \$37 billion of sales in New York City and supported 360,599 jobs or 9.7 percent of all employment in New York City.³⁵ *Tourism Economics* indicate that Travel and Tourism is a \$5.1 billion industry in Long Island, employing 74,128 people or 6.2 percent of all employment in Long Island.³⁶

Tourism in New York City took a direct hit from the storm. Almost 100 hotels were affected by flooding and power outages for at least 2-3 days. The New York City subway system suffered the most severe flooding in 100 years. Airports, tunnels, and other transportation facilities took more than two weeks to return to normal. Gas rationing in the New York-New Jersey area also affected the number of visitors to New York City.

Despite the severe impact of Hurricane Sandy, tourism in New York City recovered quickly. Initially, hotel bookings dropped due to the storm but bounced back in the week following the storm.³⁷ The Travel and Tourism industry of New York City actually did quite well as a whole in 2012. Spending by visitors to New York City increased 7.3 percent above 2011 totals.³⁸ New York City's Travel and Tourism industry recovered quickly from the effects of Sandy in part because many of the activities for tourists take place indoors, i.e., at theaters, restaurants, and museums. According to an official at NYC & Company, the official marketing, tourism, and partnership organization for the City of New York, New York City made up most of its short term losses in tourism by June. A recent media report³⁹ also indicated that the damages at Rockaway Beach, which was devastated by the storm, had mostly been repaired. The Statue of

³⁵ Tourism Economics, "The Economic Impact of Tourism in New York – 2012 Calendar Year, New York City Focus," p. 31.

³⁶ Tourism Economics, The Economic Impact of Tourism in New York – 2012 Calendar Year, Long Island Focus," p. 39.

³⁷ The Federal Reserve Bank of Minneapolis, the Beige Book, November 28, 2012.

³⁸ Tourism Economics, New York City, p. 27.

³⁹ "Sun, Sand and Suds," New York Times, June 5, 2013. http://www.nytimes.com/2013/06/06/fashion/take-the-rockabus-to-the-rockaways.html?pagewanted=all&_r=0

Liberty, which was exposed to the storm, re-opened on July 4th after the structures on its surrounding grounds had been repaired.

As indicated earlier, there were significant property damages in Long Island by Sandy. However, the damages occurred mostly in residential areas. A lot of houses were damaged, but these houses were not typically rental units used by tourists. There were also damages to the beaches. For example, some sand dunes in the Hamptons were washed away. Since the sand dunes were there to protect the beaches and nearby properties, the destruction of the sand dunes did not directly affect tourism significantly. Furthermore, Hurricane Sandy hit Long Island in late October, which was a low season for tourism. According to a [beach-by-beach survey](#) conducted by the Long Island Convention & Visitors Bureau and Sports Commission shortly before Memorial Day, all state beaches in Long Island were ready to open to tourists by Memorial Day. According to one of these officials, Hurricane Sandy has not had much impact on Long Island tourism. In 2012, tourism spending in Long Island increased 6.3 percent.⁴⁰

⁴⁰ Tourism Economics, New York City, p. 27.

Impact of Hurricane Sandy on the Construction Industry

Cost of Rebuilding

Rebuilding after Hurricane Sandy is and will continue to be costly for the states of New York and New Jersey, private insurance companies as well as the Federal government. New Jersey Governor Chris Christie estimated \$36.9 billion for its repair and recovery from the storm (Table 4).⁴¹ Similarly, New York Governor Andrew Cuomo estimated nearly \$42 billion for its repair and recovery from the storm (Table 5).⁴² Under the Disaster Relief Appropriations Act, Congress authorized \$50.5 billion in January 2013 in supplemental disaster funding for twelve states and the District of Columbia affected by the storm.⁴³

