

THE IMPORTANCE OF AN ACCURATE CENSUS COUNT IN TEXAS: Economic Consequences of a Significant Undercount

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Summary of Key Results

Accurate Census counts are far more than just a matter of interest. They are important to ensuring adequate federal funding for various programs, appropriate representation in Congress, and an understanding of demographic trends in order to plan for the future.

The economic and fiscal costs of a significant undercount would be substantial.

- The Perryman Group estimates that the **direct losses** due to a significant Census undercount in Texas total nearly **\$21.3 billion** over the 2021-2030 period, or **\$2.1 billion** per year on an average annual basis over the period. These losses are in programs important to the health and wellbeing of Texans as well as future economic growth.
- Direct costs lead to negative ripple effects through the economy, multiplying the overall economic harms of an undercount. The Perryman Group estimates that potential undercounts in Texas could lead to total losses of **\$3.6 billion** in gross product and **41,864** jobs in 2021. Over the 10 years following the count (including multiplier effects), total losses include **\$39.2 billion** in gross product and nearly **418,500** job-years of employment.
- Even beyond these negative economic impacts, reductions in funding for these programs involve substantial “**downstream**” effects such as reduced wellness, less infrastructure improvement, and more limited job training. The Perryman Group analyzed the potential economic costs of these downstream effects over the 2021 through 2030 period and found that they include an estimated **\$42.5 billion** in gross product and nearly **498,000** job-years in Texas (when multiplier effects are considered).
- The decrease in economic activity associated with funding losses would also generate a notable decrease in tax receipts to the State and local government entities including cities, counties, schools, and special districts. The Perryman Group estimates that cumulatively over the 2021-45 period, the total decrease in tax receipts due to undercounts and the related economic harms is estimated to be **\$1.98 billion** to the State and **\$1.78 billion** to local entities. Note that these losses are over and above the much larger amounts that are lost in direct allocations of

funds to the State and local governments and do not reflect any of the downstream effects.

Undercounts have the potential to negatively affect the health and wellbeing of residents of the state, job training availability, infrastructure investments, housing, and other important programs and initiatives. Encouraging responses and ensuring all Texans are counted can assure that Texas receives fair and equitable allocations from Federal initiatives over the coming decade and, hence, enhance future prosperity in the state.

Introduction

The concept of a Census to identify and enumerate the population of an area dates back more than 5,000 years and was found in Babylonia, Egypt, Rome, China, and other ancient civilizations. Records have survived from China dating back more than two millennia. They have been a part of Western civilization at least since the days of William the Conqueror and were enshrined in the US Constitution.

Accurate Census counts are far more than just a matter of interest. They are important to ensuring adequate federal funding for various programs and appropriate

representation in Congress. In addition, the Census is crucial to understanding population and demographic trends in order to plan for the future.

Undercounts occur for a variety of reasons, such as failure to realize the importance of the Census, lack of understanding as to whether to respond, inadequate internet access, or fear of providing information. Certain population groups tend to be difficult to count, including the large Hispanic population and immigrants. People who may be working in Texas but also have ties in other states may be unsure whether they should respond, and expansive areas with limited internet access can lead to notable undercounts.

Dozens of states and many metropolitan areas have engaged in proactive efforts to ensure adequate counts, with funding levels including \$187 million in California, \$30.5 million in Illinois, \$20 million in New York, and \$15.5 million in Washington. The Perryman Group recently estimated the potential economic costs of a significant undercount in Texas as a public service in order to emphasize the importance of the Census. This report presents results of the analysis as well as the methods and assumptions used in this assessment.

Accurate Census counts are far more than just a matter of interest. They are important to ensuring adequate federal funding for various programs and appropriate representation in Congress.

Potential Direct Costs of a Texas Census Undercount

Measuring the economic consequences of a significant Census undercount involves four major phases:

- estimating the potential size of the undercount,
- quantifying the associated direct losses in funding based on Census counts,
- calculating the total economic impact of lost funding, and
- estimating the “downstream” effects which are caused by the consequences of funding reductions such as increased hunger, diminished health care access, and adverse educational outcomes.

Data developed by the US Census Bureau regarding hard to count populations were used to derive an estimate of the anticipated undercount in Texas (about 1.49%). This number is likely conservative in that (1) Census plans do not account for any reluctance to participate as a result of the controversy over the citizenship question and other recent policies and (2) surveys conducted in some areas of the state have found that a much higher percentage of residents would likely not complete the survey.

Because of the manner in which many major programs determine eligibility and allocations, the loss of Federal dollars can be much greater than the magnitude of the undercount. Moreover, the primary categories of funding reductions are in sectors (such as health care, housing, education, and infrastructure) that are critical to the ongoing health and wellbeing of the population and economy.

The Perryman Group estimates that the direct losses due to a significant Census undercount in Texas total nearly **\$21.3 billion** over the 2021-2030 period, or **\$2.1 billion** per year on an average annual basis over the period. As noted, these losses are in programs that are important to the health and wellbeing of Texans as well as future economic growth.

