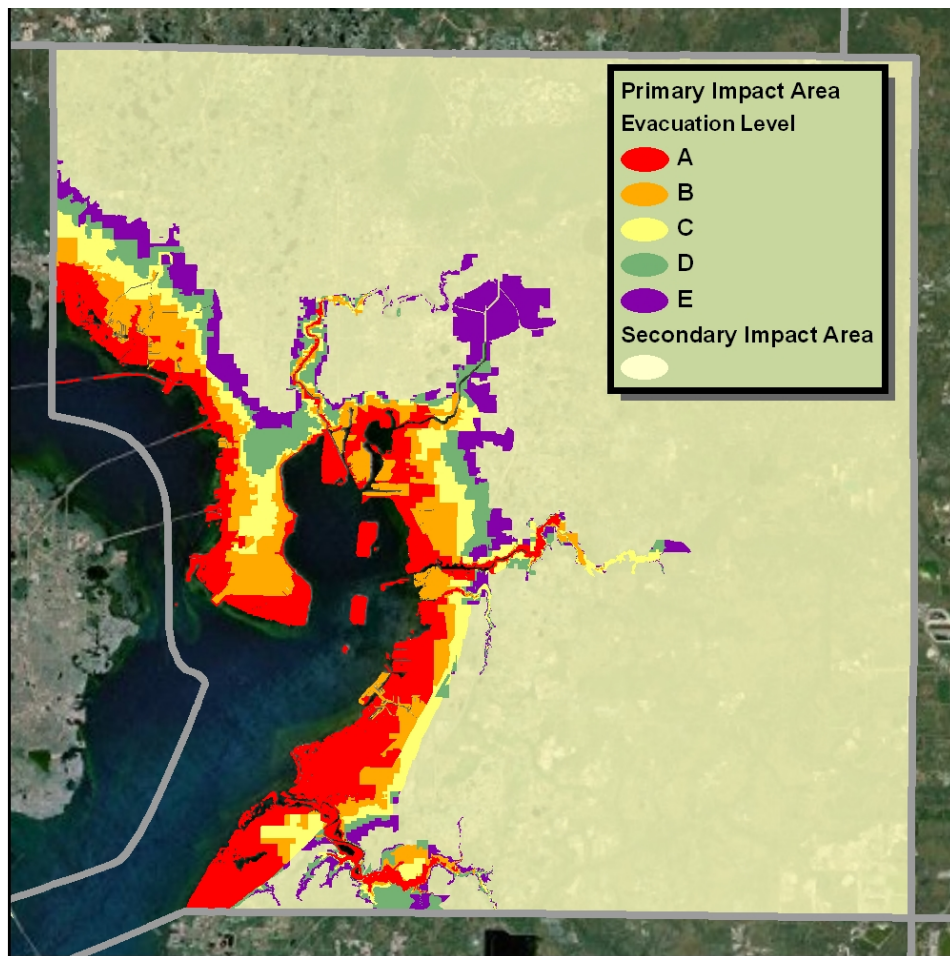


Economic Analysis of a Hurricane Event In Hillsborough County, Florida

Category 3 and 5 Hurricane Events



February 2009

**Economic Analysis of a Catastrophic Event
In Hillsborough County, Florida
Category 3 and 5 Hurricane Events**

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Prepared by
Tampa Bay Regional Planning Council
to support the development of the
Hillsborough County
Post Disaster Redevelopment Plan

February 2009

www.tbrpc.org

I. Introduction

This report presents the results of an economic impact analysis of a simulated catastrophic event(s) in Hillsborough County. This report was created by the Tampa Bay Regional Planning Council under contract to Hillsborough County as a sub-grantee, in support of the preparation of the County's Post Disaster Redevelopment Plan.. The events analyzed are Category 3 and 5 Hurricane Events.

For each of the events, two scenarios were modeled and analyzed. One scenario assumes normal recovery based on research of experiences under similar situations in other locales. The second scenario assumes accelerated recovery rates that are approximately thirty-three percent faster than the normal recovery rates. So we have four scenarios that were analyzed:

Scenarios

Category 5 Hurricane with Normal Recovery Rates
Category 5 Hurricane with Accelerated Recovery Rates

Category 3 Hurricane with Normal Recovery Rates
Category 3 Hurricane with Accelerated Recovery Rates

For each of the four scenarios estimates of employment loss and structural damage was estimated. Data from the Mapping for Emergency Management, Parallel Hazard Information System (MEMPHIS)¹ model was used to estimate structural damage and employment loss. Detailed ES-202 employment data from the State of Florida Agency for Workforce Innovation was geo-coded to assist in employment loss estimates. A customized econometric model (REMI Policy Insight) that has been created for the Tampa Bay region was utilized to estimate the economic impacts of the scenarios. Custom fiscal tools and methodologies were utilized in creating fiscal impact forecasts.

Interpretation and Use of Report

The Economic Analysis of a Hurricane Event report was created for the decision makers of Hillsborough County Emergency Management Department. A cursory understanding of the data and methods used in this analysis is helpful when applying the information contained within this report. It is a countywide economic report that highlights which industries will likely have a higher success rate in the aftermath of a disaster and which industries may need assistance.

The study was not of a specific hurricane, but of a hypothetical Category 3 or Category 5 storm that strikes "evenly" across the county. The study did not involve projecting a hurricane path. Instead, every area of the county was rated based upon location-specific risk levels. Seven areas of analysis were created. They include each of the Hurricane

¹ A Natural Risk Assessment to Support Local Mitigation Strategies in Florida Category 3 Hurricanes for 057 County, Charles C. Watson, Jr. and Mark E. Johnson, 2005.

Evacuation Levels A through E (collectively known as the Coastal Planning Area as defined by Hillsborough County), the Special Inland Flooding Area (areas that fall within the 100-year floodplain but outside the Coastal Planning Area), and the Non-Evacuation Area. Evacuation Levels A through E and the Special Inland Flooding Area were grouped into the Primary Impact Area (PIA) and the Non-Evacuation Area was summarized as the Secondary Impact Level (SIA). Hurricane damage estimates were derived by using a combination of the MEMPHIS hazard risk assessment study along with the risk levels by geographic location. Surge, winds, and flooding were not recomputed, but instead based upon the MEMPHIS study estimates.

Two events were modeled, the Employment Losses and the Construction/Cleanup Activity. Employment losses were weighted based upon location and then applied evenly across the industries within that evacuation zone (i.e. administration and support services suffered the same employment losses as water transportation, if they were in the same evacuation zone). Workforce return-to-work rate was calculated from an average of several studies. The most recent studies with quality data over a sufficient time frame were related to recovery efforts after Hurricanes Andrew and Katrina. Two sets of anticipated rates of return were used, a normal rate and an accelerated rate. The normal rate is a conservative estimate based upon prior examples. The accelerated rate is a more aggressive rate that could be achieved with excellent planning, coordination, and execution. The difference in the two rates of recovery showcases the importance in planning and recovery efforts. The federal aid and government spending is the exact same, due to the normal delays associated with receiving federal aid. An argument can easily be made that the federal aid should kick in quicker with a better prepared county. However; this report only focuses on the improvement in rate of return to work to show an apples-to-apples comparison.

Construction and Cleanup Activity were split up into two categories. The Construction was a product of private and public funds, which would include insurance payouts, homeowner repairs and reconstruction, and the restoration of any public assets that sustained damage. The Cleanup Activity was conducted with government spending. The results were then combined to show the net impacts of an hurricane event across the entire county over a specified time period. The construction impacts assume that the areas are able to be rebuilt on or nearby and that the Hillsborough County continues to be a destination county with a vibrant economy where people will want to rebuild. In this analysis, Construction and Cleanup Activity were major drivers in the restoration of the county's economy as evidenced by the larger positive impacts in the Category 5 scenario versus the Category 3 scenario.

When predicting the economic impacts of a hurricane, the only thing that can be assured is that the final impact estimate will not match the real-world outcome. There are too many variables and scenarios involved to accurately estimate each hurricane's impacts correctly before the event takes place. Because of the known variability of impacts from storm to storm, this analysis was conducted using estimates based on best-available data. The details of the underlying assumptions are shown in the report to allow users to perform rudimentary sensitivity analyses to decide if the economic impacts will be

greater or less based upon individual event scenarios. All inputs were for seven years, in the eighth year most of the economic indicators trend toward the baseline forecast. The amount of detail is substantial enough to extend the breadth of the report to disasters outside of hurricanes.

How this report is used in the decision-making process depends upon the type and location of the disaster event and the specific output desired. For example, if the user would like to know the impacts of a wildfire that consumes 20% of the Brandon/Valrico area, the user can refer to Brandon/Valrico profile in the report's appendix to see the population, residential stock, and employment estimates for that area. Applying a percentage of damage compared to the hurricane estimate provided in the report will generate a quick ballpark estimate. Using Location Quotient Ratios, users can compare the employment impacts to the Category 3 Hurricane Employment Losses to estimate the impacts by industry. Looking at the Percent of Wages to Hillsborough County on the same profile page will help estimate the impact to the county budget. Once that is computed, the user can then compare the total impact to estimate how much money is needed from federal/state aid and construction spending in order to get the economy back on track. In these scenarios, it would take between four to eight years to recover without any aid.

Industry specific information is detailed into 21 categories for each scenario, located in the Appendices B and C. Appendix B shows the assumptions used for job losses by industry. Appendix C allows users to compare and contrast the type of anticipated workforce after the impacts.

II. Executive Summary

This report presents the results of an economic impact analysis of a simulated catastrophic event(s) in Hillsborough County. This report was created by the Tampa Bay Regional Planning Council under contract to Hillsborough County as a sub-grantee, in support of the preparation of the County's Post Disaster Redevelopment Plan. The events analyzed are Category 3 and 5 Hurricane Events. For each of the events, two scenarios were modeled and analyzed. One scenario assumes normal recovery based on research of experiences under similar situations in other locales. The second scenario assumes accelerated recovery rates that are approximately thirty-three percent faster than the normal recovery rates.

Talking Points

- Employment losses from a hurricane can have a severely negative impact on employment if mitigation measures are not implemented. It can take four to eight years for the economy to recover without outside stimulus (reconstruction and federal aid).
- Mitigation planning and implementation measures as well as post-disaster preparedness can significantly reduce the negative consequences of a disaster.
- The jobs created by rebuilding efforts can significantly improve the employment and fiscal situation of the county.
- Simply rebuilding the damaged structures alone does not return the economy to "normal." The added impact from federal and state aid makes the difference in the rate and quality of the recovery. Estimating the amount of assistance required is critical.
- There are situations (construction activity and government spending) that can create boom/bust cycles for the local economy. Fiscal analysts need to be aware of the cycle in order to forecast revenue streams.

This report is more of a tool than a definitive assessment on what the impacts of a hurricane event scenario might create. The results reported are very sensitive to the inputs (damage losses and spending) and this report only looks at four different scenarios. The report reader should look at trends not specific numbers. One can gain insight into the benefits of a quick recovery made possible by mitigation planning and post-disaster preparedness planning. As well as the need to undertake as accurate a post-disaster needs assessment as possible. It will be very important to determine the minimum amount of reinvestment and outside assistance required to return the County's economy to pre-event levels. One needs to remember that the goal should be to recover to pre-event forecast levels not simply the level at the time of the event.

III. Geographic Study Areas – Description and Data

The County was broken into two study areas for this analysis. The Primary impact area is the coastal planning area and is comprised of evacuation level areas A – E plus the special flood hazard areas. The Secondary impact area is the rest of the county excluding special flood hazard areas.

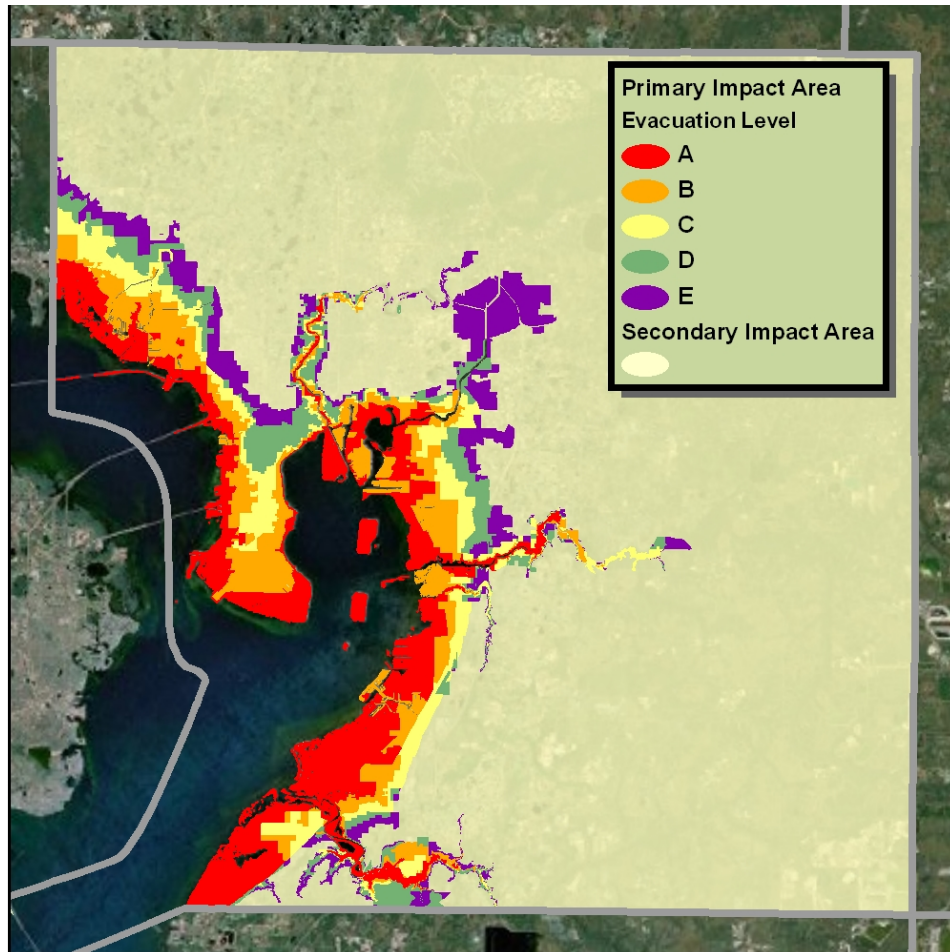


Figure 1 - EIA Study Areas

Data was disaggregated or aggregated into the primary impact (PIA) and secondary impact (SIA) areas. The PIA was further disaggregated into Evacuation Levels since the impacts are different in each level.

Population and Housing Inventory

County population and housing data was disaggregated at the Evacuation Analysis Zone (EAZ) level

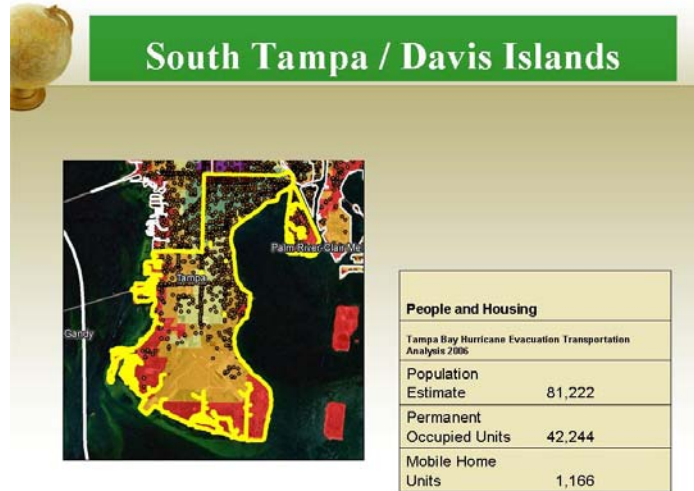


Figure 2 - Example of Population and Housing data

Employment Inventory

The employment inventory was developed utilizing employment sector (industry) level detail from ES 202 data and data from the REMI Policy Insight model. This data was geo-coded and disaggregated into the EAZs.



Figure 3 - Example of Employment Data by EAZ



Figure 4 - Example of Employment Data – by largest sectors

Structure Inventory (Property Appraiser Data)

Structure data was gathered from property appraiser’s data and aggregated at the EAZ and Evacuation Zone level.

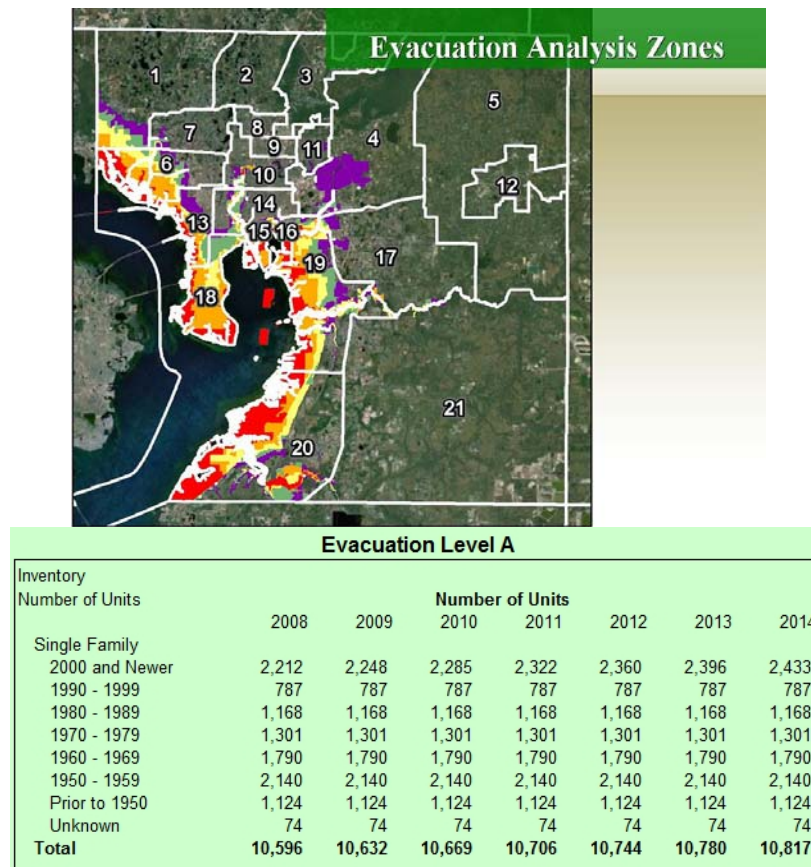


Figure 5 - Example of Structure Data

IV. Category 5 Hurricane Scenario

Assumptions

A Category 5 hurricane is a catastrophic event. Property (structure) damage estimates were derived from a 2005 natural hazards risk assessment.² These estimates are in 2000 dollars and this study's results are expressed in 2000 dollars. Employment losses are derived from estimating commercial structure loss, loss of use of business assets, business interruption, and other factors such as data from similar communities under similar events. There are essentially two major economic events that are being modeled, Employment Loss (a negative influence) and Construction and Government Spending (a positive influence). These losses and gains are summarized as follows:

- Losses
 - \$76 billion in Property Damage

Countywide	Exposure	Loss	% Loss
SF Res	\$75.23 B	\$38.79 B	51.6%
Mob Home	\$1.00 B	\$995 M	99.1%
MF Res	\$16.51 B	\$9.08 B	55.0%
Commercial	\$25.11 B	\$14.89 B	59.3%
Agriculture	\$16.99 B	\$10.32 B	60.8%
Gov/Institu	\$6.83 B	\$3.37 B	49.4%

- Employment - Almost 250,000 Jobs Lost (~30%) in Year 1
- Gains
 - \$11 billion average in Construction per Year (5 Years)
 - Insurance Payouts
 - Government assistance, etc.
 - \$7.5 billion per year Federal and State Funding
 - Public facility and utility reconstruction
 - Debris clean-up and removal

Private and Public Reconstruction and Rehabilitation

	Year 1	Year 2	Year 3	Year 4	Year 5
Construction in each year (Billions \$)	5.7	17.1	17.1	11.4	5.7
- residential	1.425	4.275	4.275	4.56	2.28
- commercial	1.425	4.275	4.275	4.56	2.28
- roads/tunnels/bridges/etc	2.85	8.55	8.55	2.28	1.14
Government Spending (Billions \$)	7.5	7.5	7.5		

For the scenario, two rates of recovery were modeled:

² A natural hazards risk assessment to support local mitigation strategies in Florida Category 5 Hurricanes for 057 County, Charles C. Watson, Jr. and Mark E. Johnson, 2005.

