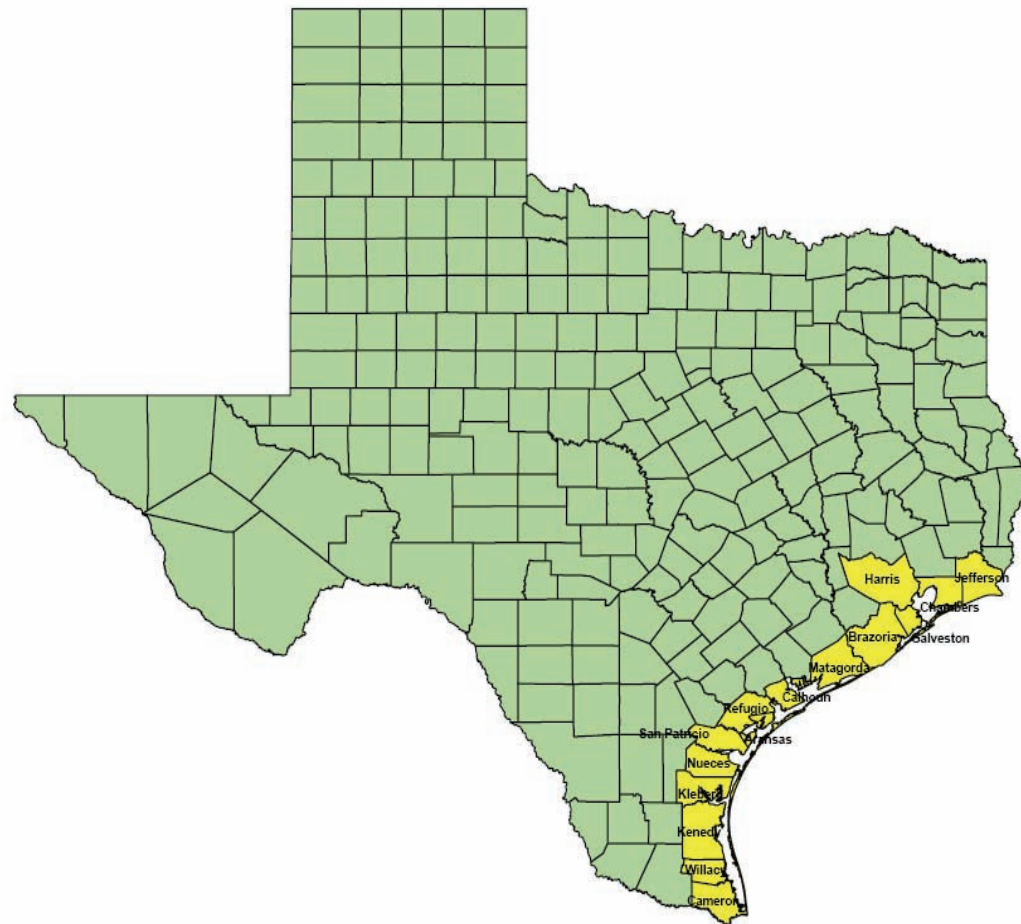


An Economy at Risk: Our Vulnerable Coast and Its Importance to the Texas Economy

December 2006

A study commissioned by IIAT



Executive Summary

Independent Insurance Agents of Texas (IIAT) commissioned the study produced by The Perryman Group in December 2006.

The Texas Gulf Coast area serves as an economic engine for the entire state.

- About 40% of Texas jobs are directly tied to its production categories.
- 44% of the state's total income is linked to key Gulf Coast sectors.
- The Port of Houston is one of the world's busiest ports in cargo volume and six Texas ports are ranked among the Top 50 in total tons.
- Produces 87% of Texas and 25% of the nation's refined petroleum. Provides diesel fuel for High Plains agribusiness and jet fuel for Dallas-based airlines.
- Regional economic success is directly linked to Gulf Coast industries, with critical dependence for output ranging from about 33% in the Upper Rio Grande Region to more than 56% in the Golden Crescent and Texoma regions.

The Texas Gulf Coast, with its concentration of major industries crucial to the economic health of the state, merits affordable insurance rates because every part of the state depends on the region's productivity.

- Major industries: Manufacturing, petroleum refining, petrochemicals, shipping and tourism among others.

Effects of a Katrina-like storm would be catastrophic for the state's overall economy, not only the Gulf Coast.

Losses would include:

- \$52.2 billion in gross state product
- \$43.8 billion in personal income
- 617,000 jobs
- \$1.8 billion a year in fiscal revenue
- As much as \$450 million per year from premium tax offsets over an extended period

If a storm hit the Port of Houston, an even larger percentage of regional economic activity would be at risk.



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Table of Contents

▪ Introduction	1
▪ The Tier 1 Windstorm Coverage Area	5
▪ Importance of the Tier 1 Windstorm Coverage Area to the Texas Economy	11
▪ Importance of Key Industries Located in the Tier 1 Windstorm Coverage Area to Other Regions of Texas	17
▪ Vulnerability to a Catastrophic Storm	26
▪ Methodology	30

Introduction

Introduction

- The Texas Gulf Coast is vital to the economy of Texas, with linkages to all regions of the Lone Star State. Without the key inputs and services provided by the industrial base located in the area, prosperity and business activity from the Panhandle to the Rio Grande Valley and from the Big Bend to the Piney Woods would be diminished.
- The coastal area is the site of major concentrations in industries (including petroleum refining, petrochemicals, and shipping) which are crucial to the present and future economic health of the state.
- Recently, property and casualty insurance rates along the Gulf Coast have been rising sharply and availability has declined. In the wake of recent, expensive hurricanes, insurance companies are significantly adjusting rates and underwriting criteria in areas considered vulnerable to similar phenomena. Although the cost of hurricanes Katrina and Rita was substantial, it did not change the fundamental probabilities of future storms.
- The Independent Insurance Agents of Texas commissioned The Perryman Group to evaluate the potential damage to the economy from this situation, with emphasis on the effects of major storms impacting Texas. There is no doubt that a Katrina-sized storm would have a significant negative effect on the economy of Texas, with varying impacts on regional economies.