Table 4. New Jersey Hurricane Sandy Repair and Response Costs

Type of Construction	\$ Millions
Government Response and Repair	529.4
Individual Assistance	702.7
Housing	4,921.2
Business	8,319.1
Health	291.8
Labor	760.1
Schools	2.6
Transit, Roads and Bridges	1,351.0
Parks and Environment	5,526.5
Water, Waste and Sewer	3,012.7
Government Operating Revenue	95.0
Other Local Government Revenue & Road	737.5
Other Local Education	125.0
Atlantic City / CRDA	312.7
Port Authority	1,000.0
Utilities – Gas & Electric	1,797.3
Total Repair and Response Costs	29,484.6
Additional Mitigation and Prevention Costs:	7,422.7
OVERALL DAMAGE ASSESSMENT TOTAL:	\$36,907.3

Source: State of New Jersey

⁴¹ State of New Jersey Press Release, “Christie Administration Releases Total Hurricane Sandy Damage Assessment of \$36.9 Billion,” November 28, 2012.

<http://www.state.nj.us/governor/news/news/552012/approved/20121128e.html>

⁴² Governor of New York press release, “Governor Cuomo Holds Meeting with New York’s Congressional Delegation, Mayor Bloomberg and Regional County Executives to Review Damage Assessment for the State in the Wake of Hurricane Sandy,” November 28, 2012. <http://www.governor.ny.gov/press/11262012-damageassessment>

⁴³ The other states affected by Hurricane Sandy that will receive funding include: Connecticut, Delaware, Maryland, Massachusetts, New Hampshire, Ohio, Pennsylvania, Rhode Island, Virginia, and West Virginia, and the District of Columbia. See footnote 1 as to the reason why we only included New Jersey and New York in our analysis.

**Table 5. New York: Damage Assessment Plus Cost of Preparedness
(\$millions)**

Categories	NYC	Counties					Total by Category
		Suffolk	Nassau	Westchester	Rockland	Other Counties ¹	
Government Response & Repair	486.0	144.0	257.1	17.0	16.2	707.0	1,627.3
Housing	4,738.0	833.0	4,016.0	50.0	35.0	-	9,672.0
Business	4,512.1	492.4	486.8	400.6	90.0	18.1	6,000.0
Infrastructure	1,130.0	25.8	1,086.5	32.4	-	6,133.7	8,408.4
Health	2,799.0	3.0	43.0	-	-	236.0	3,081.0
Parks & Environment	300.0	100.7	265.0	27.0	-	101.2	793.9
Other ²	1,080.0	186.0	448.2	0.8	2.5	10,584.8	12,302.3
Total	\$15,045.1	\$1,784.9	\$6,602.6	\$527.8	\$143.7	\$17,780.8	\$41,884.9

¹Other counties include Putnam, Orange, Sullivan and Ulster.

²The other category includes individual assistance, schools, utilities and NY Gov't operating revenue.

Source: State of New York

Eleven months after the storm hit, only a small share of the Federal money in the Disaster Relief Act--\$5.5 billion in New Jersey and \$7.8 billion in New York--has been authorized to be allocated to the states, with a significant share of the Federal dollars in New Jersey and over half of the funds in New York in the form of approved loans and grants. (Table 6) In New Jersey, around \$3.5 billion of the total assistance is in FEMA's National Flood Insurance Program (NFIP) payments made on claims, with the rest coming from grants and loans approved for individuals, households, renters, homeowners, and businesses.⁴⁴ In New York, around \$3.7 billion of the total assistance is in NFIP payments that have been made to policy holders.⁴⁵ Almost \$1 billion is in FEMA assistance grants approved for individuals and households. Another \$1.5 billion has been approved for SBA disaster loans and \$1.6 billion to FEMA Public Assistance grants to local, state, and tribal governments and eligible non-profits.

In addition to the Federal disaster relief funds, the Insurance Information Institute reports that private insurers are expected to issue \$6.3 billion in settled claims in New Jersey and \$9.6 billion in New York. As of April 2013, over 90 percent of private insurance claims in New Jersey and New York have been settled.⁴⁶

⁴⁴ FEMA press release. "New Jersey Recovery from Super Storm Sandy: By the Numbers," July 15, 2013. <http://www.fema.gov/news-release/2013/07/15/new-jersey-recovery-superstorm-sandy-numbers>.