- Recovery Rates
 - Normal Recovery Rate
 - Standard time for recovery based on other areas in the past
 - Accelerated Recovery Rate
 - Faster than normal based on successful local initiatives
 - Implementation of Local Mitigation Strategies
 - Post Disaster Redevelopment Plan implementation
 - Business Continuity Planning
 - Continuity of Operations Planning (COOP)

Estimated Employees Still Displaced After Timeframe

Area	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years	7 Years
Cat 5 Normal Recovery Rate							
PIA	33%	24%	18%	13%	10%	5%	3%
SIA	17%	12%	9%	7%	5%	3%	1%
Cat 5 Accelerated Recovery Rate							
PIA	24%	18%	13%	10%	5%	3%	1%
SIA	12%	9%	7%	5%	3%	1%	1%

Methodology

The employment losses and spending gains were modeled using the Tampa Bay Regional Planning Council’s Policy Insight® econometric model.³ Two recovery rates were analyzed for both the scenarios.

Each scenario and data set was looked at from three perspectives – employment impacts, spending impacts, and net impacts. The results are very sensitive to the government spending amounts and one should consider the situation if more or less federal aid were available. A benefit of this modeling effort is that it provides a benchmark for how much federal and state assistance would be needed to bring about a full recovery to anticipated pre-event levels.

For each scenario and data variable analyzed, the baseline forecast is shown. Also, the current level for that data set (for example employment) is shown. The data variables analyzed for each scenario is employment, gross regional product, output, population, and fiscal⁴ (revenues).

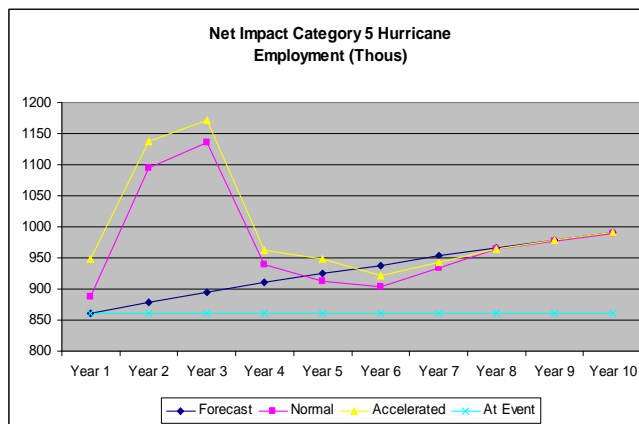
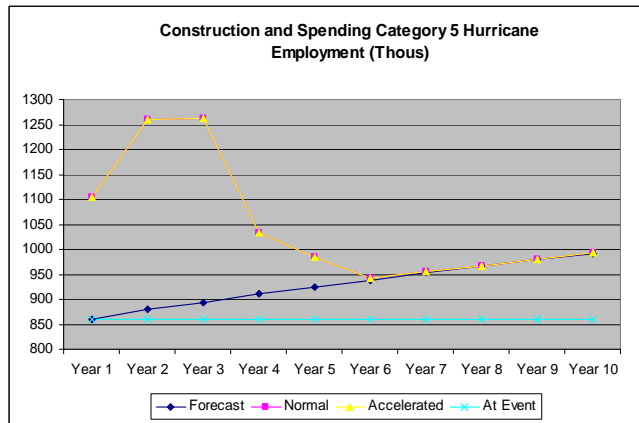
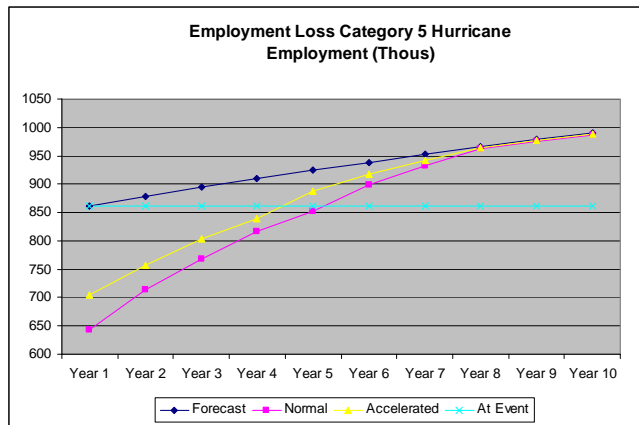
It is important to remember that we are measuring our impacts and recovery rates against where we would have been in five years or so, not where we were when the event occurred.

³ Policy Insight is produced by Regional Economic Models; Inc. located in Amherst, MA. www.remi.com

⁴ Revenues were estimated by running a multivariate regression analysis of past county revenues against employment, output, grp, and population. The regression line provided an R-Square fit of .93.

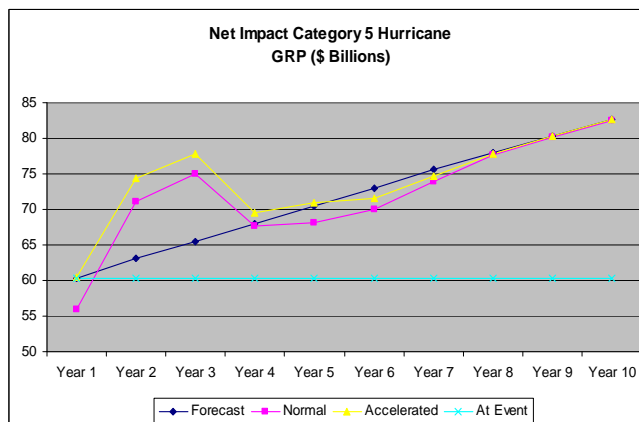
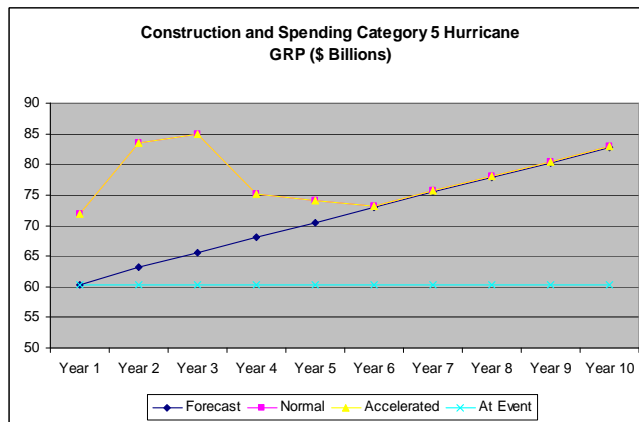
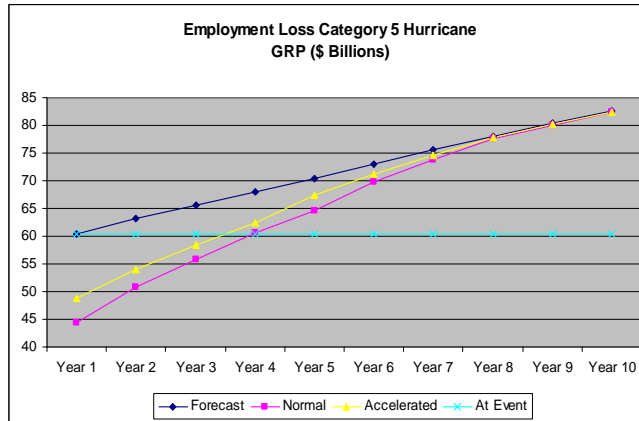
Cat 5 Scenario Employment Impacts

First year job loss attributed to employment losses from hurricane damages are estimated at 217 thousand jobs without reconstruction or government spending. Without any external stimulus these jobs do not return to the pre-event level until year 5 and achieves the pre-event forecast level in year 8. Construction and spending creates 244 thousand jobs in year 1 and 136 thousand additional jobs (380K total) in year 2. Spending is the same in both recovery scenarios so the results are the same. Net impact from employment losses and spending gains are peaks at 240 thousand jobs in year 3 under normal recovery rates and 277 thousand under accelerated recovery.



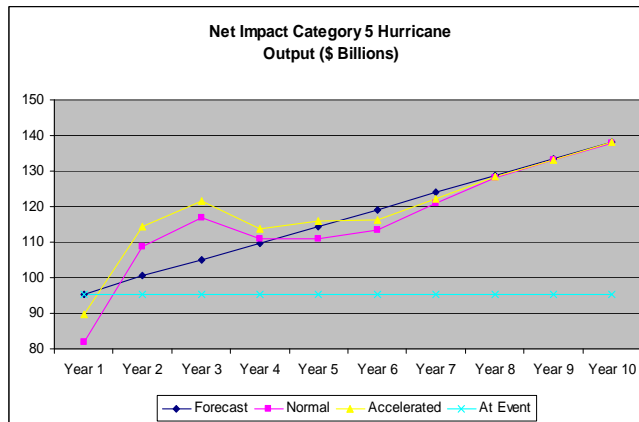
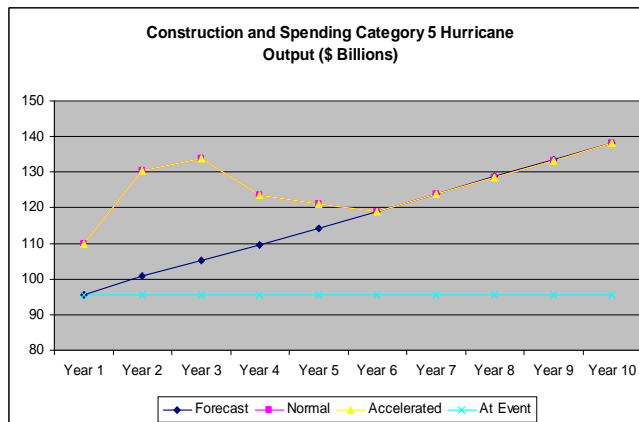
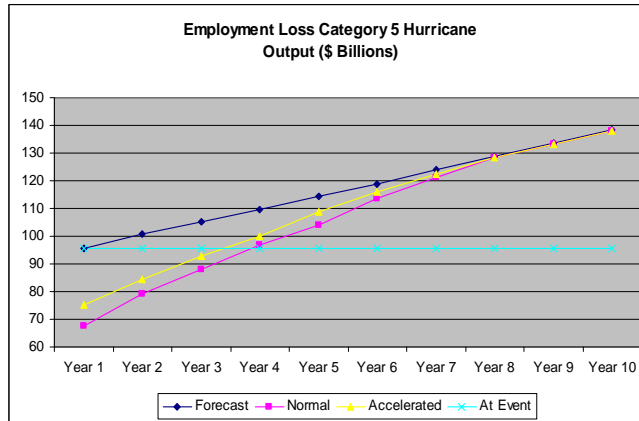
Cat 5 Scenario Gross Regional Product (GRP) Impacts

Gross Regional Product lost from employment losses due to hurricane damages are estimated at \$16 billion or twenty-five percent without reconstruction or government spending and returns to pre-event levels in year 4 and achieves the pre-event forecast level in year 8. Construction and spending creates nearly \$12 billion in GRP in year 1 and \$20 billion in year 2. Spending is the same in both recovery scenarios, therefore the GRP results are the same. Net impact from employment losses and spending gains is negative in year 1 and positive in years 2, 3, and 4 and negative in years 5, 6, and 7.



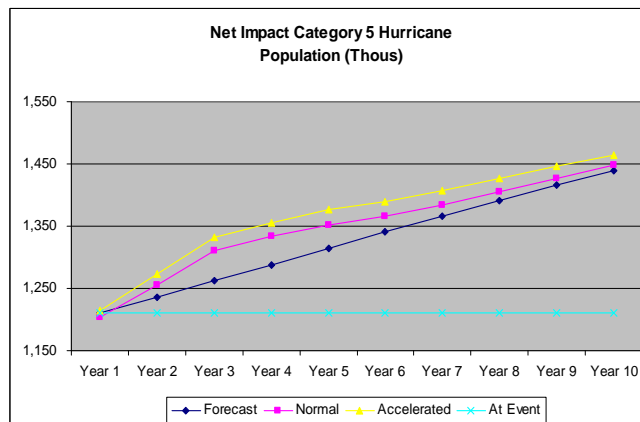
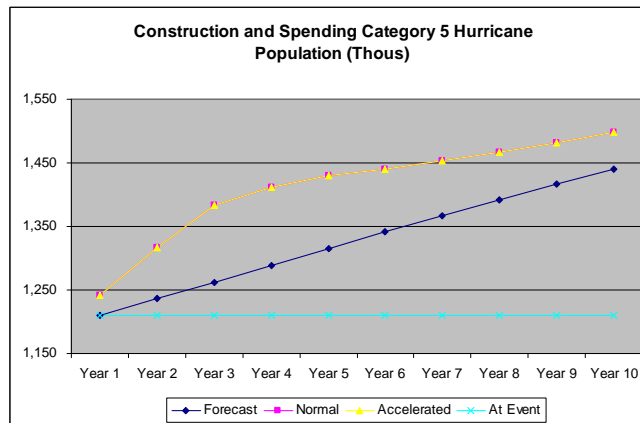
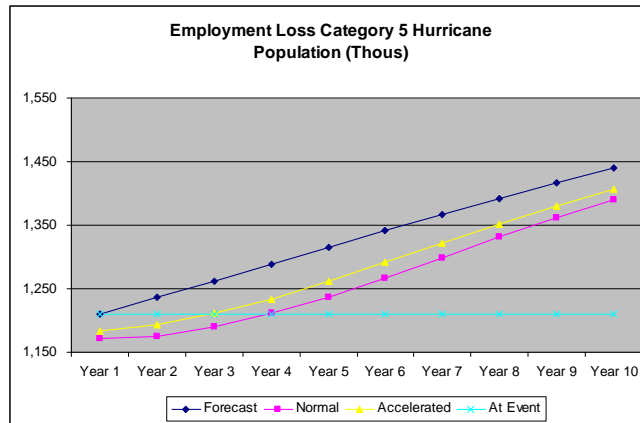
Cat 5 Scenario Output Impacts

Output lost from employment losses from damages are estimated at \$28 billion or twenty-nine percent without reconstruction or government spending and returns to pre-event levels in year 4 and achieves the pre-event forecast level in year 7. Construction and spending creates nearly \$14 billion in output in year 1 and around \$30 billion in years 2 and 3. Spending is the same in both recovery scenarios so the output results are the same. Net impact from employment losses and spending gains is negative \$13 billion in year 1 and positive in years 2, 3, and 4 and negative in years 5, 6, and 7.



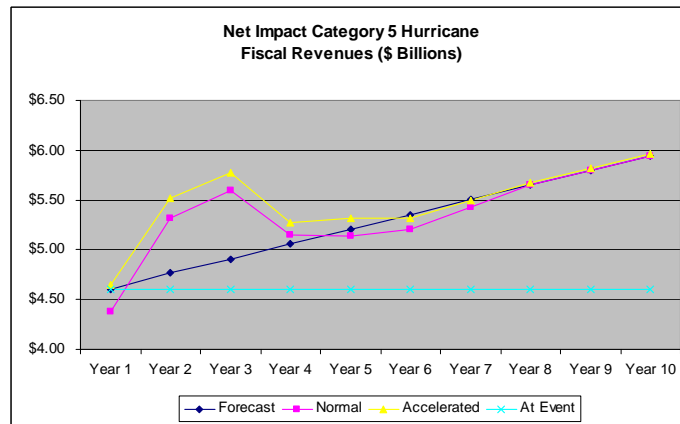
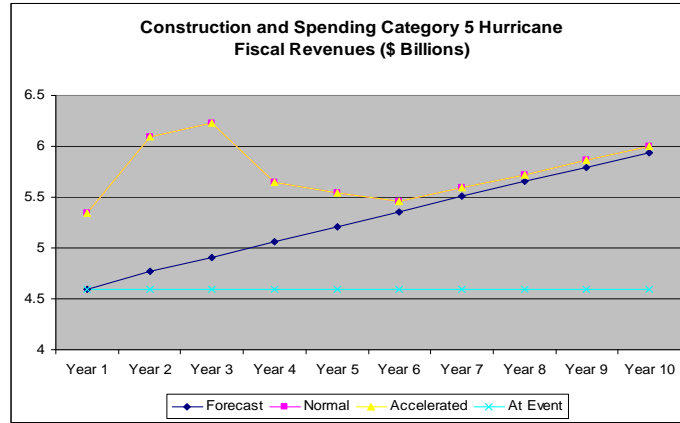
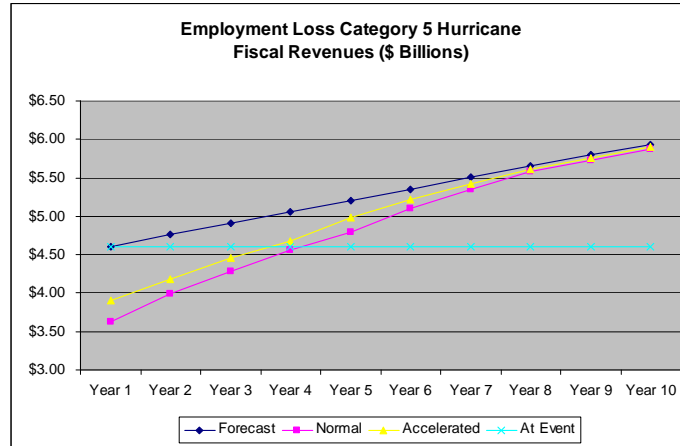
Cat 5 Scenario Population Impacts

Population lost from employment losses from damages is estimated to peak at 77 thousand persons in year 5 without reconstruction or government spending. With an accelerated recovery, the peak population loss is reduced to 52 thousand. Construction and spending creates an additional 120 thousand peak population in year 3. Net impact of population change from employment losses and spending gains is negative \$8 thousand in year 1 under normal recovery and plus 4 thousand under an accelerated recovery. Net population gains peak in year 3 at 49 thousand and 70 thousand under normal and accelerated scenarios.



Cat 5 Scenario Fiscal Impacts

County Revenues lost from employment losses from damages is estimated at \$700 million (21%) in year 1 and losses recover in year 2 and reach pre-event levels in year 4 and forecast levels in year 8. Construction and spending creates nearly \$0.75 billion in revenue year 1 and around \$1.33 billion in years 2 and 3. Spending is the same in both recovery scenarios so the revenue increase results are the same for normal and accelerated recovery. Net impact on revenues is about even to slightly negative in year 1 and revenue is positive (above forecast) for years 2, 3, and 4 and slightly negative in years 5, 6, and 7.



