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**An Assessment of the Potential Economic and Fiscal Impact of Investment in Expanding Various Aspects of the ValueOptions/NorthSTAR Model for Funding Mental Health and Substance Abuse Services**



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# Introduction



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# Introduction

- **Providing quality mental health services at a reasonable cost is an issue dealt with by every state in the US.** The societal cost of inadequate care involves numerous spillover effects in the overall economy including lost productivity and earning potential, coexisting condition costs, disability payments, homelessness, and incarceration. In addition, there is an immeasurable cost of quality of life for those suffering from a mental disorder.
- In fact, in a recent report by The Perryman Group, it was found that **the total impact of all aspects of severe mental health and substance abuse issues on business activity in Texas included losses of \$269.3 billion in total spending each year (with the direct declines alone estimated to be \$127.4 billion annually) and 1,675,582 permanent jobs.** More simply stated, if all the costs and related losses associated with these factors could be eliminated, the state economy would be approximately 10% larger than its present size.<sup>1</sup>
- According to the National Institute of Mental Health, more than **26% of American adults suffer from a diagnosable mental disorder in any given year,**<sup>2</sup> representing over 60 million people when applied to 2008 US Census population estimates.<sup>3</sup>
- In addition, while tens of millions of adults report one or more mental health problems, **far fewer report receiving treatment.**

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<sup>1</sup> *Costs, Consequences, and Cures!!! An Assessment of the Impact of Severe Mental Health and Substance Abuse Disorders on Business Activity in Texas and the Anticipated Economic and Fiscal Return on Investment in Expanded Mental Health Services.* The Perryman Group. (2009 May).

<sup>2</sup> National Institutes of Health. National Institute of Mental Health. *Statistics.* (2009). Retrieved March 10, 2009, from <http://www.nimh.nih.gov/health/topics/statistics/index.shtml>.

<sup>3</sup> US Census Bureau. *American Community Survey.*



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The latest survey results from the US Department of Health and Human Services indicate that in 2008, 30 million people over the age of 18 received mental health services the previous 12 months representing only 13.4% of the adult population.<sup>4</sup> This percentage has been relatively consistent for the past several years.

- Of adults who reported an unmet need, **cost was listed as the largest factor for not getting the mental health care services they needed** (42.7%).<sup>5</sup>
- Given funding challenges, **meeting mental health care needs increasingly requires innovative approaches** to maximize the return on investment in services.
- In response to pressure to provide quality mental health services at decreased costs, Texas launched different Medicaid waiver programs under the name of STAR (State of Texas Access Reform) in the early 1990s. One such program, known as NorthSTAR and operated by ValueOptions, has enjoyed substantial success in expanding accessibility and reducing cost in a seven-county region in the Dallas area. Efforts of this nature are particularly important at present, as the State faces a growing population, expanding needs, and a significant budgetary shortfall.
- The Perryman Group (TPG) was recently asked to evaluate the potential impact of expanding various aspects of the ValueOptions/NorthSTAR program to other areas of Texas. The current report presents the findings from this investigation.

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<sup>4</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2009). *Results from the 2008 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD.

<sup>5</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2009). *Results from the 2008 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD.



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## HIGHLIGHTS OF STUDY FINDINGS

- Millions of Texans suffer from mental health and substance abuse problems. However, Texas ranks near the bottom of the country in per-capita public spending for treatment, and compared to the ten most populous states in the nation, the Lone Star State ranks last.
- In response, STAR programs were developed in the 1990s to provide quality mental health care services under budget constraints; these innovative programs cover both physical health care and mental health and substance abuse services.
- Texas has since seen some success in this area; one particular example is that of NorthSTAR, a service delivery model started in 1999 and serving a seven-county area surrounding Dallas.
  - The NorthSTAR model combines several federal, state and local funding sources into a single behavioral health service delivery system.
  - NorthSTAR's unique service design has a number of benefits that increase efficiency, lower costs and ultimately lead to economic gains for the service area.
  - Since its implementation, NorthSTAR has improved access to care, increased the number of clients served, and enhanced quality—all without escalating cost.
  - Quality treatment at a lower cost is possible due to efficiencies realized under the NorthSTAR delivery system; NorthSTAR also reduces the time persons in need spend waiting for care.
- The Perryman Group was asked to measure the economic and fiscal benefits of expanding the NorthSTAR coverage area. While transferability is likely not perfect, particularly in areas with a smaller population and service delivery base, many of the efficiencies noted above are not tied to location and can be further



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realized and escalated through geographic expansion of the NorthSTAR model of care.

- The overall economic gains from the expansion of the NorthSTAR model are measured under two scenarios.
  - Case 1 measures the impacts projected for Texas if the number of people served by the State remains the same under a broad adoption of the NorthSTAR model. In other words, current service levels are assumed, with delivery through the more-efficient NorthSTAR system at a lower overall cost.
  - Case 2 demonstrates the expected positive consequences if State funding remains the same, thus allowing more people to be served due to NorthSTAR efficiencies and achieving resulting benefits related to lower medical costs for co-morbidities, increased productivity and earnings, and reduced incidence of homelessness, incarceration, and mortality.
- In addition, The Perryman Group quantified savings at three different levels of implementation:
  - statewide in both urban and rural areas;
  - only in mid-sized and urban population centers where the Local Mental Health Authority (LMHA) serves 700,000 or more; and
  - only in urban population centers where the LMHA serves 1,000,000 or more persons.
- The following table summarizes results from this analysis; additional detail is included in the body of the report and appendices.



<b>Annual Gains in Texas Business Activity Stemming from            Direct Medical Cost Savings Associated with Expanding the            NorthSTAR Approach to Providing Mental Health and            Substance Abuse Services to Other Areas</b> (At 2011 Expected Need Levels with Monetary Values in Millions of 2010 Dollars)					
	<b>Total Expenditures</b>	<b>Gross Product</b>	<b>Personal Income</b>	<b>Retail Sales</b>	<b>Permanent Jobs</b>
<b>Case 1: Constant Care Levels</b>					
<b>Statewide Implementation</b>	\$585.049	\$313.819	\$189.680	\$179.495	4,291
<b>Implementation in Large and Mid- Sized Urban Areas Only*</b>	\$393.064	\$210.839	\$127.436	\$120.593	2,883
<b>Implementation in Large Urban Areas Only*</b>	\$300.007	\$160.923	\$97.266	\$92.043	2,200
<b>Case 2: Constant Funding Levels</b>					
<b>Statewide Implementation</b>	\$3,810.431	\$1,903.840	\$1,161.658	\$811.590	23,054
<b>Implementation in Large and Mid- Sized Urban Areas Only*</b>	\$2,560.026	\$1,279.089	\$780.456	\$545.264	15,489
<b>Implementation in Large Urban Areas Only*</b>	\$1,953.945	\$976.267	\$595.685	\$416.174	11,822
* Statewide implementation covers all urban and rural areas of Texas. Large Urban Areas are defined as those where the Local Mental Health Authority serves more than 1,000,000 persons; Mid-Sized Urban Areas are those where more than 700,000 persons are served by the LMHA.					



- This economic activity, in turn, generates additional tax receipts to the State and to local governments. TPG’s estimates of the annual fiscal gains are noted in the table below. “Static” is based on the direct cost savings occurring as a result of implementing the expanded program; “dynamic” incorporates the additional gains from subsequent/multiplier rounds of business activity.