Highlights of Study Findings

- The Tier 1 Windstorm Insurance Coverage Area (Texas Gulf Coast) is a critical component of the Texas economy, representing about 30% of overall business activity. The key sectors that are closely linked to other parts of the state include dominant positions in water transportation, refined petroleum products, and petrochemicals. Because of the essential nature of these goods and services to major production categories, the Tier 1 Area is vital to the economic health of all parts of Texas.
- The long-term economic outlook for the Tier 1 Area is one of sustained growth across a diverse set of industries.
- The economic success of the various regions of Texas is directly linked to key Gulf Coast industries, with critical dependence for output ranging from about 33% in the Upper Rio Grande Region to more than 56% in the Golden Crescent and Texoma regions.
- If a significant natural disaster were to occur in the Area under these circumstances, the ramifications across the state would be enormous. If a “Katrina”-level storm were to occur, the losses to the state would include \$52.2 billion in gross state product, almost 617,000 permanent jobs, and nearly \$1.8 billion in annual State revenue. All regions would be significantly affected, with losses ranging from 3.76% to 9.69% of aggregate output. If a similar storm were to hit directly in the Port of Houston area, the losses would escalate to \$73.0 billion in output, over 863,000 jobs, and about \$2.5 billion in annual State revenue. In addition to losses from the economic consequences, the State could lose all of the premium taxes for qualifying insurance companies for many years thereafter due to the offsets to premium taxes for risk pool assessments. According to data from the Comptroller of Public Accounts, this additional loss could be approximately \$450 million per year.
- The entire state has a strong economic interest in finding a workable solution to the current property and casualty insurance situation in the Tier 1 Coverage Area.