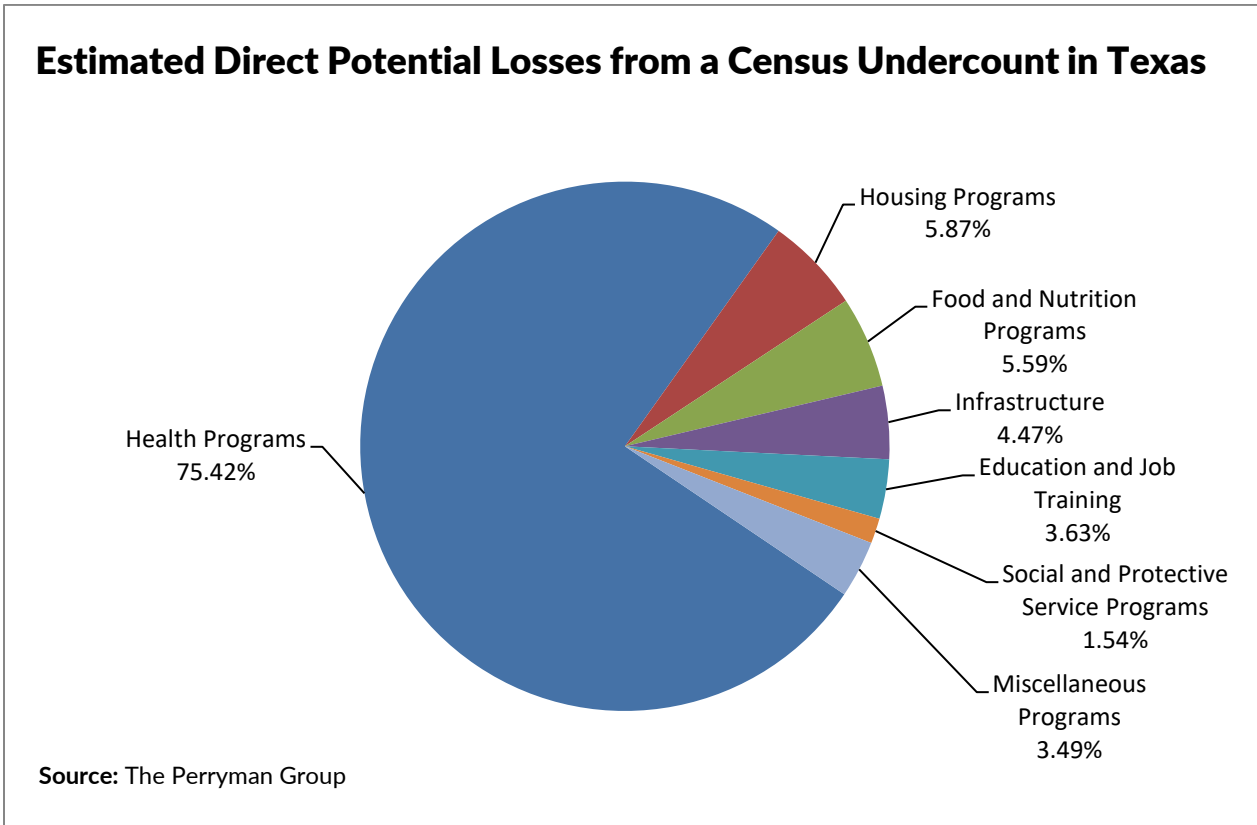
Estimated Direct Potential Losses Associated with a Census Undercount

	Total Cumulative: 2021-2030 (Millions of 2020\$)	Average Annual (Millions of 2020\$)
Health Programs	-\$16,040.940	-\$1,604.09
Housing Programs	-\$1,257.893	-\$125.79
Food and Nutrition Programs	-\$1,198.638	-\$119.86
Infrastructure	-\$938.901	-\$93.89
Education and Job Training	-\$779.331	-\$77.93
Social and Protective Service Programs	-\$330.340	-\$33.03
Miscellaneous Programs	-\$746.268	-\$74.63
TOTAL	-\$21,292.311	-\$2,129.23

Note: Based on The Perryman Group's estimates of potential undercounts and related funding losses. Miscellaneous programs include a variety of funding categories with relatively small allocations, such as several types of block grants, administrative funds, arts and cultural programs, and agricultural and environmental initiatives. Additional explanation of the methodology is provided in the Appendices.

Source: The Perryman Group

More than 75% of direct potential losses would likely fall in health programs.



Total Economic and Downstream Costs of a Significant Undercount

Direct costs lead to negative ripple effects through the economy, multiplying the overall economic harms of an undercount. Even beyond these negative economic impacts, reductions in funding for these programs involve substantial “downstream” effects such as reduced wellness, less infrastructure improvement, and more limited job training.

A brief overview of the methods used and a definition of terms is provided on the following page, with further explanation of methods used and detailed results in the Appendices to this report.

Measuring Economic and Fiscal Impacts

Any economic stimulus, whether positive or negative, generates multiplier effects throughout the economy. In this instance, an undercount would decrease funding for major programs, generating multiplier effects and dynamic responses rippling through the economy. In addition, lower funding would lead to notable downstream effects.

The Perryman Group's dynamic input-output assessment system (the US Multi-Regional Impact Assessment System, which is described in further detail in Appendix A) was developed by the firm about 40 years ago and has been consistently maintained and updated since that time. The model has been used in hundreds of analyses for clients ranging from major corporations to government agencies and has been peer reviewed on multiple occasions. 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 the total economic impacts of a significant undercount. The model used in the current analysis reflects the specific industrial composition and characteristics of the Texas economy.

Total economic effects are quantified for key measures of business activity:

- **Total expenditures** (or total spending) measure 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 of employment for multi-year, cumulative effects or jobs for annual or ongoing effects. A job-year is one person working for one year, though it could be multiple people working partial years.

The decrease in business activity associated with a significant undercount also has the potential to decrease taxes to the State and local governments. Monetary values were quantified on a constant (2020) basis to eliminate the effects of inflation. See the Appendices for additional information regarding the methods and assumptions used in this analysis and further detailed results.

Total Economic Harms of an Undercount

The Perryman Group estimates that potential undercounts in Texas could lead to total losses of **\$3.6 billion** in gross product and **41,864** jobs in 2021. Over the 10 years following the count (including multiplier effects), total losses include **\$39.2 billion** in gross product and nearly **418,500** job-years of employment.

