

The Cost of Nuclear Verdicts to the Texas Economy

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Executive Summary

- The civil justice system provides a crucial forum for dispute resolution, appropriately compensating those who have been harmed and helping to deter undesirable behavior. However, it is possible for the system to become unbalanced. Such misallocations of resources introduce inefficiencies and costs which are borne by individuals and businesses. These higher costs also decrease affordability for consumers as they become reflected in the supply chain.
- One source of misallocations is “nuclear verdicts,” which involve at least \$10 million in damages in tort claims and are typically the result of large awards for noneconomic considerations. Such verdicts often involve practices which tend to distort outcomes and have risen sharply over the past several years. Texas regularly ranks among the top states for such cases, with 29 verdicts totaling \$3.4 billion in 2025.
- The costs of nuclear verdicts are typically borne initially by insurance companies and, if policy limits are insufficient, by defendants. An outcome of the higher verdicts is thus higher insurance premiums, as a portion of the costs are passed onto customers. Some companies are also leaving markets or types of policies or limiting coverage, which reduces consumer choice. With housing costs already higher due to interest rates and costs of repairs, the addition of higher insurance expenses decreases affordability.
- The Perryman Group estimates that the direct increase in Texas property and casualty insurance costs associated with nuclear verdicts is at least **15.25%** (including both higher rates and coverage reductions). These costs in large part ultimately flow to Texas consumers and businesses.
- Higher costs reduce consumer spending and business investment, leading to a decrease in Texas business activity including approximately **\$4.1 billion** in annual gross product, **\$2.2 billion** in annual personal income to Texas households, and **27,785** jobs (when multiplier effects are considered).
- Not only is affordability decreased due to higher costs, but personal income across the state is also reduced, thus further exacerbating the situation.

- Business activity generates tax receipts, and a reduction in economic activity across the state would have negative fiscal effects. The Perryman Group estimates that the **annual** fiscal harms of nuclear verdicts and the related insurance costs include approximately **\$202.3 million** to the State of Texas and **\$154.8 million** to local taxing entities across the state.
- Tort reform in Texas which addresses nuclear verdicts can reduce the cost of excess torts and the affordability burden they place on families, businesses, and the economy.

Introduction

The civil justice system provides a crucial forum for dispute resolution, appropriately compensating those who have been harmed and helping to deter undesirable behavior. However, it is possible for the system to become unbalanced, leading to excess tort costs, unpredictable outcomes, exorbitant levels of damages, improper fee structures, and

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other problems. Such misallocations of resources introduce inefficiencies and costs which are borne by individuals and businesses.

One source of misallocations is “nuclear verdicts,” which involve at least \$10 million in damages in tort claims, typically the result of

large awards for noneconomic considerations. Such verdicts have been rising in recent years and often involve practices which tend to distort outcomes. Texas has considered reforms in this arena in recent legislative sessions, but measures have not been enacted. The state now ranks third nationally in the value of nuclear verdicts.

Tort reform which reduces imbalances in the civil justice system can improve outcomes, lowering the excess burden of the system to individuals, families, businesses, and society as a whole, while assuring proper compensation for legitimate losses. Such reductions also lead to economic benefits.

The Perryman Group was recently asked to quantify the economic benefits of potential reforms in Texas related to nuclear verdicts; this report presents the results of the analysis.

Background

There is clearly a need for a system encouraging fair and safe behavior by firms and individuals. The civil justice system is designed to deal with torts, which are acts or omissions that harm or injure another person. Tort lawsuits comprise the majority of civil litigation, and there are a wide variety of cases that fall within the category.

However, inefficiencies in the judicial system can arise due to high numbers of lawsuits of

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questionable merit or excessive jury verdicts. This diversion of resources from productive activity or the consumer spending stream decreases the potential for economic growth and development. In certain industries, excess tort costs are particularly problematic, such as manufacturing and health care.

The goal of tort reform is to make changes to the civil justice system to reduce excess tort costs which distort economic incentives and activity in undesirable ways, while maintaining and even enhancing the system's ability to provide appropriate compensation to individuals and businesses which have been harmed.