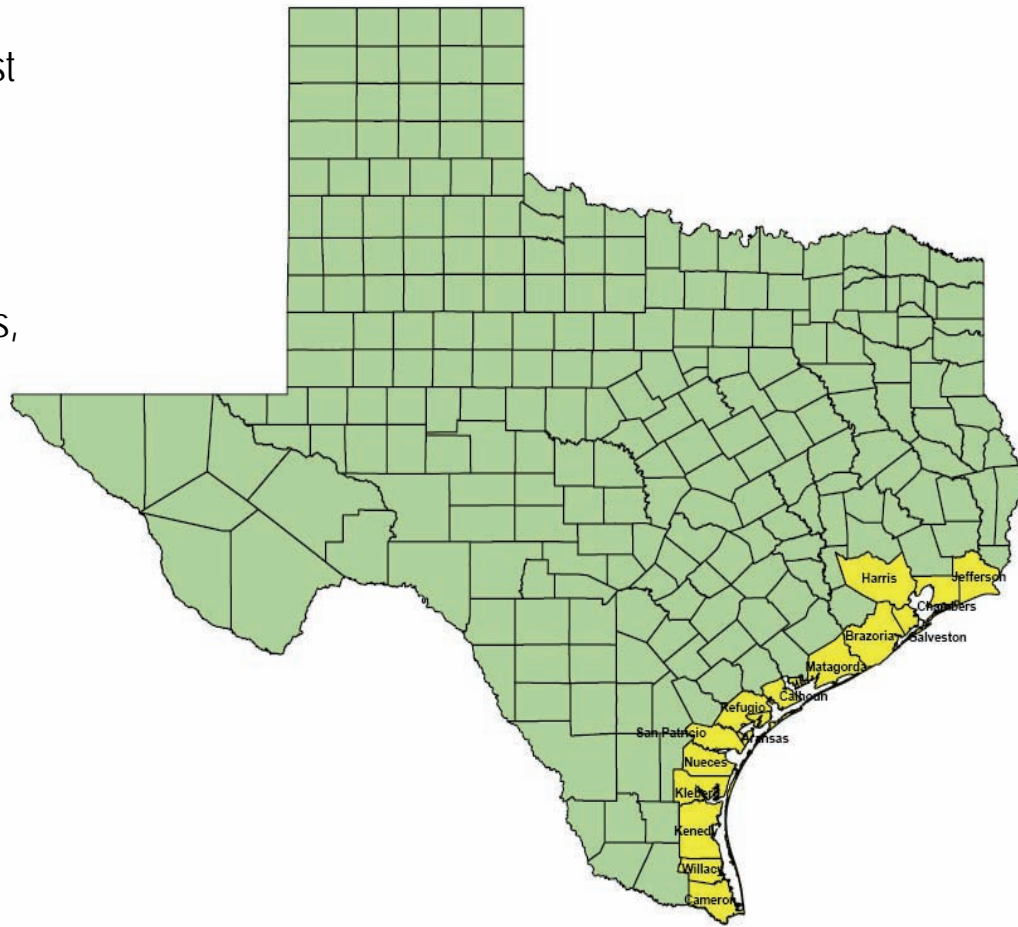
The Perryman Perspective

- The Perryman Group (TPG) is an economic research and analysis firm based in Waco, Texas with more than 20 years of experience in assessing the economic impact of corporate expansions, regulatory changes, real estate developments, and myriad other types of events affecting business activity. The firm is uniquely qualified to conduct this analysis.
- TPG has performed hundreds of impact studies for the US and Texas economies as well as all Texas metro areas and counties.
- TPG has maintained an extensive set of economic models for more than two decades, including econometric, impact assessment, demographic, and occupational subsets. The submodels used herein were specifically developed for the Tier 1 Windstorm Coverage Area economy. TPG has a long history of analyzing the economies of all Gulf Coast Region metropolitan areas as well as the surrounding region.
- Impact studies have been performed for hundreds of clients including many of the largest corporations in the world, governmental entities at all levels, educational institutions, major health care systems, utilities, and economic development organizations. In particular, TPG has conducted major studies relating to property and casualty insurance patterns and similar issues.

The Tier 1 Windstorm Coverage Area

The Tier 1 Windstorm Coverage Area

The Texas Windstorm Insurance Association defined the outer Gulf Coast counties as the "Tier 1 Windstorm Coverage Area." The defined area includes 14 counties and certain communities in Harris County (Pasadena, Morgan's Point, Shoreacres, Seabrook, and La Porte).



Economic Overview

- The Tier 1 Windstorm Coverage Area comprises a notable component of the overall state economy. Due to data limitations, all economic and forecast data in this section includes Harris County in its entirety, though the impacts presented later in this report do not.
- Specifically, the Area includes
 - 23.86% (5.6 million) of Texas' 23.4 million residents,
 - 30.91% (\$283.7 billion) of Texas' annual output (real gross product) of \$917.6 billion, and
 - 26.96% (\$219.2 billion) of Texas' total personal income by residence of \$813.3 billion.
- The Perryman Group examined the economic outlook for the Area and found that it is likely to continue to sustain healthy growth in the decades to come, further increasing its importance to economic vitality throughout the state.
- The following presents highlights of the forecast for the region; additional detail is provided in Appendix D to this report. The methodology, which is largely based on TPG's econometric model of the Tier 1 Windstorm Coverage Area, is available in the full report online at iiat.org > Governmental Affairs > Windstorm Issues.

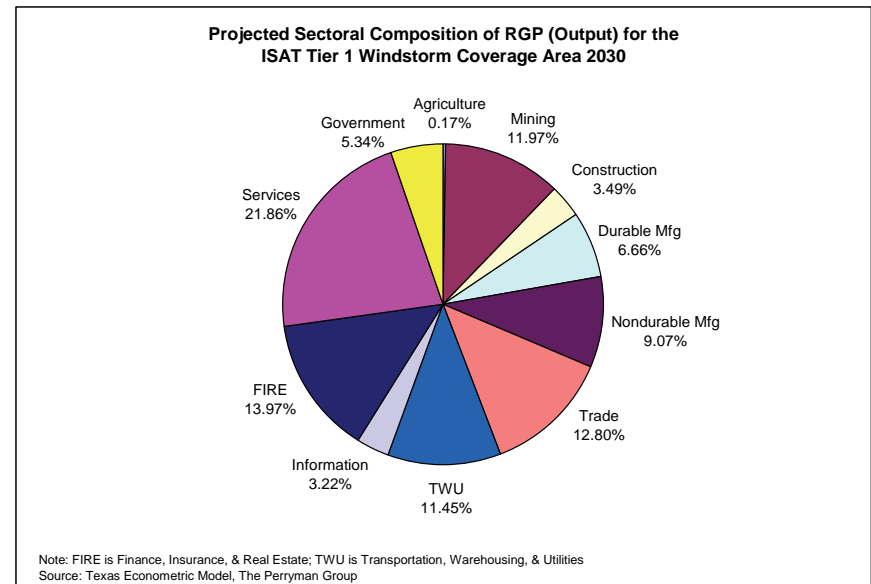
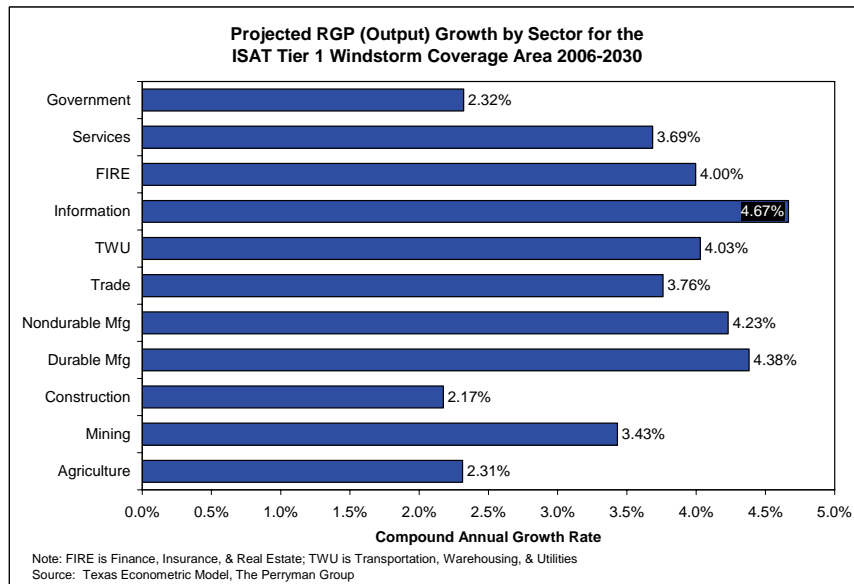
Forecast for Key Economic Indicators

- The Tier 1 Area is projected to enjoy sustained long-term growth at impressive rates in a number of key measures of aggregate business activity. Obviously, continued expansion is dependent on the maintenance of insurance coverage at levels sufficient to allow appropriate risk management for future investments.