Estimated Total Economic Losses Associated with a Significant Census Undercount

	2021		Cumulatively: 2021-2030	
	Gross Product (Billions of 2020\$)	Employment (Jobs)	Gross Product (Billions of 2020\$)	Employment (Job-Years)
Health Programs	-\$2.807	-33,070	-\$30.479	-330,563
Housing Programs	-\$0.184	-2,011	-\$1.999	-20,106
Food and Nutrition Programs	-\$0.183	-1,676	-\$1.991	-16,756
Infrastructure	-\$0.154	-1,672	-\$1.671	-16,716
Education and Job Training	-\$0.132	-1,787	-\$1.432	-17,859
Social and Protective Service Programs	-\$0.057	-714	-\$0.613	-7,133
Miscellaneous Programs	-\$0.096	-934	-\$1.039	-9,335
TOTAL	-\$3.613	-41,864	-\$39.225	-418,468

Note: Based on The Perryman Group's estimates of potential undercounts and related funding losses and the related multiplier effects. Miscellaneous programs include a variety of funding categories with relatively small allocations, such as several types of block grants, administrative funds, arts and cultural programs, and agricultural and environmental initiatives. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of the methodology and results by industry are provided in the Appendices.

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

Downstream Effects

In addition to these economic costs, there are additional negative effects due to “downstream” effects of undercounts. For example, having less funding for nutrition, education, social services, health care, and other programs can lead to reduced productivity and efficiency, diminished overall health of the population (further reducing productivity), and increased stress on the social service system. Similarly, inadequate infrastructure resources impose costs on local businesses and households and reduce efficiency.

The Perryman Group analyzed the potential economic costs of these downstream effects over the 2021 through 2030 period and found that they include an estimated **\$42.5 billion** in gross product and nearly **498,000** job-years in Texas (when multiplier effects are considered).

Estimated Cumulative Potential Downstream Losses Associated with a Significant Census Undercount: 2021-2030

	Total Expenditures (Billions of 2020\$)	Gross Product (Billions of 2020\$)	Personal Income (Billions of 2020\$)	Employment (Job-Years)
Health Programs	-\$42.435	-\$19.233	-\$11.574	-183,805
Housing Programs	-\$3.152	-\$1.517	-\$0.920	-16,183
Food and Nutrition Programs	-\$3.952	-\$1.886	-\$1.181	-22,337
Infrastructure	-\$2.672	-\$1.274	-\$0.788	-13,484
Education and Job Training	-\$38.725	-\$17.888	-\$10.998	-254,896
Social and Protective Service Programs	-\$1.407	-\$0.677	-\$0.410	-7,222
TOTAL	-\$92.343	-\$42.475	-\$25.870	-497,927

Note: Based on The Perryman Group’s estimates of potential undercounts and related funding losses and the related downstream effects such as reduced productivity and economic efficiency. Does not include certain funding categories with relatively small allocations which would further increase economic costs. Miscellaneous programs include a variety of funding categories with relatively small allocations, such as several types of block grants, administrative funds, arts and cultural programs, and agricultural and environmental initiatives. A job-year is one person working for one year, though it could be multiple individuals working partial years. Additional explanation of the methodology is provided in Appendix A.

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

Fiscal Effects

Business activity generates tax revenue. The decrease in economic activity associated with funding losses due to undercounts would lead to a notable decrease in tax receipts to the State and local government entities including cities, counties, schools, and special districts. Taxes are generated through the

The Perryman Group estimates that cumulatively over the 2021-45 period, the total decrease in tax receipts due to undercounts and the related economic harms is estimated to be \$1.98 billion to the State and \$1.78 billion to local entities. These losses are over and above lost direct allocations and do not include downstream effects.

economic effects measured in the preceding sections. For example, the economic harms cause losses of retail sales, which were measured in this study (results appear in Appendix B). A portion of these lost retail sales would have been taxable, and local taxing entities are negatively affected. Similarly, visitor outlays can lead to gains in occupancy tax

revenues. Economic harms also affect demand for housing and commercial real estate and, hence, property tax values.

When the total economic effects are considered (such as those measured in this study), the losses in taxes from these sources are significant. The Perryman Group estimates that cumulatively over the 2021-45 period, the total decrease in tax receipts due to undercounts and the related economic harms is estimated to be **\$1.98 billion** to the State and **\$1.78 billion** to local entities. Note that these losses are over and above the much larger amounts that are lost in direct allocations of funds to the State and local governments and do not reflect any of the downstream effects described in the preceding section.

Conclusion

Undercounting Texans would have a substantial negative effect on the economy. In addition to losses of federal funds for programs, representation of the state in Congress could be adversely affected.

Undercounts have the potential to negatively affect the health and wellbeing of residents of the state, job training availability, infrastructure investments, housing, and other important programs and initiatives.

The Perryman Group estimates that a significant undercount in the 2020 Census has the potential to lead to total losses of **\$39.2 billion** in gross product and nearly **418,500** job-years of employment over the 2021-2030 period (including multiplier effects), with another **\$42.5**

billion in gross product and nearly **498,000** job-years in losses due to the related downstream effects.

Undercounts have the potential to negatively affect the health and wellbeing of residents of the state, job training availability, infrastructure investments, housing, and other important programs and initiatives. Encouraging responses and ensuring all Texans are counted can assure that Texas receives fair and equitable allocations from Federal initiatives over the coming decade and, hence, enhance future prosperity in the state.

Appendix A: Methods Used

US Multi-Regional Impact Assessment System

The basic modeling technique employed in this study is known as dynamic input-output analysis. This methodology 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. Projections were based on an econometric model designed specifically for the relevant region.

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; the second is simulation of the impact assessment system.

Direct Effects

In this instance, data developed by the US Census Bureau regarding hard to count populations were used to derive an estimate of the weighted anticipated undercount in Texas (about 1.49%). As noted in the report, this number is likely conservative.

