2012 Update:

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An Economic Assessment of the Cost of Cancer in Texas and the Benefits of the Cancer Prevention and Research Institute of Texas (CPRIT) and its Programs

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INTRODUCTION

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- Preventing, detecting, and treating cancer more effectively would improve the likelihood of survival and quality of life for those individuals facing the disease. The benefits in terms of human health and wellbeing of significant advances in the war against cancer are beyond measure.

- At the same time, investments in research, screening, and related activities aimed at reducing the incidence and severity of cancer generate substantial economic benefits by reducing the cost of cancer through improving outcomes and serving as a catalyst for business development in other related industries (such as biomedicine).

- The Cancer Prevention and Research Institute of Texas (CPRIT) is helping establish Texas as a center for cancer prevention and research. Though it remains in its early stages of development, CPRIT has helped attract many of the top cancer research scientists to relocate to Texas, including members of the prestigious National Academy of Sciences. Many of the funded research projects have resulted in published research and several have led to new patents. Through its operations and programs designed to systematically reduce the effects of the disease, CPRIT is not only working toward improving the lives of countless persons potentially affected by cancer, but also providing a sizable economic stimulus.

- On several occasions, The Perryman Group (TPG) has quantified the cost of cancer in Texas and the economic benefits of CPRIT and its screening/prevention and research programs, including comprehensive analyses in 2010 and 2011. This report updates the findings from TPG's analysis based on the most recent indicators of cancer incidence as well as results to date stemming from CPRIT grants. To facilitate comparisons across years, this report follows the same basic format and methodologies as in previous years.

Summary of Study Findings

- The Perryman Group's analysis indicates the annual direct medical costs and morbidity and mortality losses (as traditionally measured) associated with cancer within the state is now estimated to be more than $29.2 billion, up from $28.1 billion last year and an increase of 33.6% since 2007.

- **These direct expenses lead to additional lost business activity, and The Perryman Group's more comprehensive measure of cancer costs to the Texas economy** indicates losses of some $146.5 billion in reduced annual spending, $72.4 billion in output losses per annum, and 747,825 lost jobs from cancer treatment, morbidity,

mortality, and the associated spillover effects. In FY2012, CPRIT awarded a total of $342.8 million for research and prevention of cancer to various entities including universities, hospitals, and private companies.

- The current total annual impact of all prevention and research programs (including initial outlays and downstream effects) associated with CPRIT on Texas business activity was found to be $2.9 billion in output and 33,431 jobs.

- This incremental business activity also generates taxes for the State and local governments. For Texas, tax receipts associated with CPRIT activities from all sources in 2012 total $159.7 million, while local public entities receive $73.5 million. By the tenth year, these annual increases rise to $508.9 million and $239.2 million, respectively.

Every Dollar Invested Through CPRIT Returns:

(Including Initial Outlays and Downstream Effects)

$15.67	**In Economic Activity (Total Expenditures) in 2012**
$7.72	**In Output (Real Gross Product) in 2012**
$1.49	**In State Tax Receipts as of the 10th Year of Operation (assuming current levels of awards)**
$0.70	**In Local Government Tax Receipts as of the 10th Year of Operation (assuming current levels of awards)**

Source: The Perryman Group

- In addition to these benefits, CPRIT's activity works to decrease the costs of cancer (both in economic terms and the enormous human costs of the disease). By establishing Texas as a center for cancer research, CPRIT is also helping to enhance the future development of biosciences industries in the state.

The Perryman Group's Perspective

- TPG is a Texas-based economic research and analysis firm with more than 30 years of experience in assessing the economic impact of corporate expansions, regulatory changes, real estate developments, public policy initiatives, and myriad other types of events affecting business activity.

- The firm has conducted hundreds of impact analyses for the US and Texas economies (as well as all Texas metro areas and regions) and maintains an extensive set of economic models for three decades, including econometric, impact assessment, demographic, occupational, and real estate absorption models developed to specifically reflect the underlying structure of the Texas economy and its various regions.

- Impact studies have been performed for hundreds of clients including many of the largest corporations in the world, governmental entities at all levels, educational institutions, major health care systems, utilities, and economic development organizations. TPG has extensively analyzed the health care sector, including insurance, cost, affordability, and other areas relevant to the current analysis. The firm has analyzed the cost of cancer and the economic benefits of CPRIT for each of the past two years.

- From a public policy perspective, studies have been performed related to Medicaid and State Children's Health Insurance Program (SCHIP) coverage, wellness initiatives, obesity treatment, and funding for mental health and substance abuse. One recent study was published in the *Journal of Medical Economics*.

- Moreover, the proprietary models developed and maintained by the firm have been used in the analysis of scores of major medical facilities. Representative examples include the Methodist Hospital, Parkland, University Health System, Menninger Clinic, Scott & White, M. D. Anderson Cancer Center (including an assessment of its contribution to improved outcomes and the resulting benefits), and the University of Kansas Cancer Center (including an investigation of the benefits of achieving the status of a Comprehensive Cancer Center). Similarly, they have been employed to evaluate educational institutions and specific instructional and research programs for the University of Texas, Texas A&M University, University of Texas Medical Branch, Baylor University, University of Texas Health Science Center at San Antonio, and Baylor College of Medicine. Recent work related to long-term access to health care has resulted in Dr. M. Ray Perryman, founder and president of the firm, being named as an Honorary Fellow of the National Academy of Nursing, while an analysis of the economics of Medicaid expansion under the Affordable Care Act is helping to frame the debate over participation.

Report Approach and Methodology

- As noted, an approach consistent to prior years was used where possible in this 2012 update. One significant change is that at this time, the first CPRIT grants have been in place for more than two years and others have been in place over a year. Recipients have reported progress, hiring, matching funds, and other key performance metrics. This information was used in assessing the economic impacts related to research to the extent possible.

- This report evaluates the full economic cost of cancer and the impact of CPRIT investments with particular attention given to the return on operations, prevention and screening programs, research supported by CPRIT, and economic development and social gains potentially associated with CPRIT investments.

- The following is a short summary of the underlying methodology used for each of the impacts presented throughout this report. Specific assumptions and additional methodological detail are noted with the corresponding results. Further explanation of the methods and terms used in this study, including the pertinent input-output and econometric systems, may be found in Appendices A and B.

- The methods used in this study include dynamic input-output assessment making use of TPG's US Multi-Regional Impact Assessment System (USMRIAS), 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. Standard economic and fiscal measures (such as output, income, employment, and State revenues) are also quantified.

- The major components of The Perryman Group's analysis include the following.
    - The economic cost of cancer in terms of Texas business activity including losses stemming from treatment, morbidity, and mortality as well as the associated spillover effects was initially estimated. Data regarding the numbers of Texans with cancer and the associated costs for direct medical expenses, morbidity costs, and mortality are the subject of reports by entities such as the National Institutes of Health, the American Cancer Society, the National Cancer Institute (Centers for Disease Control (CDC)), and the Texas Cancer Registry (Texas Department of State Health Services).
    - The overall effect of CPRIT operations on business activity in Texas (including multiplier effects) was estimated using input data regarding direct expenditures and operations employment at the Institute.
    - The positive economic benefits of CPRIT-supported cancer prevention and screening programs were also assessed, including both the increase in business activity due to the screenings themselves and the associated benefits from improved health. The effects of matching funds generated by CPRIT programs were also included.
    - Economic returns on research supported by the Institute (including the effects related to the specific outlays, actual and anticipated recruitment efforts for high quality scholars in relevant areas, typical returns on medical research investments, and spinoff companies that surface from such endeavors) were also evaluated. Again, associated matching funds were also incorporated into the analysis.
    - Some illustrative scenarios related to potential economic development and social gains stemming from the Institute's role as a catalyst for incremental business activity as well as social gains such as the economic value of increased quality of life, longevity, and productivity from improved outcomes were similarly provided.

- The key models used in this analysis include The Perryman Group's Texas Econometric Model (described in Appendix A) as well as the firm's US Multi-Regional Impact Assessment System which was used to estimate the total (direct, indirect, and induced) economic effects. Although the models used in this process have been maintained for more than 30 years and are widely used and accepted, all economic models are based on estimates and do not give perfect results.

- Impacts are expressed in terms of several different indicators of overall business activity.
    - **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 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 permanent jobs (in the case of an ongoing impact) or person-years of employment (for transitory effects such as construction or cumulations over multiple years).

- All results are expressed on an annual basis in constant 2012 dollars. Additional information regarding the methods used in this report may be found in Appendices A and B.

THE ECONOMIC COST OF CANCER IN TEXAS

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Overview of the Issue

- Cancer affects the longevity, quality of life, and finances of individuals suffering with the illness. Costs associated with cancer include direct medical outlays for treatment and care as well as indirect costs such as disease-related work disability or premature mortality. Prevention, early detection, effective treatment, and medical advances to minimize the consequences of the disease are vital national and, indeed, global priorities.

Cancer Incidence

- Despite advances in many aspects of cancer prevention and treatment, the number of Americans diagnosed with the disease continues to rise. One factor in this upward trend is the aging of the US population, as cancer incidence increases among older age groups.

- The American Cancer Society estimates that there will be about 1,638,910 new cases of cancer and 577,190 deaths from cancer in the US in 2012, slightly higher than in 2011.[1]

- In Texas, a total of 110,135 new cases of cancer are expected in 2012, with 39,072 cancer deaths projected.[2] Like the nation, cancer is the second leading cause of death in the state after cardiovascular disease.[3]

Cancer Costs

- Apart from the extremely high human cost, cancer causes economic harms to affected individuals, businesses, and society as a whole through shortened life spans, lost productivity, increased health care expenditures, and premature mortality.

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[1] *Cancer facts & figures 2012*. (2012). American Cancer Society. p. 1.
[2] *Expected new cancer cases and deaths by primary site, Texas, 2012*. (2011, November).Texas Department of State Health Services.
[3] *Cancer facts & figures 2012*. (2012). American Cancer Society.

- The National Institute of Health (NIH) estimated the total overall cost of cancer in 2010 (the latest year for which such information is available) to be $263.8 billion including
    - direct medical costs of $102.8 billion (including the total of all health expenditures),
    - indirect morbidity costs (the cost of lost productivity due to illness) of $20.9 billion, and
    - indirect mortality costs (the cost of lost productivity due to premature death) of $140.1 billion.[4]

- A study directed by the Texas Department of State Health Services (DSHS) and conducted by scholars at the University of Texas Medical Branch (UTMB) found that the total cost of cancer in the state was roughly $21.9 billion in 2007, with $10.0 billion in direct medical costs and $11.8 billion in indirect costs from lost productivity due to cancer morbidity and mortality.[5]

- These studies clearly portray the very large losses associated with cancer. However, they fail to capture numerous "multiplier" effects associated with the disease and, thus, represent only a portion of the overall toll on business activity.

The Perryman Group's More Comprehensive Measure of Cancer Cost

- Studies such as those described above reflect only the initial effect of the various categories of cost. However, these losses, in turn, generate further reductions in business activity as measured in the present study.

- Several years ago, The Perryman Group developed a more comprehensive measure of the cost of cancer in terms of Texas business activity. This includes losses stemming from treatment, morbidity, and mortality as well as the associated foregone spillover effects. This is the measure which has been used in The Perryman Group's prior studies related to CPRIT and its economic benefits.

[4] *Cancer facts & figures 2012*. (2012). American Cancer Society.
[5] Philips, B.U., et al. (2009, March). *The cost of cancer in Texas 2007*. Department of Preventive Medicine and Community Health. University of Texas Medical Branch at Galveston.

Methods Used

- The cost of cancer includes direct medical outlays for treatment and care and indirect costs such as disease-related work disability or premature mortality. Most studies of cancer costs reflect only the initial effect of the various categories of cost. However, these losses, in turn, generate further reductions in business activity. This more comprehensive measure was the approach utilized by The Perryman Group.

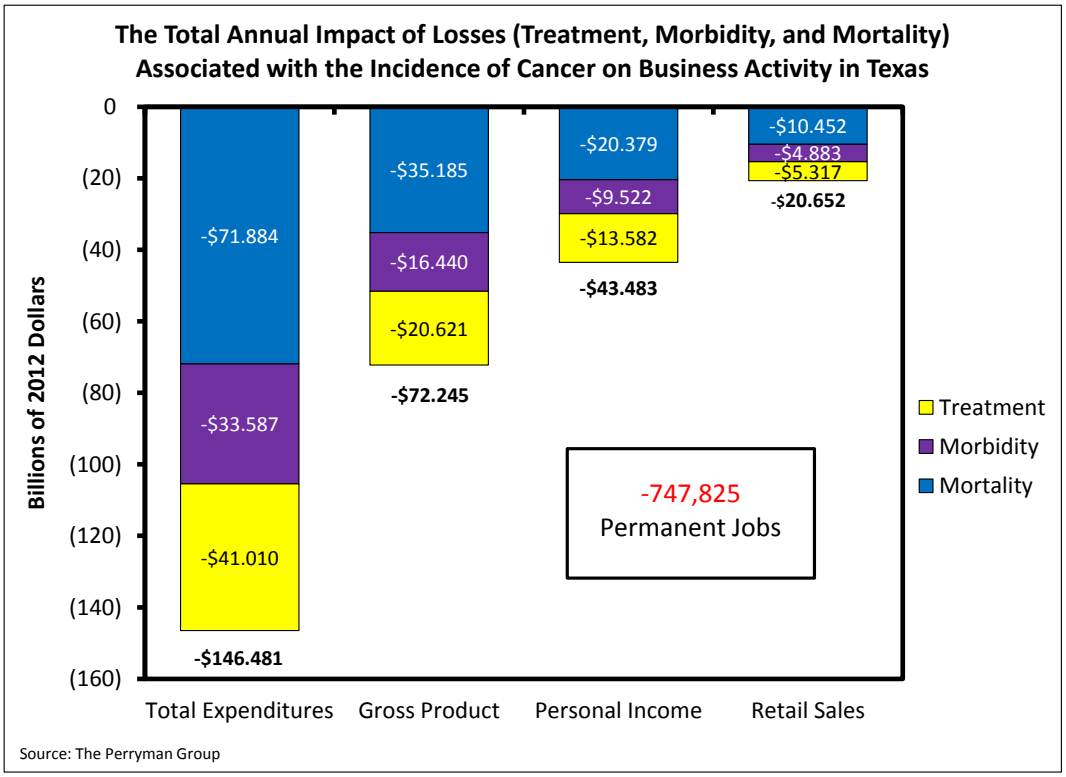
- An important source of input data is the Texas Cancer Registry, which includes information regarding treatment costs and income losses attributable to morbidity and mortality. Though this is an excellent source of the necessary input data, it is characterized by a time lag of more than two years. In order to assess the full economic effects as of 2012, TPG updated these estimates using a projection model based on population growth and composition, overall inflation, and heath care costs. Patterns in mortality and morbidity were also updated using recent data from the American Cancer Society. This segment of the analysis indicates that **the annual direct medical costs and morbidity and mortality losses associated with cancer within the state is now estimated to be more than $29.2 billion, up from $28.1 billion last year and an increase of 33.6% since 2007**, the base year of the original UTMB study**.**

- Because the treatment cost component represents a loss to various payers, there is a "multiplier" effect if these funds could be redeployed into business activity. To estimate the direct inputs for this segment of the analysis, the actual outlays are allocated based on the current incidence of health care spending across more than 500 industrial and consumer categories utilizing the direct requirements matrix from the impact system described in Appendix B.

- The mortality and morbidity estimates TPG used include productivity assumptions below historical patterns and future projections. Average compensation (rather than per-capita) was used to better capture any disparity between state and national earning patterns. Because the values were computed in terms of lost income, they do not reflect the full extent of the losses to the economy. Foregone income necessarily means that production, spending, employment, and other measures of economic activity are also foregone. These aggregates were measured using relevant coefficients to capture the relationships among the pertinent variables, as well as data from the Regional Economic Information System of the US Department of Commerce. Because the original approach captures these overall income effects, there are no additional "multiplier" calculations applied to this segment of the analysis, with the exception of the induced spending derived from the higher earnings. The direct values in this category were assumed to follow standard consumer purchasing patterns for Texas as identified by ACCRA and the US Department of Labor.

Economic Cost of Cancer in Texas

- The Perryman Group's analysis indicates a **total cost to the Texas economy of some $146.5 billion in reduced annual spending, $72.2 billion in output losses per annum, and 747,825 lost jobs from cancer treatment, morbidity, and mortality and the associated spillover effects**. These amounts are up significantly from last year's estimated total cost of $139.5 billion in spending, $68.8 billion in output, and 731,870 jobs.



- **The yearly loss in State fiscal revenues is about $5.6 billion** (up from $5.3 billion last year), while losses to **local governments include about $2.3 billion per annum**.