TIER 1 WINDSTORM COVERAGE AREA ECONOMIC INDICATORS			
Key Indicator	2006 Level	2030 Level	CAGR* 2006-2030
Real Gross Product (2000\$)	\$283.65 billion	\$679.59 Billion	3.56%
Population	5.59 million	8.41 million	1.65%
Wage & Salary Employment	2.75 million	3.91 million	1.42%
Real Personal Income (2000\$) (by place of residence)	\$187.12 billion	\$445.67 billion	3.53%

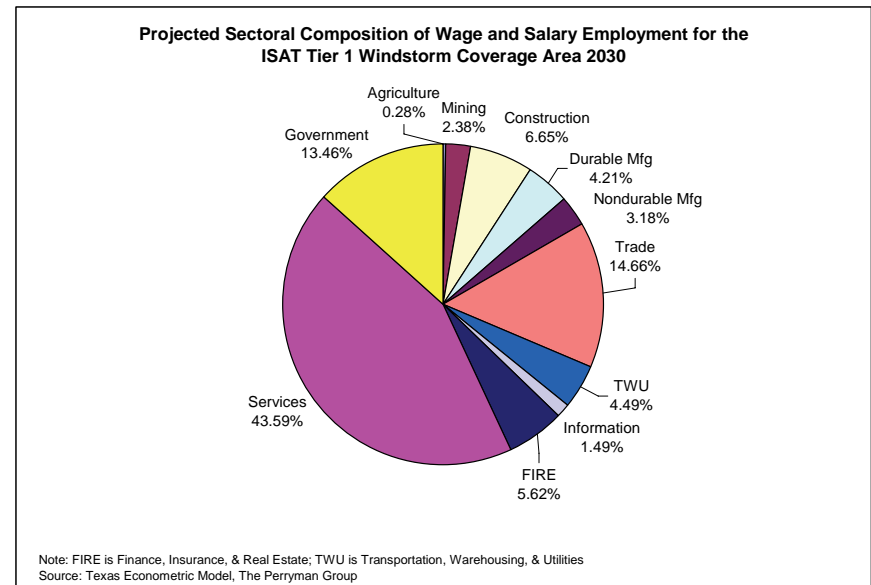
Forecast for Output Growth

- The Tier 1 Windstorm Coverage Area is projected to see expansion across a broad spectrum of output categories. Particular strength is expected in information; durable and non-durable manufacturing; transportation (including shipping), warehousing, and utilities; and financial services.
- The composition of the Area's gross product reflects both ongoing diversification and the continuing importance of various energy-related sectors.



Forecast for Employment Growth

- Employment growth is projected in all major industrial categories.
- The services sector generates the greatest potential job expansion rate by a substantial margin, continuing to enhance its role as the dominant employment component. Much of this increase occurs in health care and various business services.



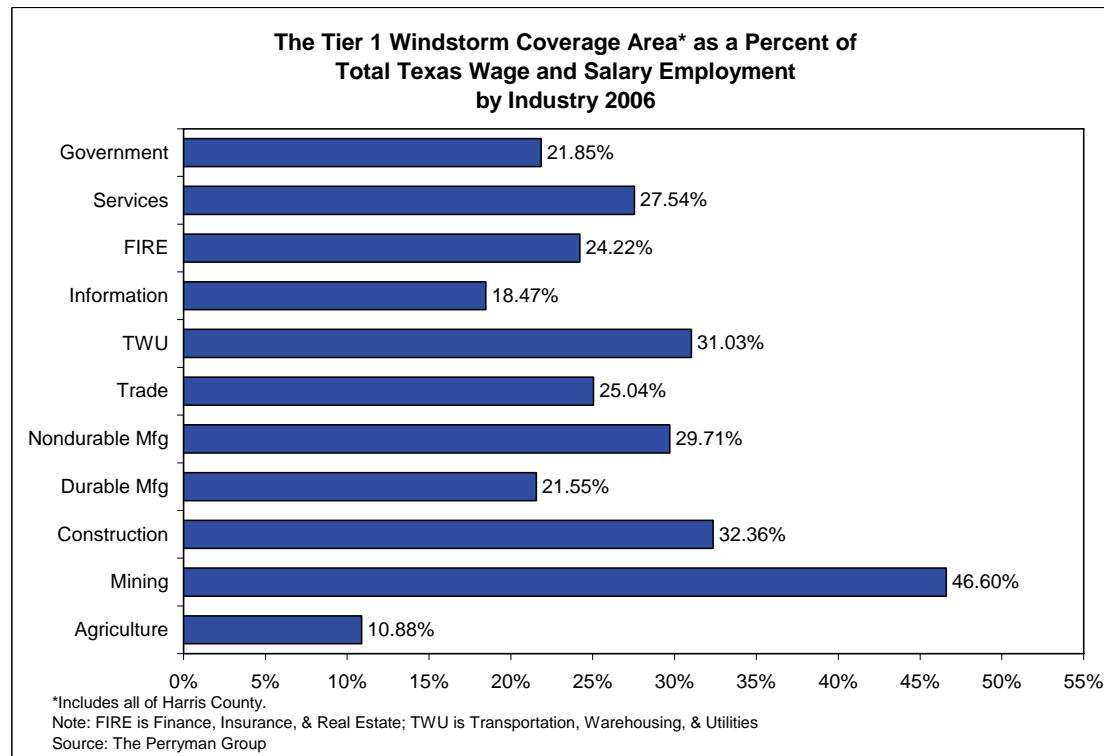
Importance of the Tier 1 Windstorm Coverage Area to the Texas Economy