All federal programs funded or supported based on local Census counts were examined to determine the types of formulas that were relevant. Initiatives for which Texas is not eligible for participation were eliminated from the analysis. Allocations to Texas were determined from programs representing well over half of the total funding and all of the major sources of revenue allocations. (See "Counting for Dollars 2020," George Washington Institute of Public Policy.) Comparison of these programs relative to the smaller ones allowed the estimation of the total amount allocated to Texas. The eligible populations in Texas were then integrated with the applicable formulas to estimate the funds provided to the area as of 2017 (the last year for which the information has been compiled). These amounts were then projected forward to 2021-2030 using The Perryman Group's US Multi-Regional Econometric Model (described below) and converted to constant (2020) dollars to eliminate the effects of inflation. The direct impact

of the potential undercount was then computed using the allocation methods applicable to each program. Once the direct effects were compiled and categorized, the total impact was determined by assigning the funds to the appropriate foregone spending categories using The Perryman Group's US Multi-Regional Impact Assessment System (described below).

Downstream Effects

Downstream effects were estimated based on academic studies and economic modeling by The Perryman Group to estimate the impact of reduced funding on underlying issues such as health, social services, homelessness, hunger, education levels, traffic congestion, and infrastructure constraints. The Perryman Group has completed many studies of these and similar issues and has developed many of the techniques used in their measurement. The systems have been widely used throughout the country in policy analysis and formulation.

Downstream **health costs** are based on foregoing potential reductions in morbidity and mortality associated with improved access to health care on an annual basis based on estimates by the Institute of Medicine as part of a major research initiative. They have been fully updated to current price levels and relative income levels in Texas based on appropriate cost indices from the US Department of Labor and income data from the US Department of Commerce. The Perryman Group developed this model, which has been used in policy analysis related to health care access throughout the United States.

Reduced **social and protective services** funding leads to increases in issues related to crime and poverty. The Perryman Group developed a method for measuring the cost of poverty based on studies of the effects of poverty on earnings losses, criminal activity and incarceration, incremental educational costs, incremental health care costs, and productivity losses associated with increased morbidity and mortality. This model has been widely used in national and state level studies in all 50 states for policy analysis and implementation related to hunger, child maltreatment, mental health, indigent health care access, and other issues related to social policy and services. The system was fully localized to Texas and reflects the economic characteristics and composition of the state. It has been used by Feeding America, Prevent Child Abuse America, and numerous social service entities throughout the country; has been the basis for testimony before the US Congress and numerous legislative bodies; and formed the analytical basis for numerous national policy decisions.

To estimate downstream costs related to the loss of funding for **housing**, information from extensive academic and policy research was implemented to develop a system to calculate the incremental economic and social costs uniquely associated with homelessness and housing affordability issues. This model was developed by The Perryman Group and has been used extensively in policy analysis in several states.

Downstream effects of **hunger** derive from an increased need for health care and adverse effects on educational performance. Available academic studies which provided information on (1) the relative incidence of various health consequences among the hungry and food insecure population and (2) the costs associated with those outcomes were used as a basis for health-related effects of hunger. In addition, hunger and food insecurity are also associated with substantial adverse effects on education costs, outcomes, and, hence, earnings. The direct educational costs were quantified in a study by the Center for American Progress and are updated using current estimates of the number of school-aged persons suffering from hunger and food insecurity and the appropriate price indices. The model was originally developed by The Perryman Group in 2014 and has been used in all 50 states to support food and nutrition initiatives and used by Congress and the US Department of Agriculture in evaluating and implementing public policy. All results were localized to Texas and reflect the state's industrial composition and economic and demographic characteristics. Additional detail is available in TPG's study of hunger available at www.perrymangroup.com.

Downstream effects of reduced **infrastructure** funding include, among others, increased congestion on highways, challenges in power and water resource availability, and difficulty in maintaining and expanding municipal services. These effects also raise the cost of doing business in many sectors and constrain capacity for expansion. The Perryman Group has developed models to measure these effects, which were updated and localized to Texas, for analysis for the Federal Highway Administration, the Federal Energy Regulatory Commission, and numerous state regulatory bodies throughout the country.

Downstream **education and job training** effects are based on the social returns to educational investment, including higher earnings and productivity and reduced social costs in a variety of areas. Based on extensive academic and professional research, The Perryman Group has developed models to estimate the effects of providing incremental resources for elementary and secondary education, as well as job training and higher education. This research was supported by the Bill and Melinda Gates Foundation and has been implemented in hundreds of studies throughout the United States. These systems were fully localized to Texas.

Model Simulation

Simulation of the input-output system measures overall economic effects as the direct costs of undercounting ripple through the economy. The Perryman Group developed the US Multi-Regional Impact Assessment System for this purpose about 40 years ago and has consistently maintained and updated it since that time. The specific submodels used in the current application reflect the structure of the Texas economy.

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 models used for the present investigation have been thoroughly tested for reasonableness and historical reliability.

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 Council 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.

In this case, because the original stimulus is negative (foregone funding for programs in the state), the overall economic effects are also negative.

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 2020 dollars to eliminate the effects of inflation.

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.

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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 Council 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.

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 an area is the amount of US output that is produced in that area; 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 are Jobs and Job-Years of Employment. The employment measures reflect the full-time equivalent jobs generated or lost due to an economic stimulus. For a stimulus which is anticipated to be ongoing, the Jobs measure is used. 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 2017 and \$1 million in 2018, it is appropriate to say that \$2 million was achieved in the 2017-18 period. If the same area has 100 people working in 2017 and 100 in 2018, 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 (a person working for a 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.

Business activity generates tax revenue. The economic costs of a census undercount lead to a notable decrease in tax receipts to the State and local government entities including cities, counties, schools, and special districts. For example, retail sales would be negatively affected by the decrease in economic activity due to undercounts measured in this study; the reductions in retail sales were quantified in this study and appear in Appendix B. A portion of these retail sales would have been taxable, and receipts to local taxing entities are thus reduced. Economic harms also affect demand for housing and commercial real estate and, hence, property tax values. When the total economic effects of a potential undercount are considered (such as measured in this study), the reductions in taxes from these sources are significant.