<b>The Annual Fiscal Revenues Stemming from Enhanced Economic Activity Associated with Direct Medical Cost Savings from Implementing the NorthSTAR Approach to Providing Mental Health and Substance Abuse Services on Business Activity</b> (At 2011 Expected Need Levels with Monetary Values in Millions of 2010 Dollars)			
	<b>State Revenue: Static</b>	<b>State Revenue: Dynamic</b>	<b>Local Revenue</b>
<b>Case 1: Constant Care Levels</b>			
<b>Statewide Implementation</b>	\$200.4	\$234.4	\$13.0
<b>Implementation in Large and Mid-Sized Urban Areas Only*</b>	\$134.6	\$157.5	\$8.8
<b>Implementation in Large Urban Areas Only*</b>	\$102.7	\$120.2	\$6.7
<b>Case 2: Constant Funding Levels</b>			
<b>Statewide Implementation</b>	\$585.2	\$740.0	\$63.9
<b>Implementation in Large and Mid-Sized Urban Areas Only*</b>	\$393.2	\$497.3	\$42.9
<b>Implementation in Large Urban Areas Only*</b>	\$300.1	\$379.5	\$32.8
* Statewide implementation covers all urban and rural areas of Texas. Large Urban Areas are defined as those where the Local Mental Health Authority serves more than 1,000,000 persons; Mid-Sized Urban Areas are those where more than 700,000 persons are served by the LMHA.			

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- The Perryman Group also analyzed the potential savings and resulting benefits stemming from implementation of particular aspects of the NorthSTAR system across the state.
    - **Expanding the pharmacy component** of the NorthSTAR program statewide could lead to sizable savings and corresponding **economic gains of an estimated \$164.3 million in output (gross product) each year and 2,246 jobs.**
    - **Incremental net receipts to taxing authorities include \$104.9 million per annum to the State on a static basis, \$122.7 million on a dynamic basis, and \$6.8 million to local governments.**
  - The statewide **expansion of the NorthSTAR approach for substance abuse** could lead to savings even larger than those associated with statewide implementation of the pharmacy component because of its direct effects on medical costs for co-morbidities, homelessness, incarceration, and other costs.
    - The Perryman Group estimated the economic benefits of implementing a NorthSTAR approach to substance abuse across Texas to include **\$266.0 million in output (gross product) each year and 3,221 jobs.**
    - The incremental business activity associated with statewide implementation of a NorthSTAR approach to substance abuse would generate **incremental static and dynamic fiscal receipts each year of an estimated \$81.8 million and \$103.4 million, respectively, to the State and \$8.9 million to local governments.**
  - Even in a challenging budget environment, investments in mental health and substance abuse treatment bring about savings in many other areas.
  - **Expanding innovative models, like the NorthSTAR delivery system serving the Dallas area, could reduce the strain on the**



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**State budget, improve access to care for those in need, and benefit the Texas economy through reducing the various costs associated with mental health and substance abuse problems.**

## **THE PERRYMAN GROUP'S PERSPECTIVE**

- Dr. M. Ray Perryman, founder and president of the firm, developed the Texas Econometric Model and the US Multi-Regional Impact Assessment System about 30 years ago and has maintained, expanded, and updated them on an ongoing basis. These models have been used in hundreds of applications across a broad spectrum and have an excellent reputation for reliability. Each of these systems also has similar submodels which reflect the unique industrial composition of the state of Texas and the particular geographic areas analyzed in this study.
- TPG has more than 25 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. Impact studies have been performed for hundreds of clients including many of the largest corporations in the world, governmental entities at all levels, educational institutions, major health care systems, utilities, and economic development organizations.
- In particular, TPG has extensively analyzed the health care sector, including insurance, cost, affordability, and other areas relevant to the current analysis. Studies have also been conducted on the effects of specific public funding initiatives, including Medicaid and the State Children's Health Insurance Program (SCHIP). In particular, the firm has analyzed the NorthSTAR model for providing mental health and substance abuse services in several past endeavors.



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- Furthermore, TPG has frequently assessed the efforts of specific initiatives designed to improve outcomes and productivity, including recent evaluations of potential wellness and obesity initiatives and related topics. The firm's prior work also includes quantifying the economic cost of mental health problems and substance abuse as well as other health issues such as cancer and obesity.



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# Mental Health Funding Challenges



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# Mental Health Funding Challenges

- The system for delivering mental health care in the US dramatically changed in 1963 with the passage of the Community Mental Health Centers Act. This Act encouraged a shift from institutional care to care through small-scale community facilities, ultimately increasing the funding responsibility of States.<sup>6</sup>
- **Although State mental health programs continue to receive federal block grants, support from Medicaid and other State-based sources comprise a growing portion of total funds.**
- A 2007 study of trends through the 1993-2003 time period noted that in 2003, 45% of all health care funding came from public sources. For mental health and substance abuse services, the importance of public funding is even greater. During the same year, **public payers accounted for 61% of mental health and substance abuse spending**, 27% of which came from federal funds and 35% from state funds. For substance abuse services this proportion was even larger, with public payers accounting for 77% of substance abuse expenditures in 2003, over half of which was from State and local governments.<sup>7</sup>
- More recent data indicates that these general patterns of heavy reliance on public funding for treatment persist.

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<sup>6</sup> *Costs, Consequences, and Cures!!! An Assessment of the Impact of Severe Mental Health and Substance Abuse Disorders on Business Activity in Texas and the Anticipated Economic and Fiscal Return on Investment in Expanded Mental Health Services.* The Perryman Group. (2009 May).

<sup>7</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. *National Expenditures for Mental Health Services and Substance Abuse Treatment 1993-2003.* (2007). Retrieved March 18, 2009, from <http://www.samhsa.gov/spendingestimates/toc.aspx>. Also, see Levit, K. R., et al. *Projections of national Expenditures for Mental Health Services and Substance Abuse Treatment, 2004-2014.* SAMHSA Publication No. SMA 08-4326. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2008.



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- Furthermore, **advances in technology, while enhancing the quality and sophistication of care, have augmented costs for already strained State budgets.** Increasing budget constraints have caused many states to cut mental health and substance abuse spending, in turn reducing Medicaid matching funds. Projections into the near future indicate that this trend is likely to continue.<sup>8</sup>
  - Providing adequate mental health resources is a significant issue in states across the country. **Funding for a large and populous state such as Texas is particularly challenging.**
  - **Millions of Texans suffer from mental health and substance abuse problems.** The latest state-level estimates from the Substance Abuse and Mental Health Services Administration (SAMHSA) indicate that in 2006, 10.96% of Texans age 18 or older suffered from serious psychological distress, just slightly below the national average.<sup>9</sup> This rate is highest among adults ages 18-25 (16.19%), as it is for the nation as a whole (17.7%).<sup>10</sup>
  - **Texas ranks near the bottom of the country in per-capita public spending for treatment,** and compared to the ten most populous states in the nation, the Lone Star State ranks last.

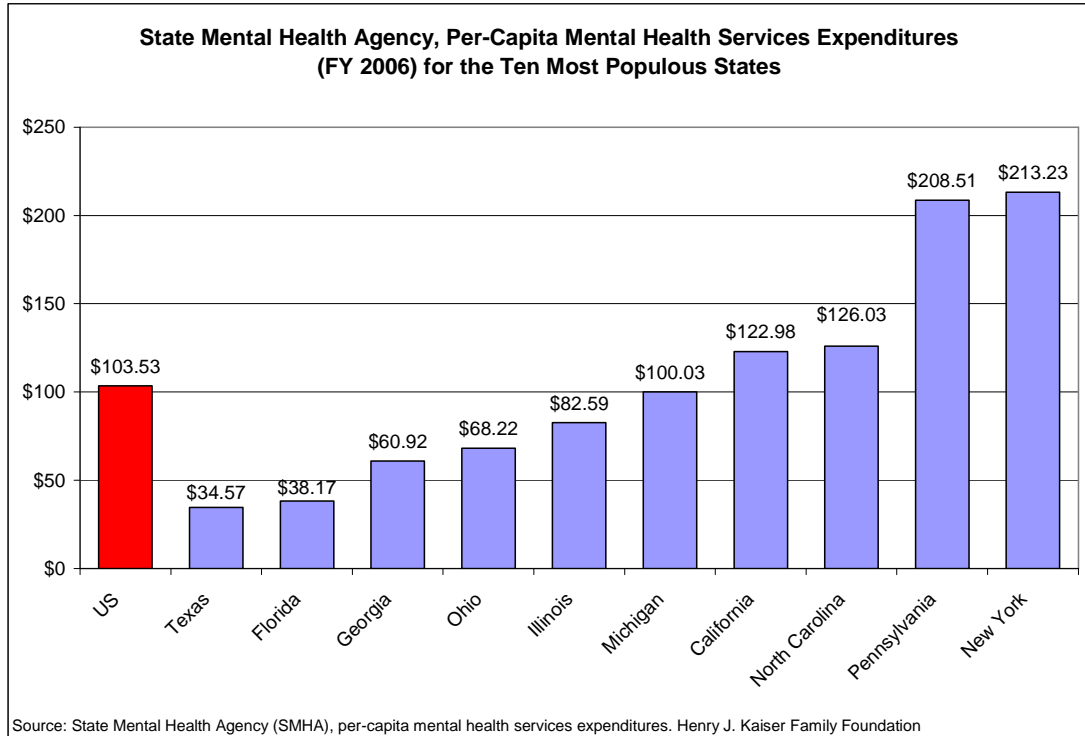
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<sup>8</sup> Levit, K. R., et al. *Projections of National Expenditures for Mental Health Services and Substance Abuse Treatment, 2004-2014*. SAMHSA Publication No. SMA 08-4326. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2008.