The Importance of the Tier 1 Windstorm Coverage Area to the Texas Economy

- The Tier 1 Windstorm Coverage Area (including Harris County) forms a large component of the Texas economy. It constitutes more than 30% of all production in the state and about 27% of aggregate income.
- While the percentages are impressive in and of themselves, the actual linkage to the health of the entire economy is even more significant. The region handles the vast majority of water shipments for goods produced for export throughout the state. Moreover, the refined petroleum and petrochemicals products produced in the Area are used extensively in every portion of Texas and are essential to the viability of many production sectors. The end result is that every segment of the state is critically linked to the dynamic Texas Gulf Coast area, and that, consequently, substantial disruptions would be felt across a broad area.

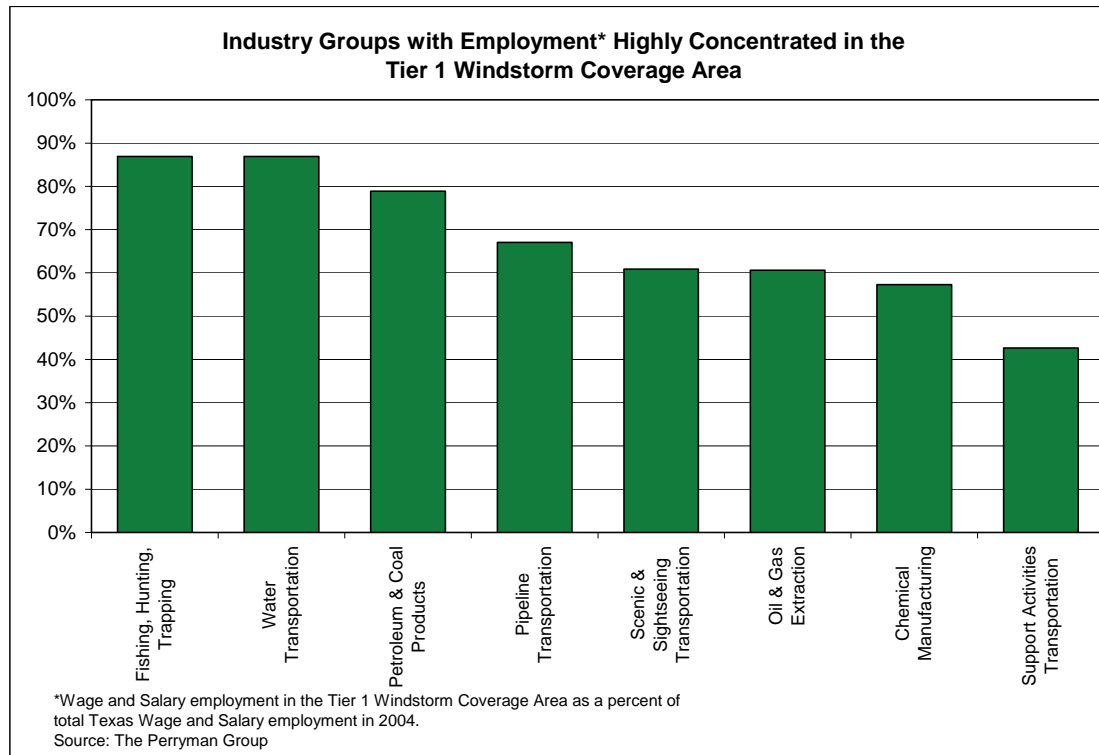
The Tier 1 Windstorm Coverage Area as a Percentage of Employment in Texas

As noted, the Area accounts for a large proportion of total Texas wage and salary employment in several industrial sectors. (Note that these percentages include all of Harris County.)