In addition to the economic aggregates, the model fully integrates the specific provisions and rate structures associated with major sources of 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 (also known as the Texas Econometric Model) was developed by Dr. M. Ray Perryman, President and CEO of The Perryman Group (TPG), beginning 40 years ago as a Texas model and has been consistently maintained, expanded, and updated to a national level 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 is used in the present analysis to generate estimates of the economic and demographic indicators which determine allocations through 2030.

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 US Multi-Regional Econometric 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 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 the appropriate Consumer Price Index.

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 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-level system and that of each of the individual sub-areas, if any, being examined. 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.

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 US Multi-Regional 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 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 and to achieve the property of statistical consistence, it is necessary to compile and assimilate extensive material regarding current events and factors affecting the forecast.

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 on a daily basis; (3) direct discussions with key business and political leaders; (4) face-to-face discussions with representatives of major industry groups; and (5) frequent site visits to various regions. 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: Detailed Sectoral Results

Year 2021



The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Health Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$91,112,188	-\$25,171,605	-\$16,629,055	-245
Mining	-\$73,941,108	-\$17,274,930	-\$9,502,734	-53
Utilities	-\$233,750,988	-\$53,135,543	-\$23,186,930	-94
Construction	-\$99,182,544	-\$52,396,743	-\$43,178,177	-567
Manufacturing	-\$702,532,246	-\$219,558,848	-\$121,023,898	-1,754
Wholesale Trade	-\$174,924,406	-\$118,282,601	-\$68,202,800	-724
Retail Trade*	-\$731,217,548	-\$549,582,003	-\$319,679,879	-9,134
Transportation & Warehousing	-\$144,655,327	-\$97,860,693	-\$64,721,565	-824
Information	-\$110,675,199	-\$68,360,005	-\$29,185,081	-244
Financial Activities*	-\$775,912,422	-\$196,809,406	-\$72,352,706	-707
Business Services	-\$200,583,971	-\$120,386,401	-\$98,204,452	-1,117
Health Services	-\$1,672,550,609	-\$1,131,015,126	-\$956,283,761	-14,761
Other Services	-\$304,048,149	-\$157,529,229	-\$126,441,543	-2,846
Total, All Industries	-\$5,315,086,704	-\$2,807,363,134	-\$1,948,592,581	-33,070

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Housing Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$5,537,095	-\$1,634,866	-\$1,072,886	-16
Mining	-\$5,847,414	-\$1,507,663	-\$837,213	-5
Utilities	-\$14,718,885	-\$3,310,045	-\$1,444,415	-6
Construction	-\$121,833,665	-\$47,429,249	-\$39,084,655	-513
Manufacturing	-\$79,557,215	-\$26,676,995	-\$15,703,434	-235
Wholesale Trade	-\$18,009,868	-\$12,185,689	-\$7,026,377	-75
Retail Trade*	-\$53,863,332	-\$41,111,708	-\$24,023,982	-670
Transportation & Warehousing	-\$12,465,730	-\$8,309,073	-\$5,495,325	-70
Information	-\$6,995,269	-\$4,319,626	-\$1,844,187	-15
Financial Activities*	-\$45,871,978	-\$11,325,820	-\$4,556,275	-45
Business Services	-\$14,435,362	-\$8,811,892	-\$7,188,246	-82
Health Services	-\$10,811,167	-\$7,568,228	-\$6,399,007	-99
Other Services	-\$19,428,784	-\$9,969,209	-\$7,999,037	-180
Total, All Industries	-\$409,375,765	-\$184,160,063	-\$122,675,037	-2,011

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Food and Nutrition Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$5,316,551	-\$1,547,758	-\$1,020,556	-15
Mining	-\$4,280,736	-\$973,508	-\$526,622	-3
Utilities	-\$13,340,507	-\$3,043,956	-\$1,328,301	-5
Construction	-\$5,492,660	-\$2,918,684	-\$2,405,178	-32
Manufacturing	-\$37,315,384	-\$11,638,143	-\$6,534,750	-99
Wholesale Trade	-\$120,695,512	-\$81,673,730	-\$47,093,800	-500
Retail Trade*	-\$44,197,839	-\$32,812,387	-\$19,013,794	-554
Transportation & Warehousing	-\$10,780,704	-\$7,356,701	-\$4,865,460	-62
Information	-\$7,953,343	-\$4,913,536	-\$2,097,746	-18
Financial Activities*	-\$43,306,205	-\$11,093,546	-\$4,349,449	-43
Business Services	-\$14,562,984	-\$8,966,889	-\$7,314,683	-83
Health Services	-\$9,702,046	-\$6,789,058	-\$5,740,211	-89
Other Services	-\$19,443,933	-\$9,689,823	-\$7,780,469	-175
Total, All Industries	-\$336,388,404	-\$183,417,719	-\$110,071,019	-1,676

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Infrastructure Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$4,933,087	-\$1,655,114	-\$1,098,180	-16
Mining	-\$5,645,661	-\$1,566,610	-\$875,123	-6
Utilities	-\$11,974,124	-\$2,699,581	-\$1,178,025	-5
Construction	-\$91,340,979	-\$45,635,911	-\$37,606,833	-494
Manufacturing	-\$57,376,894	-\$19,071,452	-\$11,110,498	-163
Wholesale Trade	-\$11,845,787	-\$8,014,083	-\$4,620,992	-49
Retail Trade*	-\$39,495,086	-\$29,768,742	-\$17,331,304	-493
Transportation & Warehousing	-\$10,292,894	-\$6,817,437	-\$4,508,810	-57
Information	-\$5,743,677	-\$3,545,629	-\$1,513,743	-13
Financial Activities*	-\$38,283,737	-\$9,213,636	-\$3,694,820	-36
Business Services	-\$17,489,262	-\$10,884,306	-\$8,878,805	-101
Health Services	-\$9,230,146	-\$6,459,731	-\$5,461,763	-84
Other Services	-\$16,729,935	-\$8,556,763	-\$6,868,352	-155
Total, All Industries	-\$320,381,269	-\$153,888,996	-\$104,747,248	-1,672