⁴⁵ FEMA press release. "New York: By the Numbers – 41," June 27, 2013. <http://www.fema.gov/news-release/2013/06/27/new-york-numbers-41>.

⁴⁶ Insurance Information Institute, "Over 90 Percent of the New Jersey and New York Sandy Insurance Claims Have Been Settled; Likely to Be Third Largest Storm Ever for U.S. Insurers," April 19, 2013. http://www.iii.org/press_releases/over-90-percent-of-the-new-jersey-and-new-york-sandy-insurance-claims-have-been-settled-likely-to-be-third-largest-hurricane-ever-for-us-insurers.html

Table 6: Disaster Assistance to New Jersey and New York¹

Federal Agency/Program	Type of Disbursement	Assistance to New Jersey	Assistance to New York
		(\$millions)	
Small Business Administration	Home loans	631.1	1,277.5
Small Business Administration	Business loans	186.5	259.6
FEMA's National Flood Insurance Program	Payments made on flood claims	3,535.3	3,327.6
FEMA Individual Assistance	Payments to individuals and households	409.4	1,054.8
FEMA Public Assistance	Reimbursements to local, state and tribal governments and eligible private nonprofits	816.1	1,699.5
Total		\$5,578.4	\$7,619.0

¹Dollar amounts are rounded down to the nearest \$100,000s.

Sources: FEMA's Office of Chief Financial Officer and SBA's Office of Disaster Assistance

Construction in New Jersey and New York

The New Jersey construction industry saw relatively steady growth in the months after Hurricane Sandy. According to the Bureau of Labor Statistics, employment in the construction industry grew by 3.8 percent, adding 4,500 jobs between November 2012 and June 2013. Construction employment has also increased in New York (statewide, including those areas not affected) since the end of the storm. Construction employment grew by 4.7 percent, adding 14,100 jobs from November 2012 to June 2013.

BLS' Current Employment Statistics data provide a regional breakdown of employment changes in the Mining, Logging, and Construction Supersector in metropolitan areas within New Jersey.⁴⁷ (Figure 5) As the map shows, the Atlantic City-Hammonton MSA had the greatest

⁴⁷ Data on Construction Industry jobs alone were not available in all areas, but in the areas where data were available, construction jobs accounted for all jobs.

increase in mining, logging, and construction jobs from July 2012 to July 2013, about 26 percent, but the number of jobs increased from a relatively small level of 4,300 in July 2012.⁴⁸ On the other hand, the Edison-New Brunswick MSA showed a decline of 2.7 percent over the same time period over a much larger initial construction employment level, 37,700 mining, logging, and construction workers in July 2013. Taken all together, the metropolitan areas in New Jersey had an increase of 4,100 mining, logging, and construction jobs from July 2012 to July 2013, somewhat consistent with the seasonally adjusted data of a 4,500 job increase from November 2012 through June 2013.