IV. Category 3 Hurricane Scenario

Assumptions

A Category 3 hurricane is an extreme natural disaster event. Property (structure) damage estimates were derived from a 2005 natural hazards risk assessment.⁵ These estimates are in 2000 dollars and this study's results are expressed in 2000 dollars. Employment losses are derived from estimating commercial structure loss, loss of use of business assets, business interruption, and other factors such as data from similar communities under similar events. There are essentially two major economic events that are being modeled, Employment Loss (a negative influence) and Construction and Government Spending (a positive influence). These losses and gains are summarized as follows:

- Losses
 - \$18.8 Billion in Property Damage

Countywide	Exposure	Loss	% Loss
SF Res	\$75.23 B	\$9.41 B	12.5%
Mob Home	\$1.00 B	\$438 M	43.7%
MF Res	\$16.51 B	\$2.19 B	13.2%
Commercial	\$25.11 B	\$3.59 B	14.0%
Agriculture	\$16.99 B	\$2.42 B	14.2%
Gov/Institu	\$6.83 B	\$821 M	12.0%

- Employment – 151,000 Jobs Lost in Year 1
- Gains
 - \$4.7 billion average in Construction per Year (4 Years)
 - Insurance Payouts
 - Government assistance, etc.
 - \$7.5 billion over three years of Federal and State Funding
 - Public facility and utility reconstruction
 - Debris clean-up and removal

Private and Public Reconstruction and Rehabilitation

	Year 1	Year 2	Year 3	Year 4
Construction in each year (Billions \$)	2.65	6	6	4.15
- residential	1	3	3	2.4
- commercial	.75	1	1	.75
- roads/tunnels/bridges/etc	.9	2	2	1
Government Spending (Billions \$)	4	2	1.5	

⁵ A natural hazards risk assessment to support local mitigation strategies in Florida Category 3 Hurricanes for 057 County, Charles C. Watson, Jr. and Mark E. Johnson, 2005.

For the scenario, two rates of recovery were modeled:

- Recovery Rates
 - Normal Recovery Rate
 - Standard time for recovery based on other areas in the past
 - Accelerated Recovery Rate (about 33% faster)
 - Faster than normal based on successful local initiatives
 - Implementation of Local Mitigation Strategies
 - Post Disaster Redevelopment Plan implementation
 - Business Continuity Planning
 - Continuity of Operations Planning (COOP)

Estimated Employees Still Displaced After Timeframe

Area	1 Year	2 Years	3 Years	4 Years	5 Years	6 Years	7 Years
Cat 3 Normal Recovery Rate							
PIA	19%	17%	15%	14%	13%	6%	3%
SIA	14%	13%	11%	10%	5%	3%	1%
Cat 3 Accelerated Recovery Rate							
PIA	13%	11%	10%	9%	8%	4%	2%
SIA	6%	6%	5%	5%	4%	2%	1%

Methodology

The employment losses and spending gains were modeled using the Tampa Bay Regional Planning Council’s Policy Insight® econometric model.⁶ Two recovery rates were analyzed for both the scenarios.

Each scenario and data set was looked at from three perspectives – employment impacts, spending impacts, and net impacts. The results are very sensitive to the government spending amounts and one should consider the situation if more or less federal aid were available. A benefit of this modeling effort is that it provides a benchmark for how much federal and state assistance would be needed to bring about a full recovery to anticipated pre-event levels.

For each scenario and data variable analyzed, the baseline forecast is shown. Also, the current level for that data set (for example employment) is shown. The data variables analyzed for each scenario is employment, gross regional product, output, population, and fiscal⁷ (revenues).

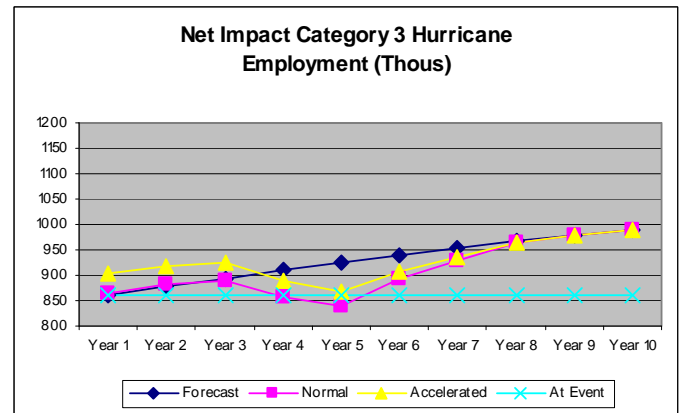
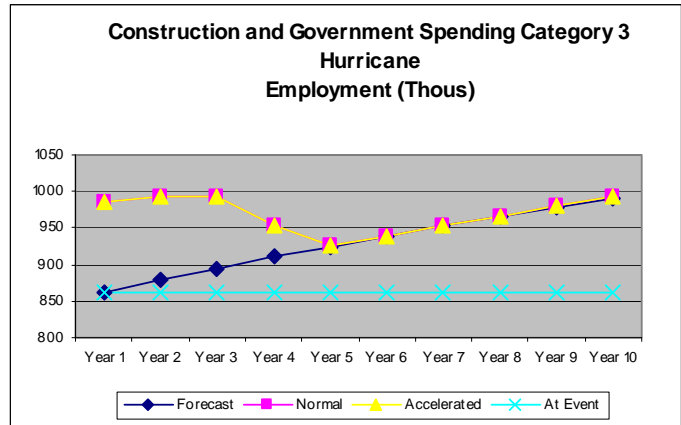
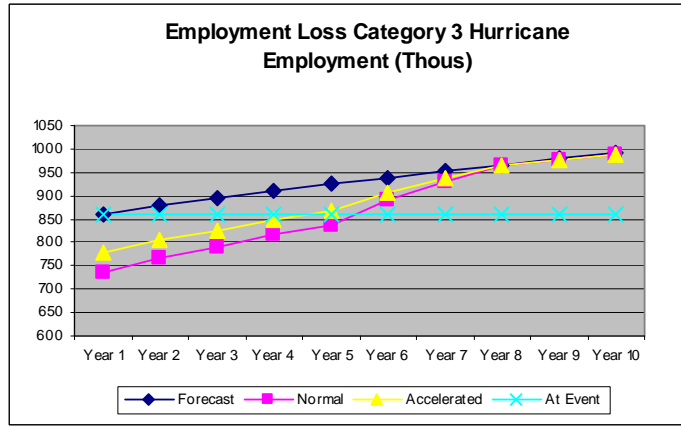
It is important to remember the study is measuring impacts and recovery rates against where we would have been in five years or so, not where we were when the event occurred. In the Cat 3 scenario, recovery projections are very conservative. It is conceivable that employment will recover faster than we have modeled.

⁶ Policy Insight is produced by Regional Economic Models; Inc. located in Amherst, MA. www.remi.com

⁷ Revenues were estimated by running a multivariate regression analysis of past county revenues against employment, output, grp, and population. The regression line provided an R-Square fit of .93.

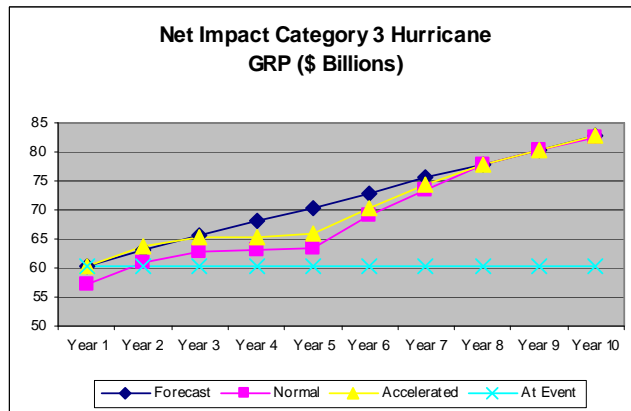
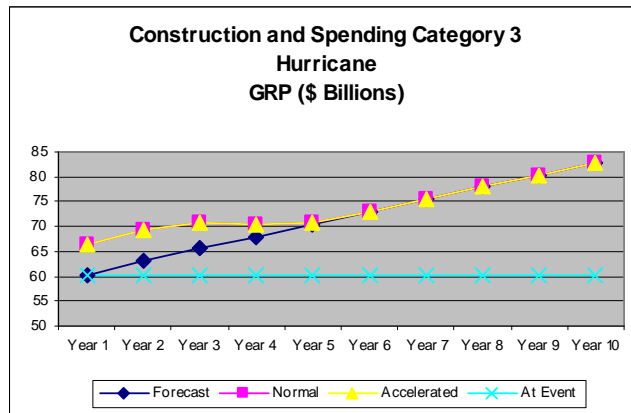
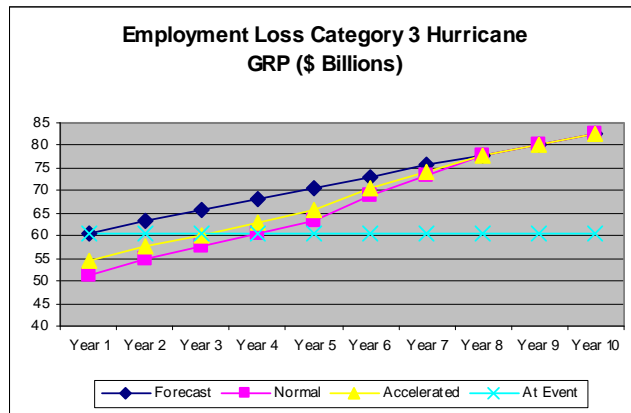
Cat 3 Scenario Employment Impacts

First year job loss attributed to employment losses from business and structure damages is estimated at 131 thousand jobs without reconstruction or government spending. Without any external stimulus these jobs do not return to the pre-event level until year 5 and achieves the pre-event forecast level in year 8. Construction and spending creates 125 thousand jobs in year 1. Spending is the same in both recovery scenarios therefore the results are the same. Net impact from employment losses and spending gains are 2 thousand jobs in year 1 under normal recovery rates and 43 thousand under accelerated recovery. Net impacts to employment remains above pre-event forecast levels for three years and drops below the forecast leveling off in years 4 to 7 before returning to baseline forecast in year 8.



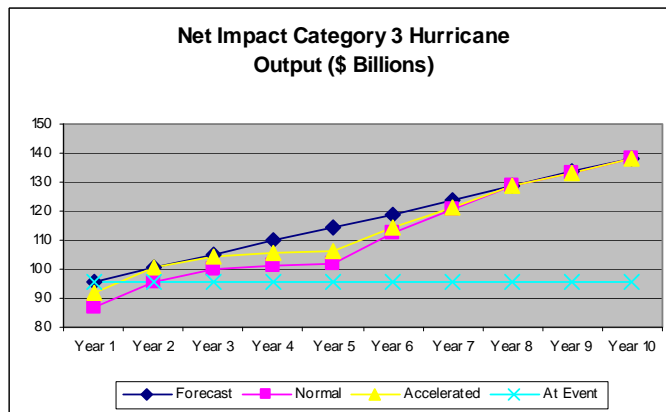
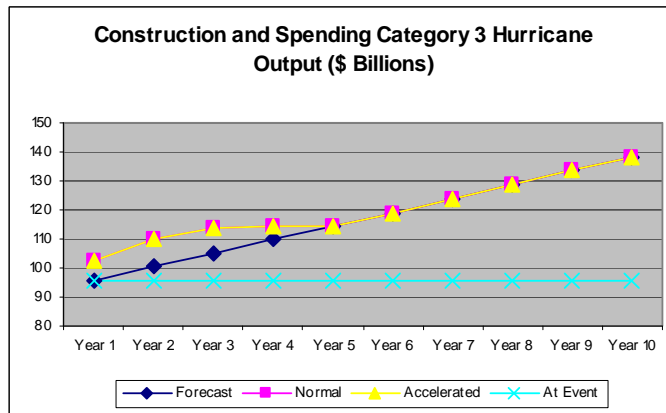
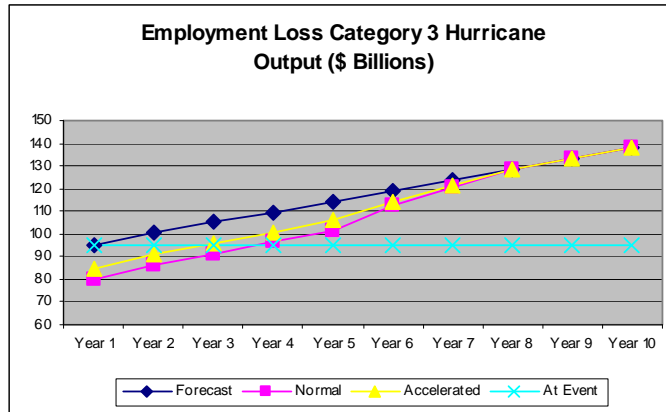
Cat 3 Scenario Gross Regional Product (GRP) Impacts

Gross Regional Product lost attributed to employment losses from business damages is estimated at \$9 billion or fifteen percent without reconstruction or government spending and returns to pre-event levels in year 4 and achieves the pre-event forecast level in year 8. Construction and spending creates around \$6 billion in GRP in year 1 and tapers to \$2.4 billion in year 4. Spending is the same in both recovery scenarios therefore the GRP results are the same. Net impact from employment losses and spending gains is negative in year 1 and above the pre-event levels in years two and beyond; however, the GRP doesn't return to the pre-event forecast levels until year 8.



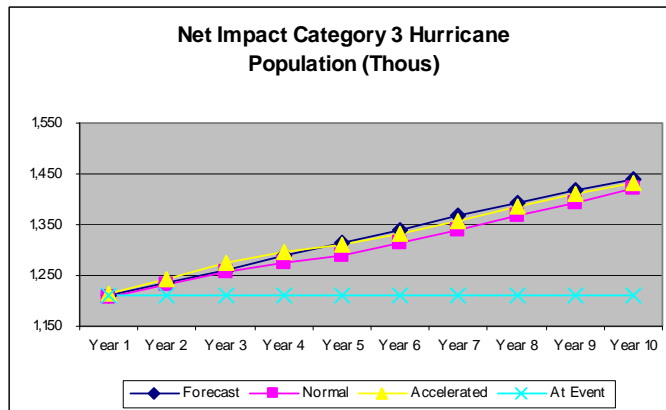
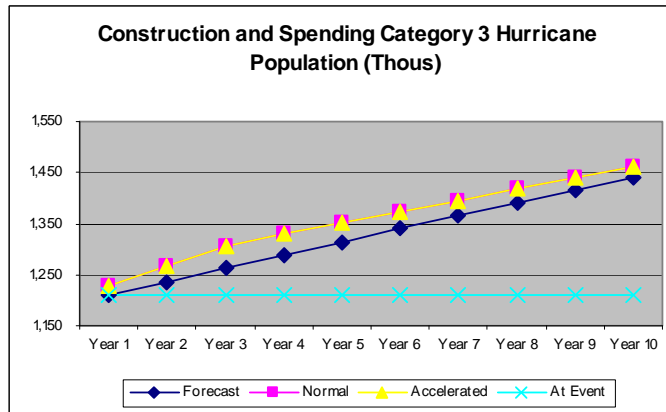
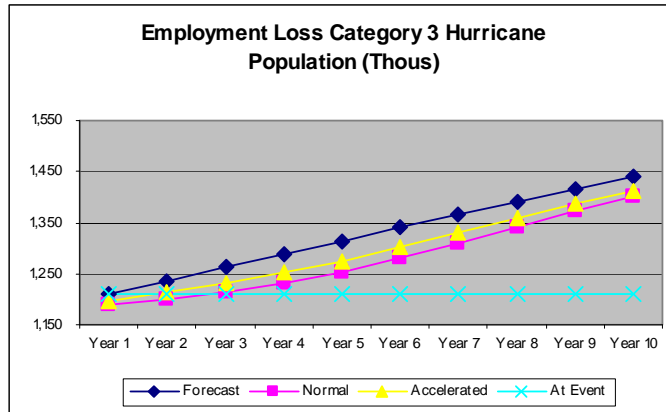
Cat 3 Scenario Output Impacts

Output lost from employment losses from damages are estimated at \$16 billion or seventeen percent without reconstruction or government spending and returns to pre-event levels in year 4 and achieves the pre-event forecast level in year 7. Construction and spending creates nearly \$7 billion in output in year 1 and around \$9 billion in years 2 and 3. Spending is the same in both recovery scenarios so the output results are the same. Net impact on output from employment losses and spending gains is negative \$9 billion of output in year 1 and above pre-event level positive in years 2 and beyond and equal to pre-event forecast levels in year 7 and beyond.



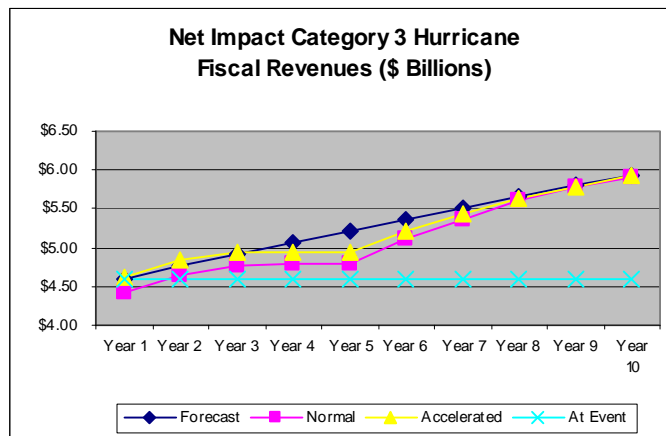
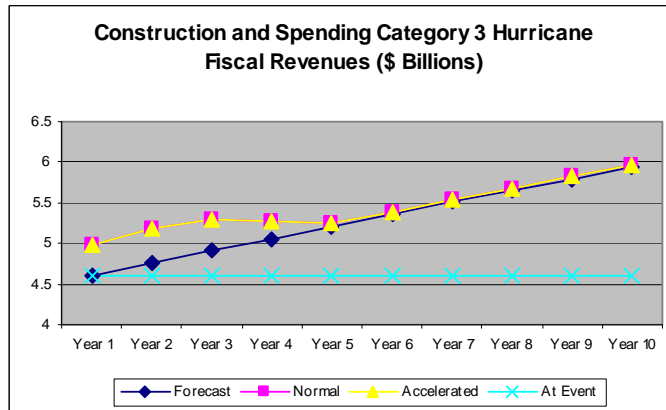
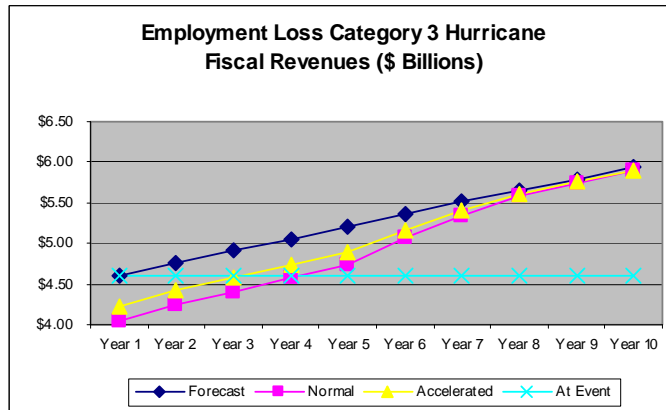
Cat 3 Scenario Population Impacts

Population lost from employment losses from damages is estimated to peak at 61 thousand persons in year 5 without reconstruction or government spending. With an accelerated recovery, the peak population loss is reduced to 40 thousand. Construction and spending creates an additional 43 thousand in peak population in year 4. Net impact of population change from employment losses and spending gains as compared to the pre-event forecast is a loss of 28 thousand persons in year 7 under normal recovery and reduced to loss of 7 thousand under an accelerated recovery. Net population remains above pre-event levels in all years.