Practices which can lead to imbalances include issues such as allowing third-party litigation funding for tort claims, which can encourage an excessive number of cases to be filed or prolonged. Various methods of allocating liability and fees can also lead to excess cases.

In a number of prior studies, The Perryman Group has measured the economic harms associated

with excess tort costs in a variety of contexts.¹ Some of the negative effects of excessive tort costs include:

- increased costs and risks of doing business in an area,

¹ See, for example, *An Assessment of Excessive US Tort Costs and Potential Economic Benefits of Reform*, The Perryman Group, 2025.

- disincentives for innovations which promote consumer welfare,
- enhanced incentives to file lawsuits of questionable merit resulting in increased inefficiencies,
- higher insurance premiums than would exist under a more balanced approach,
- increased health care costs and declining availability of medical services,
- deterrence of economic development and job creation initiatives, and
- diversion of activity to unproductive purposes.

In short, an overly aggressive tort environment is a drain on both the economy of a state and the country as a whole. In addition, such an environment is harmful to economic development by decreasing attractiveness for desirable corporate locations and expansions.

A particular problem is growth in the number of nuclear verdicts of \$10 million or more.

The goal of tort reform is to make changes to the civil justice system to reduce excess tort costs which distort economic incentives and activity in undesirable ways, while maintaining and even enhancing

the system's ability to provide appropriate compensation to individuals and businesses which have been harmed. Tort reform is an important aspect of fundamental economic health and development, which involves much of what state government does on an ongoing basis.

A particular problem is the rapid growth in nuclear verdicts, which have risen sharply over the past several years, up from 66 in 2021 to 135 in 2024.² These verdicts affect a broad spectrum of industries and are particularly high in health care, consumer products, and information technology.

Texas regularly ranks among the top states for such cases, with 29 verdicts totaling \$3.4 billion in 2025. The two largest cases and several others involved personal injuries or fatalities.

² Marathon Strategies, Corporate Verdicts Go Thermonuclear, February 9, 2026, <https://marathonstrategies.com/report/corporate-verdicts-go-thermonuclear-2025-edition/>.

The reasons for growth in the number of nuclear verdicts include tactics used in courtrooms, advertising very large verdicts (even if they were later reduced), and a lack of sufficient education for jurors in the implications of their awards.

The practice of anchoring involves plaintiffs' lawyers suggesting very high damages because jurors often rely on them even if they are arbitrary. Other practices such as third-party funding for tort litigation and consolidating cases can also lead to overly high awards.

The costs of nuclear verdicts are typically borne initially by insurance companies and, if policy limits are insufficient, by defendants. An outcome of the higher verdicts is thus higher insurance premiums, as a portion of the costs are passed onto customers. Some companies are also leaving markets or types of policies or limiting coverage, which reduces consumer choice.

Higher insurance costs to consumers and businesses reduces funds available to be used in other ways and affects the affordability of housing as well as other goods and services. Lower spending leads to notable reductions in economic activity which are the subject of this analysis.

Economic Impacts

The Perryman Group estimated the effect of nuclear verdicts on insurance costs in Texas including both higher rates and coverage reductions. Effects were estimated based on available data and outcomes in other areas where reforms have been enacted. The direct increase in Texas property and casualty insurance costs associated with nuclear verdicts was estimated to be at least **15.25%**. These higher costs largely flow to customers, reducing affordability as well as

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consumer spending and business investment, causing a drop in direct business activity.

Any economic stimulus, whether positive or negative, leads to dynamic responses across the economy. The Perryman Group

has developed complex and comprehensive models over the past four decades to measure these dynamic responses in order to estimate the total economic effects (not only direct, but also indirect and induced) associated with direct sources of stimulus. These systems have been used in thousands of analyses throughout the US and numerous other countries in Europe, Asia, North America, and South America.

In this instance, insurance cost increases were allocated across more than 500 industrial sectors based on the incidence of property and casualty insurance costs and used as inputs to the impact assessment system. These higher costs also impact consumers as they work through successive rounds of the supply chain, Methods used in this analysis are

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summarized below, with additional detail provided in Appendix A. Results are presented in constant (2026) dollars to eliminate the effects of inflation.