<sup>9</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2008, December). *2006 State Estimates of Depression & Serious Psychological Distress, Texas*. Retrieved March 13, 2009, from <http://www.oas.samhsa.gov/2k6State/TexasMH.htm>

<sup>10</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2007, September). *Results from the 2006 National Survey on Drug Use and Health: National Findings*. Retrieved April 9, 2009, <http://www.oas.samhsa.gov/NSDUH/2K6NSDUH/2K6results.cfm>; US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2008, December). *2006 State Estimates of Depression & Serious Psychological Distress, Texas*. Retrieved March 13, 2009, from <http://www.oas.samhsa.gov/2k6State/TexasMH.htm>.





- In the 1990s, managed care covering both physical and mental health was initiated within Texas' Medicaid program, an innovative response to pressure to provide quality mental health care services under budget constraints. This change led to Medicaid waiver programs launched under the name of STAR (State of Texas Access Reform). The STAR programs cover both physical health care and mental health and substance abuse services in many areas of the state.
- Texas has since seen some success in this area. One particular example is that of NorthSTAR, a service delivery model started in 1999 and serving a seven-county area surrounding Dallas.





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# The ValueOptions/NorthSTAR System



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# The ValueOptions/NorthSTAR System

- As mentioned, NorthSTAR started in 1999 and services Collin, Dallas, Ellis, Hunt, Kaufman, Navarro, and Rockwall counties. Funding for the program comes from a variety of sources for Medicaid and non-Medicaid populations.<sup>11</sup>
- NorthSTAR divides mental health and substance abuse services from physical health services. Mental health and substance abuse care are integrated under a single system through a separate provider, ValueOptions, a behavioral health organization (BHO) working with the local behavior health authority (the North Texas Behavioral Health Authority).
- **The NorthSTAR model combines several federal, state and local funding sources into a single behavioral health service delivery system.** ValueOptions is responsible for providing services to eligible individuals in the NorthSTAR service area.
- In a previous study, TPG found NorthSTAR's unique service design to have a number of benefits that increase efficiency, lower costs and ultimately lead to economic gains for the service area. In fact, in 2006 TPG found that the enhanced efficiencies of the NorthSTAR model led to increased business activity in the local service area including nearly \$226 million in total spending each year and more than 1,200 jobs.

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<sup>11</sup> *Effective, Efficient, and Essential: The Economic Impact of the NorthSTAR Model for Providing Mental Health and Substance Abuse Services and the Potential Benefits of Program Expansion and Increased Funding.* The Perryman Group. (2006, September).



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## BENEFITS OF THE VALUEOPTIONS/NORTHSTAR SYSTEM

- Since its implementation, **NorthSTAR has improved access to care, increased the number of clients served, and enhanced quality—all without escalating cost.**
- In addition to providing services for Medicaid clients (which are automatically part of the program when they enroll in Medicaid), NorthSTAR also cares for non-Medicaid clients who meet the categorical definition of need for behavioral health under NorthSTAR.
- Delivering care through ValueOptions opens the provider network up for competition, resulting in more client choice.
- Cost savings are realized under NorthSTAR as it provides for a streamlined delivery system. **Duplicative efforts are reduced by combining mental illness and chemical dependency into one system delivered through ValueOptions.**
- In FY 2000, NorthSTAR served 30,742 mental health and substance abuse/chemical dependency clients with cash funding of \$2,563 per enrollee served. **In FY 2009, enrollment increased by over 100% to 61,932, while funding per enrollee served decreased by 30% to \$1,795.** In comparison, **non-NorthSTAR Local Mental Health Authorities (LMHAs) served 84,759 persons at an average funding per person of \$3,502.**
- NorthSTAR served 24.14% (or 26,970) of the statewide total Resiliency and Disease Management (RDM) initiative Non-Medicaid members in FY2009 while receiving only 13.17% of the statewide total funding for the population. In contrast, Harris



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County alone received 14.03% of total General Revenue funding for RDM non-Medicaid persons while serving just 9.32%.

- Quality treatment at a lower cost is possible due to efficiencies realized under the NorthSTAR delivery system.
  - **Blended funding** allows pooling of finances from a variety of sources with the flexibility to maintain separate streams of funding for Medicaid and non-Medicaid populations while services are delivered under a single system.
  - The **open communication channels** between advocates, consumers, providers, and state agency representatives help with identification of problems within the system and alternative designs. Data capabilities allow for collecting and analyzing of data at both the individual and aggregate level for assessment and monitoring of the system.
  - **Separating the authority from the provider** allows the North Texas Behavioral Health Authority to serve as an advocate for consumer care. The provider, ValueOptions, is at risk for any costs that exceed the NorthSTAR funds. ValueOptions assumes full financial risk for providing services and is contracted to insure an accessible provider network.
  - **Enhanced choice and support** is accomplished under this approach by removing residence restriction boundaries within the larger seven-county area, thereby increasing the choice of providers in the area.
  - In addition, the open access policy **eliminates long waiting lists** for eligible customers, a stark contrast to other areas of the state.
  - **Decreased spending on administration** due to NorthSTAR's direct services claims target ensures that most funds are spent on direct care as opposed to administration increasing efficiency at the BHO and provider levels. Providers have transitioned to an Electronic Data Interchange process and



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- 95% of providers submit claims within 60 days, with ValueOptions paying the majority of claims in less than 15 days. During the first four years of implementation, an LBJ School of Public Affairs study found savings of about \$20 million; most of these savings were in administrative costs.
- The **jail diversion and prevention programs in Dallas County** reduces costs associated with law enforcement facilities by diverting offenders who qualify for community-based treatment, directly addressing the connection between behavioral health and crime.
  - In addition to these notable efficiencies, **NorthSTAR also reduces the time persons in need spend waiting for care.**
    - The Department of State Health Services Community Mental Health and Substance Abuse Services reports annually on access to routine services across LMHAs. In the latest report (Q1 FY07), five LMHAs across the state reported waiting periods longer than 30 days for access to initial intake, with the highest averaging 81 days.<sup>12</sup>
    - In December 2009, there were 6,800 people with serious mental illnesses alone (schizophrenia, bipolar disorder and major depression) on waiting lists throughout the state.<sup>13</sup>
    - People on waiting lists sometimes wait more than a year to get the help they need in some areas.<sup>14</sup>
  - It is important to note that **even in a challenging budget environment, investments in mental health and substance abuse treatment brings about savings in many other areas.** NorthSTAR has proven to be an effective steward of public resources delivering enormous value for lower cost than other areas.

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<sup>12</sup> Texas Department of State Health Services. Community Mental Health and Substance Abuse Services Quality Management Unit. (2006, October). *First Quarter FY2007 Statewide Study Access to Routine Services*.