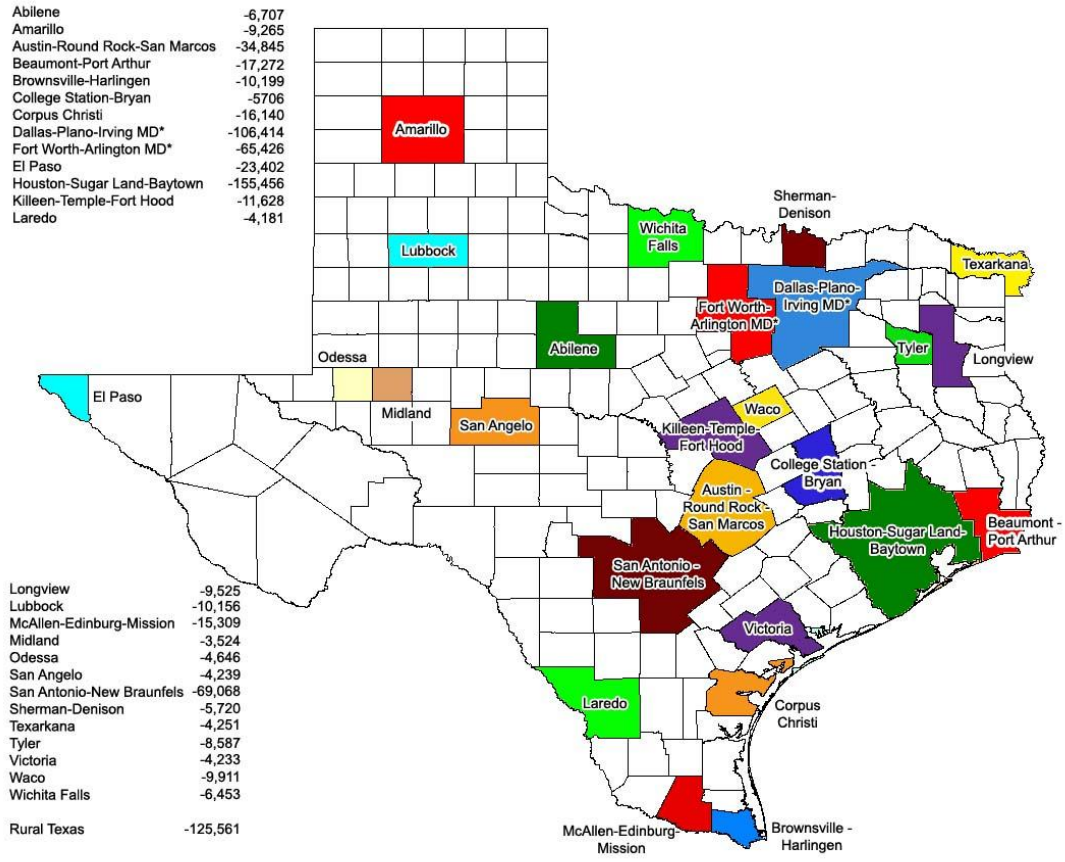
Costs of Cancer to Regions of Texas

- The Perryman Group measured the economic cost of cancer for various regions, metropolitan areas, counties, and legislative districts (Congressional, House, and Senate) of Texas (the underlying models were fully updated to reflect current electoral maps); results of this analysis are included in Appendix C.

- An important element of this segment of the analysis was allocating cancer costs to various geographic areas. The allocations of various categories of direct effects were accomplished based on health spending, cancer incidence, and cancer mortality rates at the county level. The relevant information was obtained from the US Department of Commerce and the National Cancer Institute. The county-level submodels of the USMRIAS reflect the unique industrial composition and characteristics of each county and multi-county area analyzed. They also capture spillover effects across regions. Highlights of this analysis are provided below, with detailed findings being presented in Appendix C.

- The following map illustrates the estimated economic cost of cancer to Texas metropolitan areas in terms of job losses.

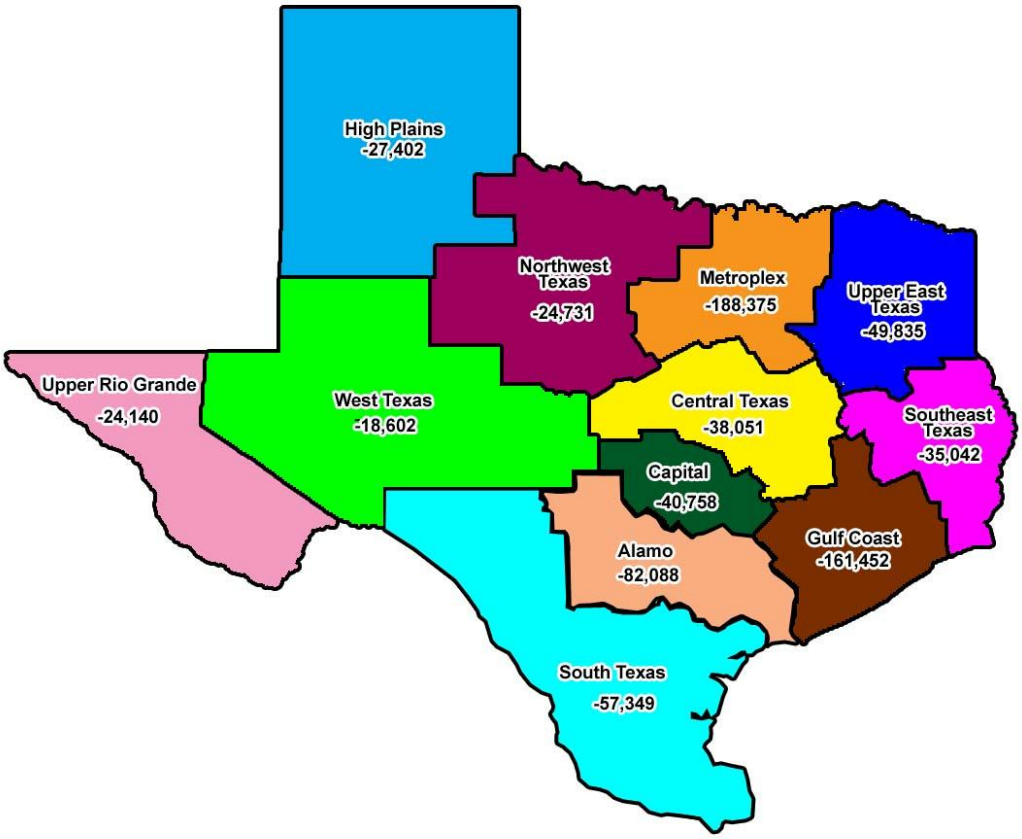
Economic Cost of Cancer to Texas Metropolitan Areas:
Estimated Jobs Losses Stemming from the Economic Cost of Treatment, Morbidity, and Mortality Associated with Cancer as of 2012



Source: The Perryman Group

- On a regional basis, the state's most populous areas naturally see the largest economic costs of cancer. The following map indicates the total cost of the disease by Council of Governments Region.

Economic Cost of Cancer to Texas Economic Regions:
Estimated Jobs Losses Stemming from the Economic Cost of Treatment, Morbidity, and Mortality Associated with Cancer as of 2012



Source: The Perryman Group

THE ECONOMIC IMPACT OF THE CANCER PREVENTION AND RESEARCH INSTITUTE OF TEXAS (CPRIT) AND ITS PROGRAMS

THE ECONOMIC IMPACT OF THE CANCER PREVENTION AND RESEARCH INSTITUTE OF TEXAS (CPRIT) AND ITS PROGRAMS

- In FY2012, CPRIT awarded a total of $342.8 million for research and prevention of cancer to entities including universities, hospitals and private companies. About $300.3 million of the total was designated for cancer research, while $42.5 million was awarded for prevention programs. The second-largest source of cancer research funding in the nation, CPRIT has awarded $755.7 million[6] since its inception to invest in cancer research and commercialization, prevention programs, and services. CPRIT expects to award almost $3 billion through 2017.

- **These investments have already begun to generate economic activity as well as progress toward new discoveries.** Work is ongoing in facilities across the state.
    - From the research grants in FY2010 and FY2011, there have been over 60 awards which have had results published. One grant has already resulted in a revenue generating product (over $1.5 million in one year).
    - The prevention grants from FY2010 and FY2011 have resulted in five published articles. Almost all recipients from FY2010 and a significant number from FY2011 have created informational materials, such as brochures and websites, as well as other items to provide information to assist in the prevention of various types of cancer.

- Even beyond the potentially life-changing influence of spending to reduce the incidence and severity of the disease, this investment in research, screening, and related activities generates substantial economic impacts. Moreover, the investment has the potential to reduce the cost of cancer through improving outcomes.
    - Returns on investments in medical research include jobs created in the private sector, health care costs saved, the value of increased longevity, the value of reduced morbidity and disability, and the benefits of newer medicines and therapies.
    - Job creation occurs not only directly through the scientists and staff in the research facilities, but also indirectly through the provision of business services needed by those institutions and other multiplier effects.

[6] This amount excludes $85.1 million in recent grants for fiscal year 2013 that are presently on hold.

- In addition, CPRIT investments have been leveraged through matching funds from other entities such as the National Institute of Health, National Cancer Institute, and private foundations. The research grants from FY2010 and FY2011 led to more than $80 million in additional funding.[7]

- Many studies over an extended period of time support the conclusion that investing in medical and cancer research can yield returns far in excess of initial outlays. Even though CPRIT has only been granting funds for research and development for less than three years, the state is already beginning to see job gains and other benefits such as attracting top-tier research talent.

Methods Used

- Job creation from CPRIT operations occurs not only directly through the scientists and staff in the research facilities, but also indirectly through the provision of business services needed by those institutions and other multiplier effects. Starting with input information regarding employment and expenditure levels at the Institute, The Perryman Group's US Multi-Regional Impact Assessment System (described in Appendix B) was used to estimate the multiplier/spinoff effects stemming from the direct operations of the Institute.

- In the case of the cancer-related health costs saved through screening programs, The Perryman Group utilized available studies of the returns on investment in cancer prevention and screening (including leveraged funds from other sources). These studies also formed the basis for estimates of the potential improvement in outcomes. TPG then used standard measures of productivity and worklife to obtain the likely incremental economic activity associated with reducing the incidence/severity of cancer through early detection.

- Because returns on direct spending for prevention and screening programs were estimated based on available studies of such returns they are unlikely to be specific to Texas or the exact programs offered by the Institute and will be subject to some range of error. Results to date were incorporated to the extent possible in estimating these economic benefits.

- Returns on investments in medical research include jobs created in the private sector, health care costs saved, the value of increased longevity, the value of reduced morbidity and disability, and the benefits of newer medicines and therapies.

- Job creation occurs not only directly through the scientists and staff in the research facilities, but also indirectly through the provision of business services needed by those institutions and other multiplier effects. Additionally, revenues from licensing and

[7] Excludes Peloton Therapeutics funds which are currently under investigation.

royalty streams are economic gains generated by research and development facilities. Attracting matching funds further enhances these economic benefits.

- TPG calculated the magnitude of these secondary effects based on typical annual rates of return to health-related research, the addition of four researchers per year, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Spinoff firms from these investments were estimated using information from the Association of University Technology Managers (AUTM) which was fully adjusted for attrition, as well as data from the US Department of Commerce regarding typical firm size (excluding large pharmaceutical manufacturers).

- The Perryman Group also estimated the outcomes-based economic benefits of CPRIT's programs (such as reduced morbidity and mortality); these results are described in a subsequent section.

Current Impact of CPRIT Direct Operations, Prevention and Screening, and Research Programs

- The direct outlays and related "multiplier" effects emanating from CPRIT operations and programs generated a sizable increase in business activity in Texas including **$799.9 million in output (gross product) and 11,950 jobs during fiscal year 2012.** These economic benefits stem from operations, prevention and screening, and research programs.

The Current Impact of CPRIT Direct Operations, Prevention and Screening, and Research Programs on Texas Business Activity and Tax Receipts

(Monetary Values in Millions of Constant 2012 Dollars)

	Operations	Prevention & Screening	Research	TOTAL
ECONOMIC BENEFITS				
Total Expenditures	$22.5	$104.1	$1,402.4	**$1,529.1**
Gross Product	$11.4	$60.3	$728.2	**$799.9**
Personal Income	$7.8	$44.3	$504.5	**$556.6**
Retail Sales	$3.0	$7.9	$191.8	**$202.7**
Employment (Permanent Jobs)	120	1,100	10,730	**11,950**
FISCAL BENEFITS				
State (Texas)	$0.6	$1.7	$37.2	$39.5
Local Governmental Entities Throughout the State	$0.3	$1.8	$22.3	$24.5

SOURCE: The Perryman Group

Ten-Year Cumulative Impact of CPRIT Direct Operations, Prevention and Screening, and Research Programs

- Over the first ten years (assuming stabilized levels of funding were attained by year 3), the operations, prevention/screening, and research initiatives of CPRIT lead to cumulative economic benefits of some **$7.4 billion in output (gross product) and 110,720 person-years of employment** to the state economy. These estimated effects are somewhat higher than last year, reflecting growth in the underlying costs of cancer (and, hence, benefits from improving outcomes), the leveraged funds from other sources, and corresponding rise in benefits of screening and research.

The Ten-Year Cumulative Impact of CPRIT Direct Operations, Prevention and Screening, and Research Programs on Texas Business Activity and Tax Receipts
(Monetary Values in Millions of Constant 2012 Dollars)

ECONOMIC BENEFITS				
	Operations	**Prevention & Screening**	**Research**	**TOTAL**
Total Expenditures	$213.9	$939.9	$13,021.5	**$14,175.3**
Gross Product	$108.5	$543.8	$6,761.1	**$7,413.4**
Personal Income	$74.4	$399.5	$4,683.9	**$5,157.8**
Retail Sales	$28.2	$71.5	$1,781.3	**$1,881.0**
Employment (Person Years)	1,160	9,930	99,630	**110,720**
FISCAL BENEFITS				
State (Texas)	$5.5	$15.2	$345.3	**$366.1**
Local Governmental Entities Throughout the State	$2.7	$16.6	$207.4	**$226.7**
SOURCE: The Perryman Group				

- Even beyond these sizable gains in business activity directly stemming from CPRIT investments, improved outcomes from screening and prevention could further enhance the economy. Research sponsored by CPRIT could also generate breakthroughs which lessen the cost of cancer, facilitate the attraction of more researchers, and yield spinoff companies. The following sections present findings from TPG's analysis of these incremental effects.

Outcomes-Related Impact of CPRIT Screening and Prevention Programs

- An even more important aspect of CPRIT's spending on prevention and screening programs (approximately $42.5 million in FY2012) is the reduced incidence and severity of cancer cases through earlier detection. Many studies have demonstrated the secondary or downstream benefits of such programs in terms of reduced health care costs, morbidity, and mortality.

- TPG estimated the **total annual net outcomes-related benefits from screening and prevention to be $150.6 million in output (gross product) and 1,560 jobs** each year (on a net present value basis assuming typical outcomes from available academic studies).

The Impact of Reduced Cancer Incidence and Severity Stemming from CPRIT Prevention and Screening Programs on Texas Business Activity and Tax Receipts **(Monetary Values in Millions of Constant 2012 Dollars)**	
ECONOMIC BENEFITS	
Total Expenditures	$305.4
Gross Product	$150.6
Personal Income	$90.7
Retail Sales	$43.1
Employment (Permanent Jobs)	1,560
FISCAL BENEFITS	
State (Texas)	$8.5
Local Governmental Entities Throughout the State	$3.9
SOURCE: The Perryman Group	

- **Over ten years, these prevention and screening effects total almost $1.4 billion in output and 14,070 person-years of employment, as well as $76.3 million to the State and $35.0 million to local governments.**

Secondary Impact of CPRIT Research

- The positive economic effects of research activities also go far beyond the initial stimulus. Research leads to better cancer outcomes (and, thus, lower costs), spinoff activity, and the attraction of top researchers (and associated grant inflows).

- Many studies over an extended period of time support the conclusion that investing in medical and cancer research can yield returns far in excess of initial outlays. The Perryman Group utilized studies of the relationship between research and reduced treatment costs (as well as reduced morbidity and mortality) to estimate the positive economic outcomes in these areas stemming from the Institute's research support.

- In addition, the economic benefits of new cancer-related therapeutics, diagnostics, and devices are estimated based on available empirical analyses of typical rates of return. Direct investments from other sources, including annual rates of federal R&D expenditures, are also quantified. Estimates of spinoff firms were derived through information sources such as studies by AUTM and others regarding typical firm formation rates until sufficient time elapses to have actual information. As noted, a number of CPRIT grants have resulted in published papers and notable findings which are likely to lead to significantly returns over time; specific results were incorporated to the extent possible. However, anticipated returns are of necessity partially estimated based on typical responses observed in other contexts because it is still early in the life of CPRIT and its programs. Over time, the results of more specific initiatives will become known and increasingly specific measures can be developed. For example, the current estimates reflect the recruitment of scholars to date and leveraged funds associated with CPRIT grants.

- The **economic benefits of CPRIT-funded research activity compound over time. Current estimates of these secondary effects stemming from research top $2.0 billion in output and 21,140 jobs, up significantly from last year** ($608.1 million in output and 6,430 jobs).

The Impact of Secondary Benefits of CPRIT Research Programs on Texas Business Activity and Tax Receipts (Monetary Values in Millions of Constant 2012 Dollars)	
ECONOMIC BENEFITS*	
Total Expenditures	$4,190.1
Gross Product	$2,038.4
Personal Income	$1,236.3
Retail Sales	$580.5
Employment (Permanent Jobs)	21,140
FISCAL BENEFITS	
State (Texas)	$114.0
Local Governmental Entities Throughout the State	$52.4
*Based on typical annual rates of return to health-related research, the location of additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding. SOURCE: The Perryman Group	

- Because research benefits are ongoing and continue to provide benefits beyond the initial year of the outlays, they rise substantially over time, reaching almost **$8.3 billion in output and 85,900 jobs in year 10. Fiscal benefits include $463.3 million to the State and $213.0 million to local governments.** These totals continue to rise due to the compounding effects of the grants and related matching funds.

- The **cumulative ten-year total effect of secondary research and related programs benefits stemming from CPRIT activities includes $29.5 billion in output and 306,090 person-years of employment**. Fiscal benefits over the ten-year period include almost $1.7 billion to the State and $759.0 million to local governments.