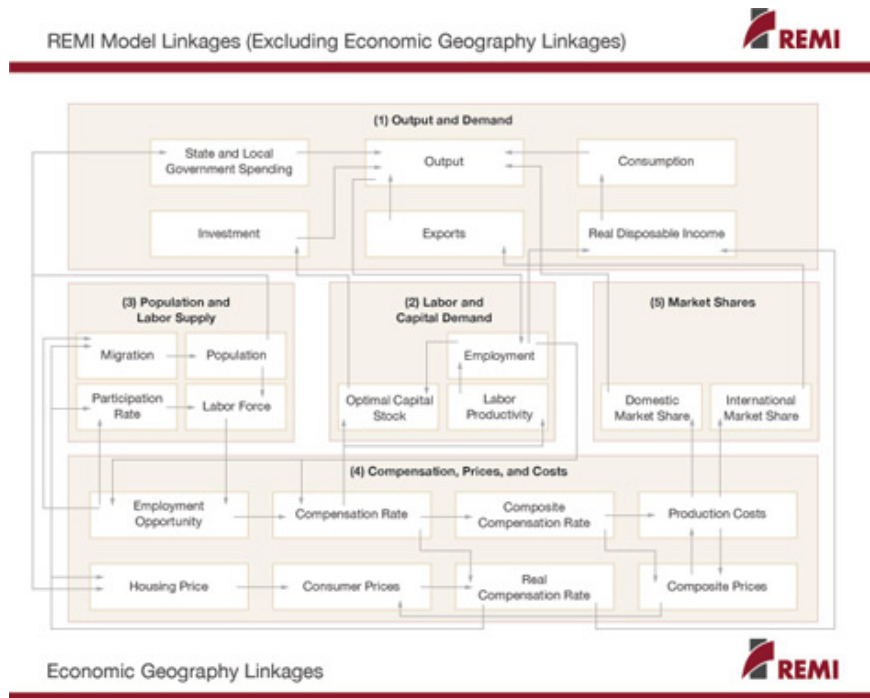
Cat 3 Scenario Fiscal Impacts

County Revenues lost from employment losses from damages is estimated at \$550 million in year 1 and recovers to pre-event levels by year 4 and forecast levels in year 8. Construction and spending creates around \$380 million in revenue year 1 above the forecast remains above forecast levels until year 5. Spending is the same in both recovery scenarios so the revenue increase results are the same for normal and accelerated recovery. Net impact on revenues is about even to slightly negative in year 1. In year 2 and beyond, revenue is negative in relation to the forecast but above pre-event levels for the normal recovery scenario. The accelerated scenario provides a better revenue projection for years 2 through 4.



Appendix A: About REMI PolicyInsight

REMI's Policy Insight[®] is a structural economic 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. It consists of thousands of simultaneous equations within a structure that is relatively straightforward. The exact number of equations used varies depending on the extent of industry, demographic, and regional detail in the specific model being used. The overall structure of the model can be summarized in five major blocks: (1) Output, (2) Labor and Capital Demand, (3) Population and Labor Supply, (4) Wages, Prices, and Costs, and (5) Market Shares.



Policy Insight's unique power is to generate realistic year-by-year estimates of the total regional effects of any specific policy initiative. A wide range of policy variables allows the user to represent the policy being evaluated, while the explicit structure in the model helps the user to interpret the predicted economic and demographic effects. The model is calibrated to many sub-national areas for policy analysis and forecasting and is available in single- and multi-area configurations. Each calibrated area (or region) has both economic and demographic variables so that any policy that affects a local economy can be tested. Users can also see the total economic impacts of each region using Policy Insight.

Policy Insight is used by government agencies (including local, state, and Federal), consulting firms, nonprofit institutions, universities, and public utilities. The model's simulations estimate comprehensive economic and demographic effects in wide-ranging initiatives such as economic impact analysis; policies and programs for economic development, transportation, infrastructure, environment, energy and natural resources; and state and local tax changes. Articles about the model equations and research findings have been published in professional journals such as the *American Economic Review*, *The Review of Economic Statistics*, the *Journal of Regional Science*, and the *International Regional Science Review*.

Appendix B: Detailed Direct Employment Losses

TBRPC inventoried Hillsborough County using geo-coded ES-202 employment counts and the REMI Policy Insight projections. TBRPC was able to determine which jobs and industries were in which locations. The evacuation areas (primary impact area) are assumed to take a higher damage impact than the non evacuation areas (secondary impact areas). The first set of charts below show the direct employment losses by industry in each scenario. This information showcases the vulnerability of industries within the county.

**Direct Employment Losses By Sector
Accelerated Rate of Recovery of a Category 5 Hurricane**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Forestry, Fishing, Other	471	359	266	210	117	70	47
Mining	60	46	33	26	13	7	4
Utilities	1,015	756	540	410	194	86	32
Construction	11,431	8,574	6,193	4,765	2,384	1,194	598
Manufacturing	10,852	8,158	5,913	4,566	2,321	1,199	638
Wholesale Trade	11,611	8,685	6,247	4,784	2,346	1,127	518
Retail Trade	21,526	16,085	11,551	8,830	4,296	2,029	895
Transp, Warehousing	6,431	4,826	3,488	2,685	1,347	678	344
Information	6,177	4,657	3,391	2,631	1,364	731	414
Finance, Insurance	16,149	12,176	8,865	6,879	3,568	1,912	1,084
Real Estate, Rental, Leasing	3,694	2,766	1,993	1,529	755	368	175
Profess, Tech Services	15,962	11,993	8,685	6,700	3,392	1,738	911
Mngmt of Co, Enter	3,054	2,295	1,663	1,283	651	335	177
Admin, Waste Services	20,569	15,460	11,203	8,648	4,391	2,263	1,198
Educational Services	7,181	5,406	3,926	3,039	1,559	819	449
Health Care, Social Asst	25,392	19,162	13,971	10,856	5,665	3,069	1,771
Arts, Enter, Rec	4,852	3,649	2,646	2,045	1,043	542	291
Accom, Food Services	11,932	8,945	6,457	4,964	2,475	1,231	609
Other Services (excl Gov)	4,931	3,708	2,689	2,078	1,059	549	294
State & Local Gov	2,758	2,015	1,396	1,024	405	96	(59)
Farm	4,904	3,683	2,666	2,055	1,038	529	275
Total Employees	190,953	143,405	103,781	80,007	40,384	20,572	10,666

Direct Employment Losses By Sector
Normal Rate of Recovery of a Category 5 Hurricane

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Forestry, Fishing, Other	639	471	359	266	210	117	70
Mining	83	60	46	33	26	13	7
Utilities	1,404	1,015	756	540	410	194	86
Construction	15,716	11,431	8,574	6,193	4,765	2,384	1,194
Manufacturing	14,893	10,852	8,158	5,913	4,566	2,321	1,199
Wholesale Trade	15,999	11,611	8,685	6,247	4,784	2,346	1,127
Retail Trade	29,688	21,526	16,085	11,551	8,830	4,296	2,029
Transp, Warehousing	8,840	6,431	4,826	3,488	2,685	1,347	678
Information	8,457	6,177	4,657	3,391	2,631	1,364	731
Finance, Insurance	22,109	16,149	12,176	8,865	6,879	3,568	1,912
Real Estate, Rental, Leasing	5,086	3,694	2,766	1,993	1,529	755	368
Profess, Tech Services	21,916	15,962	11,993	8,685	6,700	3,392	1,738
Mngmt of Co, Enter	4,193	3,054	2,295	1,663	1,283	651	335
Admin, Waste Services	28,232	20,569	15,460	11,203	8,648	4,391	2,263
Educational Services	9,845	7,181	5,406	3,926	3,039	1,559	819
Health Care, Social Asst	34,736	25,392	19,162	13,971	10,856	5,665	3,069
Arts, Enter, Rec	6,656	4,852	3,649	2,646	2,045	1,043	542
Accom, Food Services	16,411	11,932	8,945	6,457	4,964	2,475	1,231
Other Services (excl Gov)	6,765	4,931	3,708	2,689	2,078	1,059	549
State & Local Gov	3,873	2,758	2,015	1,396	1,024	405	96
Farm	6,735	4,904	3,683	2,666	2,055	1,038	529
Total Employees	262,275	190,953	143,405	103,781	80,007	40,384	20,572

**Direct Employment Losses By Sector
Accelerated Rate of Recovery of a Category 3 Hurricane**

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Forestry, Fishing, Other	261	230	211	192	180	101	62
Mining	33	28	26	23	22	11	6
Utilities	528	456	412	369	340	159	69
Construction	6,065	5,267	4,789	4,310	3,991	1,997	1,000
Manufacturing	5,792	5,040	4,589	4,138	3,837	1,957	1,017
Wholesale Trade	6,116	5,299	4,809	4,319	3,992	1,950	929
Retail Trade	11,306	9,787	8,875	7,964	7,356	3,559	1,660
Transp, Warehousing	3,416	2,967	2,699	2,430	2,250	1,130	569
Information	3,322	2,898	2,644	2,389	2,219	1,159	628
Finance, Insurance	8,686	7,577	6,912	6,246	5,803	3,030	1,643
Real Estate, Rental, Leasing	1,951	1,692	1,536	1,381	1,277	629	306
Profess, Tech Services	8,506	7,398	6,733	6,068	5,625	2,855	1,470
Mngmt of Co, Enter	1,629	1,417	1,290	1,163	1,078	548	283
Admin, Waste Services	10,973	9,547	8,691	7,835	7,265	3,699	1,917
Educational Services	3,846	3,351	3,053	2,756	2,558	1,319	699
Health Care, Social Asst	13,691	11,952	10,908	9,865	9,169	4,821	2,647
Arts, Enter, Rec	2,592	2,257	2,055	1,854	1,719	880	460
Accom, Food Services	6,322	5,489	4,989	4,488	4,155	2,071	1,029
Other Services (excl Gov)	2,634	2,293	2,088	1,883	1,747	893	466
State & Local Gov	1,362	1,155	1,031	906	823	305	45
Farm	2,611	2,270	2,065	1,861	1,725	873	447
Total Employees	101,642	88,368	80,403	72,439	67,130	33,945	17,353

Direct Employment Losses By Sector
Normal Rate of Recovery of a Category 3 Hurricane

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7
Forestry, Fishing, Other	378	331	303	275	257	140	82
Mining	48	42	38	34	32	16	9
Utilities	799	691	626	561	518	248	113
Construction	9,050	7,860	7,145	6,431	5,955	2,979	1,491
Manufacturing	8,607	7,485	6,811	6,138	5,689	2,883	1,480
Wholesale Trade	9,173	7,954	7,222	6,491	6,003	2,956	1,432
Retail Trade	16,992	14,725	13,364	12,004	11,097	5,429	2,595
Transp, Warehousing	5,093	4,424	4,023	3,622	3,354	1,682	845
Information	4,911	4,277	3,897	3,517	3,264	1,681	889
Finance, Insurance	12,838	11,183	10,189	9,196	8,534	4,395	2,326
Real Estate, Rental, Leasing	2,921	2,534	2,302	2,070	1,915	948	465
Profess, Tech Services	12,654	11,000	10,008	9,016	8,354	4,219	2,152
Mngmt of Co, Enter	2,422	2,106	1,916	1,726	1,600	809	414
Admin, Waste Services	16,312	14,183	12,906	11,629	10,777	5,455	2,795
Educational Services	5,702	4,962	4,518	4,074	3,778	1,929	1,004
Health Care, Social Asst	20,201	17,605	16,047	14,490	13,452	6,963	3,718
Arts, Enter, Rec	3,849	3,348	3,047	2,747	2,546	1,293	667
Accom, Food Services	9,443	8,199	7,452	6,706	6,208	3,097	1,542
Other Services (excl Gov)	3,912	3,402	3,097	2,791	2,587	1,313	676
State & Local Gov	2,139	1,829	1,644	1,458	1,334	560	173
Farm	3,886	3,378	3,072	2,767	2,564	1,292	656
Total Employees	151,329	131,518	119,631	107,744	99,819	50,290	25,525

Appendix C: Detailed Economic Impacts

Below is a series of tables describing the impacts of each hurricane scenario. The tables show the change in Total Employment, Total GRP, Output, Personal Income, Labor Force, and Population from the forecasted baseline - not the level at event. An additional table is provided detailing the changes in employment by industry from the forecasted baseline. This information is essential for post recovery planning. These tables allow the planning agencies to predict which industries may need more assistance and which industries benefit the most from the disaster related recovery. All results shown are the Net Impacts, including both of the impacts attributed to Employment Losses and Construction and Government Spending.

Net Impacts Summary
Accelerated Rate of Recovery of a Category 5 Hurricane

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Emp (Thous)	88.10	257.80	276.69	51.88	22.95	(15.74)	(9.52)	(1.21)	(0.59)	0.16
Total GRP (Bil 2000\$)	0.13	11.11	12.27	1.46	0.53	(1.36)	(0.83)	(0.11)	(0.06)	(0.01)
Output (Bil 2000\$)	(5.73)	13.50	16.56	4.16	1.53	(2.73)	(1.76)	(0.39)	(0.29)	(0.17)
Personal Income (Bil Nom \$)	2.16	9.71	10.87	3.48	1.99	0.06	0.05	0.25	0.19	0.16
Labor Force (Thous)	7.46	43.88	70.24	55.93	43.72	28.51	19.84	14.97	11.35	8.76
Population (Thous)	4.24	37.49	69.94	67.73	61.57	49.06	40.28	34.33	29.48	25.48

Direct, Indirect, and Induced Employment Changes by Sector (In Thousands)
Accelerated Rate of Recovery of a Category 5 Hurricane

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Forestry, Fishing, Other	(1.03)	(0.56)	(0.38)	(0.49)	(0.30)	(0.22)	(0.14)	(0.04)	(0.03)	(0.02)
Mining	(0.06)	(0.04)	(0.03)	(0.03)	(0.01)	(0.01)	(0.01)	(0.00)	(0.00)	(0.00)
Utilities	(0.19)	0.21	0.31	(0.05)	(0.01)	(0.03)	(0.01)	0.01	0.01	0.01
Construction	47.21	125.22	123.33	65.93	30.71	(1.31)	(2.03)	(1.89)	(1.81)	(1.64)
Manufacturing	(9.08)	(4.69)	(2.83)	(3.52)	(1.97)	(1.43)	(0.83)	(0.14)	(0.10)	(0.06)
Wholesale Trade	(5.84)	(1.33)	0.08	(1.80)	(0.98)	(0.94)	(0.50)	(0.06)	(0.03)	(0.01)
Retail Trade	(2.54)	12.03	13.97	4.80	2.15	(1.60)	(0.95)	(0.22)	(0.11)	0.01
Transp, Warehousing	(5.10)	(2.02)	(0.87)	(1.86)	(0.99)	(0.75)	(0.40)	(0.03)	(0.01)	(0.00)
Information	(3.23)	(0.83)	(0.04)	(1.24)	(0.67)	(0.56)	(0.32)	0.00	0.01	0.03
Finance, Insurance	(7.46)	(0.23)	1.30	(3.05)	(2.03)	(2.11)	(1.35)	(0.40)	(0.25)	(0.12)
Real Estate, Rental, Leasing	(1.39)	2.01	2.44	(0.41)	(0.42)	(0.80)	(0.57)	(0.30)	(0.25)	(0.19)
Profess, Tech Services	(3.43)	6.26	7.68	0.57	(0.03)	(1.51)	(0.94)	(0.21)	(0.15)	(0.09)
Mngmt of Co, Enter	(2.41)	(1.34)	(0.83)	(0.88)	(0.47)	(0.32)	(0.18)	(0.02)	(0.01)	(0.00)
Admin, Waste Services	(11.53)	(0.16)	2.64	(5.11)	(3.21)	(3.18)	(1.96)	(0.52)	(0.32)	(0.12)
Educational Services	(4.86)	(2.10)	(1.00)	(1.87)	(0.98)	(0.71)	(0.39)	(0.02)	(0.00)	0.01
Health Care, Social Asst	(4.36)	2.00	3.90	(0.24)	0.33	(0.10)	0.30	0.86	0.84	0.83
Arts, Enter, Rec	(2.06)	0.17	0.69	(0.82)	(0.48)	(0.50)	(0.29)	(0.04)	(0.02)	0.00
Accom, Food Services	(1.29)	6.64	7.27	(0.07)	(0.22)	(1.15)	(0.65)	(0.09)	(0.03)	0.04
Other Services (excl Gov)	1.25	8.63	8.84	1.91	0.92	(0.44)	(0.20)	0.09	0.10	0.12
Public Admin	110.30	111.65	112.85	2.12	2.63	2.48	2.18	1.81	1.56	1.35
Farm	(4.90)	(3.68)	(2.67)	(2.06)	(1.04)	(0.53)	(0.28)	-	-	-

Net Impacts Summary										
Normal Rate of Recovery of a Category 5 Hurricane										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Emp (Thous)	26.90	30.60	32.50	(36.98)	(59.12)	(44.07)	(23.44)	(1.72)	(0.66)	(0.26)
Total GRP (Bil 2000\$)	(2.00)	(0.93)	(0.88)	(4.21)	(5.45)	(3.67)	(1.99)	(0.13)	(0.06)	(0.04)
Output (Bil 2000\$)	(7.66)	(2.61)	(2.25)	(6.65)	(9.35)	(6.60)	(3.59)	(0.20)	(0.06)	(0.02)
Personal Income (Bil Nom \$)	0.27	1.13	1.19	(1.26)	(2.42)	(2.10)	(1.34)	(0.39)	(0.27)	(0.20)
Labor Force (Thous)	0.08	4.50	7.40	(1.22)	(10.47)	(14.48)	(14.00)	(10.35)	(7.95)	(6.23)
Population (Thous)	(1.24)	2.98	6.97	0.46	(8.70)	(14.54)	(16.38)	(14.70)	(13.21)	(11.86)

Direct, Indirect, and Induced Employment Changes by Sector										
Normal Rate of Recovery of a Category 5 Hurricane										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Forestry, Fishing, Other	(0.87)	(0.73)	(0.66)	(0.66)	(0.62)	(0.32)	(0.15)	0.02	0.02	0.02
Mining	(0.05)	(0.04)	(0.04)	(0.04)	(0.03)	(0.02)	(0.01)	0.00	0.00	0.00
Utilities	(0.22)	(0.20)	(0.18)	(0.27)	(0.29)	(0.16)	(0.09)	(0.01)	(0.01)	(0.01)
Construction	22.60	52.20	49.70	25.30	8.31	(4.73)	(3.12)	(1.10)	(0.24)	0.22
Manufacturing	(7.69)	(6.32)	(5.79)	(5.80)	(5.68)	(3.06)	(1.59)	(0.05)	(0.04)	(0.05)
Wholesale Trade	(5.18)	(4.13)	(3.76)	(4.19)	(4.30)	(2.37)	(1.20)	(0.07)	(0.05)	(0.05)
Retail Trade	(4.53)	(1.16)	(0.56)	(3.33)	(5.21)	(3.83)	(1.94)	(0.07)	(0.01)	0.00
Transp, Warehousing	(4.36)	(3.41)	(3.11)	(3.33)	(3.32)	(1.77)	(0.88)	0.03	0.03	0.02
Information	(2.87)	(2.45)	(2.23)	(2.50)	(2.50)	(1.38)	(0.74)	(0.04)	(0.03)	(0.03)
Finance, Insurance	(6.93)	(5.34)	(4.88)	(5.96)	(6.11)	(3.31)	(1.56)	0.28	0.24	0.19
Real Estate, Rental, Leasing	(1.70)	(1.11)	(1.00)	(1.81)	(2.03)	(1.17)	(0.53)	0.12	0.13	0.12
Profess, Tech Services	(4.50)	(2.93)	(2.65)	(4.78)	(5.69)	(3.65)	(2.00)	(0.24)	(0.18)	(0.15)
Mngmt of Co, Enter	(1.94)	(1.60)	(1.45)	(1.40)	(1.35)	(0.70)	(0.34)	0.01	0.01	0.01
Admin, Waste Services	(10.83)	(9.05)	(8.28)	(10.13)	(10.35)	(5.61)	(2.69)	0.33	0.30	0.24
Educational Services	(4.02)	(3.35)	(3.01)	(3.12)	(3.03)	(1.57)	(0.79)	0.04	0.03	0.02
Health Care, Social Asst	(4.35)	(3.30)	(2.86)	(4.08)	(4.44)	(2.67)	(1.50)	(0.18)	(0.18)	(0.19)
Arts, Enter, Rec	(1.97)	(1.60)	(1.46)	(1.83)	(1.89)	(1.05)	(0.52)	0.02	0.02	0.02
Accom, Food Services	(2.52)	(1.57)	(1.43)	(3.55)	(4.14)	(2.52)	(1.25)	0.04	0.05	0.04
Other Services (excl Gov)	(0.30)	1.48	1.34	(1.10)	(2.00)	(1.56)	(0.84)	(0.08)	(0.06)	(0.05)
Public Admin	73.07	28.61	27.89	(1.63)	(1.89)	(1.33)	(1.04)	(0.78)	(0.70)	(0.63)
Farm	(3.89)	(3.38)	(3.07)	(2.77)	(2.56)	(1.29)	(0.66)	-	-	-