<sup>13</sup> Years After Mental Health Overhaul, New Picture of Needs Emerging. *American-Statesman*. (2009, December 06).

<sup>14</sup> Years After Mental Health Overhaul, New Picture of Needs Emerging. *American-Statesman*. (2009, December 06).



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As demonstrated below, expanding various elements of the NorthSTAR model into other geographic areas would likely lead to even greater savings throughout the state.



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# Expanding the ValueOptions/NorthSTAR System



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# Expanding the ValueOptions/NorthSTAR System

- **While transferability is likely not perfect, particularly in areas with a smaller population and service delivery base, many of the efficiencies noted above are not tied to location and can be further realized and escalated through geographic expansion of the NorthSTAR model of care.**
- When taken as a whole, the current NorthSTAR area of care services a large population in a mostly urban area, and expansion of the NorthSTAR system to other areas would likely increase some costs, such as transportation, in comparison to realized expenditures in the current seven-county area. In fact, the delivery expenses are somewhat higher in some of the more rural parts of the current region. Even so, the overall efficiencies of the system would reduce mental health and substance-abuse related expenditures as a whole. **Other costs associated with mental health problems (such as medical care for co-morbidities, incarceration, homelessness, mortality, and decreased productivity) would also be diminished.**
- Treatment for mental health and substance abuse will increasingly strain the State budget as the Texas population grows and the treatments become more costly.
- Millions of Texans suffer from mental health and/or substance abuse problems. Expanding the NorthSTAR model produces significant savings for the State of Texas through increased efficiencies and related administrative costs as well as decreased societal costs





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associated with mental health and substance abuse populations served.

- TPG has measured the overall cost savings of expanding the NorthSTAR model as well as savings associated with specific components under two scenarios (described below).

## METHODOLOGY

- The methods used in this study to assess the economic impact of expanding the NorthSTAR model include dynamic input-output assessment, which essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.
- Impacts are expressed in terms of key measures of business activity (described more fully in the methodological appendices). In essence, total expenditures (or total spending) is a measure of every dollar that changes hands in the local area as a result of the stimulus. Gross product (or output) is the amount of new production of goods and services that will come about locally as a result of the activity. 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 in either person-years of employment (for a temporary effect such as construction) or permanent jobs (for an ongoing impact such as the present analysis).

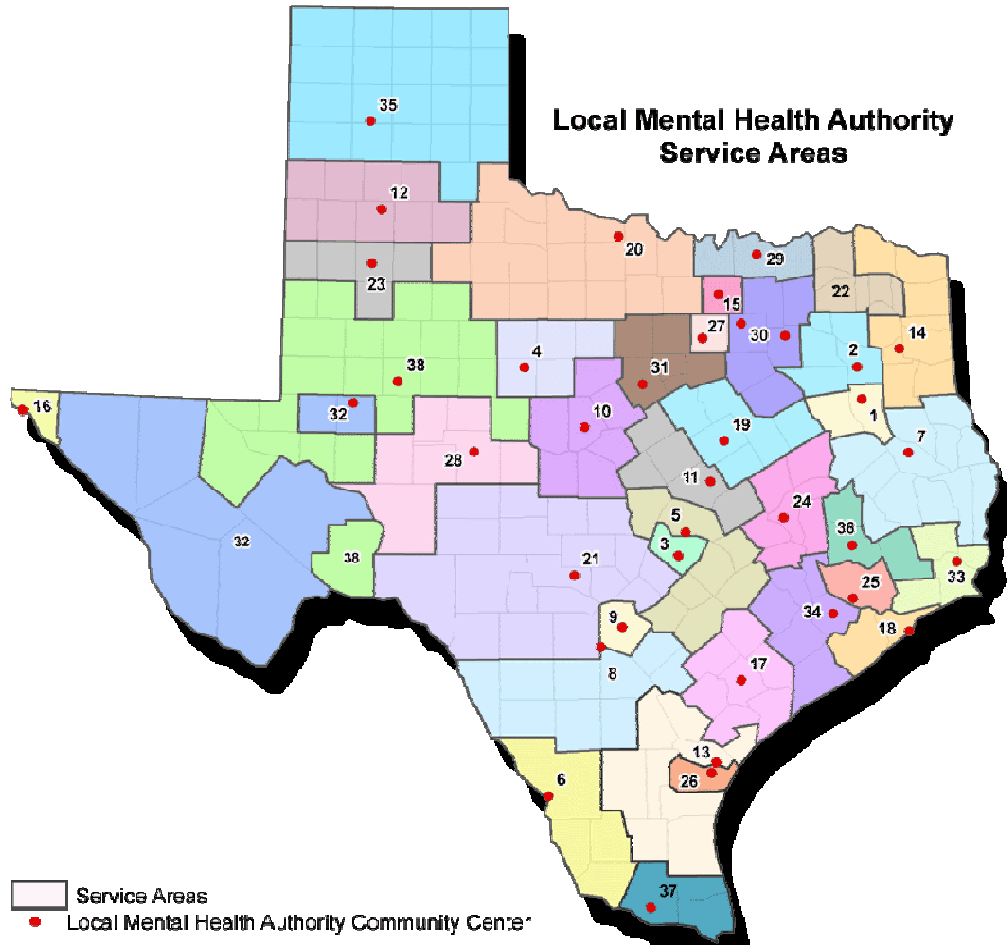


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- A detailed explanation of the methods and terms used in this study, including the pertinent input-output and econometric systems and the methods used to quantify direct savings, may be found in Appendix A.

## ECONOMIC IMPACT OF BROAD ADOPTION OF THE NORTHSTAR MODEL

- The overall economic gains from the expansion of the NorthSTAR model is measured under two scenarios.
  - **Case 1 measures the impacts projected for Texas if the number of people served by the State remains the same under a broad adoption of the NorthSTAR model.** In other words, current service levels are assumed, with delivery through the more-efficient NorthSTAR system at a lower overall cost.
  - **Case 2 demonstrates the expected positive consequences if State funding remains the same, thus allowing more people to be served** due to NorthSTAR efficiencies and achieving resulting benefits related to lower medical costs for co-morbidities, increased productivity and earnings, and reduced incidence of homelessness, incarceration, and mortality.
- In addition, The Perryman Group quantified savings at three different levels of implementation:
  - statewide in both urban and rural areas;
  - only in mid-sized and urban population centers where the LMHA serves 700,000 or more and
  - only in urban population centers where the LMHA serves 1,000,000 or more persons.





Map ID	Center Name	Map ID	Center Name	Map ID	Center Name
1	Anderson/Cherokee Community Enrichment Services	14	Community HealthCore	27	MHMR of Tarrant County
2	Andrews Center	15	Denton County MHMR Center	28	MHMR Services for the Concho Valley
3	Austin Travis County MHMR Center	16	El Paso MHMR	29	MHMR Services of Texoma
4	Betty Hardwick Center	17	Gulf Bend MHMR Center	30	North Texas Behavioral Health Authority
5	Bluebonnet Trails Community MHMR Center	18	Gulf Coast Center	31	Pecan Valley MHMR Region
6	Border Region MHMR Community Center	19	Heart of Texas Region MHMR Center	32	Permian Basin Community Centers
7	Burke Center	20	Helen Farabee Regional MHMR Centers	33	Spindletop MHMR Services
8	Camino Real Community MHMR Center	21	Hill Country Community MHMR Center	34	Texana MHMR Center
9	Center for Health Care Services	22	Lakes Regional MHMR Center	35	Texas Panhandle MHMR
10	Center for Life Resources	23	Lubbock Regional MHMR Center	36	Tri-County MHMR Services
11	Central Counties Center for MHMR Services	24	MHMR Authority of Brazos Valley	37	Tropical Texas Center for MHMR
12	Central Plains Center	25	MHMR Authority of Harris County	38	West Texas Centers for MHMR
13	Coastal Plains Community MHMR Center	26	MHMR Center of Nueces County		



<b>Large and Mid-Sized Urban Areas (LMHAs serving 700,000 or more)*</b>	<b>Population Served</b>
MHMR Authority of Harris County	4,096,052
North Texas Behavioral Health Authority	3,772,013
MHMR of Tarrant County	1,825,548
Center for Health Care Services	1,636,642
Tropical Texas Center for MHMR	1,232,576
Austin Travis County MHMR Center	992,773
Bluebonnet Trails Community MHMR Center	796,074
El Paso MHMR	773,125
Texana MHMR Center	753,369
Denton County MHMR Center	706,103
<b>Large Urban Areas (LMHAs serving 1,000,000 or more)*</b>	<b>Population Served</b>
MHMR Authority of Harris County	4,096,052
North Texas Behavioral Health Authority	3,772,013
MHMR of Tarrant County	1,825,548
Center for Health Care Services	1,636,642
Tropical Texas Center for MHMR	1,232,576

\*The North Texas Behavior Health Authority (NorthSTAR) is not included in this analysis of the savings associated with expanding that system.