Overall Total Gross Impact of CPRIT Operations, Prevention, and Research Programs

- Adding the economic benefits of CPRIT operations, prevention/screening programs, research, outcomes-based prevention/screening, and secondary research yields a total gross impact of the Institute's operations. **The current total annual impact of all operations, prevention/screening, and research programs (including initial outlays and downstream effects) associated with CPRIT on Texas business activity was found to be $2.9 billion in output and 33,430 jobs.**

The Overall Total Impact of CPRIT Operations, Prevention/Screening, and Research Programs on Texas Business Activity and Tax Receipts (Including Direct Outlays with Multiplier Effects as Well as Secondary Effects) (Monetary Values in Millions of Constant 2012 Dollars)	
ECONOMIC BENEFITS*	
Total Expenditures	$5,897.9
Gross Product	$2,917.2
Personal Income	$1,831.4
Retail Sales	$815.4
Employment (Permanent Jobs)	33,430
FISCAL BENEFITS	
State (Texas)	$159.7
Local Governmental Entities Throughout the State	$73.5
*Based on budgeted operations and reported awards in fiscal year 2012. SOURCE: The Perryman Group	

- Because of the cumulative nature of the research gains, these yearly effects rise to almost $9.2 billion in output (gross product) and 98,190 jobs (as well as $508.9 million to the State and $239.2 million to local governments) by the tenth year.

- The **total cumulative effect of CPRIT prevention and research programs on Texas business activity over ten years of planned funding includes $38.3 billion in output and 430,880 person-years of employment**. Fiscal benefits over the ten-year period total an estimated $2.1 billion to the State and $992.2 million to local governments.

Total Net Economic and Fiscal Impact of CPRIT Prevention and Research Programs

- Because any State outlay involves positive economic effects, The Perryman Group isolated the impact of CPRIT programs net of the State spending.

- The results of this phase of the analysis clearly demonstrate the positive effects of the State's investment in CPRIT. During FY2012, the **net economic benefits of prevention and research programs associated with the Institute totaled almost $2.2 billion in output and 22,700 jobs**.

- These effects will grow over time as positive outcomes are realized and benefits compound. The **net stimulus is expected to rise to nearly $8.4 billion in output and 87,460 jobs by year 10**.

- The **net cumulative ten-year impact of all prevention and research programs associated with CPRIT includes gains in Texas business activity of $30.9 billion in output and 320,160 person-years of employment**.

- This **incremental business activity also generates taxes for the State and local governments**.
    - For Texas, tax receipts associated with CPRIT activities from all sources in 2012 total $122.5 million, while local public entities receive $56.3 million.
    - By the tenth year, these annual increases rise to $471.8 million and $216.9 million, respectively.
    - Over the entire ten-year period, the total returns include $1.7 billion in State fiscal resources and $794.0 million to local taxing authorities.
    - It should also be noted that, even in the period after the CPRIT program is concluded, the ongoing research benefits will continue to generate a yearly stimulus.

- **Over an extended time horizon, CPRIT and the research funding it provides will likely generate fiscal receipts totaling a substantial multiple of the commitment of public resources (in addition to the notable economic and health benefits). To the extent that it generates any of the potential economic benefits illustrated in the following section, the positive effects will be even more marked.**

POTENTIAL ECONOMIC DEVELOPMENT AND SOCIAL BENEFITS ASSOCIATED WITH THE CANCER PREVENTION AND RESEARCH INSTITUTE OF TEXAS

POTENTIAL ECONOMIC DEVELOPMENT AND SOCIAL BENEFITS ASSOCIATED WITH THE CANCER PREVENTION AND RESEARCH INSTITUTE OF TEXAS

- Even beyond the sizable economic benefits of CPPRIT's operations, screening, prevention, and research activity, the program has the potential to help establish Texas at the forefront of cancer research and related industries. The economic growth accruing from such a situation would be substantial. TPG measured the benefits that would occur if CPRIT, in conjunction with other ongoing initiatives, serves as a catalyst for greater economic development in the biomedical and pharmaceutical arena.

- In addition, the research funded through CPRIT could help reduce cancer incidence and severity, thereby shrinking the enormous cost of the disease. TPG quantified the gains that would occur in Texas and the US if research breakthroughs that were facilitated by CPRIT funding were able to reduce cancer incidence in the state and nation over time to a level equal the current rate of the five states with the lowest prevalence.

Methods Used

- Illustrations of potential economic development and societal gains are derived from analysis of the likely range of potential outcomes. They are forward-looking in nature, and more appropriately measured over a long time horizon. Inputs are based on reputable academic studies; nonetheless, they are subject to a range of error and changing conditions can affect actual results. Although the models used in this process have been maintained for more than 30 years and are widely used and accepted, all economic models are based on estimates and do not give perfect results.

- The Perryman Group developed scenarios to illustrate the potential economic development effects of Institute activities and measure gains in business activity above baseline projections.

- Scenarios involve the economic stimulus associated with a shift in Texas' relative position in industries related to the Institute (such as the biomedical industry cluster).

The scenarios chosen are based on indications of the catalytic effect of the Institute (such as new company locations, related industrial development, and so on).

- The ultimate goal of CPRIT is reducing cancer incidence. As noted, the disease involves a high human and economic cost. The Perryman Group developed scenarios to illustrate the potential economic benefit of reducing cancer incidence in Texas. Scenarios measure shifts in Texas' cancer incidence over time to the levels observed in other states.

Impact Results: Catalyst for Economic Development

- An important role of CPRIT activity is as a catalyst for economic development. Investments in cancer research can be crucial to attracting top researchers and startup companies, which can later go on to grow into larger firms within the state.

- As this process occurs, supplier networks, training programs, related companies, and other resources tend to congregate, thus resulting in the establishment of a cluster of economic activity. Given the state's efforts to attract biomedical industries, CPRIT activity could serve as an impetus for a major concentration of emerging biomedical production sectors.

- The Perryman Group developed two scenarios to illustrate the potential economic development effects of CPRIT initiatives. Only incremental gains above baseline projections (as derived from the Texas Econometric Model) are included.
    - Scenario I assumes Texas achieves a concentration in the biomedical industry (pharmaceuticals and medical equipment) by 2040 equivalent to that of the US.
    - Scenario II presumes Texas achieves a concentration in the biomedical industry (pharmaceuticals and medical equipment) by 2040 equivalent to that of California. While there are certainly states with a higher relative presence in these sectors, California is representative of a large state that has strategically used its academic research capabilities to foster industrial development. The CPRIT initiative offers Texas an opportunity to leverage research into an enhanced presence in associated industries such as biomedicine and pharmaceuticals in a similar manner.

Impact of CPRIT as a Potential Catalyst for Economic Development on Texas Business Activity and Tax Receipts (Monetary Values as of 2040 in Millions of Constant 2012 Dollars)		
ECONOMIC BENEFITS		
	Scenario 1: Texas Achieves US Average Biomedical Industry Concentration	**Scenario 2: Texas Achieves California Biomedical Industry Concentration**
Total Expenditures	$33,405.6	$38,338.8
Gross Product	$15,412.7	$17,741.2
Personal Income	$9,306.3	$10,588.9
Retail Sales	$3,550.0	$4,054.8
Employment (Permanent Jobs)	147,740	166,990
FISCAL BENEFITS		
State (Texas)	$730.9	$826.7
Local Governmental Entities Throughout the State	$351.5	$397.2

Impact Results: Substantial Reduction in Cancer Incidence

- The ultimate goal of CPRIT is reducing cancer incidence and the associated high human and economic costs.

- If CPRIT's screening/prevention programs, research advances, and other initiatives reduce the incidence of cancer over time to equal the average of current levels observed in the five states with the lowest incidence, notable economic benefits would be realized.

- **The potential annual impact of this reduction in cancer incidence stemming from the catalytic effects of CPRIT initiatives is substantial.** Moreover, the benefits of such advances would not be restricted to Texas; they would bring better outcomes throughout the country and, indeed, the entire world.

Potential Impact of a Substantial Reduction* in Cancer Incidence (Monetary Values in Millions of Constant 2012 Dollars)		
ECONOMIC BENEFITS		
	Texas	**United States**
Total Expenditures	$33,366.4	$385,482.8
Gross Product	$16,456.6	$180,287.4
Personal Income	$9,904.8	$107,981.9
Retail Sales	$4,704.2	$48,416.2
Employment (Permanent Jobs)	170,350	1,826,370
*Economic effect of reducing cancer incidence to a rate equal to the lowest five states.		

- Fiscal benefits of such a reduction in cancer incidence include an estimated $923.6 million to the State and $423.4 million to local government entities.

- Clearly, the role of CPRIT and its programs in reducing cancer incidence involves the potential for substantial economic benefits. Reducing the tremendous cost of cancer would lead to gains in business activity across the US, not to mention the immeasurable benefits to those who would otherwise be devastated by the disease.

CONCLUSION

CONCLUSION

- The human and economic costs of cancer are extremely high and rising. The aggregate economic costs stemming from treatment, morbidity, and mortality include some $72.2 billion in output (gross product) and losses of more than 747,825 jobs in the state of Texas.

- The Cancer Prevention and Research Institute of Texas is playing a crucial role in the war on cancer through its operations, screening/prevention efforts, and research programs. CPRIT is also generating sizable economic stimulus including some $799.9 million in output (gross product) and more than 11,950 jobs. Moreover, the Institute's efforts stand to improve outcomes related to cancer prevention and treatment.

- Research enabled by grants funded through CPRIT are already bearing fruit, with leading researchers coming to the state, matching funds being attracted, and findings being published in leading journals.

- Empirical evidence shows that medical research and prevention programs can reduce cancer incidence and enhance outcomes. Reductions in treatment expenses, morbidity, and mortality stand to bring notable economic benefits.

- Adding the economic benefits of CPRIT operations, prevention/screening programs, research, outcomes-based prevention/screening, and secondary/downstream research effects yields a total gross current impact of the Institute's operations of **$2.9 billion in output and 33,430 jobs.** Because of the **cumulative** nature of the research gains, these yearly effects rise to over **$9.2 billion in output (gross product) and 98,190 jobs by the tenth year**.

- Even beyond these substantial economic gains, CPRIT programs and grants are helping attract key researchers to Texas. The Institute's role as a potential catalyst for development of Texas' biomedical industries and help establish the Lone Star State as a center for such development.

- **CPRIT and its programs stand to yield notable benefits in terms of reducing the human cost of cancer; they also involve sizable economic benefits. The Institute's positive impact is growing and represents an excellent return to the commitment of fiscal resources.**

APPENDICES

APPENDIX A: Texas Econometric Model Methodology

The Texas Econometric Model

Overview

- This Appendix provides a detailed methodological overview of the Texas Econometric Model, which was to provide baseline forecasts for the various scenarios used in the present analysis. The system was developed by Dr. M. Ray Perryman, President and CEO of The Perryman Group (TPG) approximately 30 years ago has been consistently maintained 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 more than three 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, Texas, and Waco economies. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well as hundreds of major corporations.
- 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 Texas 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 Texas Consumer Price Index, which fluctuates 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).
- Retail sales is related to income, interest rates, dynamic adjustments, and patterns in consumer behavior on a store group 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.
- The overall Texas 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. The US model, which follows the basic structure outlined above, was used to some extent in the current analysis to define the demand for domestically produced goods on a per capita basis.
- 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 Texas 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, 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 all major newspapers 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: US Multi-Regional Impact Assessment System Methodology

US Multi-Regional Impact Assessment System

- The basic modeling technique employed in this study is known as 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.
- 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. This aspect of the process was described at length within the report. The second step is the simulation of the input-output system to measure overall economic effects. In the case of a prospective evaluation, it is necessary to first calculate reasonable estimates of the direct activity.
- Once the direct input values were determined, 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. In addition, the model has been in operation and continually updated for over two decades. The systems used in the current simulations reflect the unique industrial structures of the relevant economies (Texas and its various regions, metropolitan areas, and counties).
- 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. The models used for the present investigation have been thoroughly tested for reasonableness and historical reliability.
- As noted earlier, 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, healthcare services, utilities, housing, recreation, and other items. Typical purchasing patterns in the relevant areas are obtained from the *ACCRA 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. Note that all monetary values, unless otherwise noted, are given in constant (2012) 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.
- 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, say, Amarillo 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 fourth measure, **Retail Sales**, represents the component of Total Expenditures which occurs in retail outlets (general merchandise stores, automobile dealers and service stations, building materials stores, food stores, drugstores, restaurants, and so forth). Retail Sales is a commonly used measure of consumer activity.
- The final aggregates used are **Permanent Jobs** and **Person-Years of Employment**. The Person-Years of Employment measure reveals the full-time equivalent jobs generated by an activity. A person-year is simply the equivalent of a person working for a year. As an example, it could be a carpenter employed for five months, a mason for three months, and a painter for four months. In the case of a construction project, these are typically spread over the course of the construction and development phase. It should be noted that, unlike the dollar values described above, Permanent Jobs is a "stock" rather than a "flow." In other words, if an area produces $1 million in output in 2007 and $1 million in 2008, it is appropriate to say that $2 million was achieved in the 2007-2008 period. If the same area has 100 people working in 2007 and 100 in 2008, it only has 100 Permanent 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 Person-Years (a person working for a year). This concept is distinct from Permanent Jobs, which anticipates that the relevant positions will be maintained on a continuing basis.

APPENDIX C: Detailed Sectoral Results

The Economic Cost of Cancer in Texas

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity in Texas

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	($2,102,434,682)	($608,250,955)	($378,734,902)	(6,523)
Mining	($10,928,379,416)	($4,944,408,329)	($1,738,527,240)	(7,149)
Construction	($4,916,215,882)	($2,419,363,651)	($1,861,118,774)	(28,007)
Nondurable Manufacturing	($17,355,307,817)	($4,822,035,699)	($2,534,431,016)	(29,843)
Durable Manufacturing	($7,752,838,802)	($3,198,825,213)	($2,140,676,825)	(22,079)
Transportation and Utilities	($14,539,636,393)	($5,035,244,568)	($2,880,680,993)	(31,400)
Information	($3,725,977,627)	($2,429,341,032)	($1,065,603,943)	(9,665)
Wholesale Trade	($5,062,263,819)	($3,812,072,358)	($2,153,794,786)	(24,642)
Retail Trade	($20,651,919,375)	($15,860,123,984)	($9,162,950,014)	(284,200)
Finance, Insurance, and Real Estate	($29,642,272,069)	($9,158,320,532)	($3,433,870,748)	(33,988)
Business Services	($9,086,220,890)	($6,378,042,564)	($5,173,149,927)	(60,745)
Health Services	($11,295,268,387)	($8,633,545,113)	($7,139,701,151)	(120,439)
Other Services	($9,422,208,519)	($4,945,909,335)	($3,819,549,541)	(89,143)
TOTAL	($146,480,943,679)	($72,245,483,334)	($43,482,789,859)	(747,825)

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

The Total Annual Impact of Direct Medical Expenses and Related Outlays Associated with Cancer Treatment on Business Activity in Texas

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	($749,365,898)	($205,424,338)	($135,138,923)	(2,105)
Mining	($1,219,930,658)	($278,697,786)	($142,951,726)	(749)
Construction	($1,031,402,884)	($525,776,817)	($433,272,939)	(6,084)
Nondurable Manufacturing	($4,488,534,621)	($1,265,212,494)	($658,463,220)	(10,312)
Durable Manufacturing	($1,562,709,248)	($623,976,211)	($407,312,775)	(5,251)
Transportation and Utilities	($4,749,638,550)	($1,632,698,125)	($980,017,281)	(11,649)
Information	($993,563,771)	($609,149,610)	($263,096,937)	(2,427)
Wholesale Trade	($1,323,179,386)	($895,288,830)	($516,231,430)	(5,753)
Retail Trade	($5,316,674,357)	($3,989,903,730)	($2,319,718,401)	(70,907)
Finance, Insurance, and Real Estate	($7,755,512,285)	($2,653,167,445)	($1,116,359,790)	(12,110)
Business Services	($2,389,623,946)	($1,519,933,566)	($1,239,876,294)	(15,057)
Health Services	($6,957,886,560)	($5,146,336,217)	($4,351,274,881)	(71,845)
Other Services	($2,471,813,085)	($1,275,202,124)	($1,017,913,607)	(24,172)
TOTAL	($41,009,835,249)	($20,620,767,294)	($13,581,628,205)	(238,423)

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

The Total Annual Impact of Morbidity Losses Associated with the Incidence of Cancer on Business Activity in Texas				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	($430,878,932)	($128,278,403)	($77,572,091)	(1,407)
Mining	($3,091,613,730)	($1,485,775,445)	($508,104,156)	(2,038)
Construction	($1,237,101,982)	($603,004,579)	($454,691,362)	(6,981)
Nondurable Manufacturing	($4,097,368,557)	($1,132,655,044)	($597,393,872)	(6,220)
Durable Manufacturing	($1,971,220,120)	($819,949,585)	($551,982,323)	(5,359)
Transportation and Utilities	($3,117,582,685)	($1,083,526,273)	($605,258,180)	(6,290)
Information	($870,125,434)	($579,632,126)	($255,554,903)	(2,305)
Wholesale Trade	($1,190,695,348)	($928,837,163)	($521,475,004)	(6,015)
Retail Trade	($4,883,442,786)	($3,780,020,560)	($2,179,197,660)	(67,922)
Finance, Insurance, and Real Estate	($6,969,744,471)	($2,071,538,008)	($738,001,392)	(6,967)
Business Services	($2,132,502,481)	($1,547,043,905)	($1,252,534,063)	(14,549)
Health Services	($1,381,220,579)	($1,110,486,667)	($887,962,347)	(15,475)
Other Services	($2,213,323,518)	($1,168,920,916)	($892,168,907)	(20,690)
TOTAL	($33,586,820,622)	($16,439,668,674)	($9,521,896,260)	(162,217)
Source: US Multi-Regional Impact Assessment System, The Perryman Group				