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Education and Job Training Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$4,225,179	-\$1,254,393	-\$829,836	-12
Mining	-\$3,730,883	-\$865,439	-\$475,592	-3
Utilities	-\$11,958,936	-\$2,709,333	-\$1,182,280	-5
Construction	-\$6,649,802	-\$3,582,099	-\$2,951,873	-39
Manufacturing	-\$32,201,362	-\$10,154,661	-\$5,699,141	-85
Wholesale Trade	-\$8,008,112	-\$5,418,628	-\$3,124,429	-33
Retail Trade*	-\$34,590,547	-\$25,975,827	-\$15,105,066	-432
Transportation & Warehousing	-\$7,873,005	-\$5,281,400	-\$3,492,929	-44
Information	-\$6,088,272	-\$3,756,443	-\$1,603,746	-13
Financial Activities*	-\$40,336,317	-\$10,926,823	-\$3,715,049	-36
Business Services	-\$10,129,262	-\$6,252,528	-\$5,100,461	-58
Health Services	-\$8,037,657	-\$5,625,491	-\$4,756,405	-73
Other Services	-\$87,313,333	-\$50,115,373	-\$42,936,381	-953
Total, All Industries	-\$261,142,667	-\$131,918,438	-\$90,973,189	-1,787

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Social and Protective Service Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$2,081,913	-\$564,383	-\$373,279	-6
Mining	-\$1,343,043	-\$308,112	-\$170,614	-1
Utilities	-\$4,624,901	-\$1,051,373	-\$458,791	-2
Construction	-\$2,088,965	-\$1,102,909	-\$908,866	-12
Manufacturing	-\$13,449,520	-\$4,283,517	-\$2,406,828	-36
Wholesale Trade	-\$3,335,826	-\$2,256,753	-\$1,301,264	-14
Retail Trade*	-\$14,774,096	-\$11,107,992	-\$6,461,925	-185
Transportation & Warehousing	-\$3,016,222	-\$2,067,682	-\$1,367,491	-17
Information	-\$2,371,752	-\$1,460,740	-\$623,637	-5
Financial Activities*	-\$14,905,339	-\$3,645,874	-\$1,389,183	-14
Business Services	-\$15,303,816	-\$10,870,068	-\$8,867,190	-101
Health Services	-\$3,511,829	-\$2,456,750	-\$2,077,205	-32
Other Services	-\$25,654,127	-\$15,325,614	-\$13,026,277	-289
Total, All Industries	-\$106,461,349	-\$56,501,766	-\$39,432,551	-714

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Miscellaneous Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$5,219,040	-\$1,480,741	-\$981,311	-14
Mining	-\$11,128,571	-\$2,528,455	-\$1,253,130	-6
Utilities	-\$10,605,098	-\$2,381,183	-\$1,039,085	-4
Construction	-\$7,352,277	-\$3,703,282	-\$3,051,735	-40
Manufacturing	-\$38,238,192	-\$12,102,275	-\$6,867,251	-88
Wholesale Trade	-\$9,200,241	-\$6,224,123	-\$3,588,885	-38
Retail Trade*	-\$25,801,152	-\$19,304,305	-\$11,213,998	-322
Transportation & Warehousing	-\$7,374,972	-\$4,727,350	-\$3,126,501	-40
Information	-\$5,100,151	-\$3,146,919	-\$1,343,521	-11
Financial Activities*	-\$37,697,776	-\$12,866,408	-\$4,525,186	-43
Business Services	-\$23,184,525	-\$15,387,474	-\$12,552,236	-143
Health Services	-\$7,403,632	-\$5,124,689	-\$4,332,972	-67
Other Services	-\$12,986,091	-\$6,680,650	-\$5,285,106	-117
Total, All Industries	-\$201,291,717	-\$95,657,854	-\$59,160,918	-934

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings. Miscellaneous programs include a variety of funding categories with relatively small allocations, such as several types of block grants, administrative funds, arts and cultural programs, and

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: All Programs, 2021

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Jobs
Agriculture	-\$118,425,053	-\$33,308,859	-\$22,005,103	-324
Mining	-\$105,917,415	-\$25,024,717	-\$13,641,028	-77
Utilities	-\$300,973,438	-\$68,331,013	-\$29,817,828	-121
Construction	-\$333,940,893	-\$156,768,878	-\$129,187,317	-1,696
Manufacturing	-\$960,670,813	-\$303,485,890	-\$169,345,801	-2,461
Wholesale Trade	-\$346,019,753	-\$234,055,607	-\$134,958,547	-1,432
Retail Trade*	-\$943,939,600	-\$709,662,964	-\$412,829,948	-11,790
Transportation & Warehousing	-\$196,458,855	-\$132,420,337	-\$87,578,080	-1,115
Information	-\$144,927,663	-\$89,502,899	-\$38,211,661	-320
Financial Activities*	-\$996,313,776	-\$255,881,512	-\$94,582,669	-923
Business Services	-\$295,689,181	-\$181,559,558	-\$148,106,073	-1,684
Health Services	-\$1,721,247,086	-\$1,165,039,073	-\$985,051,324	-15,205
Other Services	-\$485,604,351	-\$257,866,660	-\$210,337,165	-4,716
Total, All Industries	-\$6,950,127,876	-\$3,612,907,970	-\$2,475,652,543	-41,864