- Each of the scenarios contains adjustments to reflect the lack of transferability in an identical manner. For large urban areas with the scale necessary for implementing the various programs, only a modest efficiency adjustment was incorporated. For the more rural regions, a larger factor was estimated based on the cost spread between the more distant and rural counties in the NorthSTAR region and the more affluent and accessible areas. Cost differentials arise in categories such as transportation over greater distances, lack of a broad base of providers, and lack of sufficient concentration of patients to support certain aspects of the program at an optimal level; these were also accounted for through this process. An intermediate factor was derived for mid-sized urban regions.
- In addition, The Perryman Group separately quantified the savings associated with two individual components of care which are being considered for separate implementation—pharmacy services and substance abuse programs.

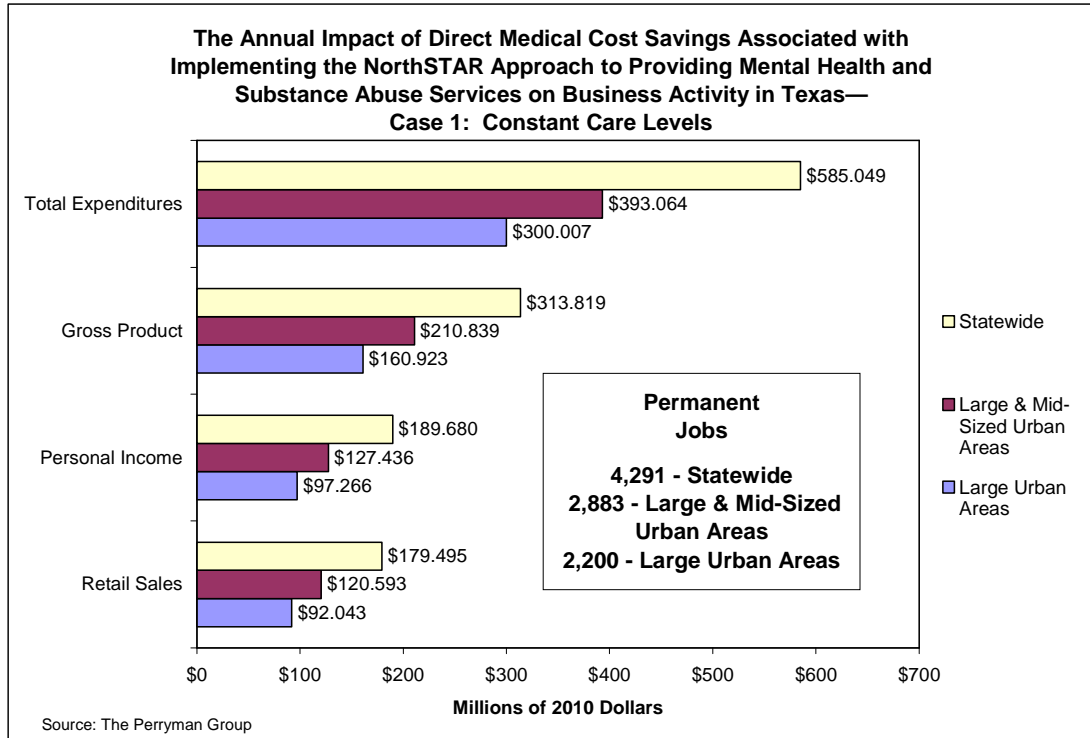


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- This economic activity, in turn, generates additional tax receipts to the State and to local governments. TPG estimated the annual fiscal gains on a static (based on the direct cost savings occurring as a result of implementing the expanded program) and dynamic (incorporating the additional gains from subsequent/multiplier rounds of business activity) basis.

### Case 1: Constant Care Levels

- **The annual gains associated with the implementation of the NorthSTAR approach statewide, assuming the treatment of the same number of people, are estimated to include \$585.0 million in total annual expenditures, \$313.8 million in output (gross product), and 4,291 permanent jobs.** (See Appendix B for detailed sectoral results.)
- Sizable benefits would also be achieved by adopting the NorthSTAR model in large and mid-sized urban areas including \$210.8 million in yearly output and 2,883 jobs.
- **Expanding the NorthSTAR model to only large urban areas would likely result in a net increase of \$160.9 million in output per annum and 2,200 jobs.** Note that all monetary values are expressed in constant (2010) dollars and reflect anticipated service levels in 2011 (to approximately correspond with the legislative budget cycle).





- Additionally, the effects on local and State taxing authorities were estimated. **The gains in tax receipts (and reductions in fiscal outlays) from implementing Case 1 in all areas of the state include \$200.4 million to the State of Texas annually on a static basis and \$234.4 million when measured dynamically (accounting for the economic activity stimulated by the cost savings). Local government also benefits by about \$13.0 million per annum.**
- If implementation is restricted to **large and mid-sized areas**, the static and dynamic annual State revenue increases (and cost savings) are **\$134.6 million** and **\$157.5 million**, respectively, while local governments enjoy an additional **\$8.8 million**.
- If the expansion of the NorthSTAR model is restricted to **only large urban areas**, the State fiscal effect is **\$102.7 million** on a static



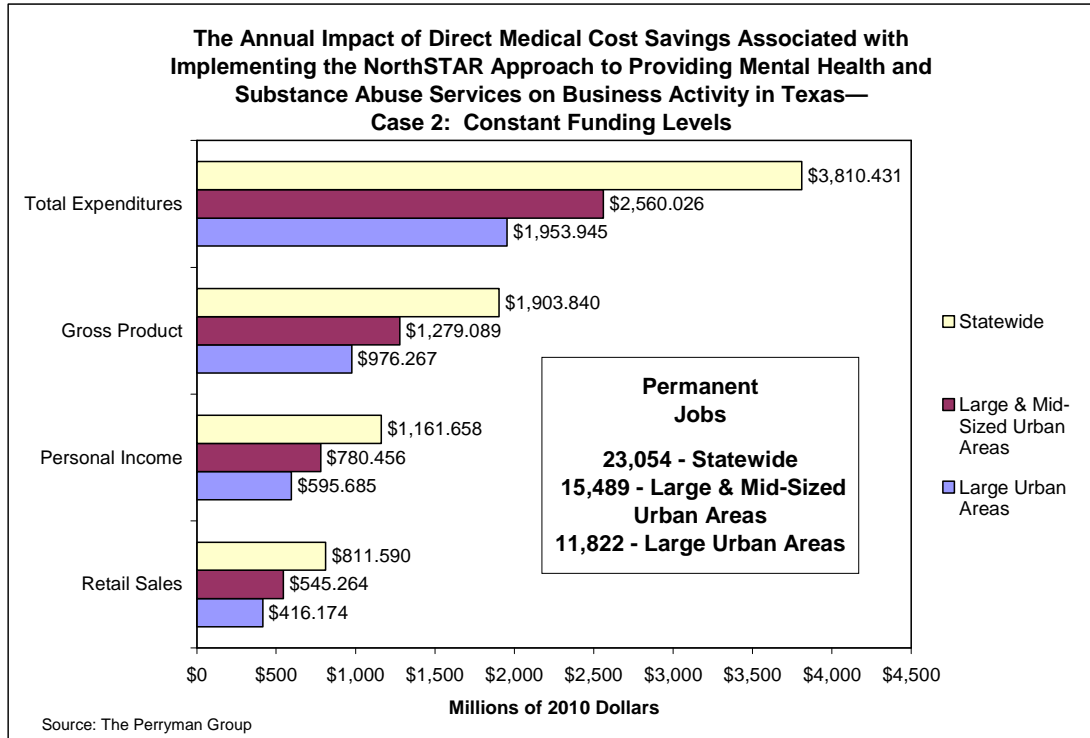
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basis and **\$120.2 million** per annum on a dynamic basis, while local taxing authorities see a yearly increment of **\$6.7 million**.