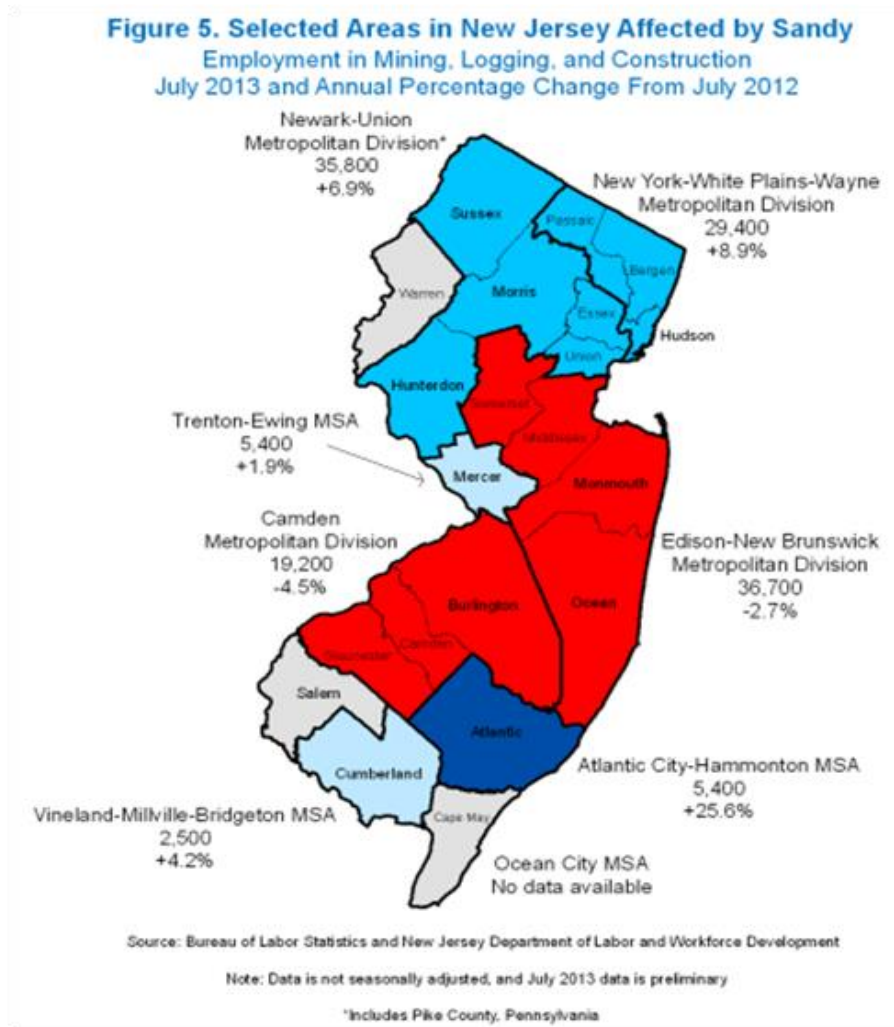
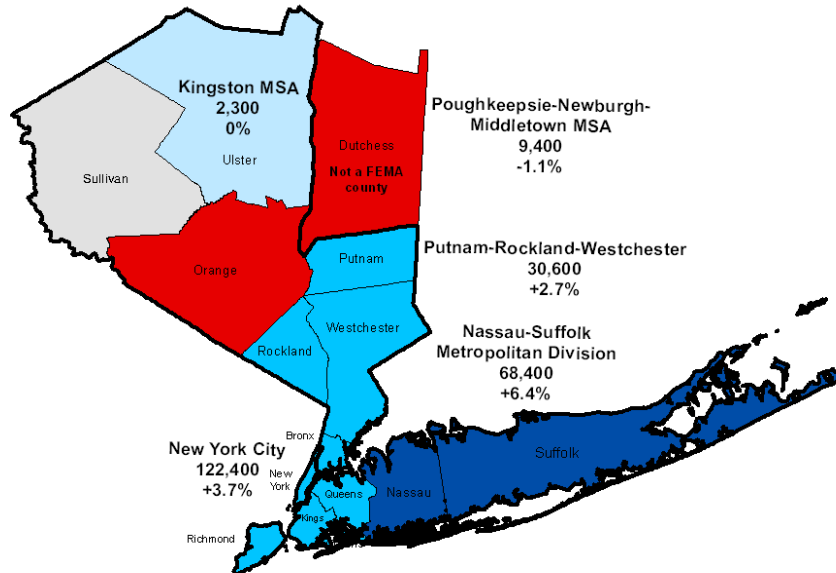


Figure 6 shows the number of mining, logging, and construction jobs and annual percentage growth in the New York metropolitan areas that were affected by the storm. In the hardest hit areas of Long Island (the Nassau-Suffolk Metropolitan Division) and New York City, mining,

⁴⁸ July 2013 data are preliminary.

logging, and construction jobs grew by 6.4 percent and 3.7 percent, respectively. The Putnam-Rockland-Westchester metropolitan division also showed an increase of 2.7 percent. Taken all together, the metropolitan divisions in New York affected by the storm showed an increase in construction jobs of 9,200.