Net Impacts Summary										
Accelerated Rate of Recovery of a Category 3 Hurricane										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Emp (Thous)	43.13	39.88	29.54	(20.55)	(55.73)	(29.85)	(15.95)	(1.09)	(0.23)	0.14
Total GRP (Bil 2000\$)	(0.11)	0.43	(0.12)	(2.56)	(4.56)	(2.48)	(1.36)	(0.09)	(0.03)	(0.00)
Output (Bil 2000\$)	(3.46)	(0.39)	(0.70)	(3.91)	(8.22)	(4.50)	(2.47)	(0.14)	(0.03)	0.02
Personal Income (Bil Nom \$)	1.00	1.47	1.16	(0.59)	(2.23)	(1.41)	(0.90)	(0.25)	(0.16)	(0.11)
Labor Force (Thous)	4.06	8.68	10.17	3.71	(6.76)	(9.08)	(8.80)	(6.38)	(4.80)	(3.65)
Population (Thous)	3.17	8.34	11.41	6.88	(3.09)	(7.14)	(8.60)	(7.62)	(6.76)	(5.98)

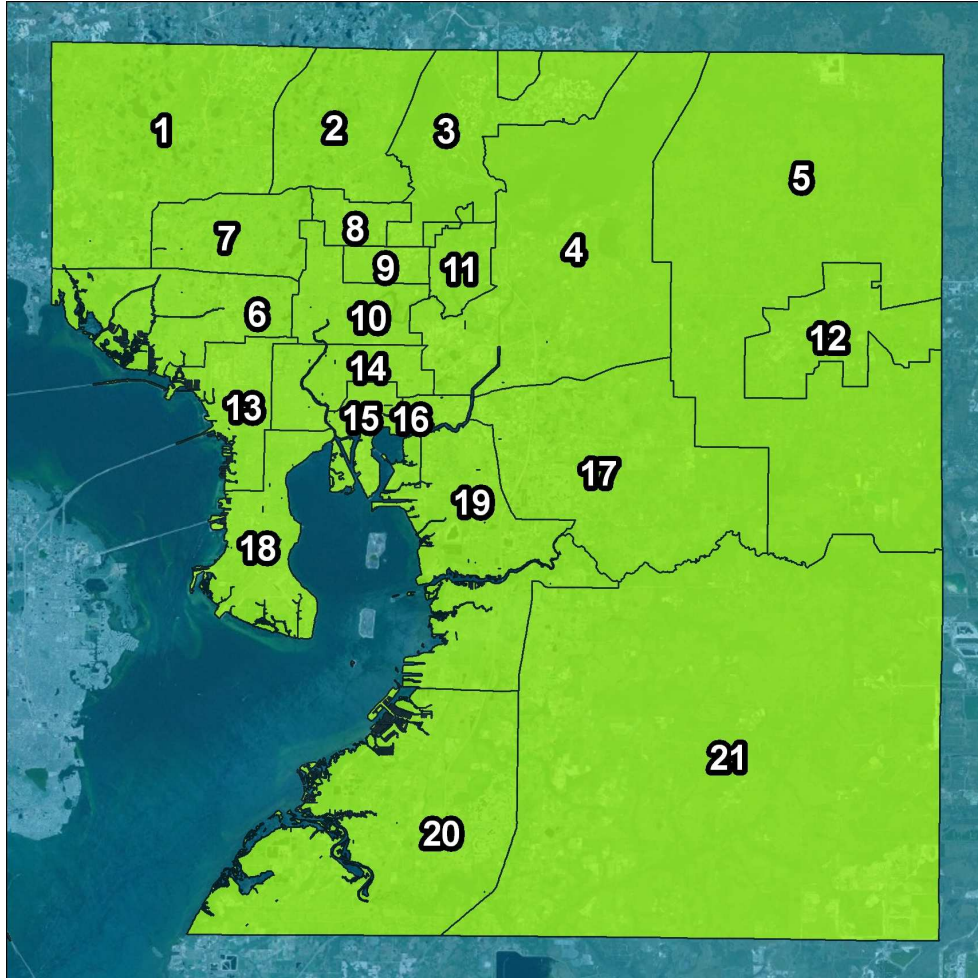
Direct, Indirect, and Induced Employment Changes by Sector										
Accelerated Rate of Recovery of a Category 3 Hurricane										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Forestry, Fishing, Other	(0.57)	(0.48)	(0.45)	(0.45)	(0.45)	(0.22)	(0.11)	0.01	0.01	0.01
Mining	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)	(0.01)	(0.01)	0.00	0.00	0.00
Utilities	(0.10)	(0.09)	(0.10)	(0.17)	(0.21)	(0.11)	(0.05)	(0.01)	(0.00)	(0.00)
Construction	22.30	38.11	35.34	19.30	(4.39)	(3.42)	(2.29)	(0.88)	(0.26)	0.07
Manufacturing	(4.93)	(4.04)	(3.78)	(3.84)	(4.04)	(2.09)	(1.09)	(0.03)	(0.02)	(0.02)
Wholesale Trade	(3.04)	(2.35)	(2.26)	(2.65)	(3.11)	(1.57)	(0.79)	(0.04)	(0.03)	(0.02)
Retail Trade	(1.63)	0.85	0.68	(1.67)	(4.98)	(2.57)	(1.29)	(0.04)	0.02	0.04
Transp, Warehousing	(2.78)	(2.21)	(2.07)	(2.21)	(2.39)	(1.20)	(0.59)	0.02	0.02	0.02
Information	(1.73)	(1.47)	(1.43)	(1.64)	(1.79)	(0.94)	(0.51)	(0.02)	(0.02)	(0.01)
Finance, Insurance	(4.04)	(3.17)	(3.15)	(3.96)	(4.63)	(2.29)	(1.12)	0.18	0.17	0.15
Real Estate, Rental, Leasing	(0.81)	(0.54)	(0.62)	(1.19)	(1.63)	(0.81)	(0.38)	0.06	0.08	0.08
Profess, Tech Services	(2.08)	(1.22)	(1.49)	(3.10)	(4.56)	(2.47)	(1.37)	(0.16)	(0.11)	(0.08)
Mngmt of Co, Enter	(1.23)	(1.02)	(0.94)	(0.92)	(0.94)	(0.47)	(0.24)	0.01	0.01	0.01
Admin, Waste Services	(6.28)	(5.24)	(5.27)	(6.72)	(7.70)	(3.84)	(1.87)	0.21	0.22	0.19
Educational Services	(2.46)	(2.08)	(1.95)	(2.05)	(2.13)	(1.07)	(0.55)	0.03	0.02	0.02
Health Care, Social Asst	(2.28)	(1.68)	(1.64)	(2.55)	(3.31)	(1.75)	(0.98)	(0.05)	(0.04)	(0.05)
Arts, Enter, Rec	(1.12)	(0.92)	(0.92)	(1.21)	(1.40)	(0.71)	(0.36)	0.02	0.02	0.02
Accom, Food Services	(0.84)	(0.40)	(0.72)	(2.25)	(3.36)	(1.70)	(0.85)	0.04	0.05	0.05
Other Services (excl Gov)	0.38	1.10	0.80	(0.68)	(1.98)	(1.04)	(0.56)	(0.04)	(0.02)	(0.01)
Public Admin	59.00	29.01	21.58	(0.69)	(0.99)	(0.68)	(0.50)	(0.40)	(0.36)	(0.32)
Farm	(2.61)	(2.27)	(2.07)	(1.86)	(1.73)	(0.87)	(0.45)	-	-	-

Net Impacts Summary										
Normal Rate of Recovery of a Category 3 Hurricane										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Total Emp (Thous)	2.10	2.80	(4.87)	(51.86)	(84.82)	(45.14)	(24.00)	(2.06)	(1.00)	(0.70)
Total GRP (Bil 2000\$)	(3.12)	(2.36)	(2.77)	(5.04)	(6.92)	(3.75)	(2.04)	(0.16)	(0.09)	(0.08)
Output (Bil 2000\$)	(8.71)	(5.27)	(5.35)	(8.24)	(12.35)	(6.69)	(3.61)	(0.20)	(0.07)	(0.04)
Personal Income (Bil Nom \$)	(0.44)	0.01	(0.32)	(2.06)	(3.69)	(2.35)	(1.52)	(0.52)	(0.37)	(0.29)
Labor Force (Thous)	(3.26)	(2.54)	(3.43)	(11.16)	(22.30)	(22.84)	(20.33)	(15.23)	(11.78)	(9.29)
Population (Thous)	(4.22)	(4.00)	(4.67)	(11.90)	(23.91)	(27.60)	(27.78)	(24.69)	(22.03)	(19.69)

Direct, Indirect, and Induced Employment Changes by Sector										
Normal Rate of Recovery of a Category 3 Hurricane										
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Forestry, Fishing, Other	(0.89)	(0.75)	(0.69)	(0.66)	(0.63)	(0.30)	(0.14)	0.03	0.03	0.02
Mining	(0.05)	(0.04)	(0.04)	(0.04)	(0.04)	(0.02)	(0.01)	0.00	0.00	0.00
Utilities	(0.27)	(0.25)	(0.25)	(0.30)	(0.33)	(0.17)	(0.09)	(0.02)	(0.01)	(0.01)
Construction	19.72	35.00	32.15	16.31	(7.11)	(5.10)	(3.11)	(0.89)	0.06	0.54
Manufacturing	(7.85)	(6.58)	(6.09)	(5.92)	(5.96)	(3.05)	(1.57)	(0.04)	(0.04)	(0.05)
Wholesale Trade	(5.42)	(4.43)	(4.17)	(4.37)	(4.70)	(2.38)	(1.21)	(0.07)	(0.06)	(0.07)
Retail Trade	(5.32)	(2.46)	(2.37)	(4.43)	(7.53)	(3.87)	(1.95)	(0.08)	(0.03)	(0.04)
Transp, Warehousing	(4.55)	(3.76)	(3.47)	(3.47)	(3.55)	(1.77)	(0.87)	0.03	0.03	0.02
Information	(3.06)	(2.64)	(2.49)	(2.60)	(2.69)	(1.40)	(0.75)	(0.05)	(0.05)	(0.05)
Finance, Insurance	(7.44)	(6.06)	(5.72)	(6.22)	(6.67)	(3.18)	(1.45)	0.36	0.30	0.21
Real Estate, Rental, Leasing	(2.02)	(1.59)	(1.56)	(2.01)	(2.37)	(1.12)	(0.47)	0.17	0.18	0.16
Profess, Tech Services	(5.28)	(4.11)	(4.18)	(5.57)	(6.88)	(3.70)	(2.03)	(0.26)	(0.20)	(0.19)
Mngmt of Co, Enter	(1.98)	(1.65)	(1.51)	(1.43)	(1.41)	(0.69)	(0.34)	0.02	0.01	0.01
Admin, Waste Services	(11.82)	(10.05)	(9.61)	(10.57)	(11.22)	(5.45)	(2.54)	0.44	0.37	0.26
Educational Services	(4.17)	(3.52)	(3.24)	(3.20)	(3.18)	(1.56)	(0.78)	0.04	0.03	0.01
Health Care, Social Asst	(4.89)	(4.01)	(3.84)	(4.60)	(5.27)	(2.91)	(1.74)	(0.41)	(0.41)	(0.42)
Arts, Enter, Rec	(2.15)	(1.81)	(1.74)	(1.94)	(2.08)	(1.04)	(0.52)	0.03	0.02	0.01
Accom, Food Services	(3.30)	(2.56)	(2.70)	(4.03)	(5.01)	(2.51)	(1.25)	0.04	0.04	0.01
Other Services (excl Gov)	(1.12)	(0.24)	(0.45)	(1.82)	(3.04)	(1.62)	(0.89)	(0.12)	(0.10)	(0.10)
Public Admin	57.84	27.69	20.13	(2.23)	(2.59)	(2.01)	(1.64)	(1.30)	(1.17)	(1.04)
Farm	(3.89)	(3.38)	(3.07)	(2.77)	(2.56)	(1.29)	(0.66)	-	-	-

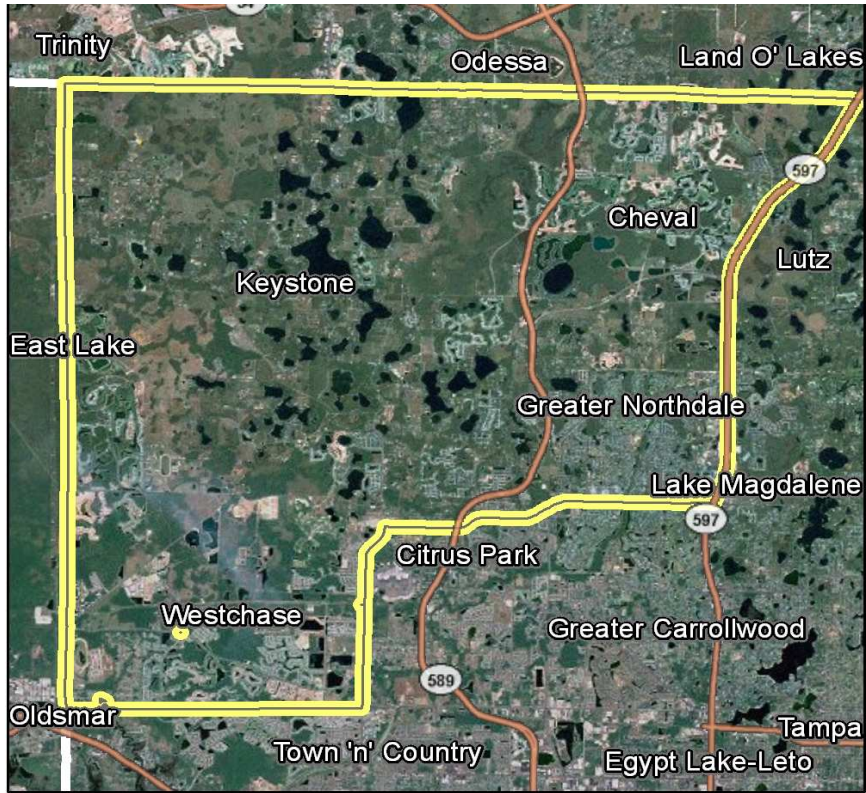
Appendix D: Population and Employment Inventory by EAZ

HILLSBOROUGH COUNTY EVACUATION ANALYSIS ZONES (EAZs) Index Map



- | | |
|--|--|
| <ul style="list-style-type: none"> 1. Keystone / Odessa / Westchase 2. Lutz / Northdale 3. USF / Tampa Palms / New Tampa 4. Mango / Seffner / Thonotosassa 5. East Rural 6. Town 'n' Country / Egypt Lake 7. Carrollwood / Citrus Park 8. University Area 9. Busch Gardens Area 10. Lowry Park/Sulphur Springs 11. Temple Terrace | <ul style="list-style-type: none"> 12. Plant City 13. Westshore 14. Central Tampa 15. Downtown Tampa / Ybor City 16. Channelside / Harbor Island 17. Brandon / Valrico 18. South Tampa 19. Palm River/ Riverview/ Gibsonton 20. Apollo Beach / Sun City 21. Fishhawk / South Rural |
|--|--|

Hillsborough EAZ 1 - Keystone / Odessa / Westchase



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	76,927
Permanent Occupied Units	31,207
Mobile Home Units	617

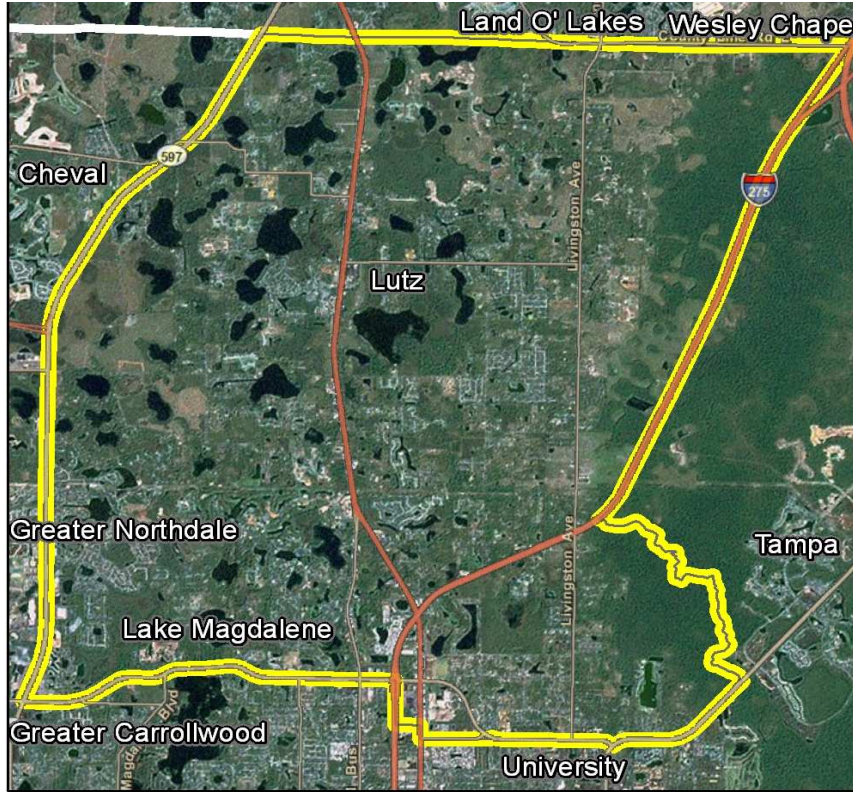
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	2.21%
Percent of Wages in Hillsborough	1.87%

Employment by Sector

Retail Trade	15.78%
Construction	12.04%
Professional and Technical Services	10.33%
Manufacturing	9.89%
Accommodation and Food Services	9.61%
Health Care and Social Assistance	9.31%
Arts, Entertainment, and Recreation	6.25%
Administrative and Waste Service	5.68%
Finance and Insurance	5.03%
Other Services	4.83%
Wholesale Trade	4.76%
Real Estate and Rental and Leasing	2.55%
Management of Companies and Enterprises	1.25%
Transportation and Warehousing	0.93%
Information	0.47%
Educational Services	0.44%
Farming - Crop and Animal Production	0.44%
Forestry, Fishing, and Related Activities	0.26%
Government and Military	0.09%
Unknown	0.07%

Hillsborough EAZ 2 - Lutz / Northdale



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	37,971
Permanent Occupied Units	16,334
Mobile Home Units	1,075