Measuring Economic Impacts

Any economic stimulus, whether positive or negative, generates dynamic responses throughout the economy. In this instance, the higher insurance costs due to nuclear verdicts use up resources and decrease direct spending by consumers and business for other purposes, with multiplier effects rippling through the economy.

The Perryman Group's dynamic input-output assessment system (the US Multi-Regional Impact Assessment System) was utilized to measure the total (not only direct, but also indirect and induced) effects. The model was developed by the firm more than 40 years ago and has been consistently maintained and updated since that time. It has been used in hundreds of analyses for clients ranging from major corporations to government agencies. The impact system uses a variety of data (from surveys, industry information, and other sources) to describe the various goods and services (known as resources or inputs) required to produce another good/service. This process allows for estimation of total economic impacts (including multiplier effects). The submodels used in the current analysis reflect the specific industrial composition and characteristics of the Texas economy.

Total economic effects are quantified for key measures of business activity. Note that these measures are different ways of looking at the same increase in economic activity; they are not additive.

- **Total expenditures** (or total spending) measures the dollars changing hands as a result of the economic stimulus.
- **Gross product** (or output) is production of goods and services that will come about in each area as a result of the activity. This measure is parallel to the gross domestic product numbers commonly reported by various media outlets and is a subset of total expenditures.
- **Personal income** is dollars that end up in the hands of people in the area; the vast majority of this aggregate derives from the earnings of employees, but payments such as interest and rents are also included.
- **Job gains** are expressed as job-years for multi-year estimates and transitory effects such as construction or jobs for ongoing effects.

Business activity also generates incremental taxes to federal, State, and local governments.

Monetary values were quantified on a constant (2026) basis to eliminate the effects of inflation. See the Appendices for additional information regarding the specific methods and assumptions used in this analysis.

The Perryman Group estimates that higher insurance costs associated with nuclear verdicts lead to a decrease in Texas business activity including approximately **\$4.1 billion** in annual gross product, **\$2.2 billion** in annual personal income to Texas households, and **27,785** jobs (when multiplier effects are considered).

The Annual Economic Cost of Nuclear Verdicts and the Related Effect on Insurance Costs

Total Expenditures (Billions of 2026 Dollars)	Gross Product (Billions of 2026 Dollars)	Personal Income (Billions of 2026 Dollars)	Employment (Jobs)
-\$8.787	-\$4.111	-\$2.206	-27,785
Note: Based on the estimated effect of nuclear verdicts on property and casualty insurance costs (allocated across more than 500 industrial sectors based on the incidence of property and casualty insurance costs) and The Perryman Group's estimates of related multiplier effects. Additional definitions of terms and explanation of methods and assumptions may be found elsewhere in this report and in Appendix A. Results by industry are included in Appendix B. Source: US Multi-Regional Impact Assessment System, The Perryman Group			

Not only is affordability decreased due to higher costs, but personal income across the state is also reduced, thus further exacerbating the situation. Tort reform could help reduce insurance costs, thus also reducing these economic harms.

Fiscal Effects

Business activity generates tax receipts, and a reduction in economic activity across the state would have negative fiscal effects. For example, retail sales and hotel occupancy effects associated with the reduction in economic activity measured in this study were quantified. A portion of the retail sales would be taxable, increasing receipts to taxing entities.

Economic activity also affects property tax values. Lower incomes decrease housing demand, leading to lower taxable values as well as a reduction in the need for additional houses. Decreased retail sales and

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incomes decrease the need for commercial space such as restaurants, retail outlets, and personal service facilities. Lower property values decrease taxes to counties, cities, school districts, and other local taxing entities.

The Perryman Group estimates that the **annual** fiscal harms of nuclear verdicts and the related insurance costs include approximately **\$202.3 million** to the State of Texas and **\$154.8 million** to local taxing entities across the state.

Tort reforms which address nuclear verdicts could reduce these losses.