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

Cumulative: 2021-2030



The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Health Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$989,190,261	-\$273,284,040	-\$180,538,951	-2,452
Mining	-\$802,766,628	-\$187,551,119	-\$103,169,647	-532
Utilities	-\$2,537,796,594	-\$576,883,982	-\$251,736,743	-942
Construction	-\$1,076,808,811	-\$568,862,950	-\$468,778,473	-5,664
Manufacturing	-\$7,627,278,751	-\$2,383,714,832	-\$1,313,936,845	-17,530
Wholesale Trade	-\$1,899,125,928	-\$1,284,175,031	-\$740,466,745	-7,236
Retail Trade*	-\$7,938,710,424	-\$5,966,722,746	-\$3,470,712,640	-91,299
Transportation & Warehousing	-\$1,570,499,441	-\$1,062,457,688	-\$702,671,547	-8,241
Information	-\$1,201,582,701	-\$742,173,501	-\$316,857,698	-2,443
Financial Activities*	-\$8,423,955,435	-\$2,136,727,827	-\$785,521,606	-7,067
Business Services	-\$2,177,707,665	-\$1,307,015,645	-\$1,066,189,821	-11,162
Health Services	-\$18,158,610,927	-\$12,279,247,943	-\$10,382,217,828	-147,549
Other Services	-\$3,301,001,484	-\$1,710,269,316	-\$1,372,755,347	-28,446
Total, All Industries	-\$57,705,035,051	-\$30,479,086,620	-\$21,155,553,891	-330,563

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Housing Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$60,115,347	-\$17,749,475	-\$11,648,144	-158
Mining	-\$63,484,431	-\$16,368,453	-\$9,089,483	-54
Utilities	-\$159,800,550	-\$35,936,620	-\$15,681,782	-59
Construction	-\$1,322,728,361	-\$514,931,673	-\$424,335,768	-5,128
Manufacturing	-\$863,739,792	-\$289,627,812	-\$170,489,643	-2,353
Wholesale Trade	-\$195,530,218	-\$132,298,047	-\$76,284,232	-745
Retail Trade*	-\$584,785,464	-\$446,343,153	-\$260,824,480	-6,700
Transportation & Warehousing	-\$135,338,415	-\$90,210,263	-\$59,661,849	-700
Information	-\$75,946,504	-\$46,897,477	-\$20,022,036	-154
Financial Activities*	-\$498,024,630	-\$122,962,590	-\$49,466,737	-448
Business Services	-\$156,722,386	-\$95,669,286	-\$78,041,621	-817
Health Services	-\$117,375,084	-\$82,167,024	-\$69,472,981	-987
Other Services	-\$210,935,160	-\$108,234,091	-\$86,844,245	-1,803
Total, All Industries	-\$4,444,526,341	-\$1,999,395,963	-\$1,331,863,001	-20,106

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Food and Nutrition Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$57,720,934	-\$16,803,755	-\$11,080,011	-150
Mining	-\$46,475,254	-\$10,569,218	-\$5,717,448	-28
Utilities	-\$144,835,722	-\$33,047,741	-\$14,421,153	-54
Construction	-\$59,632,915	-\$31,687,682	-\$26,112,623	-316
Manufacturing	-\$405,127,075	-\$126,353,436	-\$70,946,723	-989
Wholesale Trade	-\$1,310,371,620	-\$886,718,449	-\$511,289,756	-4,996
Retail Trade*	-\$479,848,777	-\$356,238,773	-\$206,429,681	-5,536
Transportation & Warehousing	-\$117,044,360	-\$79,870,516	-\$52,823,506	-619
Information	-\$86,348,158	-\$53,345,461	-\$22,774,887	-175
Financial Activities*	-\$470,168,453	-\$120,440,834	-\$47,221,266	-425
Business Services	-\$158,107,957	-\$97,352,059	-\$79,414,331	-831
Health Services	-\$105,333,540	-\$73,707,697	-\$62,320,542	-886
Other Services	-\$211,099,630	-\$105,200,833	-\$84,471,288	-1,750
Total, All Industries	-\$3,652,114,394	-\$1,991,336,454	-\$1,195,023,216	-16,756

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Infrastructure Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$53,557,723	-\$17,969,302	-\$11,922,765	-162
Mining	-\$61,294,022	-\$17,008,429	-\$9,501,067	-61
Utilities	-\$130,001,127	-\$29,308,909	-\$12,789,628	-48
Construction	-\$991,674,207	-\$495,461,693	-\$408,291,295	-4,935
Manufacturing	-\$622,931,640	-\$207,055,664	-\$120,624,882	-1,629
Wholesale Trade	-\$128,607,791	-\$87,007,603	-\$50,169,360	-490
Retail Trade*	-\$428,791,746	-\$323,194,409	-\$188,163,163	-4,927
Transportation & Warehousing	-\$111,748,285	-\$74,015,813	-\$48,951,416	-574
Information	-\$62,358,173	-\$38,494,323	-\$16,434,462	-127
Financial Activities*	-\$415,640,331	-\$100,030,954	-\$40,114,062	-363
Business Services	-\$189,878,079	-\$118,169,150	-\$96,395,746	-1,009
Health Services	-\$100,210,204	-\$70,132,254	-\$59,297,471	-843
Other Services	-\$181,634,190	-\$92,899,387	-\$74,568,584	-1,548
Total, All Industries	-\$3,478,327,519	-\$1,670,747,889	-\$1,137,223,898	-16,716