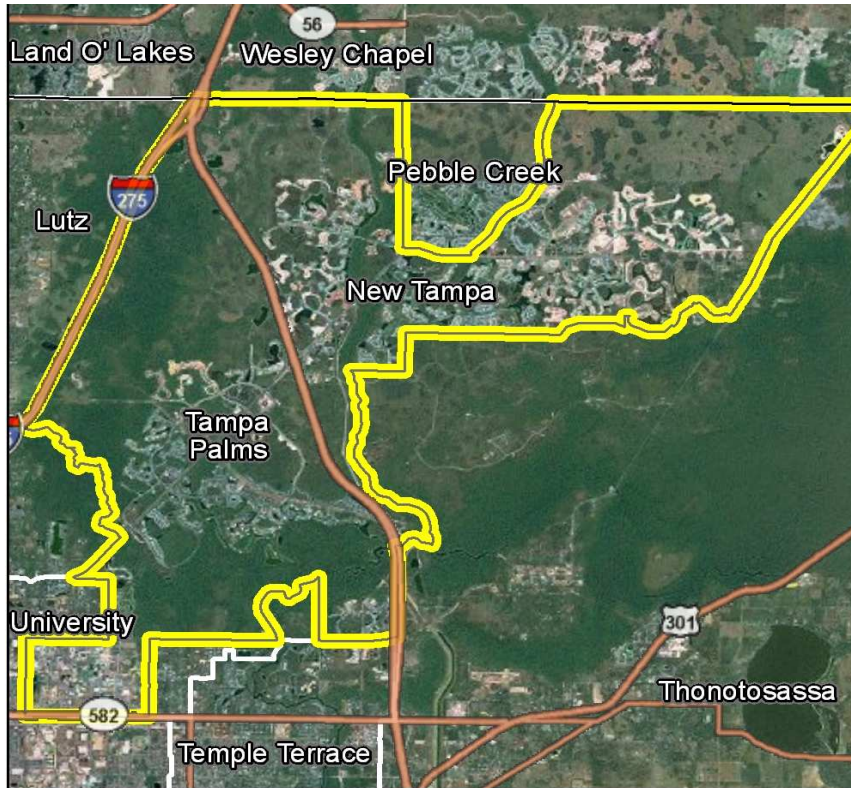
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	1.39%
Percent of Wages in Hillsborough	1.00%

Employment by Sector

Retail Trade	22.26%
Accommodation and Food Services	15.14%
Health Care and Social Assistance	12.09%
Construction	12.08%
Professional and Technical Services	8.34%
Administrative and Waste Service	4.91%
Management of Companies and Enterprises	3.85%
Other Services	3.77%
Wholesale Trade	3.39%
Real Estate and Rental and Leasing	2.91%
Transportation and Warehousing	2.78%
Finance and Insurance	2.50%
Farming - Crop and Animal Production	2.30%
Arts, Entertainment, and Recreation	1.66%
Manufacturing	1.09%
Educational Services	0.54%
Mining	0.17%
Forestry, Fishing, and Related Activities	0.13%
Information	0.10%
Utilities	0.03%

Hillsborough EAZ 3 - USF / Tampa Palms / New Tampa



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	52,106
Permanent Occupied Units	24,029
Mobile Home Units	59

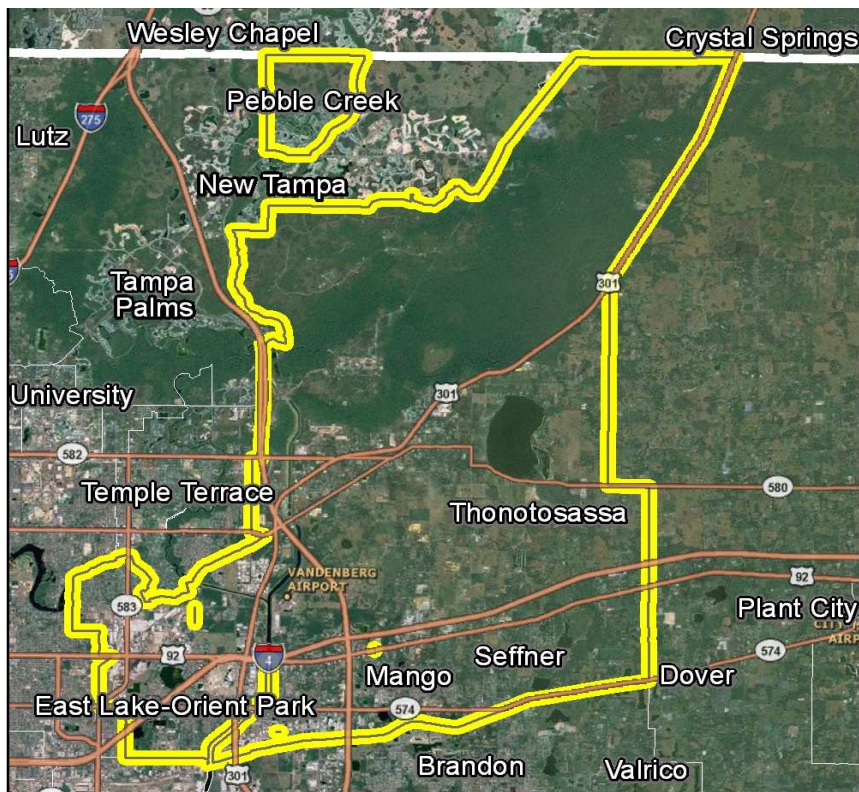
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	5.52%
Percent of Wages in Hillsborough	6.19%

Employment by Sector

Educational Services	24.37%
Health Care and Social Assistance	15.78%
Finance and Insurance	14.72%
Administrative and Waste Service	11.66%
Professional and Technical Services	8.30%
Retail Trade	7.51%
Accommodation and Food Services	6.85%
Information	3.35%
Manufacturing	1.87%
Other Services	1.78%
Arts, Entertainment, and Recreation	1.60%
Wholesale Trade	1.15%
Transportation and Warehousing	0.34%
Construction	0.33%
Real Estate and Rental and Leasing	0.19%
Government and Military	0.07%
Management of Companies and Enterprises	0.06%
Farming - Crop and Animal Production	0.02%
Utilities	0.01%
Unknown	0.03%

Hillsborough EAZ 4 - Mango / Seffner / Thonotosassa



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	58,628
Permanent Occupied Units	24,157
Mobile Home Units	4,520

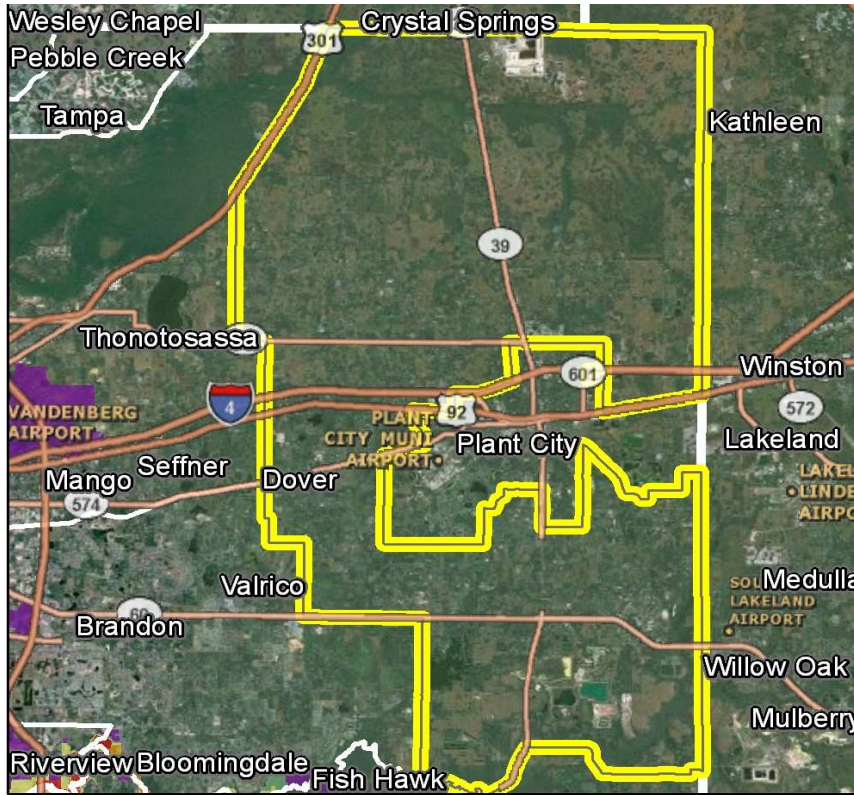
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	8.69%
Percent of Wages in Hillsborough	10.42%

Employment by Sector

Administrative and Waste Service	8.84%
Retail Trade	14.90%
Finance and Insurance	12.77%
Wholesale Trade	12.33%
Construction	11.46%
Manufacturing	6.01%
Professional and Technical Services	5.36%
Arts, Entertainment, and Recreation	4.54%
Information	4.46%
Health Care and Social Assistance	4.35%
Transportation and Warehousing	2.83%
Accommodation and Food Services	2.48%
Educational Services	2.05%
Other Services	1.83%
Real Estate and Rental and Leasing	1.49%
Farming - Crop and Animal Production	1.34%
Management of Companies and Enterprises	1.11%
Utilities	0.93%
Government and Military	0.45%
Forestry, Fishing, and Related Activities	0.36%
Mining	0.11%

Hillsborough EAZ 5 - East Rural



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	50,166
Permanent Occupied Units	32,737
Mobile Home Units	5,145

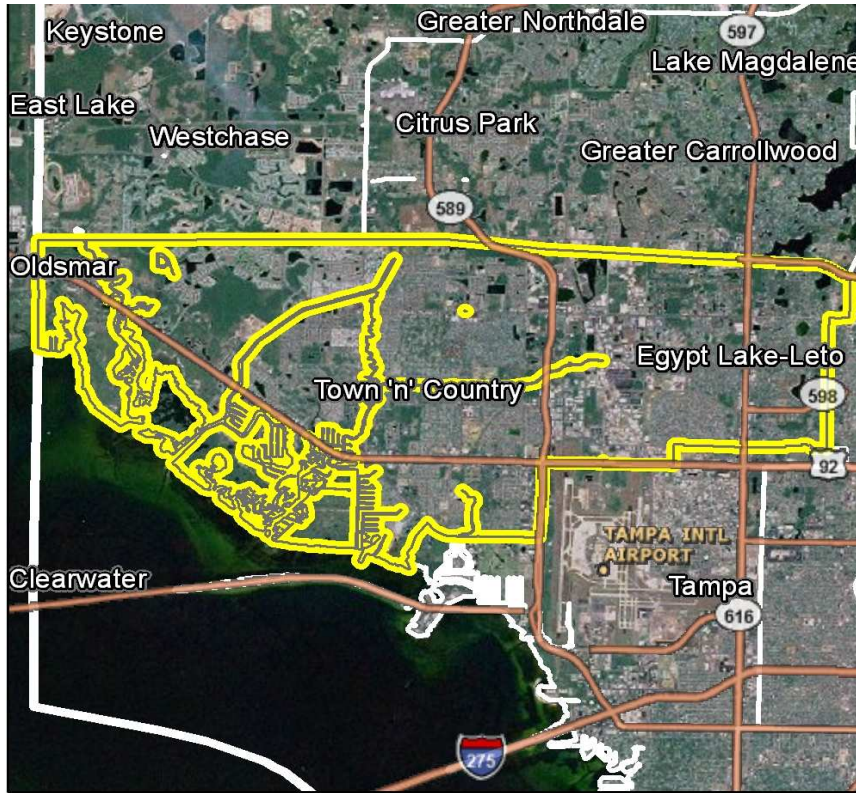
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	1.70%
Percent of Wages in Hillsborough	0.81%

Employment by Sector

Farming - Crop and Animal Production	61.69%
Construction	6.30%
Retail Trade	5.23%
Transportation and Warehousing	5.16%
Other Services	4.47%
Health Care and Social Assistance	3.69%
Wholesale Trade	3.27%
Forestry, Fishing, and Related Activities	2.36%
Manufacturing	2.13%
Accommodation and Food Services	1.55%
Administrative and Waste Service	1.25%
Real Estate and Rental and Leasing	0.73%
Mining	0.72%
Professional and Technical Services	0.64%
Finance and Insurance	0.42%
Arts, Entertainment, and Recreation	0.31%
Management of Companies and Enterprises	0.06%
Educational Services	0.02%
Information	0.02%

Hillsborough EAZ 6 - Town 'n' Country / Egypt Lake



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	112,402
Permanent Occupied Units	48,673
Mobile Home Units	2,429

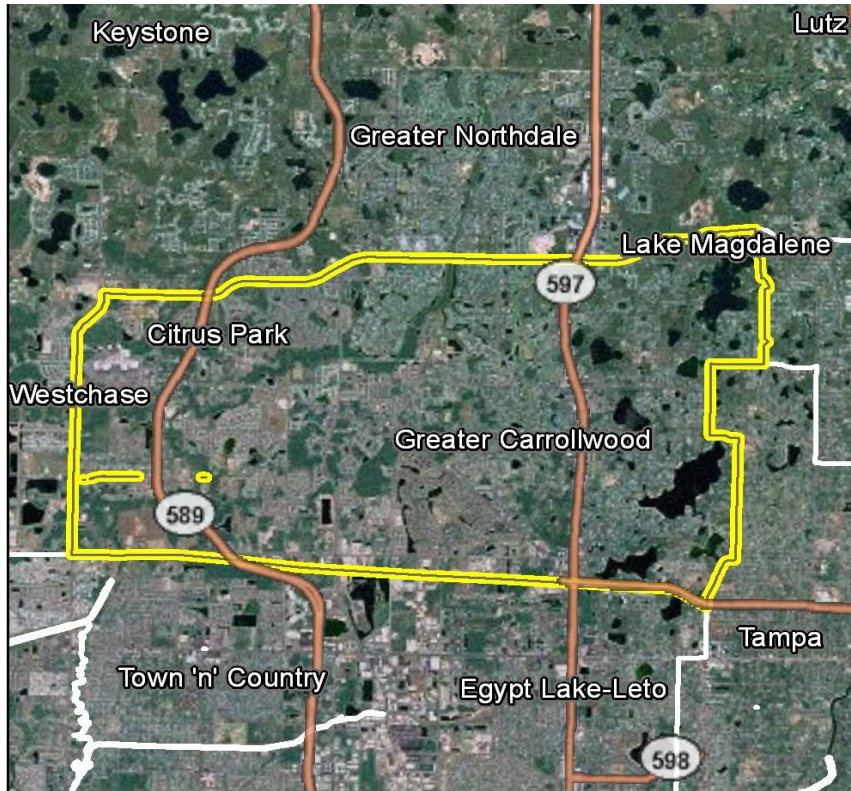
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	8.83%
Percent of Wages in Hillsborough	8.42%

Employment by Sector

Finance and Insurance	15.59%
Professional and Technical Services	12.64%
Retail Trade	11.66%
Administrative and Waste Service	11.48%
Wholesale Trade	9.99%
Health Care and Social Assistance	7.79%
Manufacturing	7.09%
Construction	5.76%
Information	4.47%
Real Estate and Rental and Leasing	3.62%
Accommodation and Food Services	3.57%
Educational Services	2.04%
Transportation and Warehousing	1.85%
Other Services	1.58%
Arts, Entertainment, and Recreation	0.44%
Utilities	0.19%
Government and Military	0.13%
Farming - Crop and Animal Production	0.07%
Management of Companies and Enterprises	0.03%

Hillsborough EAZ 7 - Carrollwood / Citrus Park



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	62,025
Permanent Occupied Units	26,245
Mobile Home Units	605

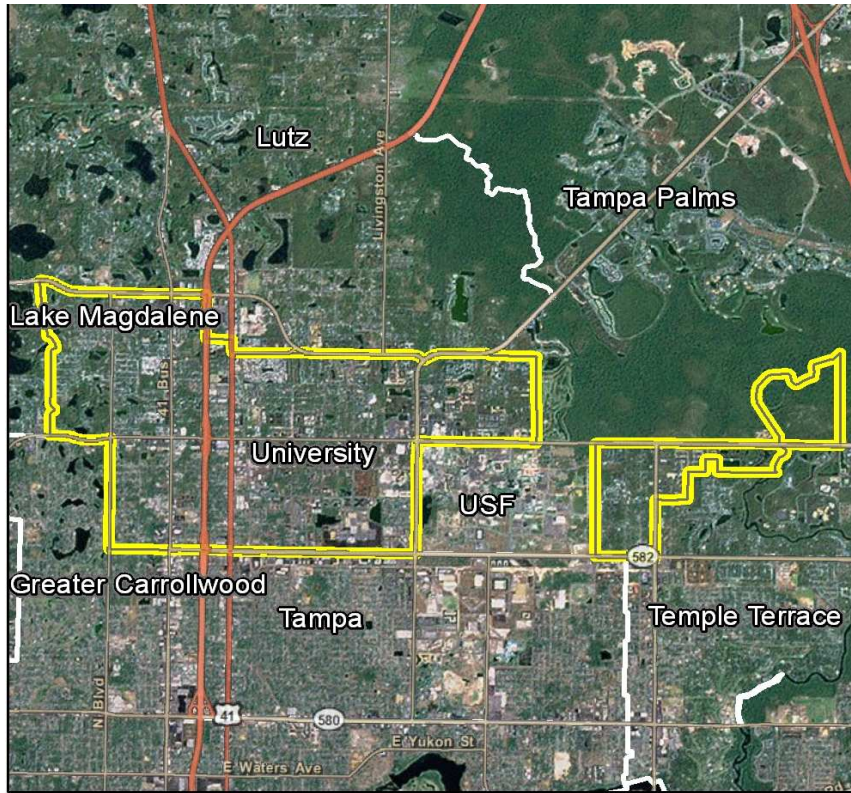
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	3.07%
Percent of Wages in Hillsborough	2.99%

Employment by Sector

Health Care and Social Assistance	9.01%
Retail Trade	25.05%
Accommodation and Food Services	14.69%
Administrative and Waste Service	9.82%
Finance and Insurance	7.66%
Professional and Technical Services	6.65%
Manufacturing	4.83%
Other Services	4.51%
Construction	4.16%
Wholesale Trade	2.97%
Real Estate and Rental and Leasing	2.79%
Educational Services	1.89%
Government and Military	1.84%
Information	1.71%
Arts, Entertainment, and Recreation	1.17%
Transportation and Warehousing	1.13%
Farming - Crop and Animal Production	0.07%
Management of Companies and Enterprises	0.04%
Utilities	0.01%

Hillsborough EAZ 8 - University Area



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	41,841
Permanent Occupied Units	21,741
Mobile Home Units	1,095

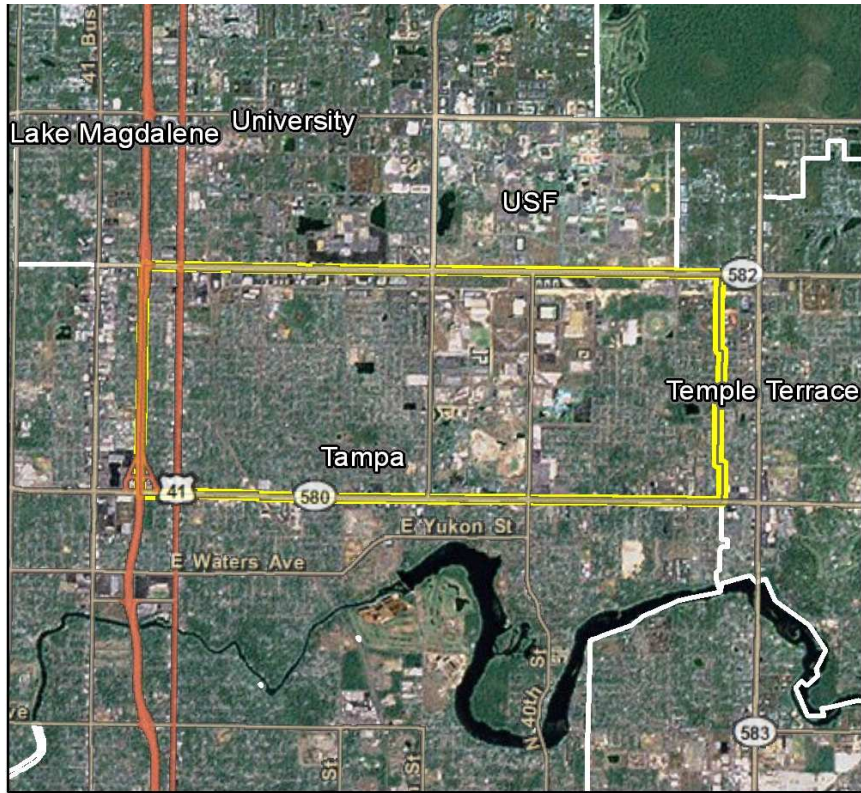
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	3.94%
Percent of Wages in Hillsborough	3.44%