Conclusion

Nuclear verdicts are a large and growing problem, leading to imbalances in the civil justice system and higher costs to individuals and business across the country. Reforms which curtail the trend toward higher verdicts can decrease excess costs and improve efficiency. Although the judicial system is essential to resolving disputes and compensating those that have been harmed, it is possible for it to become unpredictable and inequitable.

Nuclear verdicts lead to higher property and casualty insurance costs as companies raise rates to recoup the additional expense or reduce coverage. Higher costs negatively affect affordability for individuals, businesses, and the economy as a whole. The Perryman Group estimates that nuclear verdicts and the associated higher expenses for insurance cost the Texas economy more than **\$4.1 billion** in gross product each year, **\$2.2 billion** in personal income to Texas households, and **27,785** jobs (when multiplier effects are considered), as well as hundreds of millions in foregone tax receipts to the State and local taxing authorities.

Tort reform in Texas which addresses nuclear verdicts can reduce the cost of excess torts and the burden they place on families, businesses, and the economy. At a time with many goods and services are becoming less affordable, curtailing excess costs borne by Texans and businesses across the state through tort reform is a particularly worthwhile goal.

Appendix A: Methods Used

US Multi-Regional Impact Assessment System

The US Multi-Regional Impact Assessment System (USMRIAS) was developed by The Perryman Group more than 40 years ago and has been consistently maintained and updated since that time. The basic modeling technique is known as dynamic input-output analysis, which essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.

There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated.

Direct Effects

This assessment focuses on the effect of nuclear verdicts on property and casualty insurance rates. Data from public sources such as the County Business Patterns series produced by the US Census Bureau was used in conjunction with the US Multi-Regional Econometric Model (described below) to estimate the outlays of the property and casualty insurance industry in Texas. Nuclear verdicts data (previously cited in this report) and other research was then used to estimate the percentage increase in costs associated with nuclear claims.

The Perryman Group estimates that Texas insurance costs are approximately 15.25% higher than they would be without excessive nuclear verdicts. These higher direct costs (which could be in the form of either rate increases or tighter coverage requirements) were allocated across more than 500 industrial sectors based on the incidence of property and casualty insurance costs using the direct requirements coefficients from the USMRIAS for segments of activity that are correlated with tort expenses. This approach requires assignment of effects across more than 500 sectors reflecting the composition of each economy. The resulting values become the inputs for the model simulations. (Note that tort reform would likely lead to additional benefits associated with reducing excess tort costs more generally over time; such effects would be in addition to those measured in this study.)

Model Simulation

The second major phase of the analysis is the simulation of the input-output system to measure overall economic effects of the direct excess costs of the current situation. The present study was conducted within the context of the US Multi-Regional Impact Assessment System (USMRIAS) which was developed and is maintained by The Perryman Group. This model has been used in hundreds of diverse applications across the country and has an excellent reputation for accuracy and credibility; it has also been peer reviewed on multiple occasions. The submodels used in the current simulations reflect the unique industrial structure of each state. As a part of this analysis, the USMRIAS is integrated with a dynamic econometric model in order to capture the various market responses to the excess costs. It should be noted that the results of the model can also be reviewed in a converse manner. In other words, the losses associated with excess costs may also be interpreted as the potential gains from reforms if these unnecessary outlays are eliminated.

It should be noted that the overall US impacts are determined as the sum of the individual state analyses. This approach modestly understates the overall consequences of excessive tort costs due to spillover effects across areas. Because reforms are generally implemented on an individual state basis, the more conservative representation of aggregate effects is more appropriate.

The USMRIAS is somewhat similar in format to the Input-Output Model of the United States and the Regional Input-Output Modeling System, both of which are maintained by the US Department of Commerce. The model developed by TPG, however, incorporates several important enhancements and refinements. Specifically, the expanded system includes (1) comprehensive 500-sector coverage for any county, multi-county, or urban region; (2) calculation of both total expenditures and value-added by industry and region; (3) direct estimation of expenditures for multiple basic input choices (expenditures, output, income, or employment); (4) extensive parameter localization; (5) price adjustments for real and nominal assessments by sectors and areas; (6) measurement of the induced impacts associated with payrolls and consumer spending; (7) embedded modules to estimate multi-sectoral direct spending effects; (8) estimation of retail spending activity by consumers; and (9) comprehensive linkage and integration capabilities with a wide variety of econometric, real estate, occupational, and fiscal impact models. Moreover, the model uses specific local taxing patterns to estimate the fiscal effects of activity on a detailed sectoral basis.