## Case 2: Constant Funding Levels

- The assumptions **under Case 2** (constant funding and enhanced coverage) produce even greater positive effects on the state economy. **An annual benefit associated with implementing NorthSTAR statewide under this scenario at the current funding level (adjusted for expected growth in the relevant population by 2011) is estimated to be \$3.8 billion in total expenditures. The state would also experience a \$1.9 billion stimulus in output (gross product) and 23,054 permanent jobs.** (For a more detailed analysis of Case 2 cost savings for the State, see Appendix B.)
- Implementing the NorthSTAR approach in **large and mid-sized urban areas could result in benefits totaling \$1.3 billion in output and 15,489 jobs.**
- Texas would realize an **increase of \$976.3 million in output through the adoption of NorthSTAR in only large urban areas under Case 2, as well as 11,822 jobs.**





- **Tax receipts and cost savings associated with Case 2 for the State would total \$585.2 million annually on a static basis and \$740.0 million as measured dynamically. Local governments also would receive aggregate yearly benefits of about \$63.9 million.**
- **If the expansion is limited to the large and mid-sized urban service areas, the static and dynamic increments to the State, respectively, are \$393.2 million and \$497.3 million, while local public entities receive approximately \$42.9 million.**
- **If only the largest urban regions are converted to the NorthSTAR model, the State government sees gains of \$300.1 million in a static context and \$379.5 million dynamically; local entities see increased resources of \$32.8 million per annum.**





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## ECONOMIC IMPACT OF IMPLEMENTING SPECIFIC PROGRAMS

- The Perryman Group also analyzed the **potential savings and resulting benefits stemming from implementation of particular aspects of the NorthSTAR system across the state:** the ValueOptions/NorthSTAR Dallas Pharmacy Program and the substance abuse treatment initiative. The results for these potential program initiatives are outlined below.

### Pharmacy Component

- **Prescription drugs are an increasingly large part of mental health treatment** as they have become more effective through medical breakthroughs. However, this has led to greater spending on prescription drugs, resulting in a larger portion of and strain on mental health budgets.
- For example, prescription drug spending grew by 18.8% annually between 1993 and 2003 and was responsible for 42.0% of the total mental health spending increase during that time.<sup>15</sup> While growth in spending for prescription drugs is forecast to slow as more generic medications come into the market, this segment of mental health treatment is still expected to grow at a much faster rate than overall mental health and substance abuse spending.<sup>16</sup>
- **Expanding the pharmacy component of the NorthSTAR program statewide could lead to sizable savings and corresponding economic gains.** The Perryman Group estimated the economic benefits of such an effort to include **\$164.3 million in**

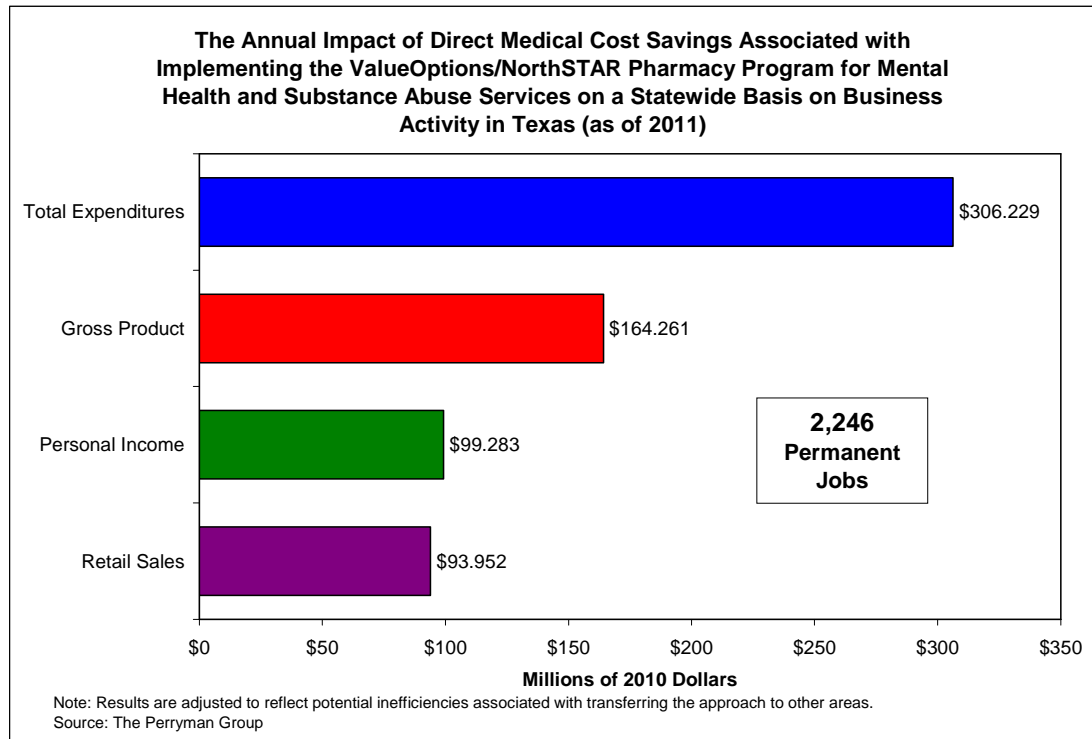
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<sup>15</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2007). *National expenditures for mental health services and substance abuse treatment 1993-2003*. Retrieved April 2, 2010, from <http://www.samhsa.gov/spendingestimates/toc.aspx>.

<sup>16</sup> Levit, K. R., et al. *Projections of national expenditures for mental health services and substance abuse treatment, 2004-2014*. SAMHSA Publication No. SMA 08-4326. Rockville, MD: Substance Abuse and Mental Health Services Administration. (2008).



output (gross product) each year and 2,246 jobs. (Refer to Appendix B for detailed results by sector.)