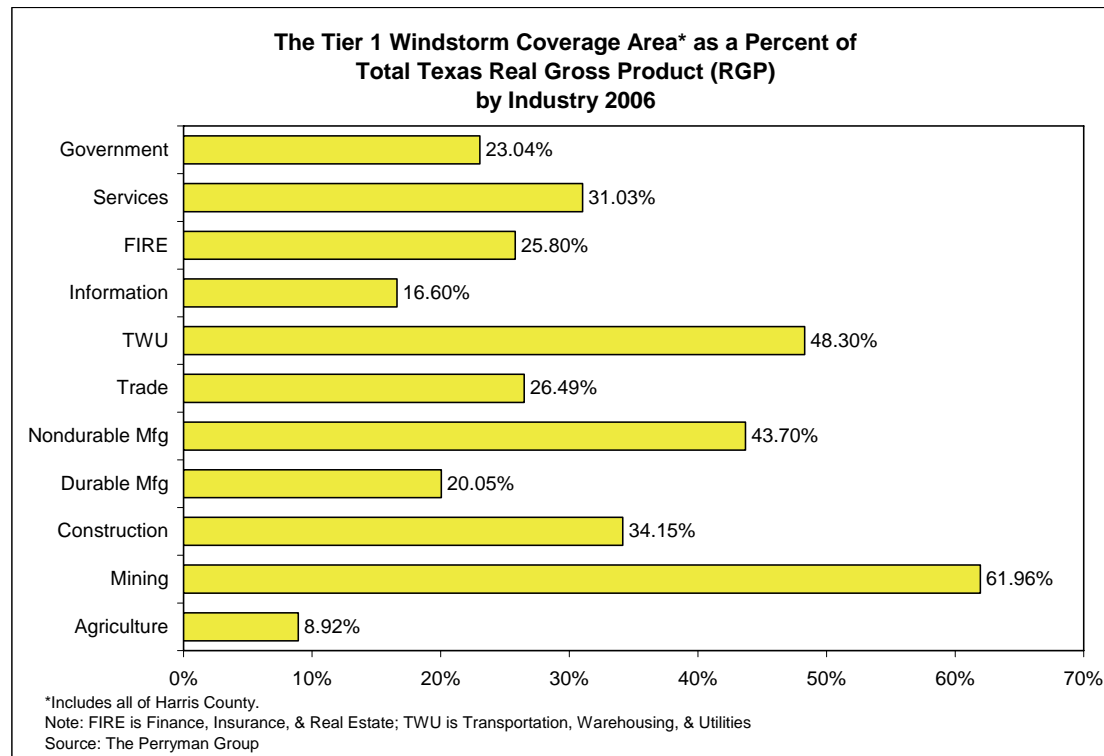
Industry Groups with Particularly High Concentrations in the Tier 1 Windstorm Coverage Area: Employment

For some industries, the Tier 1 Area comprises virtually all Texas activity. Several of these (water transportation, petroleum and coal products (refining), and chemical manufacturing) are critical inputs to production in a variety of other industries located throughout the state. The vast majority of this activity occurs at coastal locations particularly vulnerable to storms.



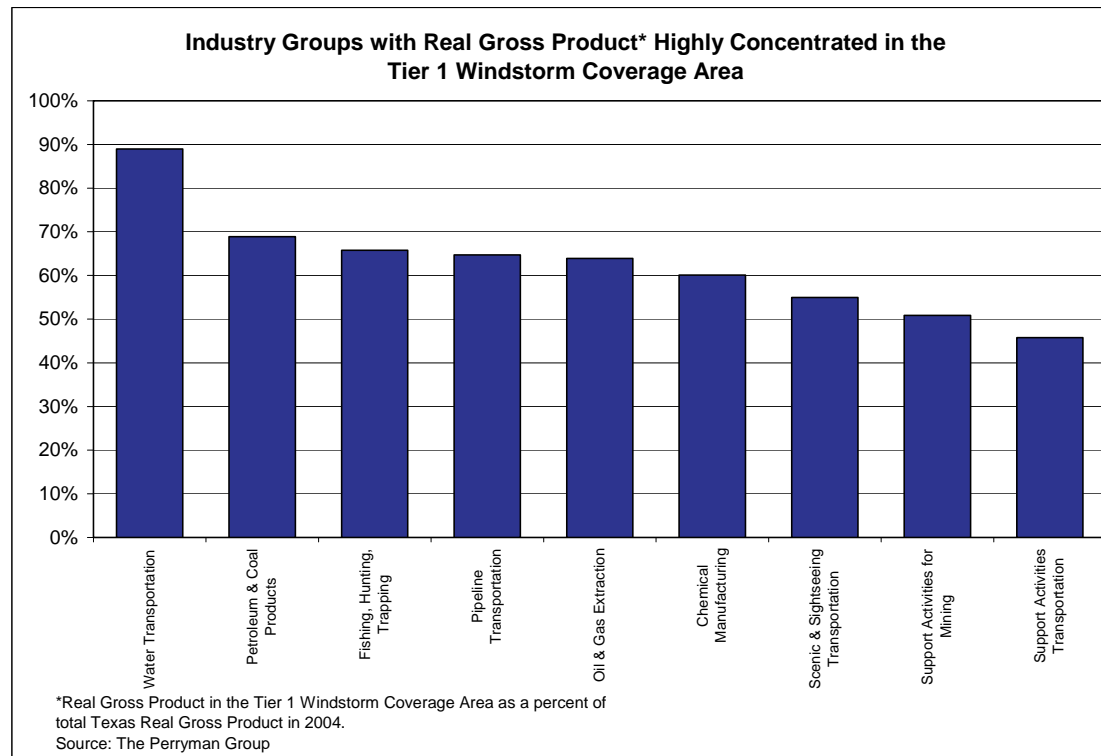
The Tier 1 Windstorm Coverage Area as a Percentage of Output in Texas

The Area (including Harris County) is also the site of a sizable proportion of output and accounts for a large percentage of total Texas gross state product in several industries.



Industry Groups with Particularly High Concentrations in the Tier 1 Windstorm Coverage Area: Output

Like employment, output in a number of industry groups occurs almost exclusively within the Windstorm Coverage Area.