The impact assessment (input-output) process essentially estimates the amounts of all types of goods and services required to produce one unit (a dollar's worth) of a specific type of output. For purposes of illustrating the nature of the system, it is useful to think of inputs and outputs in dollar (rather than physical) terms. As an example, the construction of a new building will require specific dollar amounts of lumber, glass, concrete, hand tools, architectural services, interior design services, paint, plumbing, and numerous other elements. Each of these suppliers

must, in turn, purchase additional dollar amounts of inputs. This process continues through multiple rounds of production, thus generating subsequent increments to business activity. The initial process of building the facility is known as the *direct effect*. The ensuing transactions in the output chain constitute the *indirect effect*.

Another pattern that arises in response to any direct economic activity comes from the payroll dollars received by employees at each stage of the production cycle. As workers are compensated, they use some of their income for taxes, savings, and purchases from external markets. A substantial portion, however, is spent locally on food, clothing, health care services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the Center for Community and Economic Research *Cost of Living Index*, a privately compiled inter-regional measure which has been widely used for several decades, and the *Consumer Expenditure Survey* of the US Department of Labor. These initial outlays by area residents generate further secondary activity as local providers acquire inputs to meet this consumer demand. These consumer spending impacts are known as the *induced effect*. The USMRIAS is designed to provide realistic, yet conservative, estimates of these phenomena.

Sources for information used in this process include the Bureau of the Census, the Bureau of Labor Statistics, the Regional Economic Information System of the US Department of Commerce, and other public and private sources. The pricing data are compiled from the US Department of Labor and the US Department of Commerce. The verification and testing procedures make use of extensive public and private sources.

Impacts were measured in constant 2026 dollars to eliminate the effects of inflation.

Measures of Business Activity

The USMRIAS generates estimates of the effect on several measures of business activity. The most comprehensive measure of economic activity used in this study is **Total Expenditures**. This measure incorporates every dollar that changes hands in any transaction. For example, suppose a farmer sells wheat to a miller for \$0.50; the miller then sells flour to a baker for \$0.75; the baker, in turn, sells bread to a customer for \$1.25. The Total Expenditures recorded in this instance would be \$2.50, that is, $\$0.50 + \$0.75 + \$1.25$. This measure is quite broad but is useful in that (1) it reflects the overall interplay of all industries in the economy, and (2) some key fiscal variables such as sales taxes are linked to aggregate spending.

A second measure of business activity frequently employed in this analysis is that of **Gross Product**. This indicator represents the regional equivalent of Gross Domestic Product, the most commonly reported statistic regarding national economic performance. In other words, the Gross Product of Texas is the amount of US output that is produced in that state; it is defined as the value of all final

goods produced in a given region for a specific period of time. Stated differently, it captures the amount of value-added (gross area product) over intermediate goods and services at each stage of the production process, that is, it eliminates the double counting in the Total Expenditures concept. Using the example above, the Gross Product is \$1.25 (the value of the bread) rather than \$2.50.

Alternatively, it may be viewed as the sum of the value-added by the farmer, \$0.50; the miller, \$0.25 (\$0.75 - \$0.50); and the baker, \$0.50 (\$1.25 - \$0.75). The total value-added is, therefore, \$1.25, which is equivalent to the final value of the bread. In many industries, the primary component of value-added is the wage and salary payments to employees.

The third gauge of economic activity used in this evaluation is **Personal Income**. As the name implies, Personal Income is simply the income received by individuals, whether in the form of wages, salaries, interest, dividends, proprietors' profits, or other sources. It may thus be viewed as the segment of overall impacts which flows directly to the citizenry.