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Education and Job Training Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$45,872,079	-\$13,618,738	-\$9,009,394	-122
Mining	-\$40,505,588	-\$9,395,933	-\$5,163,429	-26
Utilities	-\$129,836,225	-\$29,414,785	-\$12,835,827	-48
Construction	-\$72,195,828	-\$38,890,268	-\$32,048,002	-387
Manufacturing	-\$349,604,966	-\$110,247,507	-\$61,874,650	-848
Wholesale Trade	-\$86,942,776	-\$58,829,166	-\$33,921,421	-331
Retail Trade*	-\$375,543,969	-\$282,015,347	-\$163,993,256	-4,321
Transportation & Warehousing	-\$85,475,939	-\$57,339,303	-\$37,922,168	-445
Information	-\$66,099,384	-\$40,783,097	-\$17,411,613	-134
Financial Activities*	-\$437,924,861	-\$118,630,746	-\$40,333,688	-357
Business Services	-\$109,971,757	-\$67,882,687	-\$55,374,877	-580
Health Services	-\$87,263,542	-\$61,075,044	-\$51,639,518	-734
Other Services	-\$947,946,706	-\$544,094,484	-\$466,153,326	-9,526
Total, All Industries	-\$2,835,183,620	-\$1,432,217,104	-\$987,681,168	-17,859

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Social and Protective Service Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$22,602,989	-\$6,127,412	-\$4,052,632	-55
Mining	-\$14,581,196	-\$3,345,125	-\$1,852,331	-9
Utilities	-\$50,211,801	-\$11,414,584	-\$4,981,020	-19
Construction	-\$22,679,556	-\$11,974,108	-\$9,867,412	-119
Manufacturing	-\$146,019,264	-\$46,505,445	-\$26,130,547	-364
Wholesale Trade	-\$36,216,522	-\$24,501,206	-\$14,127,614	-138
Retail Trade*	-\$160,399,966	-\$120,597,668	-\$70,156,069	-1,845
Transportation & Warehousing	-\$32,746,636	-\$22,448,483	-\$14,846,626	-174
Information	-\$25,749,727	-\$15,859,021	-\$6,770,725	-52
Financial Activities*	-\$161,824,855	-\$39,582,660	-\$15,082,137	-135
Business Services	-\$166,151,048	-\$118,014,564	-\$96,269,643	-1,008
Health Services	-\$38,127,362	-\$26,672,540	-\$22,551,880	-321
Other Services	-\$278,522,695	-\$166,387,703	-\$141,424,180	-2,894
Total, All Industries	-\$1,155,833,617	-\$613,430,520	-\$428,112,814	-7,133

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: Miscellaneous Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$56,662,273	-\$16,076,166	-\$10,653,939	-143
Mining	-\$120,821,088	-\$27,451,024	-\$13,605,032	-63
Utilities	-\$115,137,826	-\$25,852,120	-\$11,281,174	-41
Construction	-\$79,822,485	-\$40,205,935	-\$33,132,191	-399
Manufacturing	-\$415,145,855	-\$131,392,435	-\$74,556,634	-882
Wholesale Trade	-\$99,885,528	-\$67,574,294	-\$38,963,945	-380
Retail Trade*	-\$280,118,925	-\$209,583,710	-\$121,748,556	-3,224
Transportation & Warehousing	-\$80,068,873	-\$51,324,077	-\$33,943,916	-397
Information	-\$55,371,508	-\$34,165,593	-\$14,586,386	-112
Financial Activities*	-\$409,278,647	-\$139,688,502	-\$49,129,211	-429
Business Services	-\$251,710,627	-\$167,059,314	-\$136,277,594	-1,426
Health Services	-\$80,380,032	-\$55,637,920	-\$47,042,377	-668
Other Services	-\$140,987,889	-\$72,530,731	-\$57,379,544	-1,174
Total, All Industries	-\$2,185,391,555	-\$1,038,541,821	-\$642,300,501	-9,335

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings. Miscellaneous programs include a variety of funding categories with relatively small allocations, such as several types of block grants, administrative funds, arts and cultural programs, and agricultural and environmental initiatives.

The Impact of the Potential Loss of Federal Funding Arising from a 2020 Census Undercount on Business Activity in Texas: All Programs, 2021-2030

Results by Industry

Industry	Total Expenditures	Gross Product	Personal Income	Job-Years
Agriculture	-\$1,285,721,606	-\$361,628,889	-\$238,905,836	-3,242
Mining	-\$1,149,928,206	-\$271,689,301	-\$148,098,435	-775
Utilities	-\$3,267,619,845	-\$741,858,740	-\$323,727,328	-1,209
Construction	-\$3,625,542,163	-\$1,702,014,309	-\$1,402,565,762	-16,949
Manufacturing	-\$10,429,847,342	-\$3,294,897,131	-\$1,838,559,924	-24,596
Wholesale Trade	-\$3,756,680,382	-\$2,541,103,795	-\$1,465,223,072	-14,316
Retail Trade*	-\$10,248,199,272	-\$7,704,695,805	-\$4,482,027,846	-117,851
Transportation & Warehousing	-\$2,132,921,949	-\$1,437,666,143	-\$950,821,028	-11,149
Information	-\$1,573,456,155	-\$971,718,473	-\$414,857,806	-3,198
Financial Activities*	-\$10,816,817,212	-\$2,778,064,114	-\$1,026,868,708	-9,225
Business Services	-\$3,210,249,519	-\$1,971,162,705	-\$1,607,963,634	-16,833
Health Services	-\$18,687,300,691	-\$12,648,640,422	-\$10,694,542,596	-151,987
Other Services	-\$5,272,127,753	-\$2,799,616,546	-\$2,283,596,514	-47,139
Total, All Industries	-\$75,456,412,095	-\$39,224,756,372	-\$26,877,758,489	-418,468

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

Notes: Monetary values given in 2020 US dollars per year. Components may not sum due to rounding. Retail Trade includes Restaurants, Financial Activities includes Real Estate. Based on a conservative estimate of the potential undercount derived from the planning model of the US Census Bureau and the resulting implications for more than 300 programs with funding levels tied to the Census findings.