The Total Annual Impact of Mortality Losses Associated with the Incidence of Cancer on Business Activity in Texas				
Sector	**Total Expenditures**	**Real Gross Product**	**Personal Income**	**Employment**
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	($922,189,852)	($274,548,214)	($166,023,888)	(3,011)
Mining	($6,616,835,028)	($3,179,935,098)	($1,087,471,358)	(4,362)
Construction	($2,647,711,016)	($1,290,582,255)	($973,154,473)	(14,942)
Nondurable Manufacturing	($8,769,404,639)	($2,424,168,161)	($1,278,573,924)	(13,312)
Durable Manufacturing	($4,218,909,435)	($1,754,899,418)	($1,181,381,727)	(11,469)
Transportation and Utilities	($6,672,415,158)	($2,319,020,170)	($1,295,405,532)	(13,461)
Information	($1,862,288,421)	($1,240,559,296)	($546,952,103)	(4,933)
Wholesale Trade	($2,548,389,085)	($1,987,946,365)	($1,116,088,352)	(12,874)
Retail Trade	($10,451,802,232)	($8,090,199,693)	($4,664,033,953)	(145,370)
Finance, Insurance, and Real Estate	($14,917,015,313)	($4,433,615,079)	($1,579,509,566)	(14,911)
Business Services	($4,564,094,464)	($3,311,065,093)	($2,680,739,570)	(31,139)
Health Services	($2,956,161,249)	($2,376,722,229)	($1,900,463,923)	(33,120)
Other Services	($4,737,071,917)	($2,501,786,295)	($1,909,467,026)	(44,281)
TOTAL	($71,884,287,808)	($35,185,047,365)	($20,379,265,395)	(347,185)
Source: US Multi-Regional Impact Assessment System, The Perryman Group				

Cost of Cancer by County and Region

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Comptroller's Economic Region Results

Economic Region	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
High Plains	($4,995,510,257)	($2,561,142,771)	($1,541,062,916)	($810,140,639)	-27,402
Northwest Texas	($4,522,887,371)	($2,336,844,926)	($1,387,361,231)	($758,597,433)	-24,731
Metroplex	($37,546,231,657)	($18,557,800,572)	($11,131,528,816)	($5,012,374,174)	-188,375
Upper East Texas	($9,093,834,646)	($4,608,447,798)	($2,783,404,012)	($1,492,023,254)	-49,835
Southeast Texas	($6,080,960,623)	($3,089,141,291)	($1,933,989,385)	($1,072,205,080)	-35,042
Gulf Coast	($36,801,582,312)	($17,117,181,970)	($10,114,974,381)	($4,013,288,489)	-161,452
Capital	($7,238,779,931)	($3,752,230,539)	($2,309,686,462)	($1,136,730,500)	-40,758
Central Texas	($6,607,428,265)	($3,360,565,970)	($2,062,732,593)	($1,130,552,550)	-38,051
Alamo	($15,071,438,152)	($7,572,365,594)	($4,625,737,535)	($2,304,545,271)	-82,088
South Texas	($10,249,887,627)	($5,201,754,446)	($3,158,988,128)	($1,694,129,747)	-57,349
West Texas	($3,662,545,611)	($1,826,906,641)	($1,067,526,802)	($571,819,251)	-18,602
Upper Rio Grande	($4,609,857,226)	($2,261,100,816)	($1,365,797,600)	($655,512,985)	-24,140
TOTAL STATE IMPACT	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area.

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

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Council of Governments (COG) Region Results

COG	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Panhandle	($2,622,089,926)	($1,326,904,472)	($787,141,890)	($418,838,200)	-13,881
South Plains	($2,373,420,331)	($1,234,238,299)	($753,921,026)	($391,302,439)	-13,520
North Texas	($1,841,253,882)	($968,162,587)	($575,080,686)	($314,400,108)	-10,215
North Central Texas	($36,016,942,738)	($17,767,701,788)	($10,638,430,468)	($4,737,222,014)	-179,315
North East Texas	($2,066,818,370)	($1,054,784,715)	($656,077,354)	($380,298,856)	-12,200
East Texas	($7,027,016,277)	($3,553,663,083)	($2,127,326,657)	($1,111,724,398)	-37,635
West Central Texas	($2,681,633,490)	($1,368,682,338)	($812,280,545)	($444,197,326)	-14,516
Upper Rio Grande	($4,609,857,226)	($2,261,100,816)	($1,365,797,600)	($655,512,985)	-24,140
Permian Basin	($2,498,863,212)	($1,251,791,193)	($732,948,079)	($388,431,323)	-12,557
Concho Valley	($1,163,682,399)	($575,115,448)	($334,578,723)	($183,387,928)	-6,045
Heart of Texas	($2,798,320,169)	($1,370,989,906)	($832,430,312)	($446,729,295)	-15,277
Capital	($7,238,779,931)	($3,752,230,539)	($2,309,686,462)	($1,136,730,500)	-40,758
Brazos Valley	($1,618,332,107)	($831,343,308)	($502,222,933)	($278,649,308)	-9,157
Deep East Texas	($2,994,716,226)	($1,548,544,074)	($961,677,266)	($549,300,875)	-17,770
South East Texas	($3,086,244,397)	($1,540,597,217)	($972,312,119)	($522,904,205)	-17,272
Gulf Coast	($36,801,582,312)	($17,117,181,970)	($10,114,974,381)	($4,013,288,489)	-161,452
Golden Crescent	($1,428,677,684)	($715,922,800)	($432,243,315)	($232,104,773)	-7,618
Alamo	($13,642,760,468)	($6,856,442,794)	($4,193,494,220)	($2,072,440,497)	-74,470
South Texas	($986,023,491)	($523,312,316)	($311,110,143)	($183,565,884)	-5,733
Coastal Bend	($4,201,115,954)	($2,013,246,226)	($1,196,383,548)	($623,154,134)	-20,824
Lower Rio Grande Valley	($4,290,313,715)	($2,255,818,839)	($1,400,203,208)	($740,376,402)	-26,031
Texoma	($1,529,288,919)	($790,098,784)	($493,098,348)	($275,152,160)	-9,060
Central Texas	($2,190,775,988)	($1,158,232,757)	($728,079,348)	($405,173,947)	-13,618
Middle Rio Grande	($772,434,466)	($409,377,065)	($251,291,229)	($147,033,327)	-4,761
Border Region	($10,662,893,075)	($5,452,068,107)	($3,329,929,305)	($1,727,280,370)	-60,691
TOTAL STATE IMPACT	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area.
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Metropolitan Statistical Area (MSA) and Rural Texas Results

MSA	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Abilene	($1,312,894,507)	($656,515,745)	($387,120,411)	($191,772,274)	-6,707
Amarillo	($1,700,711,229)	($884,185,832)	($527,340,297)	($265,779,601)	-9,265
Austin-Round Rock-San Marcos	($6,132,897,889)	($3,204,541,314)	($1,983,300,970)	($959,504,449)	-34,845
Beaumont-Port Arthur	($3,086,244,397)	($1,540,597,217)	($972,312,119)	($522,904,205)	-17,272
Brownsville-Harlingen	($1,733,359,783)	($884,626,282)	($546,128,881)	($290,056,656)	-10,199
College Station-Bryan	($1,023,005,015)	($521,719,790)	($314,957,508)	($168,458,974)	-5,706
Corpus Christi	($3,361,662,113)	($1,576,357,479)	($939,109,891)	($472,694,411)	-16,140
Dallas-Plano-Irving MD*	($21,963,525,505)	($10,802,275,515)	($6,426,718,118)	($2,725,641,632)	-106,414
Fort Worth-Arlington MD*	($12,719,173,881)	($6,306,782,643)	($3,807,372,085)	($1,785,750,000)	-65,426
El Paso	($4,488,639,581)	($2,197,437,222)	($1,326,667,294)	($631,684,966)	-23,402
Houston-Sugar Land-Baytown	($35,771,146,260)	($16,589,640,454)	($9,791,155,072)	($3,826,040,164)	-155,456
Killeen-Temple-Fort Hood	($1,865,473,715)	($989,336,568)	($622,864,048)	($340,692,787)	-11,628
Laredo	($747,725,349)	($392,819,258)	($231,075,738)	($130,405,637)	-4,181
Longview	($1,763,526,500)	($907,834,106)	($547,486,678)	($279,625,307)	-9,525
Lubbock	($1,768,534,987)	($926,659,807)	($571,192,639)	($279,045,411)	-10,156
McAllen-Edinburg-Mission	($2,476,254,594)	($1,325,894,527)	($826,514,914)	($433,197,565)	-15,309
Midland	($712,393,945)	($361,696,406)	($210,264,775)	($105,155,537)	-3,524
Odessa	($917,358,823)	($457,469,520)	($273,669,894)	($138,984,875)	-4,646
San Angelo	($824,612,732)	($405,104,851)	($234,408,362)	($124,168,497)	-4,239
San Antonio-New Braunfels	($12,651,612,945)	($6,365,778,770)	($3,899,694,730)	($1,907,596,885)	-69,068
Sherman-Denison	($922,626,565)	($485,161,565)	($305,352,573)	($174,303,013)	-5,720
Texarkana	($695,051,769)	($368,520,050)	($230,690,377)	($127,266,403)	-4,251
Tyler	($1,719,653,219)	($852,637,058)	($495,351,749)	($247,125,737)	-8,587
Victoria	($850,178,391)	($413,734,987)	($247,687,802)	($127,646,585)	-4,233
Waco	($1,858,028,626)	($900,758,879)	($546,479,333)	($278,638,269)	-9,911
Wichita Falls	($1,146,036,144)	($616,316,791)	($366,870,351)	($193,397,389)	-6,453
Rural Area	($22,268,615,214)	($11,311,080,699)	($6,851,003,248)	($3,924,382,145)	-125,561
TOTAL STATE IMPACT	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

***Metropolitan Division**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area.

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

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Anderson	($451,734,839)	($246,424,853)	($148,183,634)	($79,497,950)	-2,642
Andrews	($77,395,334)	($39,660,686)	($22,714,377)	($12,031,815)	-382
Angelina	($615,200,976)	($311,732,135)	($195,614,676)	($108,338,812)	-3,605
Aransas	($308,057,942)	($142,322,215)	($80,951,007)	($45,737,691)	-1,418
Archer	($49,704,419)	($25,392,403)	($14,268,033)	($8,608,521)	-260
Armstrong	($15,796,163)	($8,049,283)	($4,846,343)	($1,832,664)	-80
Atascosa	($289,403,415)	($140,759,373)	($83,435,661)	($42,257,734)	-1,424
Austin	($218,638,117)	($103,611,689)	($63,204,482)	($28,608,580)	-1,032
Bailey	($29,575,008)	($15,239,480)	($9,253,175)	($6,058,855)	-172
Bandera	($177,221,563)	($85,395,178)	($50,242,120)	($30,412,141)	-937
Bastrop	($442,929,929)	($218,467,044)	($132,918,803)	($76,279,472)	-2,474
Baylor	($52,153,438)	($27,849,571)	($16,825,283)	($9,420,554)	-304
Bee	($152,272,165)	($81,134,551)	($48,208,119)	($27,948,983)	-887
Bell	($1,395,639,709)	($749,465,370)	($475,215,851)	($253,917,522)	-8,797
Bexar	($10,122,583,475)	($5,128,343,380)	($3,155,296,962)	($1,479,569,634)	-55,239
Blanco	($68,839,531)	($33,064,784)	($19,662,434)	($11,419,323)	-371
Borden	($15,646,175)	($7,550,670)	($4,187,221)	($2,033,187)	-66
Bosque	($155,562,615)	($77,968,971)	($48,893,845)	($24,343,278)	-883
Bowie	($695,051,769)	($368,520,050)	($230,690,377)	($127,266,403)	-4,251
Brazoria	($1,573,918,715)	($753,854,404)	($458,709,081)	($256,085,662)	-8,123
Brazos	($750,553,123)	($381,783,445)	($229,831,841)	($114,818,288)	-4,116
Brewster	($53,424,079)	($29,440,769)	($18,546,099)	($9,977,234)	-342
Briscoe	($11,498,629)	($5,347,647)	($3,129,488)	($1,984,200)	-57
Brooks	($34,758,805)	($19,184,393)	($11,823,311)	($7,219,195)	-221
Brown	($281,704,509)	($154,350,890)	($97,173,962)	($60,839,563)	-1,893
Burleson	($139,461,615)	($73,646,636)	($43,886,686)	($26,283,984)	-790
Burnet	($366,532,715)	($177,398,848)	($106,081,349)	($58,007,804)	-1,915
Caldwell	($264,836,924)	($133,548,928)	($80,379,544)	($42,941,534)	-1,436
Calhoun	($98,230,964)	($40,486,792)	($23,995,272)	($12,960,456)	-409
Callahan	($131,342,171)	($63,801,357)	($36,716,808)	($21,044,987)	-659
Cameron	($1,733,359,783)	($884,626,282)	($546,128,881)	($290,056,656)	-10,199
Camp	($80,132,907)	($40,171,544)	($24,981,809)	($13,503,077)	-462
Carson	($19,624,151)	($8,122,930)	($4,046,883)	($1,525,185)	-64
Cass	($228,124,102)	($116,375,938)	($72,162,324)	($46,002,376)	-1,364
Castro	($21,711,002)	($10,349,086)	($6,240,621)	($4,260,728)	-121
Chambers	($188,418,286)	($79,643,107)	($44,701,530)	($20,468,998)	-721
Cherokee	($320,921,354)	($164,638,785)	($105,210,315)	($58,801,774)	-1,939
Childress	($50,825,093)	($25,730,111)	($15,522,966)	($9,735,754)	-297
Clay	($85,353,227)	($43,451,141)	($26,955,449)	($13,007,452)	-463
Cochran	($14,400,866)	($7,540,596)	($4,093,157)	($1,912,874)	-68

(continued)
The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Coke	($45,750,145)	($22,157,280)	($12,774,772)	($7,304,941)	-218
Coleman	($101,668,154)	($52,789,591)	($30,896,957)	($17,305,750)	-552
Collin	($2,687,735,316)	($1,387,425,494)	($852,259,840)	($418,445,318)	-14,869
Collingsworth	($24,996,337)	($13,706,711)	($8,445,993)	($5,140,716)	-152
Colorado	($178,229,927)	($91,145,532)	($55,371,132)	($33,286,966)	-1,075
Comal	($711,258,106)	($349,859,768)	($211,927,912)	($118,631,245)	-4,011
Comanche	($121,277,039)	($62,443,406)	($38,936,604)	($21,694,301)	-716
Concho	($19,056,279)	($10,263,519)	($6,691,040)	($3,301,552)	-122
Cooke	($323,528,092)	($160,302,570)	($96,222,444)	($50,402,209)	-1,644
Coryell	($306,427,782)	($156,669,465)	($96,357,699)	($56,233,485)	-1,838
Cottle	($15,544,604)	($8,987,664)	($5,578,848)	($2,709,642)	-95
Crane	($16,404,696)	($8,916,670)	($5,164,199)	($2,433,848)	-88
Crockett	($20,332,439)	($10,430,936)	($5,917,597)	($4,405,237)	-113
Crosby	($40,085,017)	($21,818,516)	($13,001,334)	($5,394,582)	-220
Culberson	($10,933,303)	($6,432,679)	($3,917,098)	($3,091,038)	-80
Dallam	($25,003,587)	($13,208,454)	($7,987,372)	($4,041,923)	-144
Dallas	($14,535,276,082)	($7,098,168,648)	($4,152,725,777)	($1,566,368,665)	-66,152
Dawson	($92,921,363)	($46,433,009)	($26,040,312)	($16,027,038)	-467
Deaf Smith	($58,406,142)	($28,377,353)	($17,076,190)	($8,527,196)	-307
Delta	($36,236,148)	($19,003,240)	($11,978,212)	($4,323,976)	-200
Denton	($2,470,243,739)	($1,201,027,621)	($733,557,295)	($347,411,057)	-12,701
DeWitt	($191,025,258)	($97,267,052)	($60,160,802)	($33,167,660)	-1,100
Dickens	($22,348,539)	($11,739,064)	($7,226,016)	($4,311,592)	-129
Dimmit	($43,642,130)	($22,857,974)	($13,634,983)	($8,810,475)	-259
Donley	($32,117,860)	($18,181,331)	($11,491,939)	($7,755,555)	-229
Duval	($72,238,602)	($35,627,912)	($20,481,989)	($10,226,310)	-359
Eastland	($180,353,593)	($89,752,991)	($52,620,204)	($32,445,740)	-970
Ector	($917,358,823)	($457,469,520)	($273,669,894)	($138,984,875)	-4,646
Edwards	($15,552,639)	($7,626,314)	($4,180,051)	($2,697,432)	-76
El Paso	($4,488,639,581)	($2,197,437,222)	($1,326,667,294)	($631,684,966)	-23,402
Ellis	($767,825,729)	($359,086,824)	($218,203,949)	($124,941,101)	-3,938
Erath	($201,452,202)	($109,647,218)	($69,527,998)	($41,886,614)	-1,341
Falls	($139,431,716)	($74,456,303)	($47,039,997)	($25,418,940)	-872
Fannin	($283,134,262)	($144,634,650)	($91,523,330)	($50,446,939)	-1,696
Fayette	($269,046,853)	($137,743,090)	($81,360,395)	($40,203,815)	-1,422
Fisher	($33,137,217)	($17,444,412)	($10,635,068)	($6,640,786)	-203
Floyd	($30,286,997)	($13,809,563)	($8,222,712)	($3,956,834)	-145
Foard	($5,091,448)	($2,881,239)	($1,894,835)	($932,757)	-35
Fort Bend	($2,382,179,888)	($1,120,926,040)	($656,501,617)	($311,693,478)	-10,866
Franklin	($77,633,907)	($38,878,781)	($22,289,157)	($13,103,109)	-405