The final aggregates used, **Jobs and Job-Years**, reflect the full-time equivalent jobs generated by an activity. For an economic stimulus expected to endure (such as the ongoing operations of a facility), the Jobs measure is used. It should be noted that, unlike the dollar values described above, Jobs is a "stock" rather than a "flow." In other words, if an area produces \$1 million in output in 2025 and \$1 million in 2026, it is appropriate to say that \$2 million was achieved in the 2025-26 period. If the same area has 100 people working in 2025 and 100 in 2026, it only has 100 Jobs. When a flow of jobs is measured, such as in a construction project or a cumulative assessment over multiple years, it is appropriate to measure employment in Job-Years (one person working for one year, though it could be multiple individuals working partial years). This concept is distinct from Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

In addition to the economic aggregates, the model fully integrates the specific provisions and rate structures associated with major sources of federal, State, and local revenues on a detailed industrial basis, allowing for the estimation of the **fiscal benefits** associated with the economic stimulus.

US Multi-Regional Econometric Model

Overview

The US Multi-Regional Econometric Model was developed by Dr. M. Ray Perryman, President and CEO of The Perryman Group (TPG), about 40 years ago and has been consistently maintained, expanded, and updated since that time. It is formulated in an internally consistent manner and is designed to permit the

integration of relevant global, national, state, and local factors into the projection process. It is the result of four decades of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, state, and metropolitan area economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations. It can be integrated with The Perryman Group's other models and systems to provide dynamic projections.

This section describes the forecasting process in a comprehensive manner, focusing on both the modeling and the supplemental analysis. The overall methodology, while certainly not ensuring perfect foresight, permits an enormous body of relevant information to impact the economic outlook in a systematic manner.

Model Logic and Structure

The Model revolves around a core system which projects output (real and nominal), income (real and nominal), and employment by industry in a simultaneous manner. For the purposes of illustration, it is useful to initially consider the employment functions. Essentially, employment within the system is a derived demand relationship obtained from a neo-Classical production function. The expressions are augmented to include dynamic temporal adjustments to changes in relative factor input costs, output and (implicitly) productivity, and technological progress over time. Thus, the typical equation includes output, the relative real cost of labor and capital, dynamic lag structures, and a technological adjustment parameter. The functional form is logarithmic, thus preserving the theoretical consistency with the neo-Classical formulation.

The income segment of the model is divided into wage and non-wage components. The wage equations, like their employment counterparts, are individually estimated at the 3-digit North American Industry Classification System (NAICS) level of aggregation. Hence, income by place of work is measured for approximately 90 production categories. The wage equations measure real compensation, with the form of the variable structure differing between "basic" and "non-basic."

The basic industries, comprised primarily of the various components of Mining, Agriculture, and Manufacturing, are export-oriented, i.e., they bring external dollars into the area and form the core of the economy. The production of these sectors typically flows into national and international markets; hence, the labor markets are influenced by conditions in areas beyond the borders of the particular region. Thus, real (inflation-adjusted) wages in the basic industry are expressed as a function of the corresponding national rates, as well as measures of local labor market conditions (the reciprocal of the unemployment rate), dynamic adjustment parameters, and ongoing trends.

The “non-basic” sectors are somewhat different in nature, as the strength of their labor markets is linked to the health of the local export sectors. Consequently, wages in these industries are related to those in the basic segment of the economy. The relationship also includes the local labor market measures contained in the basic wage equations.

Note that compensation rates in the export or “basic” sectors provide a key element of the interaction of the regional economies with national and international market phenomena, while the “non-basic” or local industries are strongly impacted by area production levels. Given the wage and employment equations, multiplicative identities in each industry provide expressions for total compensation; these totals may then be aggregated to determine aggregate wage and salary income. Simple linkage equations are then estimated for the calculation of personal income by place of work.

The non-labor aspects of personal income are modeled at the regional level using straightforward empirical expressions relating to national performance, dynamic responses, and evolving temporal patterns. In some instances (such as dividends, rents, and others) national variables (for example, interest rates) directly enter the forecasting system. These factors have numerous other implicit linkages into the system resulting from their simultaneous interaction with other phenomena in national and international markets which are explicitly included in various expressions.