Figure 6. Areas in New York Affected by Sandy
 Employment in Mining, Logging, and Construction
 Level in July 2013 and Annual Percentage Change from July 2012



Source: Bureau of Labor Statistics

Note: Data is not seasonally adjusted, and July 2013 data is preliminary

Construction Industry Impacts

In order to consider the economic impacts to the region from the rebuilding of New Jersey and New York structures and infrastructure, we use BEA’s RIMS II multipliers (as we did for the New Jersey Travel and Tourism, page 9) and we assume that all of the money that each of the states estimated to cover the costs of repair and replacement will eventually be spent. Therefore, we consider the economic impacts of an extra \$29.5 billion in New Jersey and \$41.9 billion in New York spent by the construction industry.

In New Jersey, new construction spending of \$29.5 billion would lead to an increase in total output of \$44 billion and an increase of 295,020 jobs required to produce the \$44 billion of new output. However, owing to a prior assumption that many of the Professional and Scientific jobs related to the reconstruction would be performed by the Federal sector prior to or during the Federal outlay to New Jersey, we subtracted 12,002 jobs or 90 percent of the Professional and

Scientific jobs that were estimated using the RIMS II employment multiplier.⁴⁹ Thus, we estimate an employment impact to New Jersey of 281,131 jobs. Of these 281,000 new jobs, 218,000 will be construction jobs. The rest are from other industries that support New Jersey’s reconstruction. (Table 7)

Table 7. Total New Jobs by Sector Due to the Increase in Construction Spending in New Jersey

Industry	Number of Jobs
Agriculture, forestry, fishing, and hunting	215
Mining	569
Utilities	230
Construction	218,092
Manufacturing	14,271
Wholesale trade	4,429
Retail trade	13,345
Transportation and warehousing	4,479
Information	1,165
Finance and insurance	3,273
Real estate and rental and leasing	3,046
Professional, scientific, and technical services ¹	1,543
Management of companies and enterprises	938
Administrative and waste management services	8,778
Educational services	91
Health care and social assistance	174
Arts, entertainment, and recreation	663
Accommodation	587
Food services and drinking places	1,309
Other services	3,936
Total Jobs, Direct & Indirect²	281,131

¹RIMS estimated 15,432 jobs. We assumed 90% of these jobs would come from within the Federal sector.

²May not sum to total due to rounding.

Source: ESA calculations using RIMS II Type I multipliers

⁴⁹ We use Type I multipliers (direct and indirect) to estimate construction-related output and employment for two reasons: (1) to avoid over estimating output and employment from household spending (the induced) occurring outside the state due to a potential for non-local workers to use their earnings in the region or state where they live and not in New Jersey and (2) to provide a conservative estimate. Further, we assume that practically all of the Professional, Scientific and Technical jobs that are estimated using RIMS to support this level of construction spending would come from the Federal sector, primarily as contracting professionals who specialize in damage relief, and to, once again, provide a conservative total private sector job estimate.

To determine the impact of the increase in spending to the 13-county region in New York that was declared eligible for Federal disaster relief. The RIMS II analysis indicates that an increase in new spending of \$41.9 billion in construction spending could lead to an increase in total output of \$53 billion (which includes the \$41.9 billion) and new employment of 364,097 jobs. We make an adjustment to the RIMS analysis as we did for New Jersey and assume that 90 percent of the Professional and Scientific jobs related to the reconstruction will be made by the Federal sector. The direct employment impact to the region is an increase of nearly 300,000 construction jobs. The rest are from other industries that support construction. (Table 8)

Table 8. Total New Jobs by Sector Due to the Increase in Construction Spending in New York

Industry	Number of Jobs
Agriculture, forestry, fishing, and hunting	59
Mining	251
Utilities	239
Construction	299,188
Manufacturing	8,054
Wholesale trade	4,134
Retail trade	14,082
Transportation and warehousing	2,362
Information	1,353
Finance and insurance	3,095
Real estate and rental and leasing	3,338
Professional, scientific, and technical services ¹	1,334
Management of companies and enterprises	645
Administrative and waste management services	7,849
Educational services	109
Health care and social assistance	205
Arts, entertainment, and recreation	817
Accommodation	620
Food services and drinking places	1,374
Other services	2,995
Total Jobs, Direct & Indirect	352,103

¹RIMS estimated 13,336 jobs. We assumed 90% of these jobs would come from within the Federal sector.