- For a pharmacy program and the associated medical cost savings, the **incremental net receipts to taxing authorities include \$104.9 million per annum to the State on a static basis, \$122.7 million on a dynamic basis, and \$6.8 million to local governments.**

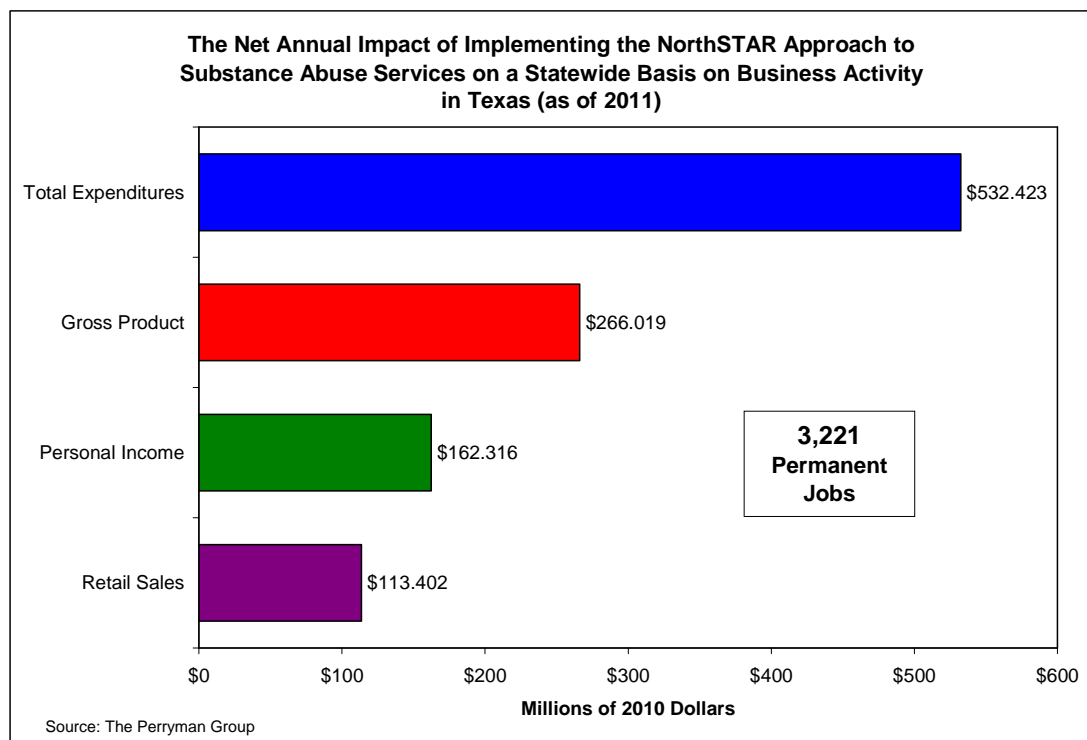
### Substance Abuse Component

- In 2008, more than 20 million adults suffered from drug or alcohol abuse in the US, while just 3.8 million had received substance use treatment during the previous year.<sup>17</sup>

<sup>17</sup> US Department of Health and Human Services. Substance Abuse and Mental Health Services Administration. (2009). *Results from the 2008 National Survey on Drug Use and Health: National Findings* (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD.



- Treatment for substance abuse comprises a significant component of spending for overall mental health. In addition, the social costs associated with substance abuse are sizable.
- **The statewide expansion of the NorthSTAR approach for substance abuse could lead to savings even larger than those associated with statewide implementation of the pharmacy component because of its direct effects on medical costs for comorbidities, homelessness, incarceration and other costs. The Perryman Group estimated the economic benefits of implementing a NorthSTAR approach to substance abuse across Texas to include \$266.0 million in output (gross product) each year and 3,221 jobs. (See Appendix B for more detailed results.)**



- The incremental business activity associated with statewide implementation of a NorthSTAR approach to substance abuse would generate incremental **static and dynamic fiscal receipts**



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**each year of an estimated \$81.8 million and \$103.4 million, respectively, to the State and \$8.9 million to local governments.**



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# Conclusion



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# Conclusion

- **The economic impact surrounding treatment for mental health and substance abuse, even beyond the human cost of such problems (which is enormous and defies measurement), is substantial.**
- With numerous spillover effects in the overall economy, including lost earning potential, coexisting condition costs, disability payments, homelessness, and incarceration, **inadequate treatment can put major strains on social services and have a severe negative impact on business activity.**
- Likewise, while it is impossible to remove all costs associated with mental health and substance abuse, **finding cost-effective methods to reduce the incidence and severity of mental health and substance abuse problems is an important endeavor that can improve the economy as well.**
- One way of strengthening mental health care while limiting associated costs is through **increasing the quality and efficiency of mechanisms that provide care to those in need.** People who have access to mental health care get better. According to the Department of State Health Services, 82% of adults who received mental health services in Texas in 2008 improved or stabilized.<sup>18</sup>
- **The NorthSTAR model has seen significant success over the past decade, expanding patient care while decreasing costs and eliminating waiting lists.** It also rates among the highest programs in the state in terms of effectiveness. In FY 2009, while the average

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<sup>18</sup> Years After Mental Health Overhaul, New Picture of Needs Emerging. *American-Statesman*. (2009, December 06).



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cash funding per enrollee across the state was \$3,502, the NorthSTAR service area average was \$1,795.

- **Expanding innovative models, like the NorthSTAR delivery system serving the Dallas area, could reduce the strain on the State budget, improve access to care for those in need, and benefit the Texas economy** through reducing the various costs associated with mental health and substance abuse problems.
- The economic rationale for expanding the NorthSTAR model of delivery is clear. In addition, ten years of history prove that **NorthSTAR is a viable mechanism which can increase efficiency of mental health delivery resulting in effective care for less cost.**



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# APPENDICES





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## APPENDIX A: Methodologies



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# Texas Econometric Model Methodology

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## Texas Econometric Model

- The models used in developing the baseline forecast for this analysis, which were used in projecting 2011 levels for the relevant populations and appropriate inflation adjustments, are formulated in an internally consistent manner and are designed to permit the integration of relevant global, national, state, and local factors into the projection process. They are the result of more than 30 years 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, and Texas economies.
- The remainder of this Technical Explanation 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 expanded version of the Texas Econometric Model, developed and maintained by The Perryman Group, revolves around a core system which projects output, income, 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 three-digit North American Industry Classification System (NAICS) level of aggregation. Hence, income by place of work is measured for approximately 70 distinct 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 three-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 interindustry 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, income, and employment at a disaggregated industrial level.
- Several other components of the model are critical to the multi-regional 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 age-cohort-survival 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 (from the age-cohort-survival model), 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



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- 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.
- 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.
  - 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. Nonetheless, the above synopsis offers a basic understanding of the overall structure and underlying logic of the system.

### **Model Simulation and Multi-Regional Structure**

- The initial phase of the simulation process is the execution of a standard non-linear algorithm for the state system and that of each of the individual sub-areas. The external assumptions are derived from scenarios developed through national and international models and extensive analysis by The Perryman Group.
- Once the initial simulations are completed, they are merged into a single system with additive constraints and interregional flows. Using information on minimum regional requirements, import needs, export potential, and locations, it becomes possible to balance the various forecasts into a mathematically consistent set of results. This process is, in effect, a disciplining exercise with regard to the individual regional (including metropolitan and rural) systems. By compelling equilibrium across all regions and sectors, the algorithm ensures that the patterns in state activity are reasonable in light of smaller area dynamics and, conversely, that the regional outlooks are within plausible performance levels for the state as a whole.
- The iterative simulation process has the additional property of imposing a global convergence criterion across the entire multi-regional system, with balance being achieved simultaneously on both a sectoral and a geographic basis. This approach is particularly critical on non-linear dynamic systems, as independent simulations of individual systems often yield unstable, non-convergent outcomes.
- It should be noted that the underlying data for the modeling and simulation process are frequently updated and revised by the various public and private entities compiling them. Whenever those modifications to the database occur, they bring corresponding changes to the structural parameter estimates of the various systems and the solutions to the simulation and forecasting system. The multi-regional version of the Texas Econometric Model is automatically re-estimated and



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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 the preliminary forecast. 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 “what’s happenin’” both across the state of Texas and elsewhere.
- This critical aspect of the forecasting methodology includes activities such as (1) daily review of key financial and business publications and electronic information sites; (2) review of 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 US 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



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is again balanced across regions and sectors through an iterative simulation algorithm analogous to that described in the preceding section.