The output or gross area product expressions are also developed at the 3-digit NAICS level. Regional output for basic industries is linked to national performance in the relevant industries, local and national production in key related sectors, relative area and national labor costs in the industry, dynamic adjustment parameters, and ongoing changes in industrial interrelationships (driven by technological changes in production processes).

Output in the non-basic sectors is modeled as a function of basic production levels, output in related local support industries (if applicable), dynamic temporal adjustments, and ongoing patterns. The inter-industry linkages are obtained from the input-output (impact assessment) system which is part of the overall integrated modeling structure maintained by The Perryman Group. Note that the dominant component of the econometric system involves the simultaneous estimation and projection of output (real and nominal), income (real and nominal), and employment at a disaggregated industrial level. This process, of necessity, also produces projections of regional price deflators by industry. These values are affected by both national pricing patterns and local cost variations and permit changes in prices to impact other aspects of economic behavior. Income is converted from real to nominal terms using relevant Consumer Price Indices, which fluctuate in response to national pricing patterns and unique local phenomena.

Several other components of the model are critical to the forecasting process. The demographic module includes (1) a linkage equation between wage and salary (establishment) employment and household employment, (2) a labor force participation rate function, and (3) a complete population system with endogenous migration. Given household employment, labor force participation (which is a function of economic conditions and evolving patterns of worker preferences), and the working-age population, the unemployment rate and level become identities.

The population system uses Census information, fertility rates, and life tables to determine the “natural” changes in population by age group. Migration, the most difficult segment of population dynamics to track, is estimated in relation to relative regional and extra-regional economic conditions over time. Because evolving economic conditions determine migration in the system, population changes are allowed to interact simultaneously with overall economic conditions. Through this process, migration is treated as endogenous to the system, thus allowing population to vary in accordance with relative business performance (particularly employment).

Real retail sales is related to income, interest rates, dynamic adjustments, and patterns in consumer behavior on a store group basis. It is expressed on an inflation-adjusted basis. Inflation at the state level relates to national patterns, indicators of relative economic conditions, and ongoing trends. As noted earlier, prices are endogenous to the system.

A final significant segment of the forecasting system relates to real estate absorption and activity. The short-term demand for various types of property is determined by underlying economic and demographic factors, with short-term adjustments to reflect the current status of the pertinent building cycle. In some instances, this portion of the forecast requires integration with the US Multi-Regional Industry-Occupation System which is maintained by The Perryman Group. This system also allows any employment simulation or forecast from the econometric model to be translated into a highly detailed occupational profile.

The overall US Multi-Regional Econometric Model contains numerous additional specifications, and individual expressions are modified to reflect alternative lag structures, empirical properties of the estimates, simulation requirements, and similar phenomena. Moreover, it is updated on an ongoing basis as new data releases become available. Nonetheless, the above synopsis offers a basic understanding of the overall structure and underlying logic of the system.

Model Simulation and Multi-Regional Structure

The initial phase of the simulation process is the execution of a standard non-linear algorithm for the state system and that of each of the individual sub-areas. The external assumptions are derived from scenarios developed through national and international models and extensive analysis by The Perryman Group.

Once the initial simulations are completed, they are merged into a single system with additive constraints and interregional flows. Using information on minimum regional requirements, import needs, export potential, and locations, it becomes possible to balance the various forecasts into a mathematically consistent set of results. This process is, in effect, a disciplining exercise with regard to the individual regional (including metropolitan and rural) systems. By compelling equilibrium across all regions and sectors, the algorithm ensures that the patterns in state activity are reasonable in light of smaller area dynamics and, conversely, that the regional outlooks are within plausible performance levels for the state as a whole.

The iterative simulation process has the additional property of imposing a global convergence criterion across the entire multi-regional system, with balance being achieved simultaneously on both a sectoral and a geographic basis. This approach is particularly critical on non-linear dynamic systems, as independent simulations of individual systems often yield unstable, non-convergent outcomes.