Source: ESA calculations using RIMS II Type I multipliers

Net Impact of Hurricane Sandy on Economic Activity

The net economic impact of Hurricane Sandy has been tremendous damage to the capital stock of both of New Jersey and New York and primarily short-term impacts to business activity except for the Travel and Tourism industry in New Jersey. The damage from the storm, however, is likely to lead to rebuilding and repairing that will generate a large number of construction-related jobs if the cost estimates from both of these states are realized.

- Of the almost 270,000 net gain in jobs in New Jersey (281,000 construction-related jobs less 11,000 Travel and Tourism-related jobs), about 218,000 will be construction jobs. Over a four-year period, this translates to about 67,500 jobs per year.
- If all of the projected new construction spending in the 13 affected counties in New York is spread over a four-year period, the average annual number of jobs supported by this spending would be about 88,000 per year.

Conclusion

Many individuals and businesses are still suffering from the destruction and devastation inflicted eleven months ago as Hurricane Sandy made landfall in the middle of the Jersey shore. This economic impact analysis has focused on disruptions in economic activity from Hurricane Sandy and sought to identify areas with long-term economic losses. We concluded that New Jersey's tourism industry would likely see losses but as recovery and restoration spending occur, particularly in the construction industry, both New Jersey and New York will realize net job creation. It may seem counterintuitive, but spending from rebuilding after natural disasters often generates job growth and helps offset initial losses. As noted earlier, the creation of construction and other jobs reported in this analysis is contingent upon the states of New Jersey and New York damage estimates; i.e., that spending for reconstruction will equate to the damage estimates.

President Obama's Hurricane Sandy Rebuilding Task Force developed a Rebuilding Strategy to serve as a model for communities across the nation facing greater risks from extreme weather and to continue helping the Sandy-affected region rebuild. The Rebuilding Strategy, delivered to the President in August 2013, contains 69 policy recommendations, many of which have already been adopted, that will help homeowners stay in and repair their homes, strengthen small businesses and revitalize local economies and ensure entire communities are better able to withstand and recover from future storms.⁵⁰

⁵⁰ Hurricane Sandy Rebuilding Task Force, "Hurricane Sandy Rebuilding Strategy," August, 2013.

Appendix

The data and methods used to estimate the loss and/or gain in economic activity⁵¹ in New Jersey and New York as a result of Hurricane Sandy rely on:

- A review of published papers, both formal and informal, on impacts of the storm;
- Consultations with various Federal and state agencies and local Travel and Tourism bureaus concerned with the impacts of the storm; and
- Inter-industry relationships as published by Commerce's Bureau of Economic Analysis (BEA) Regional Input-Output Model (RIMS II) for New Jersey and for the lower New York area.

All counties in New Jersey were declared as eligible for disaster assistance by FEMA. FEMA declared 13 counties/boroughs in lower New York as eligible for disaster assistance and multipliers were developed by BEA for these 13 contiguous counties. (See Figures 1 and 2 in the main body of this report.)

The flow of the analysis was based on the following precepts:

1. Most businesses experienced short-term losses of generating economic activity, i.e., production which results in revenues, and short-term losses do not generate sufficient economic activity loss to assess with the RIMS multipliers;
2. The Travel and Tourism industry in New Jersey is expected to experience significant economic losses this summer as a result of the storm and will return to normal levels by 2014. Revenue losses, however, are expected to be less than 3 percent of the annual revenue generated by this industry in 2012;
3. There are no expected significant revenue losses in Travel and Tourism in New York as a result of the storm;
4. Reconstruction, at the level determined by New Jersey and New York state agencies, over the next several years as a result of the storm will result in additional output and employment for the construction industry and its supplying industries. A good share of construction jobs in New Jersey and New York will be related to rebuilding from the storm; and

⁵¹ This study is focused on the loss and/or gain of economic activity in New Jersey and New York and not on damages to their capital stock such as damage and destruction to housing, commercial structures, inventories, public facilities and infrastructure, which when combined for New Jersey and New York, totaled \$71.4 billion.