Employment by Sector

Health Care and Social Assistance	58.24%
Retail Trade	12.47%
Administrative and Waste Service	6.15%
Accommodation and Food Services	6.01%
Construction	3.61%
Professional and Technical Services	2.69%
Other Services	2.12%
Real Estate and Rental and Leasing	1.84%
Information	1.80%
Finance and Insurance	1.60%
Wholesale Trade	1.16%
Transportation and Warehousing	0.80%
Manufacturing	0.69%
Arts, Entertainment, and Recreation	0.41%
Educational Services	0.39%
Management of Companies and Enterprises	0.01%
Government and Military	0.01%

Hillsborough EAZ 9 - Busch Gardens Area



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	26,329
Permanent Occupied Units	11,122
Mobile Home Units	215

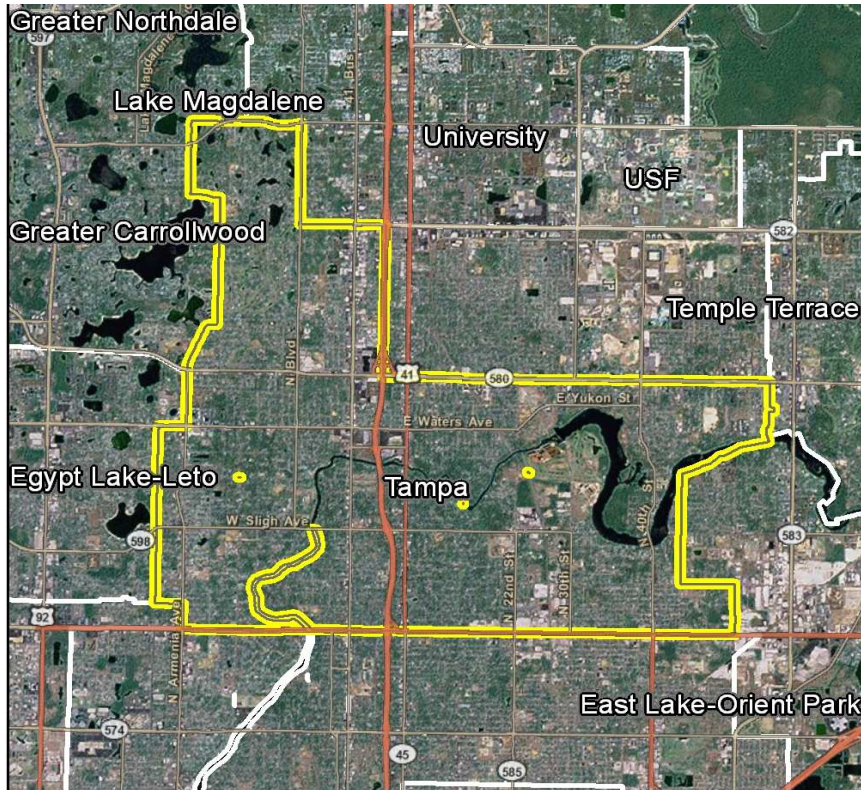
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	2.06%
Percent of Wages in Hillsborough	1.47%

Employment by Sector

Arts, Entertainment, and Recreation	33.84%
Manufacturing	9.89%
Finance and Insurance	9.19%
Construction	8.68%
Health Care and Social Assistance	7.21%
Retail Trade	6.13%
Accommodation and Food Services	6.12%
Information	4.77%
Administrative and Waste Service	3.71%
Professional and Technical Services	3.69%
Wholesale Trade	2.35%
Transportation and Warehousing	1.49%
Educational Services	0.99%
Other Services	0.90%
Real Estate and Rental and Leasing	0.64%
Government and Military	0.40%

Hillsborough EAZ 10 - Lowry Park / Forest Hills / Sulphur Springs



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	71,064
Permanent Occupied Units	31,245
Mobile Home Units	408

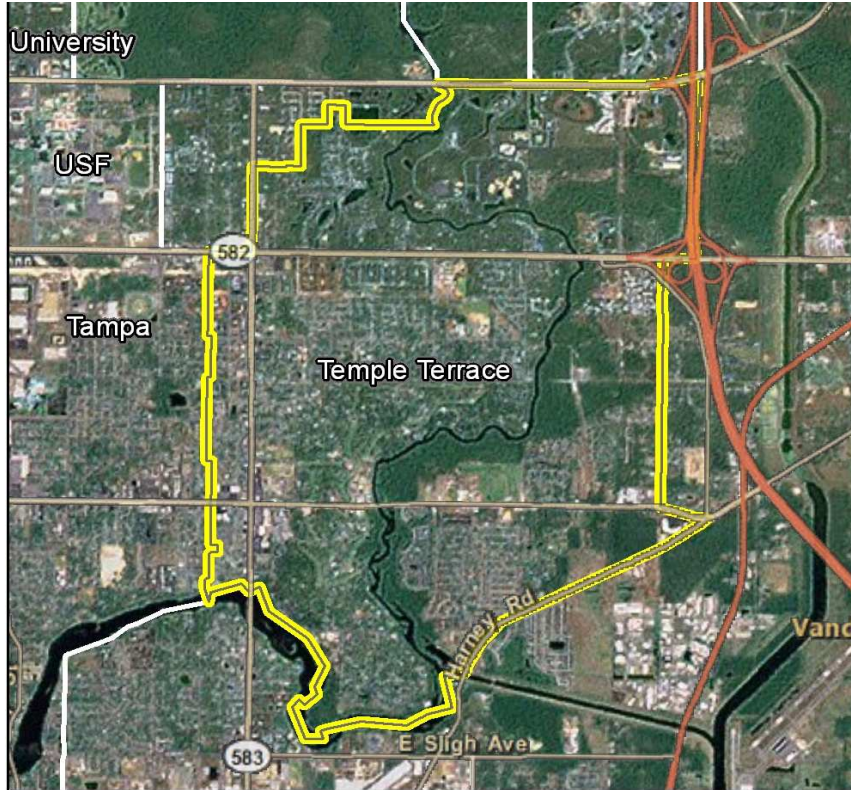
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	2.05%
Percent of Wages in Hillsborough	1.38%

Employment by Sector

Retail Trade	26.45%
Health Care and Social Assistance	13.30%
Accommodation and Food Services	7.60%
Government and Military	7.13%
Construction	6.34%
Finance and Insurance	5.58%
Other Services	5.18%
Professional and Technical Services	5.00%
Arts, Entertainment, and Recreation	4.75%
Administrative and Waste Service	4.49%
Wholesale Trade	4.05%
Educational Services	3.86%
Manufacturing	2.65%
Real Estate and Rental and Leasing	1.82%
Transportation and Warehousing	0.90%
Farming - Crop and Animal Production	0.62%
Information	0.20%
Management of Companies and Enterprises	0.08%
Unknown	0.02%
	0

Hillsborough EAZ 11 - Temple Terrace



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	26,817
Permanent Occupied Units	12,162
Mobile Home Units	304

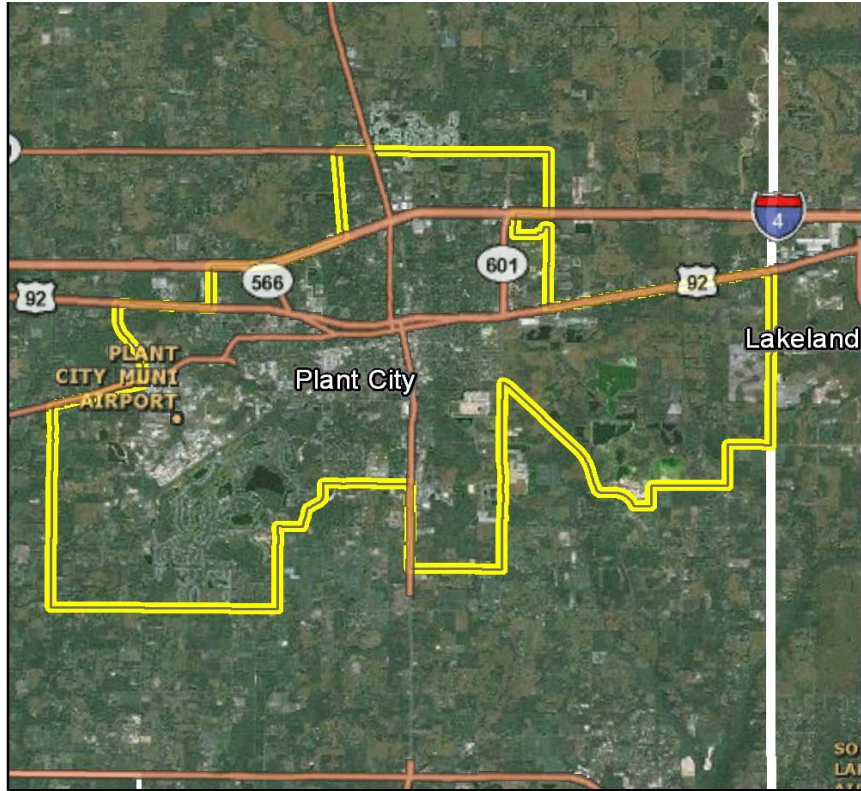
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	1.20%
Percent of Wages in Hillsborough	1.03%

Employment by Sector

Retail Trade	15.64%
Educational Services	15.41%
Health Care and Social Assistance	13.76%
Accommodation and Food Services	12.50%
Manufacturing	10.77%
Administrative and Waste Service	5.59%
Government and Military	5.39%
Finance and Insurance	4.53%
Professional and Technical Services	4.49%
Information	2.24%
Arts, Entertainment, and Recreation	2.14%
Construction	1.90%
Other Services	1.59%
Real Estate and Rental and Leasing	1.54%
Transportation and Warehousing	1.32%
Wholesale Trade	1.11%
Farming - Crop and Animal Production	0.08%
	0
	0
	0

Hillsborough EAZ 12 - Plant City



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	34,988
Permanent Occupied Units	13,686
Mobile Home Units	907

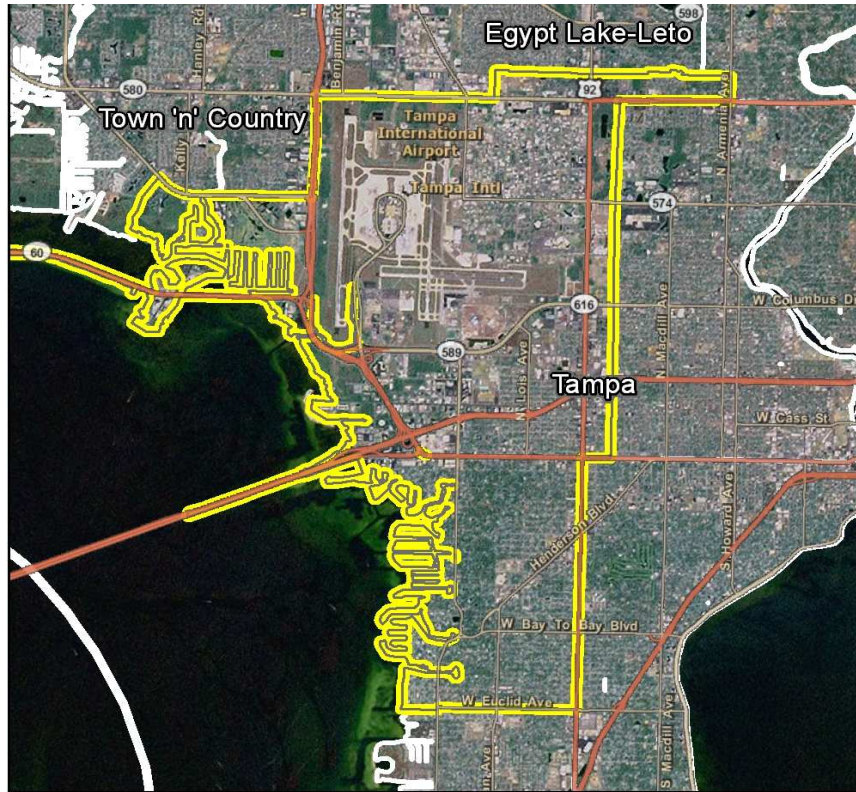
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	3.23%
Percent of Wages in Hillsborough	2.24%

Employment by Sector

Manufacturing	20.86%
Farming - Crop and Animal Production	18.55%
Retail Trade	11.42%
Health Care and Social Assistance	8.52%
Wholesale Trade	6.38%
Transportation and Warehousing	5.87%
Accommodation and Food Services	5.55%
Construction	5.43%
Government and Military	3.58%
Administrative and Waste Service	2.90%
Arts, Entertainment, and Recreation	2.58%
Professional and Technical Services	2.20%
Finance and Insurance	1.66%
Other Services	1.41%
Forestry, Fishing, and Related Activities	0.91%
Real Estate and Rental and Leasing	0.63%
Information	0.61%
Utilities	0.60%
Management of Companies and Enterprises	0.24%
Educational Services	0.12%

Hillsborough EAZ 13 - Westshore



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	76,927
Permanent Occupied Units	31,207
Mobile Home Units	617

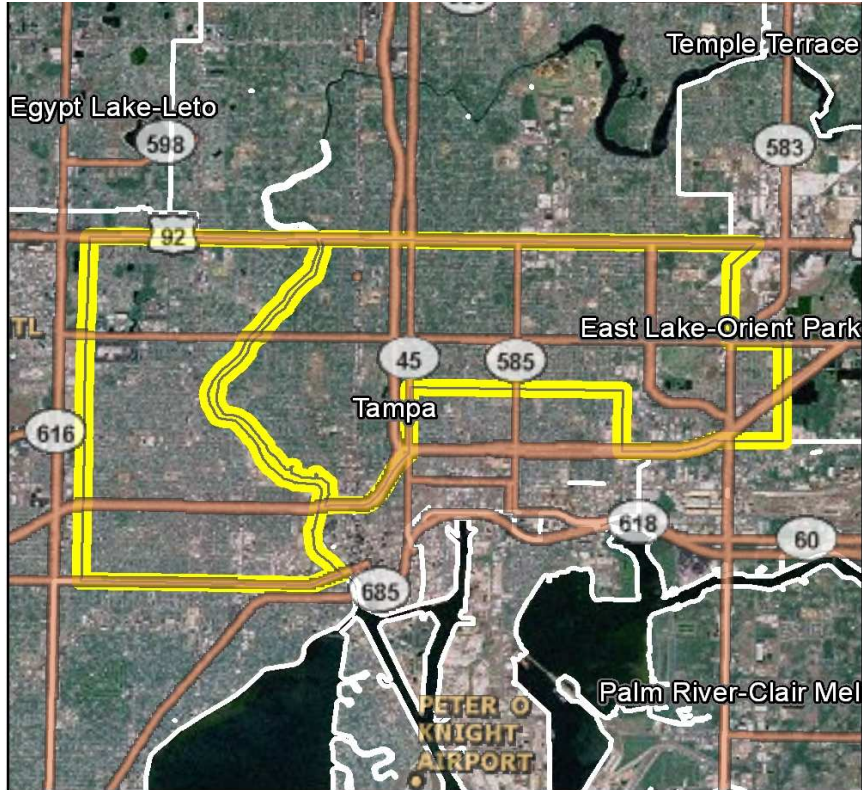
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	14.40%
Percent of Wages in Hillsborough	19.88%

Employment by Sector

Professional and Technical Services	14.23%
Administrative and Waste Service	13.96%
Finance and Insurance	13.76%
Retail Trade	9.30%
Accommodation and Food Services	8.24%
Transportation and Warehousing	6.43%
Wholesale Trade	5.36%
Construction	5.22%
Information	5.16%
Health Care and Social Assistance	4.63%
Management of Companies and Enterprises	4.14%
Other Services	2.27%
Real Estate and Rental and Leasing	2.20%
Arts, Entertainment, and Recreation	1.59%
Government and Military	1.43%
Manufacturing	1.10%
Educational Services	0.97%
Utilities	0.01%
Farming - Crop and Animal Production	0.00%
Mining	0.00%

Hillsborough EAZ 14 - Central Tampa



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	74,830
Permanent Occupied Units	32,496
Mobile Home Units	356

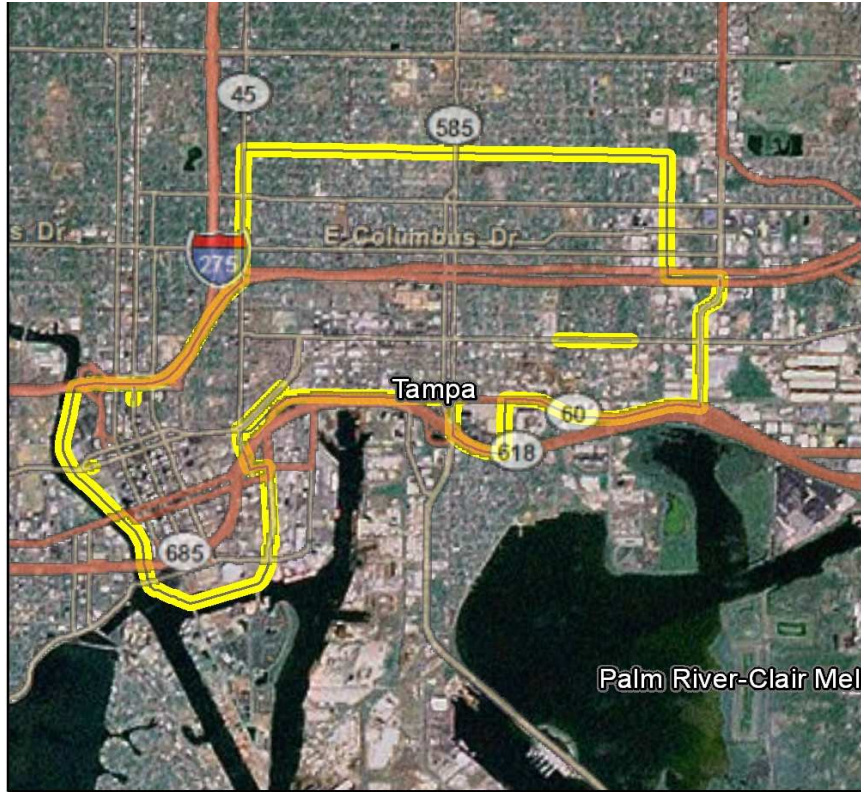
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	5.63%
Percent of Wages in Hillsborough	4.99%

Employment by Sector

Health Care and Social Assistance	27.91%
Administrative and Waste Service	8.51%
Educational Services	7.90%
Construction	7.24%
Professional and Technical Services	6.67%
Retail Trade	6.59%
Other Services	6.40%
Management of Companies and Enterprises	5.94%
Transportation and Warehousing	5.07%
Manufacturing	4.11%
Information	3.13%
Finance and Insurance	3.09%
Wholesale Trade	3.04%
Accommodation and Food Services	2.92%
Real Estate and Rental and Leasing	0.97%
Arts, Entertainment, and Recreation	0.50%
Unknown	0.01%
Utilities	0.01%
Farming - Crop and Animal Production	0.01%

Hillsborough EAZ 15 - Downtown Tampa / Ybor City



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	14,061
Permanent Occupied Units	6,182
Mobile Home Units	17