It should be noted that the underlying data for the modeling and simulation process are frequently updated and revised by the various public and private entities compiling them. Whenever those modifications to the database occur, they bring corresponding changes to the structural parameter estimates of the various systems and the solutions to the simulation and forecasting system. The multi-regional version of the econometric model is re-estimated and simulated with each such data release, thus providing a constantly evolving and current assessment of state and local business activity.

The Final Forecast

The process described above is followed to produce an initial set of projections. Through the comprehensive multi-regional modeling and simulation process, a systematic analysis is generated which accounts for both historical patterns in economic performance and inter-relationships and the best available information on the future course of pertinent external factors. While the best available techniques and data are employed in this effort, they are not capable of directly capturing “street sense,” i.e., the contemporaneous and often non-quantifiable information that can materially affect economic outcomes. In order to provide a comprehensive approach to the prediction of business conditions, it is necessary to compile and assimilate extensive material regarding current events and factors both across the state of Texas and elsewhere.

This critical aspect of the forecasting methodology includes activities such as (1) daily review of hundreds of financial and business publications and electronic information sites; (2) review of major newspapers and online news sources in the state on a daily basis; (3) dozens of hours of direct telephone interviews with key business and political leaders in all parts of the state; (4) face-to-face discussions with representatives of major industry groups; and (5) frequent site visits to the

various regions of the state. The insights arising from this “fact finding” are analyzed and evaluated for their effects on the likely course of the future activity.

Another vital information resource stems from the firm’s ongoing interaction with key players in the international, domestic, and state economic scenes. Such activities include visiting with corporate groups on a regular basis and being regularly involved in the policy process at all levels. The firm is also an active participant in many major corporate relocations, economic development initiatives, and regulatory proceedings.

Once organized, this information is carefully assessed and, when appropriate, independently verified. The impact on specific communities and sectors that is distinct from what is captured by the econometric system is then factored into the forecast analysis. For example, the opening or closing of a major facility, particularly in a relatively small area, can cause a sudden change in business performance that will not be accounted for by either a modeling system based on historical relationships or expected (primarily national and international) factors.

The final step in the forecasting process is the integration of this material into the results in a logical and mathematically consistent manner. In some instances, this task is accomplished through “constant adjustment factors” which augment relevant equations. In other cases, anticipated changes in industrial structure or regulatory parameters are initially simulated within the context of the Multi-Regional Impact Assessment System to estimate their ultimate effects by sector. Those findings are then factored into the simulation as constant adjustments on a distributed temporal basis. Once this scenario is formulated, the extended system is again balanced across regions and sectors through an iterative simulation algorithm analogous to that described in the preceding section.

Appendix B: Results by Industry

The Annual Cost of Nuclear Verdicts to the Texas Economy

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$0.151 b	-\$0.044 b	-\$0.029 b	-339
Mining	-\$0.341 b	-\$0.078 b	-\$0.039 b	-158
Utilities	-\$0.356 b	-\$0.080 b	-\$0.035 b	-109
Construction	-\$0.316 b	-\$0.157 b	-\$0.129 b	-1,349
Manufacturing	-\$1.244 b	-\$0.383 b	-\$0.216 b	-2,305
Wholesale Trade	-\$0.425 b	-\$0.287 b	-\$0.166 b	-1,399
Retail Trade*	-\$0.982 b	-\$0.734 b	-\$0.427 b	-9,798
Transportation & Warehousing	-\$0.322 b	-\$0.216 b	-\$0.143 b	-1,446
Information	-\$0.215 b	-\$0.133 b	-\$0.057 b	-375
Financial Activities*	-\$3.168 b	-\$1.222 b	-\$0.329 b	-2,471
Business Services	-\$0.472 b	-\$0.306 b	-\$0.250 b	-2,260
Health Services	-\$0.342 b	-\$0.235 b	-\$0.199 b	-2,448
Other Services	-\$0.452 b	-\$0.235 b	-\$0.188 b	-3,329
Total, All Industries	-\$8.787 b	-\$4.111 b	-\$2.206 b	-27,785

Source: US Multi-Regional Impact Assessment System, The Perryman Group

Notes: Monetary values given in billions of 2026 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. (in constant 2026 dollars)