5. The amount of dollars spent on Sandy-related construction, of course, is directly related to the actual monies allocated from the Federal sector, private insurance carriers and state and local governments.

The RIMS II model translates the spending dollar losses and/or gains into lost and/or gained total output and employment by industry for the duration of the expected spending changes. The output and employment changes include estimates for both direct industries (Travel and Tourism and Construction) and indirect industries (supplying industries). Lost Travel and Tourism spending in New Jersey is expected to occur in the third quarter of 2013. New spending on construction as a result of the storm in both New Jersey and New York is expected to occur for several years (we use four years). Although we use a four-year time horizon, the time period for that construction has not yet been determined.

The model's multipliers are used in a wide variety of economic impact studies to measure the ripple effects of spending to include estimates of direct, indirect and induced impacts within a region. The [Bureau of Economic Analysis Users Guide](#) provides several examples.

Travel and Tourism Estimates

We assume that the spending loss in New Jersey in the Travel and Tourism industry will be \$950 million in the third quarter of 2013 based on a January 2013 [study](#) by Rutgers Edward J. Bloustein School of Planning and Public Policy. The distribution of the \$950 million to Travel and Tourism sectors was based on a *Tourism Economics*⁵² report for New Jersey and data from BEA's [Travel and Tourism Satellite accounts](#). Type I RIMS multipliers were used to determine output and employment industry impacts. Type II multipliers were not used since we assume that the household spending losses (the induced) were already incorporated into the \$950 million estimated by Rutgers and we did not want to double-count those impacts. Finally, distribution costs from BEA for retail purchases were used to calculate a "margin" share (or a value added share of the revenue) estimate for retail purchases by tourists in New Jersey. Implicit in using the retail margin was the assumption that the retail items were not produced or wholesaled in New Jersey and truck transportation was from out of state. Of the three retail items used in this study—groceries, apparel and gasoline—only gasoline possibly could have been produced within state.

⁵² *Tourism Economics* is an Oxford Economics Company. Their latest report for New Jersey was published in 2013 and included annual data for 2012. <http://www.visitnj.org/sites/visitnj.org/files/2012-nj-tourism-ei-state-counties-v0701.ppt>

Construction Industry Estimates

Construction impacts were based on the dollar value of construction needed to repair or replace residential, commercial, public facilities, inventories and infrastructure. These estimates were prepared by the states of New Jersey (\$29.5 billion) and New York (\$41.9 billion). Type I multipliers (direct and indirect) were also used to estimate output and job impacts because (1) construction workers from out-of-state (or in this case out of the “multiplier” region) would likely use a majority of their earnings (earnings used for household spending) in the state where they live and not in the states of New Jersey and New York and (2) to provide conservative estimates.

Disaster Funding

This analysis was conducted for New Jersey and New York only, despite Federal disaster relief dollars going to a number of other states affected by Hurricane Sandy. Eleven months after the storm, FEMA reported that \$13.5 billion had been allocated to six states.⁵³ We assume, however, that both New Jersey and New York will spend the dollar amounts that they determined were needed to completely recover from the storm. Sources of these construction dollars would include a combination of Federal assistance, insurance payments and State and local government spending on damage repair.

Finally, as stated in the report itself, it is possible to perform a RIMS analysis county by county and/or for multiple contiguous counties (such as the Jersey shore) if data are available on either (1) long-term industry production losses as a result of the storm or (2) construction projects completed or underway to repair damage from the storm. At this time, we have not found data to support this detailed county level of analysis.

⁵³ Based on FEMA press releases. <http://www.federaltransparency.gov/funded/Sandy/Pages/State.aspx>.

Footnotes 1 and 43 provide more information on the allocation of Federal disaster relief funding to New Jersey and New York.