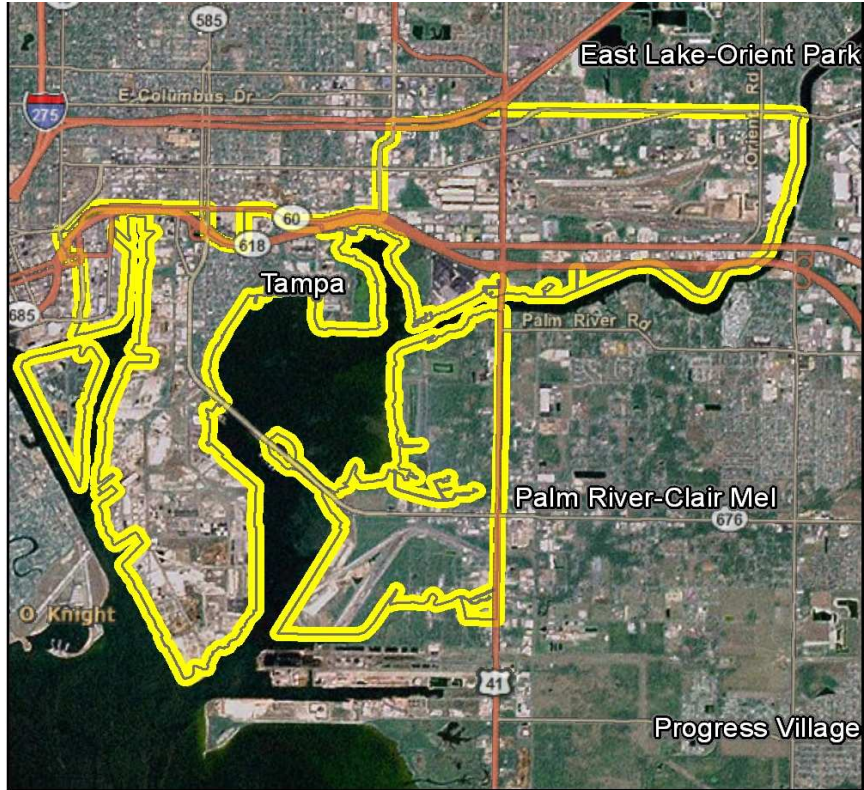
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	14.39%
Percent of Wages in Hillsborough	15.56%

Employment by Sector

Educational Services*	38.47%
Government and Military*	23.59%
Administrative and Waste Service	11.87%
Professional and Technical Services	6.88%
Accommodation and Food Services	2.99%
Finance and Insurance	2.77%
Arts, Entertainment, and Recreation	1.66%
Construction	1.62%
Utilities	1.39%
Wholesale Trade	1.38%
Transportation and Warehousing	1.30%
Information	1.16%
Other Services	1.13%
Manufacturing	0.92%
Management of Companies and Enterprises	0.86%
Real Estate and Rental and Leasing	0.72%
Retail Trade	0.70%
Health Care and Social Assistance	0.58%
Farming - Crop and Animal Production	0.02%
Forestry, Fishing, and Related Activities	0.00%

Hillsborough EAZ 16 - Channelside / Harbour Island / Palmetto Beach



**Tampa Bay Hurricane Evacuation
Transportation Analysis 2006**

Population Estimate	8,917
Permanent Occupied Units	4,221
Mobile Home Units	322

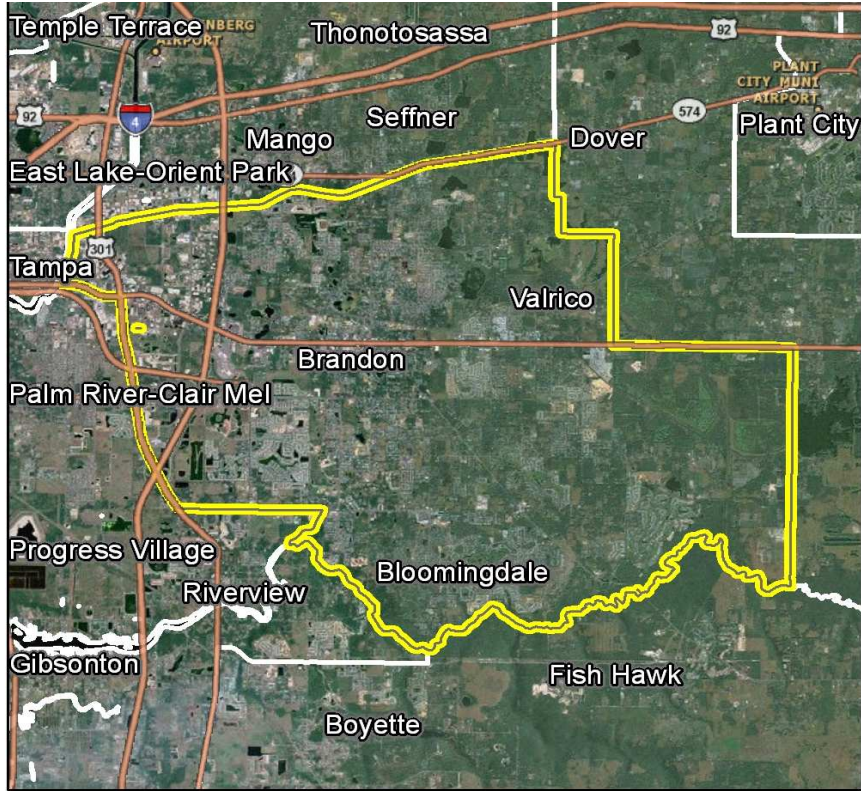
**Quarterly Census of Employment
and Wages - 2008 Q1**

Percent of Employees in Hillsborough	2.60%
Percent of Wages in Hillsborough	2.53%

Employment by Sector

Wholesale Trade	19.10%
Manufacturing	19.04%
Transportation and Warehousing	18.10%
Construction	8.20%
Administrative and Waste Service	6.99%
Professional and Technical Services	6.49%
Accommodation and Food Services	5.46%
Retail Trade	4.28%
Other Services	4.12%
Real Estate and Rental and Leasing	2.92%
Arts, Entertainment, and Recreation	1.79%
Finance and Insurance	1.54%
Government and Military	1.18%
Information	0.37%
Health Care and Social Assistance	0.37%
Mining	0.04%
Unknown	0.01%
Educational Services	0.01%

Hillsborough EAZ 17 - Brandon / Valrico



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	158,363
Permanent Occupied Units	61,302
Mobile Home Units	2,771

Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	6.90%
Percent of Wages in Hillsborough	5.24%

Employment by Sector

Retail Trade	24.96%
Health Care and Social Assistance	13.52%
Accommodation and Food Services	13.02%
Construction	6.87%
Administrative and Waste Service	6.81%
Manufacturing	6.58%
Finance and Insurance	5.84%
Wholesale Trade	5.63%
Professional and Technical Services	5.22%
Other Services	3.48%
Real Estate and Rental and Leasing	2.16%
Arts, Entertainment, and Recreation	1.63%
Transportation and Warehousing	1.55%
Educational Services	1.26%
Information	0.75%
Farming - Crop and Animal Production	0.46%
Utilities	0.09%
Forestry, Fishing, and Related Activities	0.09%
Management of Companies and Enterprises	0.08%
Unknown	0.01%

Hillsborough EAZ 18 - South Tampa / Davis Islands



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	81,222
Permanent Occupied Units	42,244
Mobile Home Units	1,166

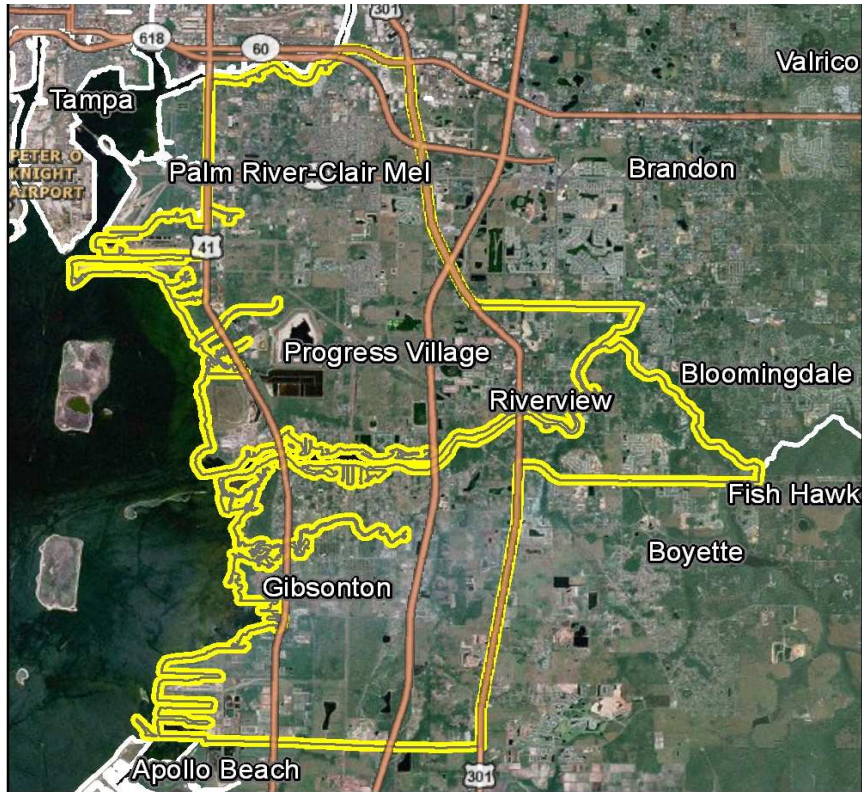
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	6.23%
Percent of Wages in Hillsborough	5.70%

Employment by Sector

Health Care and Social Assistance	29.73%
Retail Trade	9.56%
Professional and Technical Services	9.41%
Educational Services	7.31%
Finance and Insurance	6.71%
Accommodation and Food Services	6.41%
Manufacturing	6.11%
Administrative and Waste Service	5.67%
Other Services	4.64%
Construction	4.42%
Information	3.98%
Real Estate and Rental and Leasing	1.80%
Wholesale Trade	1.49%
Arts, Entertainment, and Recreation	1.31%
Transportation and Warehousing	0.89%
Management of Companies and Enterprises	0.49%
Farming - Crop and Animal Production	0.03%
Forestry, Fishing, and Related Activities	0.01%
Mining	0.00%

Hillsborough EAZ 19 - Palm River / Riverview / Gibsonton



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	64,662
Permanent Occupied Units	25,423
Mobile Home Units	4,467

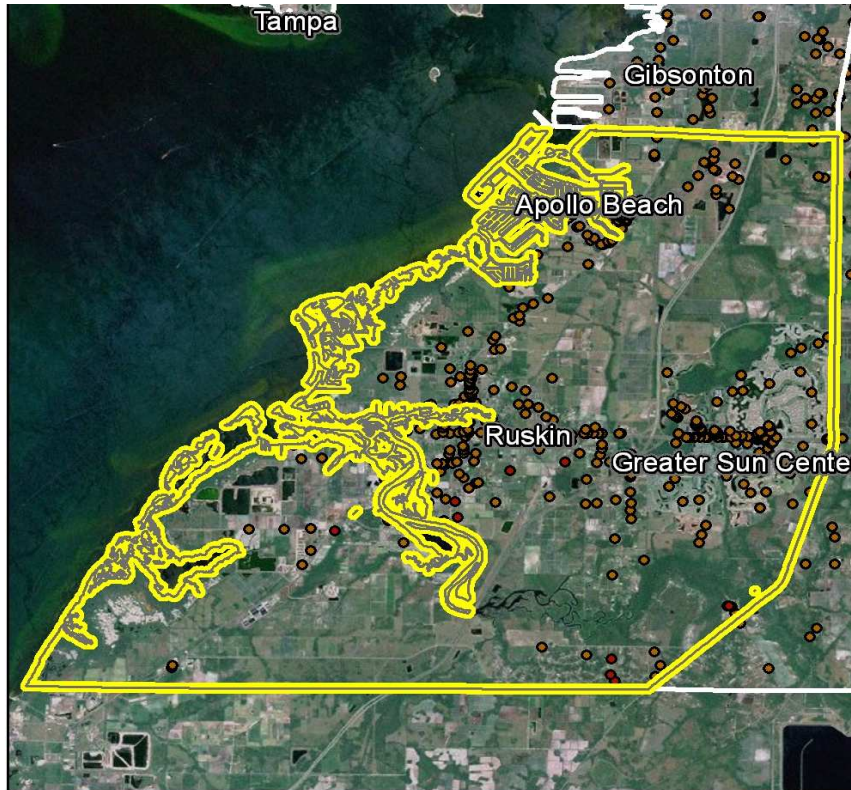
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	3.12%
Percent of Wages in Hillsborough	3.02%

Employment by Sector

Wholesale Trade	22.41%
Manufacturing	14.06%
Retail Trade	13.93%
Construction	12.81%
Administrative and Waste Service	8.85%
Health Care and Social Assistance	5.36%
Information	3.67%
Utilities	3.15%
Accommodation and Food Services	2.72%
Professional and Technical Services	2.41%
Transportation and Warehousing	2.36%
Other Services	2.27%
Real Estate and Rental and Leasing	1.77%
Farming - Crop and Animal Production	1.46%
Management of Companies and Enterprises	1.21%
Finance and Insurance	0.71%
Educational Services	0.62%
Arts, Entertainment, and Recreation	0.16%
Mining	0.05%
Unknown	0.02%

Hillsborough EAZ 20 - Apollo Beach / Sun City



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	47,679
Permanent Occupied Units	27,498
Mobile Home Units	3,644

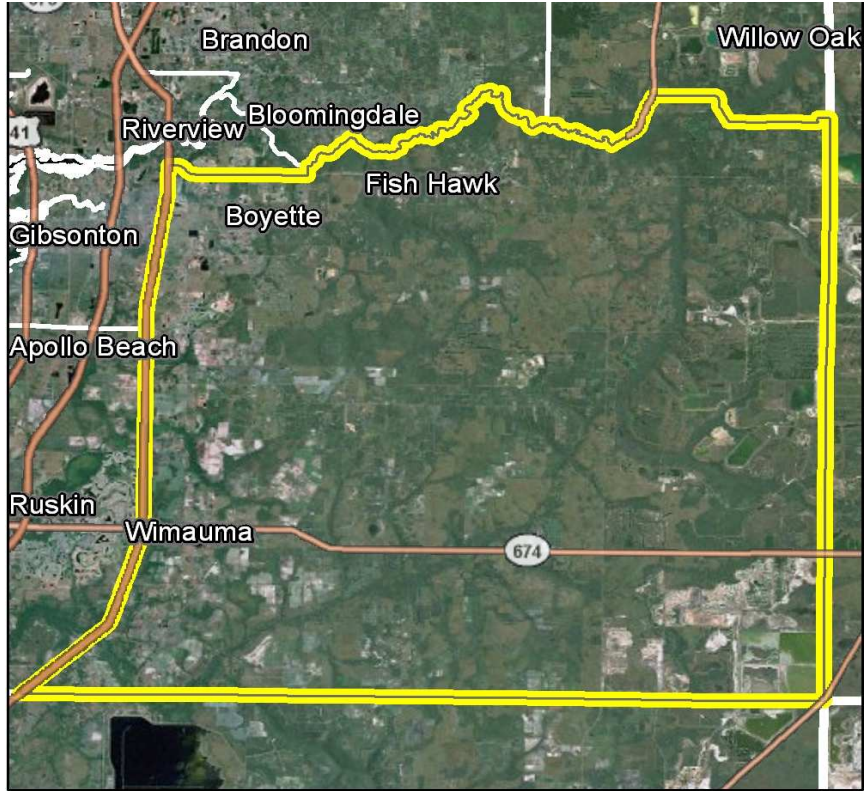
Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	1.67%
Percent of Wages in Hillsborough	1.15%

Employment by Sector

Health Care and Social Assistance	23.12%
Retail Trade	15.45%
Accommodation and Food Services	8.84%
Farming - Crop and Animal Production	7.83%
Forestry, Fishing, and Related Activities	6.42%
Arts, Entertainment, and Recreation	6.26%
Utilities	6.13%
Manufacturing	4.08%
Construction	3.71%
Administrative and Waste Service	3.16%
Other Services	3.08%
Professional and Technical Services	2.80%
Real Estate and Rental and Leasing	2.71%
Finance and Insurance	2.25%
Wholesale Trade	1.70%
Transportation and Warehousing	1.37%
Management of Companies and Enterprises	0.70%
Educational Services	0.24%
Information	0.15%
Unknown	0.01%

Hillsborough EAZ 21 - Fish Hawk / South Rural



Tampa Bay Hurricane Evacuation Transportation Analysis 2006

Population Estimate	43,062
Permanent Occupied Units	15,558
Mobile Home Units	4,135

Quarterly Census of Employment and Wages - 2008 Q1

Percent of Employees in Hillsborough	1.18%
Percent of Wages in Hillsborough	0.67%

Employment by Sector

Farming - Crop and Animal Production	34.61%
Construction	20.53%
Retail Trade	10.47%
Health Care and Social Assistance	6.89%
Administrative and Waste Service	6.48%
Accomodation and Food Services	5.59%
Wholesale Trade	4.64%
Professional and Technical Services	3.34%
Other Services	1.72%
Transportation and Warehousing	1.19%
Real Estate and Rental and Leasing	1.04%
Arts, Entertainment, and Recreation	0.95%
Educational Services	0.92%
Finance and Insurance	0.52%
Management of Companies and Enterprises	0.35%
Mining	0.22%
Forestry, Fishing, and Related Activities	0.22%
Information	0.17%
Manufacturing	0.15%
Government and Military	0.02%

Appendix E: Glossary of Economic Terms

At Event vs Forecast Levels – When comparing the new scenario, there are two levels for comparison. The At Event Level is the level when the scenario took place. The Forecast Level is the level at where the county should be at during each year. If the event never happened, the county would not remain still, it would continue to grow at a historical forecast.

GRP – Gross Regional Product - Gross Regional Product as a Value Added concept is equal to Output excluding the intermediate inputs, and represents compensation and profits. Gross Domestic Product as a Final Demand concept is equal to Consumption + Investment + Government + (Exports - Imports). Gross Regional Product is affected by changes in Demand. For example, an increase in Gross Domestic Product can be caused by an increase in Demand.

Labor Force - The number of people in the labor force, i.e., employed or seeking work; calculated with participation rates by age cohort.

Output - Output is the amount of production, including all intermediate goods purchased as well as value added (compensation and profit). Can also be thought of as sales or supply. The components of Output are Self Supply and Exports (Multiregions, 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.

Personal Income - Personal Income is the income that is received by all persons from all sources. It is calculated as the sum of wage and salary disbursements, supplements to wages and salaries, proprietors' income with inventory valuation and capital consumption adjustments, rental income of persons with capital consumption adjustment, personal dividend income, personal interest income, and personal current transfer receipts, less contributions for government social insurance. The personal income of an area is the income that is received by, or on behalf of, all the individuals who live in the area; therefore, the estimates of personal income are presented by the place of residence of the income recipients. Personal Income is affected by changes of any of the components listed above. For example, an increase in Personal Income can be caused by an increase in Wage and Salary Disbursements, Supplements to Wages and Salaries, Proprietors' Income, Rental Income, Personal Dividend Income, Personal Interest Income, or Personal Current Transfer Receipts, or a decrease in Contributions for Government Social Insurance.

PIA – Primary Impact Area – The PIA represented the areas in Evacuation Levels A-E and the Special Flood Zones. Collectively, The PIA and SIA total the entire county of Hillsborough.

SIA – Secondary Impact Area – The SIA represents the non-evacuation zones. Collectively, The PIA and SIA total the entire county of Hillsborough.

Appendix F: List of References

- Hartwig, Robert P. "Florida Case Study: Economic Impacts of Business Closures in Hurricane Prone Counties." Insurance Information Institute. (June 2002).
- Holtz-Eakin, Douglas. Letter to U. S. Senator Bill Frist. September 6, 2005. Congressional Budget Office. Washington, D.C.
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- The New Orleans Index: Tracking the Recovery of New Orleans and the Metro Area. August 2008. The Brookings Institution Metropolitan Policy Program and the Greater New Orleans Community Data Center. 29 Dec. 2008.
<<http://www.brookings.edu/reports/2007/08neworleansindex.aspx>>
- Smith, Stanley K., and Christopher McCarty. "Demographic Effects of Natural Disasters: A Case Study of Hurricane Andrew." Demographics 33.2 (May 1996): 265-275.