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The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Freestone	($159,092,142)	($78,859,552)	($44,981,891)	($28,947,982)	-826
Frio	($90,948,007)	($44,367,195)	($25,558,938)	($14,030,945)	-453
Gaines	($67,374,092)	($32,083,067)	($17,432,673)	($10,092,513)	-300
Galveston	($2,358,032,324)	($1,119,359,766)	($678,867,120)	($353,918,742)	-12,031
Garza	($33,819,410)	($16,389,318)	($9,331,340)	($5,664,896)	-163
Gillespie	($251,868,387)	($125,039,837)	($77,027,883)	($42,720,373)	-1,434
Glasscock	($2,043,391)	($959,981)	($500,315)	($173,672)	-8
Goliad	($55,014,295)	($29,533,139)	($17,739,053)	($11,975,233)	-336
Gonzales	($98,835,232)	($50,975,853)	($31,748,645)	($18,152,824)	-592
Gray	($210,844,715)	($100,110,400)	($59,272,649)	($33,359,350)	-1,023
Grayson	($922,626,565)	($485,161,565)	($305,352,573)	($174,303,013)	-5,720
Gregg	($1,032,492,936)	($546,157,829)	($331,341,534)	($162,975,979)	-5,714
Grimes	($140,375,534)	($71,170,495)	($43,496,168)	($24,822,964)	-792
Guadalupe	($600,654,221)	($297,929,122)	($181,328,650)	($111,376,449)	-3,399
Hale	($148,682,189)	($80,429,161)	($50,400,025)	($33,808,693)	-989
Hall	($30,983,976)	($15,718,303)	($9,364,861)	($5,538,255)	-173
Hamilton	($73,415,133)	($36,851,967)	($22,997,992)	($14,751,071)	-443
Hansford	($18,914,420)	($8,328,639)	($4,232,769)	($1,967,954)	-64
Hardeman	($28,685,684)	($15,720,686)	($9,618,111)	($7,163,276)	-195
Hardin	($403,538,767)	($199,453,216)	($118,282,836)	($70,224,517)	-2,139
Harris	($25,174,261,445)	($11,530,723,879)	($6,768,150,955)	($2,325,781,811)	-103,644
Harrison	($571,117,451)	($268,262,843)	($160,327,685)	($72,534,652)	-2,626
Hartley	($8,511,232)	($4,160,631)	($2,465,940)	($1,478,359)	-48
Haskell	($55,530,773)	($28,827,491)	($17,558,844)	($9,286,551)	-312
Hays	($572,057,140)	($293,019,855)	($180,467,952)	($96,516,058)	-3,299
Hemphill	($12,736,904)	($5,964,042)	($3,236,966)	($1,640,903)	-53
Henderson	($858,416,461)	($421,293,145)	($252,945,511)	($136,432,716)	-4,618
Hidalgo	($2,476,254,594)	($1,325,894,527)	($826,514,914)	($433,197,565)	-15,309
Hill	($312,112,212)	($148,175,041)	($88,926,244)	($56,045,406)	-1,756
Hockley	($118,337,738)	($60,746,396)	($35,597,065)	($21,015,187)	-651
Hood	($471,314,385)	($227,615,206)	($139,958,037)	($79,167,150)	-2,587
Hopkins	($234,421,290)	($122,482,269)	($76,359,936)	($48,254,250)	-1,451
Houston	($254,439,691)	($125,687,925)	($78,794,454)	($33,098,668)	-1,296
Howard	($273,209,595)	($132,797,356)	($78,490,083)	($41,812,894)	-1,359
Hudspeth	($5,140,211)	($2,621,000)	($1,509,368)	($1,559,435)	-34
Hunt	($542,048,564)	($274,946,438)	($171,134,921)	($105,413,014)	-3,242
Hutchinson	($166,720,747)	($77,630,678)	($44,727,371)	($30,799,426)	-787
Irion	($7,390,171)	($3,029,193)	($1,618,746)	($933,693)	-26
Jack	($65,846,529)	($32,731,213)	($19,068,303)	($11,218,197)	-332
Jackson	($100,890,252)	($51,879,102)	($29,276,300)	($18,513,209)	-531

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The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Jasper	($280,333,674)	($145,004,173)	($90,385,955)	($54,879,698)	-1,728
Jeff Davis	($17,938,670)	($8,986,917)	($5,502,565)	($3,109,757)	-102
Jefferson	($2,036,099,396)	($1,020,496,905)	($652,744,498)	($337,736,593)	-11,514
Jim Hogg	($36,850,671)	($18,577,134)	($10,339,798)	($7,440,356)	-191
Jim Wells	($217,777,007)	($120,649,714)	($71,640,875)	($41,202,814)	-1,307
Johnson	($917,404,337)	($458,518,885)	($289,497,142)	($155,980,463)	-5,272
Jones	($157,313,486)	($80,065,205)	($47,553,116)	($23,859,736)	-838
Karnes	($131,649,983)	($60,967,192)	($35,172,858)	($18,935,148)	-604
Kaufman	($608,435,972)	($300,753,305)	($186,591,451)	($105,245,255)	-3,481
Kendall	($245,363,468)	($114,916,365)	($68,434,722)	($38,297,336)	-1,228
Kenedy	($6,206,356)	($3,101,750)	($1,698,063)	($1,360,238)	-36
Kent	($5,720,548)	($2,710,560)	($1,537,132)	($813,993)	-25
Kerr	($516,681,146)	($260,289,800)	($156,039,810)	($89,157,146)	-2,912
Kimble	($52,814,487)	($23,296,286)	($13,174,922)	($8,162,275)	-238
King	($6,020,472)	($3,063,086)	($1,865,429)	($727,740)	-31
Kinney	($33,448,880)	($15,807,380)	($8,608,319)	($5,177,056)	-157
Kleberg	($193,699,613)	($98,537,535)	($58,224,702)	($31,817,860)	-1,047
Knox	($33,840,190)	($17,882,221)	($10,404,363)	($4,780,578)	-173
La Salle	($25,889,541)	($13,993,543)	($8,216,148)	($5,386,437)	-159
Lamar	($394,480,812)	($198,115,793)	($124,778,802)	($74,291,826)	-2,381
Lamb	($65,110,688)	($30,403,776)	($18,516,127)	($10,906,286)	-330
Lampasas	($163,406,224)	($83,201,733)	($51,290,498)	($30,541,781)	-993
Lavaca	($187,748,550)	($102,065,807)	($63,369,765)	($34,624,495)	-1,162
Lee	($122,123,527)	($61,456,273)	($36,204,580)	($19,562,020)	-637
Leon	($112,910,408)	($59,772,281)	($34,693,067)	($24,041,327)	-655
Liberty	($594,114,296)	($307,347,904)	($186,702,396)	($95,403,337)	-3,257
Limestone	($174,092,858)	($90,771,161)	($56,109,002)	($33,335,419)	-1,029
Lipscomb	($18,605,708)	($8,706,201)	($4,595,458)	($2,147,197)	-75
Live Oak	($102,815,821)	($49,033,467)	($28,915,154)	($17,549,748)	-515
Llano	($279,339,416)	($138,026,230)	($83,076,735)	($48,033,090)	-1,569
Loving	($3,401,271)	($1,514,532)	($692,588)	($251,050)	-9
Lubbock	($1,728,449,970)	($904,841,291)	($558,191,304)	($273,650,829)	-9,936
Lynn	($24,799,568)	($12,104,356)	($7,184,601)	($2,765,478)	-118
Madison	($80,122,053)	($41,329,565)	($24,483,232)	($16,583,830)	-481
Marion	($110,779,647)	($56,907,648)	($34,369,274)	($20,729,787)	-657
Martin	($28,544,997)	($13,662,764)	($7,894,739)	($3,937,163)	-130
Mason	($46,099,607)	($22,928,243)	($13,077,947)	($7,292,915)	-236
Matagorda	($277,635,422)	($128,058,049)	($77,048,281)	($48,626,724)	-1,392
Maverick	($197,298,040)	($102,041,809)	($61,653,459)	($37,463,577)	-1,189
McCulloch	($74,908,260)	($39,174,160)	($24,567,361)	($13,937,631)	-450

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The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
McLennan	($1,858,028,626)	($900,758,879)	($546,479,333)	($278,638,269)	-9,911
McMullen	($2,326,354)	($1,083,008)	($587,830)	($251,862)	-9
Medina	($256,586,046)	($124,109,558)	($73,665,157)	($43,350,773)	-1,395
Menard	($22,735,425)	($11,802,185)	($6,687,783)	($4,405,237)	-122
Midland	($712,393,945)	($361,696,406)	($210,264,775)	($105,155,537)	-3,524
Milam	($173,019,492)	($87,581,229)	($54,242,218)	($32,085,743)	-1,003
Mills	($33,002,638)	($19,889,604)	($12,932,155)	($7,908,592)	-248
Mitchell	($69,750,205)	($36,376,047)	($21,569,261)	($12,188,676)	-383
Montague	($210,017,364)	($103,182,799)	($59,436,254)	($33,815,859)	-1,085
Montgomery	($2,851,522,118)	($1,373,942,595)	($816,855,879)	($361,300,363)	-13,595
Moore	($95,035,291)	($41,296,002)	($23,542,864)	($12,971,630)	-397
Morris	($103,489,076)	($45,808,965)	($28,288,125)	($11,985,965)	-465
Motley	($14,599,234)	($6,973,364)	($3,884,512)	($2,267,204)	-70
Nacogdoches	($371,325,205)	($198,993,029)	($126,169,773)	($75,537,233)	-2,458
Navarro	($385,478,095)	($192,862,230)	($120,101,977)	($62,023,839)	-2,196
Newton	($60,676,641)	($37,445,773)	($24,730,905)	($15,947,204)	-462
Nolan	($146,676,006)	($77,194,239)	($45,179,965)	($24,947,127)	-803
Nueces	($2,587,414,566)	($1,213,160,008)	($725,216,792)	($347,830,705)	-12,311
Ochiltree	($37,988,144)	($18,069,468)	($10,129,875)	($5,362,884)	-169
Oldham	($2,753,502)	($1,527,512)	($960,249)	($835,309)	-21
Orange	($646,606,235)	($320,647,096)	($201,284,785)	($114,943,095)	-3,619
Palo Pinto	($280,792,701)	($132,635,740)	($77,251,836)	($43,607,533)	-1,386
Panola	($197,942,704)	($100,720,813)	($60,086,689)	($32,057,744)	-1,055
Parker	($749,172,763)	($351,837,653)	($208,647,321)	($115,852,888)	-3,753
Parmer	($17,643,533)	($7,955,182)	($4,753,361)	($1,528,223)	-79
Pecos	($81,070,619)	($40,638,936)	($23,383,213)	($14,936,631)	-435
Polk	($530,871,250)	($274,003,369)	($162,560,216)	($95,270,540)	-2,912
Potter	($935,922,584)	($488,667,371)	($290,068,092)	($142,482,633)	-5,037
Presidio	($33,781,382)	($16,182,229)	($9,655,176)	($6,090,556)	-181
Rains	($95,425,117)	($44,264,269)	($25,033,657)	($17,263,051)	-464
Randall	($729,368,330)	($379,346,247)	($228,378,979)	($119,939,119)	-4,084
Reagan	($13,880,859)	($7,109,258)	($3,904,515)	($2,686,252)	-68
Real	($43,137,725)	($20,001,118)	($11,462,990)	($6,441,356)	-202
Red River	($142,735,062)	($69,420,652)	($41,654,349)	($23,675,942)	-770
Reeves	($72,643,410)	($37,205,397)	($21,514,439)	($15,066,271)	-408
Refugio	($57,359,117)	($28,536,416)	($15,693,615)	($12,882,712)	-303
Roberts	($3,486,814)	($1,562,266)	($849,734)	($701,922)	-16
Robertson	($132,990,277)	($66,289,709)	($41,238,981)	($27,356,703)	-800
Rockwall	($315,723,954)	($161,863,945)	($100,266,674)	($53,493,247)	-1,830
Runnels	($113,653,276)	($51,382,345)	($29,201,409)	($16,098,810)	-509

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The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Rusk	($398,843,864)	($194,800,695)	($117,037,065)	($59,307,523)	-2,029
Sabine	($98,763,433)	($49,531,998)	($31,997,325)	($18,717,806)	-593
San Augustine	($94,866,844)	($46,198,840)	($27,021,339)	($14,894,313)	-489
San Jacinto	($200,625,239)	($98,881,593)	($60,217,914)	($35,946,018)	-1,125
San Patricio	($466,189,605)	($220,875,257)	($132,942,092)	($79,126,015)	-2,412
San Saba	($45,865,010)	($24,573,389)	($15,042,934)	($9,735,754)	-295
Schleicher	($12,575,351)	($6,523,440)	($3,920,616)	($1,367,885)	-64
Scurry	($102,885,716)	($55,689,961)	($31,691,391)	($21,122,355)	-586
Shackelford	($25,121,847)	($12,609,683)	($7,044,196)	($3,958,193)	-123
Shelby	($152,677,197)	($82,524,270)	($53,956,461)	($31,706,995)	-1,021
Sherman	($5,325,229)	($2,405,714)	($1,389,304)	($735,220)	-25
Smith	($1,719,653,219)	($852,637,058)	($495,351,749)	($247,125,737)	-8,587
Somervell	($31,442,118)	($14,886,476)	($9,478,630)	($3,469,222)	-165
Starr	($154,290,311)	($87,387,748)	($55,119,427)	($36,205,297)	-1,086
Stephens	($75,287,753)	($40,739,154)	($23,859,876)	($16,009,735)	-437
Sterling	($3,512,886)	($2,000,457)	($1,211,285)	($895,348)	-23
Stonewall	($12,477,256)	($6,978,078)	($4,118,092)	($2,710,106)	-77
Sutton	($27,403,928)	($14,324,833)	($8,242,523)	($5,460,157)	-151
Swisher	($31,334,948)	($14,466,914)	($8,649,575)	($4,866,485)	-159
Tarrant	($10,721,393,248)	($5,325,199,733)	($3,209,250,033)	($1,456,130,005)	-54,622
Taylor	($1,024,238,850)	($512,649,183)	($302,850,487)	($146,867,551)	-5,210
Terrell	($4,264,177)	($2,459,071)	($1,527,125)	($791,771)	-27
Terry	($66,210,332)	($33,824,091)	($18,491,627)	($13,172,007)	-341
Throckmorton	($9,654,900)	($4,995,525)	($2,732,811)	($1,582,788)	-47
Titus	($154,646,203)	($76,179,027)	($47,876,072)	($31,395,007)	-913
Tom Green	($817,222,562)	($402,075,657)	($232,789,616)	($123,234,804)	-4,213
Travis	($3,864,281,745)	($2,031,059,637)	($1,255,930,317)	($568,644,083)	-21,605
Trinity	($159,589,898)	($87,226,986)	($53,359,135)	($31,932,333)	-1,020
Tyler	($175,346,178)	($91,313,983)	($56,869,111)	($33,031,255)	-1,059
Upshur	($332,189,700)	($166,875,582)	($99,108,079)	($57,341,805)	-1,781
Upton	($18,412,251)	($9,277,074)	($5,210,823)	($2,705,636)	-88
Uvalde	($163,697,104)	($85,761,596)	($52,897,889)	($29,263,182)	-994
Val Verde	($214,058,793)	($120,115,384)	($76,637,179)	($41,942,534)	-1,432
Van Zandt	($383,762,987)	($216,445,861)	($132,963,020)	($78,628,271)	-2,520
Victoria	($696,933,133)	($343,715,056)	($205,953,477)	($102,710,896)	-3,488
Walker	($454,625,679)	($238,642,122)	($150,843,489)	($83,844,263)	-2,830
Waller	($229,435,833)	($101,349,478)	($57,244,098)	($36,833,177)	-1,063
Ward	($72,473,190)	($37,183,079)	($21,480,569)	($14,085,072)	-393
Washington	($261,919,097)	($137,351,176)	($84,592,959)	($44,742,212)	-1,522
Webb	($747,725,349)	($392,819,258)	($231,075,738)	($130,405,637)	-4,181

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The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: County Results

County	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
Wharton	($320,570,263)	($168,577,405)	($100,774,321)	($57,436,389)	-1,824
Wheeler	($35,934,883)	($19,915,996)	($11,736,049)	($7,679,411)	-221
Wichita	($1,010,978,497)	($547,473,247)	($325,646,869)	($171,781,416)	-5,731
Wilbarger	($128,324,173)	($62,712,487)	($39,155,800)	($22,488,826)	-716
Willacy	($80,699,339)	($45,298,030)	($27,559,414)	($17,122,180)	-524
Williamson	($988,792,150)	($528,445,849)	($333,604,354)	($175,123,302)	-6,031
Wilson	($248,542,651)	($124,466,025)	($75,363,546)	($43,701,573)	-1,433
Winkler	($43,305,884)	($22,282,975)	($12,780,736)	($7,912,350)	-226
Wise	($331,203,532)	($171,226,371)	($99,977,590)	($57,786,644)	-1,779
Wood	($473,603,092)	($234,062,158)	($140,386,636)	($75,524,331)	-2,540
Yoakum	($30,694,301)	($15,316,242)	($8,662,601)	($5,689,383)	-157
Young	($189,554,497)	($97,780,137)	($56,632,902)	($33,253,606)	-999
Zapata	($47,157,161)	($24,528,177)	($14,575,179)	($9,514,594)	-275
Zavala	($35,709,614)	($21,171,947)	($14,000,211)	($9,851,280)	-292
TOTAL STATE IMPACT	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area.
SOURCE: US Multi-Regional Impact Assessment System, The Perryman Group