Importance of Key Industries Located in the Tier 1 Windstorm Coverage Area to Other Regions of Texas

Importance of the Tier 1 Windstorm Coverage Area to Other Parts of Texas

- The Tier 1 Windstorm Coverage Area serves as an economic growth engine for the entire state. Clearly, the sheer volume of the state's economic activity occurring in the Area is an indication of its role in the Texas economic complex. On a sectoral basis, the percentage of total employment and output attributable to the Area is substantial for virtually all industries. For some industry groups, the Area is responsible for almost all of the state's activity.
- Business operations located in the Tier 1 Area are vital to firms across the state. Although there are many channels of interaction with other regions, three are clearly dominant:
 - refined petroleum products are utilized by individuals and companies throughout Texas,
 - manufacturing concerns and agribusinesses selling into global markets and receiving inputs from foreign sources rely on shipping through the coastal ports, and
 - the petrochemical products are critical to many types of production across the state.

Petroleum Refining and Related Operations

- The Gulf Coast, particularly the Houston-Beaumont area, is one of the world's densest concentrations of oil refineries. The Texas Gulf Coast's complex of petroleum refining operations has a crude operable capacity of over 4 million barrels of refined petroleum products per day. This amount is 87% of the total for Texas and almost 25% for the entire United States. Much of the product used in the state is generated in these facilities.
- These products are essential to business activity throughout the state. From diesel fuel for agricultural operations in the High Plains to jet fuel for Dallas-based airlines, the availability of refinery output is vital to economic viability.
- Along with oil refining, Houston is a major manufacturer of oil-field equipment and other products for the oil industry, and Beaumont, Port Arthur, and Galveston are production locations of tugs and barges used in offshore drilling operations.

Chemical Plants

- The Texas coast also contains 40% of the nation's capacity for producing the basic chemicals that are used by downstream chemical operations. The Houston area alone is home to 405 chemical plants employing about 36,000 people, making the area a world leader in the chemical industry. Most of these facilities are found within the Tier 1 Area.
- Almost every major chemical company operates a plant near Houston. Some of the largest include BASF AG, Bayer Corp., Chevron Phillips Chemical Co., E.I. du Pont de Nemours Co., ExxonMobil Chemical Co., and Shell Chemical LP.
- These products are also critical for many types of companies situated across the state.

Port Operations

- The Gulf Coast Region is served by the Gulf Intracoastal Waterway which stretches the length of the Gulf and Atlantic coasts and allows for easy access to the Mississippi River as well as the East Coast. Most of the tonnage handled by Texas ports is destined for other parts of the United States, and petroleum and petroleum products make up a large part of these shipments.
- Texas ports made shipments to or received shipments from nearly 200 countries and territories in 2003, and some 28,300 companies exported goods from Texas in 2004. Refined petroleum products, chemicals, plastics, and cereals dominate Houston port tonnage. Refined petroleum products, chemicals, and cereals also account for 99% of the Corpus Christi export tonnage and along with wood pulp account for nearly all of Beaumont's exports. Texas City is almost entirely dependent on exports of chemicals and petroleum products, but Galveston still remains largely outside the petrochemical complex with cereals and milled grains accounting for a large percent of port exports.
- The Port of Houston is one of the ten busiest ports in the world by cargo volume (along with six other Gulf Coast ports) and one of the three busiest ports in the United States. Houston is the largest port in the United States in terms of tonnage, moving more than 65.6 million metric tons and approximately 10% of the US port volume. Houston also accounts for 56% of Texas international trade by sea in terms of value and 39% in terms of tonnage. International trade through the Port of Houston continues to grow, with significant capacity expansion now in progress.
- Texas ports account for a substantial proportion of total US import and export activity. Moreover, shipments through these facilities have been rising significantly in recent years. Six Texas ports ranked among the top 50 US water ports by total tons in 2004, seven ranked in the top 50 US ports by port calls and vessel type, and two ranked among the top 30 US container ports.

Importance of the Tier 1 Windstorm Coverage Area to Other Regions of Texas

- Petroleum refining, chemicals, and port activity are three of the key linkages to other parts of the state. These industries provide products that are used as inputs to production in virtually every other type of business. There are also many other industries which add to the economic prosperity of the state, such as tourism.
- The Perryman Group estimated the proportion of economic activity in each region of Texas which is critically dependent on industries located in the Tier 1 Windstorm Coverage Area. Only those sectors which are major users of Texas Gulf Coast products and services are included in the computations. This analysis is based on
 - trading patterns among regions of the state as determined within the Texas Multi-Regional Impact Assessment System;
 - industrial linkages, including a detailed assessment of the purchasing patterns around the state; and
 - determination of the sectors in each region which are highly dependent on key producing segments of the Gulf Coast economy.
- The following maps illustrate the percentage of economic activity in the regions of Texas that is directly tied to the Tier 1 Windstorm Coverage Area.