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Results by Texas House District

House District	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
1	($1,309,901,551)	($674,935,276)	($419,412,685)	($238,337,281)	-7,807
2	($1,160,232,841)	($613,874,569)	($380,457,877)	($232,295,536)	-7,214
3	($987,940,716)	($466,818,208)	($274,527,762)	($132,939,074)	-4,680
4	($1,320,921,635)	($650,426,615)	($396,536,225)	($218,484,409)	-7,314
5	($1,320,013,168)	($645,118,858)	($385,450,719)	($208,981,608)	-6,904
6	($1,306,936,446)	($648,004,164)	($376,467,329)	($187,815,560)	-6,526
7	($1,364,682,636)	($713,033,411)	($430,449,613)	($220,317,784)	-7,495
8	($1,308,417,288)	($666,321,676)	($402,193,745)	($226,515,177)	-7,420
9	($1,359,404,533)	($674,323,509)	($412,899,759)	($221,749,361)	-7,317
10	($913,756,527)	($430,706,659)	($261,204,686)	($148,134,662)	-4,723
11	($1,091,090,423)	($558,432,509)	($348,417,153)	($193,646,530)	-6,426
12	($1,124,011,938)	($562,830,187)	($345,104,874)	($188,073,469)	-6,332
13	($1,395,419,694)	($716,734,425)	($435,281,587)	($232,573,016)	-7,795
14	($630,464,624)	($320,698,094)	($193,058,746)	($96,447,362)	-3,458
15	($1,046,508,617)	($504,236,932)	($299,786,108)	($132,597,233)	-4,989
16	($1,046,508,617)	($504,236,932)	($299,786,108)	($132,597,233)	-4,989
17	($1,060,375,596)	($525,415,291)	($316,424,430)	($175,870,998)	-5,743
18	($1,249,365,214)	($644,871,619)	($397,763,799)	($215,193,617)	-7,212
19	($1,450,766,509)	($747,220,514)	($452,829,023)	($269,353,214)	-8,301
20	($757,086,480)	($381,238,164)	($233,716,525)	($128,620,673)	-4,244
21	($1,379,602,017)	($688,025,982)	($436,272,804)	($236,528,269)	-7,764
22	($1,303,103,613)	($653,118,019)	($417,756,479)	($216,151,420)	-7,369
23	($1,225,952,508)	($572,161,404)	($343,403,063)	($176,193,245)	-6,014
24	($1,320,498,101)	($626,841,469)	($380,165,587)	($198,194,495)	-6,737
25	($970,159,657)	($459,753,987)	($278,880,276)	($161,304,415)	-4,966
26	($647,952,930)	($304,891,883)	($178,568,440)	($84,780,626)	-2,955
27	($647,952,930)	($304,891,883)	($178,568,440)	($84,780,626)	-2,955
28	($647,952,930)	($304,891,883)	($178,568,440)	($84,780,626)	-2,955
29	($881,394,481)	($422,158,466)	($256,877,085)	($143,407,971)	-4,549
30	($1,406,620,709)	($681,860,669)	($404,493,226)	($219,434,648)	-7,054
31	($805,479,213)	($414,046,358)	($248,176,794)	($145,019,357)	-4,524
32	($1,267,833,137)	($594,448,404)	($355,356,228)	($170,437,045)	-6,032
33	($638,252,192)	($328,355,004)	($202,537,854)	($103,706,685)	-3,614
34	($1,319,581,429)	($618,711,604)	($369,860,564)	($177,393,659)	-6,278
35	($611,631,751)	($320,100,967)	($198,635,819)	($104,758,920)	-3,693
36	($539,823,502)	($289,045,007)	($180,180,251)	($94,437,069)	-3,337
37	($728,011,109)	($371,543,038)	($229,374,130)	($121,823,796)	-4,283
38	($710,677,511)	($362,696,776)	($223,912,841)	($118,923,229)	-4,181
39	($539,823,502)	($289,045,007)	($180,180,251)	($94,437,069)	-3,337
40	($539,823,502)	($289,045,007)	($180,180,251)	($94,437,069)	-3,337

(continued)
The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Results by Texas House District

House District	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
41	($539,823,502)	($289,045,007)	($180,180,251)	($94,437,069)	-3,337
42	($478,544,223)	($251,404,325)	($147,888,473)	($83,459,608)	-2,676
43	($1,029,938,391)	($521,197,058)	($311,015,789)	($180,095,672)	-5,653
44	($849,196,872)	($422,395,148)	($256,692,196)	($155,078,022)	-4,832
45	($640,896,671)	($326,084,639)	($200,130,385)	($107,935,380)	-3,669
46	($629,877,924)	($331,062,721)	($204,716,642)	($92,688,986)	-3,522
47	($656,927,897)	($345,280,138)	($213,508,154)	($96,669,494)	-3,673
48	($656,927,897)	($345,280,138)	($213,508,154)	($96,669,494)	-3,673
49	($633,742,206)	($333,093,780)	($205,972,572)	($93,257,630)	-3,543
50	($629,877,924)	($331,062,721)	($204,716,642)	($92,688,986)	-3,522
51	($656,927,897)	($345,280,138)	($213,508,154)	($96,669,494)	-3,673
52	($385,628,939)	($206,093,881)	($130,105,698)	($68,298,088)	-2,352
53	($1,470,479,773)	($724,754,120)	($429,688,251)	($251,185,644)	-8,015
54	($833,313,284)	($442,945,111)	($279,394,106)	($152,422,191)	-5,216
55	($725,732,649)	($389,721,993)	($247,112,243)	($132,037,111)	-4,575
56	($1,300,620,038)	($630,531,215)	($382,535,533)	($195,046,788)	-6,938
57	($1,317,129,871)	($671,947,733)	($413,965,903)	($228,889,283)	-7,547
58	($1,072,966,952)	($536,487,856)	($338,390,987)	($180,323,742)	-6,155
59	($887,790,182)	($464,135,683)	($289,841,374)	($169,616,671)	-5,496
60	($1,547,585,113)	($774,294,612)	($465,521,874)	($274,378,651)	-8,607
61	($1,080,376,296)	($523,064,025)	($308,624,910)	($173,639,532)	-5,532
62	($1,241,996,975)	($648,799,454)	($408,854,116)	($229,073,928)	-7,616
63	($617,560,935)	($300,256,905)	($183,389,324)	($86,852,764)	-3,175
64	($617,560,935)	($300,256,905)	($183,389,324)	($86,852,764)	-3,175
65	($617,560,935)	($300,256,905)	($183,389,324)	($86,852,764)	-3,175
66	($591,301,770)	($305,233,609)	($187,497,165)	($92,057,970)	-3,271
67	($591,301,770)	($305,233,609)	($187,497,165)	($92,057,970)	-3,271
68	($1,367,921,597)	($691,237,653)	($410,895,820)	($232,502,824)	-7,331
69	($1,237,121,220)	($664,929,822)	($395,994,832)	($208,531,279)	-6,966
70	($591,301,770)	($305,233,609)	($187,497,165)	($92,057,970)	-3,271
71	($1,328,228,342)	($669,908,627)	($395,583,568)	($195,674,414)	-6,851
72	($1,295,719,163)	($631,775,047)	($367,181,781)	($196,441,966)	-6,546
73	($1,208,489,961)	($589,815,970)	($357,390,517)	($199,648,955)	-6,674
74	($727,402,835)	($383,446,104)	($233,146,627)	($139,456,910)	-4,396
75	($897,727,916)	($439,487,444)	($265,333,459)	($126,336,993)	-4,680
76	($897,727,916)	($439,487,444)	($265,333,459)	($126,336,993)	-4,680
77	($897,727,916)	($439,487,444)	($265,333,459)	($126,336,993)	-4,680
78	($897,727,916)	($439,487,444)	($265,333,459)	($126,336,993)	-4,680
79	($897,727,916)	($439,487,444)	($265,333,459)	($126,336,993)	-4,680
80	($650,335,141)	($340,101,822)	($203,854,466)	($118,416,504)	-3,779

(continued)
The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Results by Texas House District

House District	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
81	($1,110,533,231)	($556,596,260)	($330,645,575)	($173,014,112)	-5,647
82	($868,677,251)	($439,985,922)	($254,574,847)	($130,259,222)	-4,298
83	($1,038,046,077)	($539,564,709)	($323,833,296)	($170,834,548)	-5,768
84	($1,037,069,982)	($542,904,775)	($334,914,783)	($164,190,497)	-5,962
85	($859,781,614)	($426,706,898)	($250,846,919)	($133,301,198)	-4,353
86	($841,686,327)	($434,575,379)	($261,622,092)	($136,350,129)	-4,684
87	($1,222,628,002)	($618,122,695)	($363,774,513)	($188,514,094)	-6,310
88	($821,836,098)	($408,810,928)	($243,197,566)	($145,271,119)	-4,413
89	($591,301,770)	($305,233,609)	($187,497,165)	($92,057,970)	-3,271
90	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
91	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
92	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
93	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
94	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
95	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
96	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
97	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
98	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
99	($975,646,786)	($484,593,176)	($292,041,753)	($132,507,830)	-4,971
100	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
101	($964,925,392)	($479,267,976)	($288,832,503)	($131,051,700)	-4,916
102	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
103	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
104	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
105	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
106	($617,560,935)	($300,256,905)	($183,389,324)	($86,852,764)	-3,175
107	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
108	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
109	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
110	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
111	($1,053,807,516)	($514,617,227)	($301,072,619)	($113,561,728)	-4,796
112	($1,032,004,602)	($503,969,974)	($294,843,530)	($111,212,175)	-4,697
113	($1,053,807,516)	($514,617,227)	($301,072,619)	($113,561,728)	-4,796
114	($1,053,807,516)	($514,617,227)	($301,072,619)	($113,561,728)	-4,796
115	($1,053,807,516)	($514,617,227)	($301,072,619)	($113,561,728)	-4,796
116	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
117	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
118	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
119	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
120	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524

(continued)
The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Results by Texas House District

House District	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
121	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
122	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
123	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
124	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
125	($1,012,258,348)	($512,834,338)	($315,529,696)	($147,956,963)	-5,524
126	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
127	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
128	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
129	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
130	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
131	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
132	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
133	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
134	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
135	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
136	($385,628,939)	($206,093,881)	($130,105,698)	($68,298,088)	-2,352
137	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
138	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
139	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
140	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
141	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
142	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
143	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
144	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
145	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
146	($1,057,318,981)	($484,290,403)	($284,262,340)	($97,682,836)	-4,353
147	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
148	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
149	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
150	($1,032,144,719)	($472,759,679)	($277,494,189)	($95,357,054)	-4,249
TOTAL	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area. In cases in which a county was part of more than one district, allocations are based on the percentage of the population residing in a district. This convention is adopted because of a lack of subcounty data sufficient for allocation purposes. In some instances, this approach will result in districts which reflect the same proportion of a large urban county reporting identical results. Allocations reflect district maps as currently defined.

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

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Results by Texas Senate District

Senate District	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
1	($6,712,916,451)	($3,373,895,375)	($2,030,729,727)	($1,068,821,265)	-36,000
2	($4,970,185,229)	($2,491,082,648)	($1,501,814,582)	($729,350,677)	-26,131
3	($6,669,261,274)	($3,400,701,036)	($2,088,646,565)	($1,155,186,314)	-37,888
4	($5,455,634,869)	($2,638,845,958)	($1,609,775,284)	($742,236,545)	-27,156
5	($3,166,573,717)	($1,644,645,408)	($1,013,524,242)	($560,959,821)	-18,562
6	($5,034,852,289)	($2,306,144,776)	($1,353,630,191)	($465,156,362)	-20,729
7	($5,034,852,289)	($2,306,144,776)	($1,353,630,191)	($465,156,362)	-20,729
8	($3,011,338,823)	($1,534,220,102)	($932,057,153)	($433,996,953)	-15,946
9	($4,953,448,552)	($2,449,403,088)	($1,464,890,331)	($636,057,382)	-24,525
10	($4,931,840,894)	($2,449,591,877)	($1,476,255,015)	($669,819,802)	-25,126
11	($5,182,654,215)	($2,435,476,378)	($1,462,358,281)	($689,883,388)	-24,771
12	($3,658,511,291)	($1,795,632,885)	($1,090,240,060)	($506,770,678)	-18,735
13	($4,732,238,624)	($2,173,199,007)	($1,275,320,970)	($454,604,669)	-19,684
14	($3,302,498,420)	($1,721,451,176)	($1,062,307,238)	($497,076,094)	-18,462
15	($4,783,109,674)	($2,190,837,537)	($1,285,948,681)	($441,898,544)	-19,692
16	($5,014,670,248)	($2,448,868,184)	($1,432,690,393)	($540,397,190)	-22,823
17	($4,522,866,354)	($2,091,385,302)	($1,232,139,957)	($481,480,103)	-19,469
18	($5,256,040,303)	($2,566,413,357)	($1,525,194,340)	($805,774,973)	-26,579
19	($4,544,978,257)	($2,309,199,150)	($1,409,990,715)	($714,693,525)	-25,189
20	($4,250,303,897)	($2,109,881,341)	($1,280,807,460)	($644,028,995)	-22,594
21	($3,506,384,802)	($1,786,538,392)	($1,075,279,302)	($597,127,544)	-19,467
22	($5,574,669,495)	($2,720,588,801)	($1,669,041,656)	($882,834,168)	-30,312
23	($5,014,670,248)	($2,448,868,184)	($1,432,690,393)	($540,397,190)	-22,823
24	($5,122,744,256)	($2,630,869,268)	($1,613,586,690)	($887,656,423)	-29,748
25	($4,373,053,456)	($2,199,010,758)	($1,346,719,192)	($680,082,010)	-24,117
26	($4,707,001,316)	($2,384,679,672)	($1,467,213,087)	($687,999,880)	-25,686
27	($3,053,992,020)	($1,588,439,298)	($980,747,323)	($522,299,912)	-18,235
28	($5,368,924,807)	($2,743,301,009)	($1,638,710,015)	($884,170,796)	-29,401
29	($4,556,433,146)	($2,231,660,047)	($1,347,251,502)	($645,535,752)	-23,798
30	($5,243,332,123)	($2,673,110,577)	($1,611,531,288)	($877,350,630)	-28,882
31	($4,770,962,340)	($2,401,397,967)	($1,418,068,037)	($743,115,429)	-24,566
TOTAL	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area. In cases in which a county was part of more than one district, allocations are based on the percentage of the population residing in a district. This convention is adopted because of a lack of subcounty data sufficient for allocation purposes. In some instances, this approach will result in districts which reflect the same proportion of a large urban county reporting identical results. Allocations reflect district maps as currently defined.

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

The Total Annual Impact of Losses (Treatment, Morbidity, and Mortality) Associated with the Incidence of Cancer on Business Activity: Results by US Congressional District in Texas

US Congressional District in Texas	Total Expenditures (2012 Dollars)	Gross Product (2012 Dollars)	Personal Income (2012 Dollars)	Retail Sales (2012 Dollars)	Employment (Permanent Jobs)
1	($5,535,831,811)	($2,792,234,561)	($1,682,974,724)	($869,672,000)	-29,695
2	($4,279,624,446)	($1,960,223,059)	($1,150,585,662)	($395,382,908)	-17,620
3	($2,392,084,431)	($1,234,808,690)	($758,511,258)	($372,416,333)	-13,234
4	($4,780,287,045)	($2,447,250,201)	($1,519,737,159)	($875,939,095)	-28,243
5	($4,951,844,181)	($2,488,418,098)	($1,494,315,254)	($724,722,664)	-26,037
6	($4,155,293,933)	($2,043,004,980)	($1,236,895,935)	($594,681,341)	-21,429
7	($4,279,624,446)	($1,960,223,059)	($1,150,585,662)	($395,382,908)	-17,620
8	($4,691,078,709)	($2,292,002,394)	($1,377,637,448)	($643,901,018)	-23,481
9	($4,119,941,574)	($1,894,532,853)	($1,111,666,538)	($403,532,823)	-17,227
10	($3,943,189,494)	($1,923,028,220)	($1,153,412,745)	($518,590,162)	-19,431
11	($5,196,213,654)	($2,600,417,394)	($1,544,733,409)	($850,634,615)	-27,628
12	($4,201,974,048)	($2,069,427,856)	($1,242,506,091)	($589,789,980)	-21,380
13	($4,849,223,126)	($2,489,052,966)	($1,478,556,098)	($793,557,227)	-26,088
14	($5,165,351,890)	($2,509,245,329)	($1,556,379,067)	($817,137,309)	-27,525
15	($2,610,326,820)	($1,357,985,095)	($835,067,535)	($457,089,688)	-15,417
16	($3,905,116,435)	($1,911,770,383)	($1,154,200,545)	($549,565,920)	-20,359
17	($4,135,488,740)	($2,073,457,301)	($1,259,378,315)	($661,429,222)	-22,751
18	($4,279,624,446)	($1,960,223,059)	($1,150,585,662)	($395,382,908)	-17,620
19	($4,493,998,972)	($2,304,258,097)	($1,381,938,091)	($720,986,276)	-24,485
20	($4,150,259,225)	($2,102,620,786)	($1,293,671,754)	($606,623,550)	-22,648
21	($4,153,636,454)	($2,089,344,325)	($1,274,208,406)	($649,165,932)	-22,866
22	($3,092,818,690)	($1,455,774,753)	($861,680,863)	($410,889,432)	-14,365
23	($3,780,621,734)	($1,921,945,955)	($1,167,099,644)	($611,353,580)	-21,055
24	($3,970,410,418)	($1,950,544,438)	($1,159,534,079)	($483,776,062)	-19,134
25	($3,642,933,420)	($1,847,259,574)	($1,144,320,286)	($607,174,875)	-20,860
26	($2,922,549,039)	($1,429,967,073)	($869,745,283)	($406,407,946)	-14,978
27	($5,337,580,992)	($2,562,337,112)	($1,530,354,698)	($800,925,218)	-26,635
28	($2,803,318,049)	($1,449,188,282)	($879,241,488)	($466,171,866)	-15,881
29	($4,279,624,446)	($1,960,223,059)	($1,150,585,662)	($395,382,908)	-17,620
30	($4,273,371,168)	($2,086,861,582)	($1,220,901,378)	($460,512,388)	-19,449
31	($2,230,911,492)	($1,195,470,029)	($756,546,462)	($401,109,896)	-13,860
32	($4,143,929,765)	($2,028,143,739)	($1,188,982,453)	($454,291,733)	-19,018
33	($4,217,356,129)	($2,076,513,247)	($1,232,666,373)	($511,620,001)	-20,301
34	($3,156,549,054)	($1,632,255,884)	($999,455,545)	($546,246,984)	-18,534
35	($3,465,109,162)	($1,768,153,370)	($1,087,158,475)	($524,241,416)	-19,164
36	($4,893,846,242)	($2,377,316,531)	($1,426,969,810)	($686,231,189)	-24,189
TOTAL	**($146,480,943,679)**	**($72,245,483,334)**	**($43,482,789,859)**	**($20,651,919,375)**	**-747,825**

NOTE: Allocations reflect best available evidence regarding incidence and industrial structure and composition of each area. In cases in which a county was part of more than one district, allocations are based on the percentage of the population residing in a district. This convention is adopted because of a lack of subcounty data sufficient for allocation purposes. In some instances, this approach will result in districts which reflect the same proportion of a large urban county reporting identical results. Allocations reflect district maps as currently defined.

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

The Economic Impact of the Cancer Prevention and Research Institute of Texas (CPRIT) and Its Programs (Direct Outlays)

The Total Annual Impact of All Direct Outlays for Operations and Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Based on Budgeted Operations and Actual Awards in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$25,047,033	$7,435,151	$4,921,863	81
Mining	$21,499,964	$4,983,968	$2,737,217	16
Construction	$38,297,330	$20,547,724	$16,932,607	246
Nondurable Manufacturing	$144,406,625	$41,955,470	$22,233,575	391
Durable Manufacturing	$37,529,185	$14,726,693	$9,493,288	137
Transportation and Utilities	$117,349,734	$46,617,731	$27,206,315	319
Information	$32,744,040	$20,123,136	$8,673,836	84
Wholesale Trade	$45,762,342	$30,970,032	$17,857,597	207
Retail Trade	$202,740,953	$152,112,121	$88,429,386	2,901
Finance, Insurance, and Real Estate	$240,702,954	$65,872,871	$22,186,569	234
Business Services	$62,436,461	$38,159,670	$31,128,511	391
Health Services	$92,713,222	$65,900,405	$55,719,403	948
Other Services	$467,879,235	$290,458,213	$249,041,024	5,997
TOTAL	$1,529,109,078	$799,863,183	$556,561,190	11,953

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

The Cumulative Ten-Year Impact of All Direct Outlays for Operations and Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Budgeted Operations and Actual Awards in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$232,204,520	$68,939,934	$45,635,952	749
Mining	$199,369,286	$46,215,543	$25,382,644	148
Construction	$355,267,498	$190,611,058	$157,075,414	2,284
Nondurable Manufacturing	$1,338,563,631	$388,887,096	$206,090,638	3,618
Durable Manufacturing	$347,912,606	$136,529,193	$88,007,348	1,273
Transportation and Utilities	$1,088,477,325	$432,358,846	$252,319,366	2,960
Information	$303,676,364	$186,626,887	$80,443,426	780
Wholesale Trade	$424,186,505	$287,071,730	$165,528,122	1,912
Retail Trade	$1,881,003,100	$1,411,280,300	$820,439,526	26,869
Finance, Insurance, and Real Estate	$2,232,260,118	$610,706,393	$205,659,478	2,166
Business Services	$580,341,337	$354,631,944	$289,288,777	3,631
Health Services	$848,589,240	$603,046,010	$509,880,986	8,674
Other Services	$4,343,486,596	$2,696,508,094	$2,312,018,918	55,660
TOTAL	$14,175,338,127	$7,413,413,027	$5,157,770,594	110,724

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

*Includes effects of leveraged external funds for prevention and research purposes (effects of Peloton grant are excluded) and assumes stabilized funding levels achieved in 2012.

CPRIT Operations

The Annual Impact of Operations Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Based on Budget Levels and Staffing for Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$355,397	$98,748	$65,176	1
Mining	$262,650	$61,380	$34,196	0
Construction	$359,140	$189,933	$156,520	2
Nondurable Manufacturing	$2,184,725	$639,140	$338,501	5
Durable Manufacturing	$584,891	$248,114	$158,280	1
Transportation and Utilities	$1,710,371	$693,233	$404,964	4
Information	$563,257	$346,864	$149,406	1
Wholesale Trade	$672,409	$455,208	$262,477	3
Retail Trade	$2,971,315	$2,205,363	$1,277,917	39
Finance, Insurance, and Real Estate	$2,962,534	$761,966	$303,363	2
Business Services	$7,919,801	$4,593,853	$3,747,404	45
Health Services	$676,069	$472,914	$399,853	6
Other Services	$1,325,354	$670,581	$539,092	12
TOTAL	$22,547,913	$11,437,297	$7,837,149	122

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

The Cumulative Ten-Year Impact of Operations Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Based on Budget Levels and Staffing for Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$3,372,118	$936,949	$618,413	7
Mining	$2,492,100	$582,391	$324,459	0
Construction	$3,407,628	$1,802,138	$1,485,104	19
Nondurable Manufacturing	$20,729,334	$6,064,353	$3,211,796	46
Durable Manufacturing	$5,549,622	$2,354,183	$1,501,806	13
Transportation and Utilities	$16,228,517	$6,577,605	$3,842,422	40
Information	$5,344,352	$3,291,155	$1,417,613	11
Wholesale Trade	$6,380,020	$4,319,149	$2,490,463	24
Retail Trade	$28,192,739	$20,925,148	$12,125,263	374
Finance, Insurance, and Real Estate	$28,109,415	$7,229,766	$2,878,397	23
Business Services	$75,145,465	$43,587,862	$35,556,503	431
Health Services	$6,414,747	$4,487,148	$3,793,926	61
Other Services	$12,575,355	$6,362,680	$5,115,070	113
TOTAL	$213,941,414	$108,520,527	$74,361,235	1,162

Source: US Multi-Regional Impact Assessment System, The Perryman Group
Assumes staffing level stabilizes in year 3.

CPRIT Prevention and Screening

The Annual Impact of Outlays for Prevention and Screening Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Reported Outlays for Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$1,655,236	$445,451	$296,120	8
Mining	$1,200,751	$281,876	$151,856	2
Construction	$1,531,581	$823,986	$679,015	17
Nondurable Manufacturing	$10,388,068	$3,079,823	$1,606,425	40
Durable Manufacturing	$2,562,036	$996,607	$655,152	14
Transportation and Utilities	$5,646,892	$2,422,355	$1,441,552	28
Information	$1,799,879	$1,106,973	$476,504	8
Wholesale Trade	$3,288,778	$2,225,403	$1,283,187	22
Retail Trade	$7,927,993	$5,911,698	$3,429,787	302
Finance, Insurance, and Real Estate	$12,614,935	$4,156,491	$1,558,698	24
Business Services	$3,820,275	$2,368,184	$1,931,831	36
Health Services	$47,579,891	$34,311,980	$29,011,097	507
Other Services	$4,131,676	$2,128,035	$1,747,109	92
TOTAL	$104,147,991	$60,258,862	$44,268,335	1,100

Source: US Multi-Regional Impact Assessment System, The Perryman Group
*Includes effects of leveraged funds for screening and prevention purposes.

The Cumulative Ten-Year Impact of Outlays for Prevention and Screening Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Reported Outlays for Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$14,937,701	$4,019,983	$2,672,341	70
Mining	$10,836,196	$2,543,797	$1,370,431	14
Construction	$13,821,778	$7,436,071	$6,127,785	157
Nondurable Manufacturing	$93,747,287	$27,793,909	$14,497,205	362
Durable Manufacturing	$23,121,133	$8,993,894	$5,912,432	123
Transportation and Utilities	$50,960,465	$21,860,579	$13,009,308	255
Information	$16,243,036	$9,989,896	$4,300,218	77
Wholesale Trade	$29,679,625	$20,083,186	$11,580,144	195
Retail Trade	$71,546,300	$53,350,208	$30,952,169	2,725
Finance, Insurance, and Real Estate	$113,843,682	$37,510,319	$14,066,498	214
Business Services	$34,476,135	$21,371,715	$17,433,843	325
Health Services	$429,385,478	$309,649,005	$261,811,102	4,578
Other Services	$37,286,373	$19,204,488	$15,766,812	834
TOTAL	$939,885,189	$543,807,051	$399,500,288	9,930

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

*Assumes percentage leveraging of external funds remains constant over time.

CPRIT Research

The Annual Impact of Outlays for Research Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Reported Outlays for Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$23,036,400	$6,890,952	$4,560,566	72
Mining	$20,036,563	$4,640,711	$2,551,165	14
Construction	$36,406,609	$19,533,806	$16,097,072	227
Nondurable Manufacturing	$131,833,831	$38,236,507	$20,288,650	346
Durable Manufacturing	$34,382,259	$13,481,971	$8,679,856	122
Transportation and Utilities	$109,992,471	$43,502,143	$25,359,799	287
Information	$30,380,904	$18,669,298	$8,047,926	75
Wholesale Trade	$41,801,155	$28,289,421	$16,311,932	182
Retail Trade	$191,841,645	$143,995,061	$83,721,682	2,560
Finance, Insurance, and Real Estate	$225,125,486	$60,954,414	$20,324,508	208
Business Services	$50,696,385	$31,197,633	$25,449,275	310
Health Services	$44,457,262	$31,115,511	$26,308,453	434
Other Services	$462,422,206	$287,659,596	$246,754,822	5,893
TOTAL	$1,402,413,174	$728,167,025	$504,455,706	10,730

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

*Includes effects of leveraged external funds for research purposes (excluding the Peloton grant).

The Cumulative Ten-Year Impact of Outlays for Research Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Reported Outlays for Fiscal Year 2012 Reflecting Stabilized Level)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$213,894,702	$63,983,002	$42,345,198	672
Mining	$186,040,990	$43,089,354	$23,687,754	134
Construction	$338,038,092	$181,372,850	$149,462,524	2,108
Nondurable Manufacturing	$1,224,087,011	$355,028,835	$188,381,637	3,210
Durable Manufacturing	$319,241,851	$125,181,116	$80,593,110	1,137
Transportation and Utilities	$1,021,288,343	$403,920,662	$235,467,635	2,665
Information	$282,088,975	$173,345,836	$74,725,596	693
Wholesale Trade	$388,126,859	$262,669,395	$151,457,514	1,693
Retail Trade	$1,781,264,061	$1,337,004,945	$777,362,094	23,770
Finance, Insurance, and Real Estate	$2,090,307,022	$565,966,307	$188,714,583	1,930
Business Services	$470,719,737	$289,672,366	$236,298,430	2,875
Health Services	$412,789,014	$288,909,856	$244,275,958	4,034
Other Services	$4,293,624,869	$2,670,940,926	$2,291,137,036	54,712
TOTAL	$13,021,511,524	$6,761,085,449	$4,683,909,071	99,632

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

*Assumes percentage leveraging of external funds remains constant over time (excluding the Peloton grant).

Secondary (Downstream) Benefits of CPRIT Prevention/Screening and Research Programs

Secondary Economic Benefits of Prevention and Screening Activity

The Anticipated Total Annual Benefit of Enhanced Cancer Prevention and Screening Services (Net Reduction in Treatment Cost, Morbidity, and Mortality) Associated with the Efforts of the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Reported Prevention Grant Levels in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$4,383,533	$1,268,191	$789,655	14
Mining	$22,785,447	$10,308,990	$3,624,794	15
Construction	$10,250,210	$5,044,324	$3,880,395	58
Nondurable Manufacturing	$36,185,462	$10,053,846	$5,284,237	62
Durable Manufacturing	$16,164,510	$6,669,485	$4,463,267	46
Transportation and Utilities	$30,314,844	$10,498,382	$6,006,161	65
Information	$7,768,587	$5,065,126	$2,221,762	20
Wholesale Trade	$10,554,716	$7,948,093	$4,490,618	51
Retail Trade	$43,058,829	$33,068,034	$19,104,563	593
Finance, Insurance, and Real Estate	$61,803,531	$19,094,911	$7,159,550	71
Business Services	$18,944,585	$13,298,088	$10,785,912	127
Health Services	$23,550,403	$18,000,765	$14,886,131	251
Other Services	$19,645,112	$10,312,120	$7,963,683	186
TOTAL	$305,409,770	$150,630,354	$90,660,727	1,559

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

*Based on typical results of screening and prevention measures determined in various studies. Includes effects of leveraged external funds for screening and prevention purposes.

The Anticipated Total Cumulative Ten-Year Benefits of Enhanced Cancer Prevention and Screening Services (Net Reduction in Treatment Cost, Morbidity, and Mortality) Associated with the Anticipated Efforts of the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Sustainable Prevention Grant Levels Being Attained in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$39,559,265	$11,444,808	$7,126,250	123
Mining	$205,627,630	$93,033,645	$32,712,008	135
Construction	$92,503,178	$45,522,579	$35,018,682	527
Nondurable Manufacturing	$326,556,270	$90,731,090	$47,687,679	562
Durable Manufacturing	$145,876,878	$60,188,874	$40,278,827	415
Transportation and Utilities	$273,576,792	$94,742,813	$54,202,694	591
Information	$70,107,737	$45,710,313	$20,050,330	182
Wholesale Trade	$95,251,206	$71,727,690	$40,525,654	464
Retail Trade	$388,585,085	$298,422,995	$172,409,433	5,347
Finance, Insurance, and Real Estate	$557,746,939	$172,322,325	$64,611,474	640
Business Services	$170,965,703	$120,008,807	$97,337,631	1,143
Health Services	$212,530,988	$162,448,187	$134,340,123	2,266
Other Services	$177,287,623	$93,061,888	$71,868,380	1,677
TOTAL	$2,756,175,294	$1,359,366,012	$818,169,163	14,071

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

*Based on typical results of screening and prevention measures determined in various studies. Includes effects of leveraged external funds for screening and prevention purposes.

Secondary Economic Benefits of Research Activity

The Anticipated Annual Benefits of the Research and Related Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Based on Research Awards as Reported in Fiscal Years 2010-2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$60,504,729	$17,477,224	$10,926,698	187
Mining	$295,461,070	$132,903,345	$46,905,476	194
Construction	$135,274,673	$66,737,085	$51,454,738	773
Nondurable Manufacturing	$568,750,130	$173,004,210	$89,056,401	1,003
Durable Manufacturing	$241,531,014	$87,945,976	$67,653,921	728
Transportation and Utilities	$406,379,601	$135,073,109	$81,181,391	887
Information	$105,249,454	$65,339,989	$29,960,439	272
Wholesale Trade	$146,000,630	$113,030,049	$61,733,156	705
Retail Trade	$580,457,879	$425,976,483	$257,112,190	7,977
Finance, Insurance, and Real Estate	$821,780,397	$255,696,017	$94,828,853	940
Business Services	$253,902,607	$172,203,102	$143,681,668	1,689
Health Services	$308,154,194	$234,458,461	$194,517,485	3,280
Other Services	$266,622,221	$158,514,318	$107,289,697	2,507
TOTAL	$4,190,068,600	$2,038,359,368	$1,236,302,113	21,141

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

*Based on typical annual rate of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

The Anticipated Annual Benefits of the Research and Related Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Impact in Year 10 Assuming Sustainable Level of Research Funding Achieved in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$245,852,300	$71,016,196	$44,399,071	760
Mining	$1,200,563,737	$540,033,705	$190,593,684	787
Construction	$549,669,259	$271,176,586	$209,078,957	3,140
Nondurable Manufacturing	$2,311,034,687	$702,977,826	$361,867,931	4,075
Durable Manufacturing	$981,426,679	$357,355,877	$274,902,017	2,956
Transportation and Utilities	$1,651,265,301	$548,850,232	$329,868,955	3,604
Information	$427,666,082	$265,499,688	$121,739,952	1,105
Wholesale Trade	$593,252,647	$459,281,415	$250,843,837	2,866
Retail Trade	$2,358,607,448	$1,730,894,425	$1,044,738,555	32,413
Finance, Insurance, and Real Estate	$3,339,186,934	$1,038,984,140	$385,323,463	3,818
Business Services	$1,031,696,875	$699,722,637	$583,829,876	6,865
Health Services	$1,252,140,429	$952,688,372	$790,393,937	13,328
Other Services	$1,083,381,206	$644,100,225	$435,956,316	10,186
TOTAL	$17,025,743,584	$8,282,581,324	$5,023,536,552	85,903

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

*Based on typical annual rate of return to health-related research, the reported location of additional researchers to the state, at the current pace and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