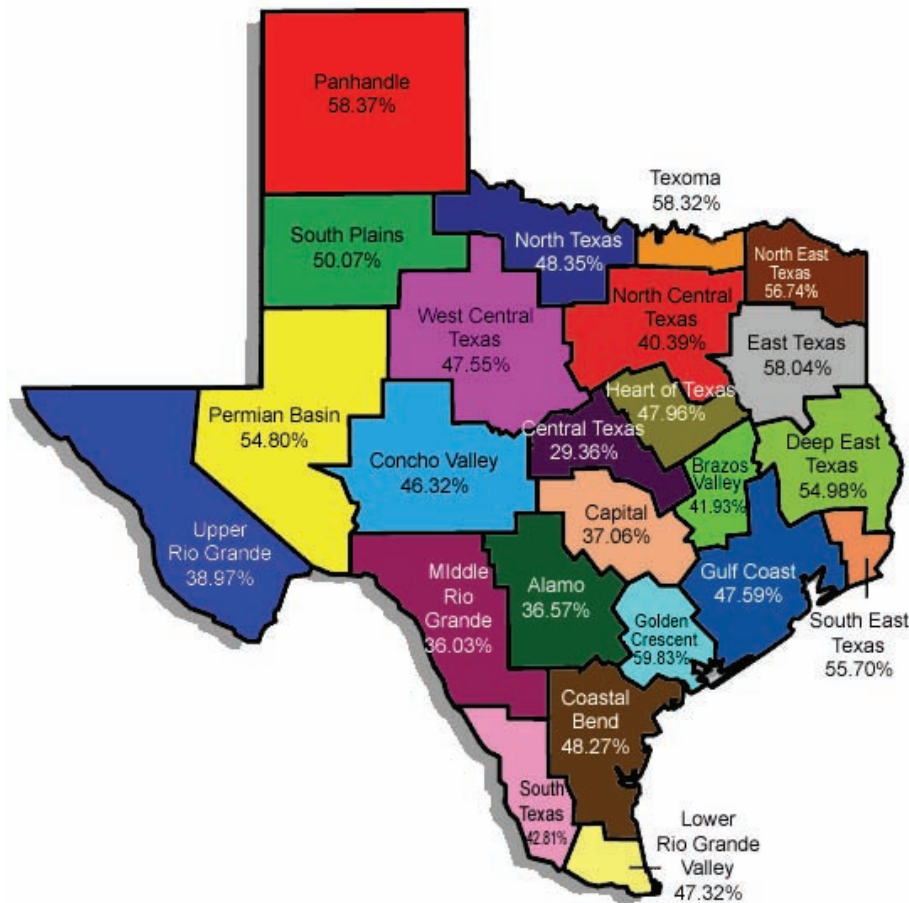
Percentage of Regional Output Directly Dependent on the Tier 1 Windstorm Coverage Area

- Regional dependency on industries in the Tier 1 Windstorm Coverage Area varies from almost 33% of aggregate production activity for the Upper Rio Grande Region to more than 56% for the Golden Crescent and Texoma regions. For the state as a whole, approximately 39% of total output is critically linked to the Tier 1 Area.



Percentage of Regional Personal Income Directly Dependent on the Tier 1 Windstorm Coverage Area

- Regional personal incomes are also tied to the Tier 1 Area. In several regions, more than 58% of personal income is dependent on industrial activity in the Tier 1 Area. Approximately 44% of total income in Texas is significantly linked to key sectors in the Tier 1 Area.



Percentage of Regional Employment Directly Dependent on the Tier 1 Windstorm Coverage Area

- The dependency of various regions in terms of employment is also substantial, totaling more than 50% in five major planning regions. On the whole, about 40% of the jobs in Texas are directly tied to key production categories in the Tier 1 Area.



Vulnerability to a Catastrophic Storm

Vulnerability to a Catastrophic Storm

- As noted earlier, a premium increase of the magnitude currently expected would lead to “dead weight” economic losses. In addition, it would contribute to underinsurance as firms and individuals elected not to pay the much higher premiums. In the event of a major storm, insurance insufficiencies would delay the recovery process and negatively affect not only the immediate area, but also the rest of Texas.
- In order to estimate the vulnerability of various regions of the state to a major catastrophe in the Windstorm Coverage Area, The Perryman Group developed two scenarios.
 - In the first scenario, a storm causing damages of the magnitude of Katrina was assumed to hit the Gulf Coast area. In this instance, the hypothetical storm damages were simply allocated across the entire region to illustrate the impact of a “generic” storm with overall damage at the level occurring in Katrina. While it is recognized that such a storm would directly impact a specific area, no attempt was made to identify a precise location.
 - In the second scenario, a storm of the magnitude of Katrina was assumed to be concentrated in the Port of Houston area. Because of the large concentration of facilities and shipping in this locale, the actual losses would be higher.
- In both instances, which capture the incremental effects if current insurance costs escalation and availability limits are absorbed locally, the negative implications for all regions of the state were found to be sizable.

Regional Impacts of a Hypothetical Storm

- The first scenario (with Katrina-level damages at an unspecified location in the Tier 1 Windstorm Coverage Area) would cause lost economic activity in all regions of Texas. The percentage of the regional economies vulnerable to such a storm is illustrated in the accompanying map.
- For the state as a whole, these losses amount to \$52.2 billion in gross state product, \$43.8 billion in personal income, and almost 617,000 jobs. The State would also suffer a yearly loss of fiscal revenues of about \$1.8 billion, in addition to a loss of as much as \$450 million annum from premium tax offsets over an extended period.



Regional Impacts of a Hypothetical Storm Localized at the Port of Houston

- If a storm hit the Port of Houston, an even larger percentage of regional economic activity would be at risk.
- In this scenario, the aggregate losses to the Texas economy would include \$73.0 billion in gross product, \$61.3 billion in income, and more than 863,000 jobs. The annual loss of State revenue would be almost \$2.5 billion (in addition to an even longer period of large annual losses in premium taxes).



Methodology

Detailed methodology and values used by The Perryman Group are available upon request.

The full report including methodology is available online at:
iiat.org > Governmental Affairs > Windstorm Issues

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