The Anticipated Cumulative Ten-Year Benefits of the Research and Related Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Cumulative Impact over Ten Years Assuming Sustainable Level of Research Funding Achieved in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$876,013,528	$253,042,776	$158,201,436	2,708
Mining	$4,277,812,632	$1,924,231,870	$679,117,689	2,805
Construction	$1,958,564,986	$966,248,262	$744,983,858	11,187
Nondurable Manufacturing	$8,234,609,354	$2,504,829,467	$1,289,396,939	14,521
Durable Manufacturing	$3,496,990,054	$1,273,319,723	$979,522,607	10,534
Transportation and Utilities	$5,883,738,903	$1,955,646,656	$1,175,379,148	12,842
Information	$1,523,846,933	$946,020,509	$433,780,140	3,938
Wholesale Trade	$2,113,860,005	$1,636,497,736	$893,799,223	10,210
Retail Trade	$8,404,119,187	$6,167,471,003	$3,722,581,026	115,495
Finance, Insurance, and Real Estate	$11,898,090,545	$3,702,077,067	$1,372,972,984	13,604
Business Services	$3,676,111,303	$2,493,230,676	$2,080,285,071	24,461
Health Services	$4,461,589,153	$3,394,590,582	$2,816,307,925	47,489
Other Services	$3,860,271,360	$2,295,038,566	$1,553,386,447	36,295
TOTAL	$60,665,617,941	$29,512,244,894	$17,899,714,492	306,089

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

*Based on typical annual rate of return to health-related research, the reported location of additional researchers to the state, at the current pace and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

Total Benefits of CPRIT Operations and Programs (Direct Outlays and Secondary Effects)

The Anticipated Gross Annual Benefits of All Prevention and Research Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Based on Budgeted Operations and Reported Awards in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$87,924,662	$25,636,366	$16,276,918	273
Mining	$338,283,080	$147,853,046	$53,081,435	223
Construction	$181,931,491	$91,315,214	$71,432,205	1,058
Nondurable Manufacturing	$736,769,423	$221,294,563	$114,629,288	1,411
Durable Manufacturing	$292,077,783	$108,097,433	$80,797,044	896
Transportation and Utilities	$546,686,916	$189,073,634	$112,547,351	1,239
Information	$143,398,946	$89,074,414	$40,230,127	367
Wholesale Trade	$198,356,501	$149,267,563	$82,535,706	939
Retail Trade	$815,358,353	$603,039,579	$359,938,435	11,130
Finance, Insurance, and Real Estate	$1,108,709,413	$335,745,342	$122,312,912	1,218
Business Services	$323,543,576	$216,698,823	$179,916,855	2,126
Health Services	$376,161,860	$283,574,737	$235,712,068	3,966
Other Services	$748,689,539	$456,486,033	$362,008,202	8,585
TOTAL	$5,897,891,545	$2,917,156,747	$1,831,418,546	33,431

*Based on (1) budgeted operations and reported screening and research for fiscal year 2012; (2) typical results of screening and prevention measures determined in various studies including effects of leveraged external funds for screening and prevention purposes; and (3) typical annual rates of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

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

The Anticipated Gross Annual Benefits of All Prevention and Research Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Impact in Year 10 Based Upon Attaining Sustainable Levels of Funding for All Prevention and Research Grant Programs by Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$273,272,233	$79,175,339	$49,749,292	846
Mining	$1,243,385,747	$554,983,407	$196,769,643	817
Construction	$596,326,077	$295,754,715	$229,056,424	3,425
Nondurable Manufacturing	$2,479,053,980	$751,268,179	$387,440,818	4,483
Durable Manufacturing	$1,031,973,448	$377,507,334	$288,045,140	3,125
Transportation and Utilities	$1,791,572,616	$602,850,757	$361,234,915	3,957
Information	$465,815,573	$289,234,112	$132,009,641	1,200
Wholesale Trade	$645,608,518	$495,518,928	$271,646,387	3,099
Retail Trade	$2,593,507,922	$1,907,957,520	$1,147,564,800	35,566
Finance, Insurance, and Real Estate	$3,626,115,950	$1,119,033,465	$412,807,521	4,097
Business Services	$1,101,337,844	$744,218,359	$620,065,063	7,301
Health Services	$1,320,148,095	$1,001,804,649	$831,588,520	14,013
Other Services	$1,565,448,524	$942,071,940	$690,674,822	16,265
TOTAL	$18,733,566,528	$9,161,378,703	$5,618,652,985	98,193

*Based on (1) budgeted operations and reported screening and research for fiscal year 2012; (2) typical results of screening and prevention measures determined in various studies including effects of leveraged external funds for screening and prevention purposes; and (3) typical annual rates of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

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

The Anticipated Gross Cumulative Ten-Year Benefits of All Prevention and Research Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Cumulative Impact over Ten Years Assuming Sustainable Level of Prevention and Research Funding Achieved in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$1,147,777,314	$333,427,518	$210,963,638	3,580
Mining	$4,682,809,548	$2,063,481,058	$737,212,341	3,088
Construction	$2,406,335,662	$1,202,381,899	$937,077,955	13,998
Nondurable Manufacturing	$9,899,729,255	$2,984,447,653	$1,543,175,256	18,700
Durable Manufacturing	$3,990,779,538	$1,470,037,790	$1,107,808,783	12,222
Transportation and Utilities	$7,245,793,020	$2,482,748,315	$1,481,901,207	16,393
Information	$1,897,631,033	$1,178,357,709	$534,273,896	4,899
Wholesale Trade	$2,633,297,715	$1,995,297,155	$1,099,852,998	12,586
Retail Trade	$10,673,707,373	$7,877,174,298	$4,715,429,984	147,711
Finance, Insurance, and Real Estate	$14,688,097,602	$4,485,105,785	$1,643,243,936	16,410
Business Services	$4,427,418,343	$2,967,871,427	$2,466,911,478	29,235
Health Services	$5,522,709,381	$4,160,084,778	$3,460,529,034	58,429
Other Services	$8,381,045,579	$5,084,608,548	$3,937,273,745	93,633
TOTAL	$77,597,131,363	$38,285,023,934	$23,875,654,250	430,884

*Based on (1) budgeted operations and reported screening and research for fiscal year 2012; (2) typical results of screening and prevention measures determined in various studies including effects of leveraged external funds for screening and prevention purposes; and (3) typical annual rates of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

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

The Anticipated Net Annual Benefits of All Prevention and Research Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Based on Budgeted Operations and Reported Awards in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$64,888,262	$18,745,415	$11,716,352	201
Mining	$318,246,517	$143,212,335	$50,530,270	209
Construction	$145,524,883	$71,781,409	$55,335,132	831
Nondurable Manufacturing	$604,935,592	$183,058,056	$94,340,638	1,065
Durable Manufacturing	$257,695,524	$94,615,461	$72,117,188	774
Transportation and Utilities	$436,694,446	$145,571,491	$87,187,552	952
Information	$113,018,041	$70,405,116	$32,182,201	292
Wholesale Trade	$156,555,346	$120,978,142	$66,223,774	757
Retail Trade	$623,516,708	$459,044,517	$276,216,753	8,570
Finance, Insurance, and Real Estate	$883,583,928	$274,790,928	$101,988,404	1,010
Business Services	$272,847,191	$185,501,190	$154,467,579	1,816
Health Services	$331,704,598	$252,459,226	$209,403,615	3,531
Other Services	$286,267,333	$168,826,437	$115,253,380	2,693
TOTAL	$4,495,478,370	$2,188,989,723	$1,326,962,840	22,700

*Based on (1) budgeted operations and reported screening and research for fiscal year 2012; (2) typical results of screening and prevention measures determined in various studies including effects of leveraged external funds for screening and prevention purposes; and (3) typical annual rates of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

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

The Anticipated Net Annual Benefits of All Prevention and Research Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Impact in Year 10 Based Upon Attaining Sustainable Levels of Funding for All Prevention and Research Grant Programs by Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$250,235,833	$72,284,387	$45,188,726	774
Mining	$1,223,349,184	$550,342,695	$194,218,478	802
Construction	$559,919,468	$276,220,909	$212,959,352	3,198
Nondurable Manufacturing	$2,347,220,149	$713,031,672	$367,152,168	4,138
Durable Manufacturing	$997,591,190	$364,025,362	$279,365,285	3,002
Transportation and Utilities	$1,681,580,146	$559,348,614	$335,875,116	3,669
Information	$435,434,669	$270,564,814	$123,961,715	1,125
Wholesale Trade	$603,807,363	$467,229,507	$255,334,455	2,917
Retail Trade	$2,401,666,278	$1,763,962,459	$1,063,843,118	33,006
Finance, Insurance, and Real Estate	$3,400,990,464	$1,058,079,051	$392,483,013	3,889
Business Services	$1,050,641,459	$713,020,726	$594,615,788	6,992
Health Services	$1,275,690,833	$970,689,137	$805,280,067	13,579
Other Services	$1,103,026,318	$654,412,344	$443,919,999	10,372
TOTAL	$17,331,153,354	$8,433,211,678	$5,114,197,279	87,463

*Based on (1) typical results of screening and prevention measures determined in various studies including effects of leveraged external funds for screening and prevention purposes; and (2) typical annual rates of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

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

The Anticipated Net Cumulative Ten-Year Benefits of All Prevention and Research Programs Associated with the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas (Cumulative Impact over Ten Years Assuming Sustainable Level of Prevention and Research Funding Achieved in Fiscal Year 2012)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Person Years)*
Agriculture	$915,572,793	$264,487,584	$165,327,686	2,831
Mining	$4,483,440,262	$2,017,265,515	$711,829,697	2,939
Construction	$2,051,068,163	$1,011,770,841	$780,002,540	11,714
Nondurable Manufacturing	$8,561,165,624	$2,595,560,557	$1,337,084,617	15,083
Durable Manufacturing	$3,642,866,932	$1,333,508,597	$1,019,801,434	10,949
Transportation and Utilities	$6,157,315,695	$2,050,389,469	$1,229,581,842	13,433
Information	$1,593,954,670	$991,730,822	$453,830,470	4,120
Wholesale Trade	$2,209,111,210	$1,708,225,425	$934,324,876	10,674
Retail Trade	$8,792,704,272	$6,465,893,998	$3,894,990,459	120,842
Finance, Insurance, and Real Estate	$12,455,837,484	$3,874,399,392	$1,437,584,458	14,243
Business Services	$3,847,077,006	$2,613,239,483	$2,177,622,702	25,604
Health Services	$4,674,120,141	$3,557,038,769	$2,950,648,048	49,755
Other Services	$4,037,558,983	$2,388,100,454	$1,625,254,827	37,973
TOTAL	$63,421,793,236	$30,871,610,906	$18,717,883,656	320,160

*Based on (1) typical results of screening and prevention measures determined in various studies including effects of leveraged external funds for screening and prevention purposes; and (2) typical annual rates of return to health-related research, the reported location of 47 additional researchers to the state, and standard patterns in spinoff companies from research outlays (fully adjusted for attrition). Includes effects of leveraged external research funding (excluding Peloton grant).

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

Potential Economic Development and Social Benefits Associated with the Cancer Prevention and Research Institute of Texas

Texas as a Center of Biomedical Production

The Potential Annual Incremental Impact Associated with Becoming a Major Center of Biomedical Production as a Partial Consequence of the Catalytic Effect Resulting from the Initiatives of the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Scenario I -- As of 2040)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$502,062,227	$141,158,617	$93,097,569	1,476
Mining	$430,592,723	$102,381,073	$56,916,088	347
Construction	$484,068,368	$258,327,042	$212,877,574	3,002
Nondurable Manufacturing	$10,462,520,877	$4,285,672,403	$2,084,541,560	21,344
Durable Manufacturing	$6,478,728,276	$2,697,074,544	$1,993,596,250	25,980
Transportation and Utilities	$2,210,783,624	$886,293,950	$517,531,357	5,877
Information	$670,429,801	$408,584,708	$175,944,711	1,623
Wholesale Trade	$1,330,877,395	$899,793,183	$518,828,765	5,801
Retail Trade	$3,550,031,891	$2,635,072,054	$1,526,951,685	47,498
Finance, Insurance, and Real Estate	$3,652,864,478	$961,601,315	$375,149,791	3,848
Business Services	$1,279,594,706	$772,618,725	$630,258,900	7,668
Health Services	$806,546,020	$563,926,779	$476,805,314	7,875
Other Services	$1,546,462,572	$800,187,749	$643,813,463	15,396
TOTAL	$33,405,562,957	$15,412,692,142	$9,306,313,027	147,735

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

*This scenario assumes that Texas achieves a concentration in the biomedical industry (pharmaceuticals and medical equipment) by 2040 equivalent to that of the US. Only incremental gains above baseline are included.

The Potential Annual Incremental Impact Associated with Becoming a Major Center of Biomedical Production as a Partial Consequence of the Catalytic Effect Resulting from the Initiatives of the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (Scenario II -- As of 2040)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$587,062,845	$165,480,692	$109,077,585	1,729
Mining	$497,245,339	$118,334,025	$65,712,239	400
Construction	$554,918,255	$296,149,806	$244,045,885	3,441
Nondurable Manufacturing	$12,974,757,133	$5,371,621,508	$2,605,569,735	26,019
Durable Manufacturing	$6,459,257,963	$2,690,436,860	$1,981,123,906	25,887
Transportation and Utilities	$2,528,748,230	$1,014,719,395	$592,792,615	6,737
Information	$780,136,597	$474,949,838	$204,489,013	1,884
Wholesale Trade	$1,518,100,932	$1,026,439,391	$591,854,096	6,618
Retail Trade	$4,054,790,418	$3,007,266,601	$1,742,222,349	54,258
Finance, Insurance, and Real Estate	$4,192,509,024	$1,110,495,221	$431,977,546	4,425
Business Services	$1,503,628,572	$907,193,375	$740,037,331	9,004
Health Services	$917,932,756	$641,853,441	$542,693,030	8,963
Other Services	$1,769,734,054	$916,221,537	$737,339,250	17,623
TOTAL	$38,338,822,118	$17,741,161,690	$10,588,934,580	166,990

*This scenario assumes that Texas achieves a concentration in the biomedical industry (pharmaceuticals and medical equipment) by 2040 equivalent to that of California. Only incremental gains above baseline are included.

Reduction in Cancer Incidence

The Potential Annual Impact of a Substantial Reduction in Cancer Incidence as a Consequence of the Catalytic Effect Resulting from the Initiatives of the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in Texas* (As of 2040)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$478,906,825	$138,551,526	$86,270,804	1,486
Mining	$2,489,340,349	$1,126,270,849	$396,013,521	1,628
Construction	$1,119,848,982	$551,099,054	$423,938,251	6,380
Nondurable Manufacturing	$3,953,309,670	$1,098,395,981	$577,309,878	6,798
Durable Manufacturing	$1,765,994,181	$728,650,093	$487,617,879	5,029
Transportation and Utilities	$3,311,936,945	$1,146,962,143	$656,181,045	7,153
Information	$848,728,443	$553,371,769	$242,730,490	2,202
Wholesale Trade	$1,153,116,771	$868,339,685	$490,605,977	5,613
Retail Trade	$4,704,234,200	$3,612,726,561	$2,087,198,872	64,737
Finance, Insurance, and Real Estate	$6,752,117,684	$2,086,144,337	$782,190,358	7,742
Business Services	$2,069,720,992	$1,452,833,774	$1,178,375,160	13,837
Health Services	$2,572,912,807	$1,966,607,435	$1,626,329,530	27,434
Other Services	$2,146,254,532	$1,126,612,758	$870,042,888	20,306
TOTAL	$33,366,422,381	$16,456,565,963	$9,904,804,655	170,345

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

*This scenario assumes that the incidence of and death rate from cancer in Texas over time is reduced to the average of current levels observed in the five states with the lowest incidence and cancer death rates.

The Potential Annual Impact of a Substantial Reduction in Cancer Incidence as a Consequence of the Catalytic Effect Resulting from the Initiatives of the Cancer Prevention and Research Institute of Texas (CPRIT) on Business Activity in the United States* (As of 2040)

Sector	Total Expenditures	Real Gross Product	Personal Income	Employment
	(2012 Dollars)	*(2012 Dollars)*	*(2012 Dollars)*	*(Permanent Jobs)*
Agriculture	$5,575,605,584	$1,624,113,911	$997,711,573	17,175
Mining	$24,917,431,191	$11,247,256,047	$3,990,569,612	16,617
Construction	$11,511,826,523	$5,688,729,244	$4,371,845,381	65,855
Nondurable Manufacturing	$72,736,377,697	$19,087,307,266	$9,880,105,889	119,367
Durable Manufacturing	$22,453,750,892	$9,041,136,216	$6,048,966,460	62,725
Transportation and Utilities	$40,552,464,596	$13,560,301,016	$7,640,323,737	80,734
Information	$8,836,797,519	$5,762,961,516	$2,526,818,053	22,873
Wholesale Trade	$11,800,526,823	$8,886,234,247	$5,020,661,516	57,443
Retail Trade	$48,416,230,407	$37,148,539,985	$21,455,798,597	666,522
Finance, Insurance, and Real Estate	$68,607,176,611	$21,497,515,367	$8,254,462,394	81,562
Business Services	$21,305,612,455	$14,955,403,873	$12,130,139,564	142,436
Health Services	$26,042,138,433	$19,905,324,008	$16,461,148,098	277,682
Other Services	$22,726,851,636	$11,882,531,833	$9,203,359,352	215,376
TOTAL	$385,482,790,367	$180,287,354,528	$107,981,910,227	1,826,370

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

*This scenario assumes that the incidence of and death rate from cancer in the US over time is reduced to the average of current levels observed in the five states with the lowest incidence and cancer death rates.