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# US Multi-Regional Impact Assessment System Methodology





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## US Multi-Regional Impact Assessment System

- The basic modeling technique employed in this study is known as dynamic input-output analysis. This methodology essentially uses extensive survey data, industry information, and a variety of corroborative source materials to create a matrix describing the various goods and services (known as resources or inputs) required to produce one unit (a dollar's worth) of output for a given sector. Once the base information is compiled, it can be mathematically simulated to generate evaluations of the magnitude of successive rounds of activity involved in the overall production process.
- There are two essential steps in conducting an input-output analysis once the system is operational. The first major endeavor is to accurately define the levels of direct activity to be evaluated. The second step is the simulation of the input-output system to measure overall economic effects.
- The overall cost savings associated with NorthSTAR were derived based on funding and client data for all Local Mental Health Authorities in the state. As described in the report, adjustments were made for the potential lack of direct transferability across various areas. Adjustments were also made for the federal matching funds associated with Medicaid enrollees.
- The pharmacy savings were determined based on recent surveys of relative costs, again with an adjustment for efficiency and funding sources.
- The savings from substance abuse were derived from an analysis by the Legislative Budget Board, as well as academic studies related to costs savings and outcomes. Again, the appropriate funding and efficiency parameters were incorporated.
- Once the direct input values were determined (as described within the report), 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 system used in the current simulations reflects the unique industrial structure of the economies of the state of Texas.
- 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



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- 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 (2010) 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



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- (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.



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## APPENDIX B: Detailed Sectoral Results



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## Case 1: Constant Care Levels



**Table 1**  
**The Annual Impact (as of 2011) of Direct Medical Cost Savings Associated with Expanding the NorthSTAR Approach to Providing Mental Health and Substance Abuse Services on Business Activity in Texas: Assuming Maintaining Current Service Levels and Implementing in All Urban and Rural Areas of the State**  
**Results by Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)*
Agricultural Products & Services	\$10,288,537	\$2,730,185	\$1,859,407	33
Forestry & Fishery Products	\$249,934	\$239,869	\$88,963	1
Coal Mining	\$1,100,483	\$317,987	\$335,084	2
Crude Petroleum & Natural Gas	\$21,366,653	\$4,679,563	\$2,158,209	11
Miscellaneous Mining	\$447,664	\$195,167	\$114,729	1
New Construction	\$3,295,122	\$1,442,013	\$1,188,310	19
Maintenance & Repair Construction	\$12,826,785	\$6,910,208	\$5,694,443	88
Food Products & Tobacco	\$20,460,894	\$5,272,736	\$2,693,564	49
Textile Mill Products	\$292,482	\$69,308	\$58,641	1
Apparel	\$4,028,676	\$2,237,741	\$1,133,898	34
Paper & Allied Products	\$3,916,934	\$1,741,257	\$787,210	13
Printing & Publishing	\$7,140,922	\$3,641,902	\$2,377,152	44
Chemicals & Petroleum Refining	\$21,140,327	\$3,458,525	\$1,623,976	13
Rubber & Leather Products	\$2,903,499	\$1,250,195	\$730,860	16
Lumber Products & Furniture	\$1,788,498	\$633,962	\$451,979	10
Stone, Clay, & Glass Products	\$2,773,451	\$1,455,261	\$761,107	13
Primary Metal	\$1,865,820	\$520,859	\$387,701	6
Fabricated Metal Products	\$3,870,526	\$1,437,144	\$927,824	17
Machinery, Except Electrical	\$3,120,678	\$1,267,771	\$905,701	10
Electric & Electronic Equipment	\$3,650,478	\$2,066,495	\$1,235,422	11
Motor Vehicles & Equipment	\$1,659,013	\$356,194	\$231,407	3
Transp. Equip., Exc. Motor Vehicles	\$898,441	\$409,797	\$267,786	3
Instruments & Related Products	\$728,291	\$309,649	\$235,362	3
Miscellaneous Manufacturing	\$1,641,366	\$651,483	\$449,334	8
Transportation	\$16,888,795	\$11,459,268	\$7,578,754	115
Communication	\$21,601,711	\$13,230,677	\$5,648,599	55
Electric, Gas, Water, Sanitary Services	\$32,190,184	\$7,298,802	\$3,185,003	15
Wholesale Trade	\$28,569,691	\$19,332,923	\$11,147,537	137
Retail Trade	\$144,945,709	\$120,108,354	\$71,820,957	2,081
Finance	\$8,737,034	\$4,787,852	\$2,787,980	27
Insurance	\$16,569,597	\$11,315,151	\$6,764,640	89
Real Estate	\$63,744,043	\$11,712,734	\$1,887,176	18
Hotels, Lodging Places, Amusements	\$10,239,908	\$5,144,153	\$3,374,743	91
Personal Services	\$11,728,879	\$7,185,822	\$5,590,689	104
Business Services	\$28,814,502	\$18,467,080	\$15,064,407	202
Eating & Drinking Places	\$34,549,253	\$20,239,579	\$10,768,534	538
Health Services	\$18,017,480	\$12,582,133	\$10,638,309	194
Miscellaneous Services	\$16,239,022	\$6,901,253	\$5,982,812	158
Households	\$758,208	\$758,208	\$742,163	56
<b>Total</b>	<b>\$585,049,489</b>	<b>\$313,819,262</b>	<b>\$189,680,371</b>	<b>4,291</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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



**Table 2**  
**The Annual Impact (as of 2011) of Direct Medical Cost Savings Associated with Expanding the NorthSTAR Approach to Providing Mental Health and Substance Abuse Services on Business Activity in Texas: Assuming Maintaining Current Service Levels and Implementing Only in Large and Mid-Sized Urban Areas Where the Population Base Served by the Local Mental Health Authority (LMHA) Exceeds 700,000 Persons Results by Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)*
Agricultural Products & Services	\$6,912,323	\$1,834,266	\$1,249,237	22
Forestry & Fishery Products	\$167,918	\$161,155	\$59,770	1
Coal Mining	\$739,356	\$213,639	\$225,125	2
Crude Petroleum & Natural Gas	\$14,355,121	\$3,143,950	\$1,449,986	8
Miscellaneous Mining	\$300,762	\$131,123	\$77,080	1
New Construction	\$2,213,818	\$968,812	\$798,362	12
Maintenance & Repair Construction	\$8,617,637	\$4,642,602	\$3,825,794	59
Food Products & Tobacco	\$13,746,589	\$3,542,472	\$1,809,663	33
Textile Mill Products	\$196,503	\$46,564	\$39,398	1
Apparel	\$2,706,654	\$1,503,420	\$761,806	23
Paper & Allied Products	\$2,631,580	\$1,169,859	\$528,885	9
Printing & Publishing	\$4,797,607	\$2,446,801	\$1,597,083	30
Chemicals & Petroleum Refining	\$14,203,065	\$2,323,599	\$1,091,064	9
Rubber & Leather Products	\$1,950,707	\$839,940	\$491,026	10
Lumber Products & Furniture	\$1,201,597	\$425,926	\$303,661	7
Stone, Clay, & Glass Products	\$1,863,334	\$977,712	\$511,347	9
Primary Metal	\$1,253,545	\$349,938	\$260,476	4
Fabricated Metal Products	\$2,600,401	\$965,541	\$623,356	12
Machinery, Except Electrical	\$2,096,618	\$851,748	\$608,492	7
Electric & Electronic Equipment	\$2,452,562	\$1,388,368	\$830,015	7
Motor Vehicles & Equipment	\$1,114,603	\$239,308	\$155,470	2
Transp. Equip., Exc. Motor Vehicles	\$603,615	\$275,321	\$179,911	2
Instruments & Related Products	\$489,300	\$208,037	\$158,127	2
Miscellaneous Manufacturing	\$1,102,747	\$437,697	\$301,884	5
Transportation	\$11,346,686	\$7,698,874	\$5,091,763	77
Communication	\$14,513,044	\$8,888,990	\$3,794,994	37
Electric, Gas, Water, Sanitary Services	\$21,626,877	\$4,903,678	\$2,139,834	10
Wholesale Trade	\$19,194,461	\$12,988,766	\$7,489,439	92
Retail Trade	\$97,381,335	\$80,694,434	\$48,252,692	1,398
Finance	\$5,869,950	\$3,216,704	\$1,873,096	18
Insurance	\$11,132,233	\$7,602,050	\$4,544,803	60
Real Estate	\$42,826,242	\$7,869,165	\$1,267,893	12
Hotels, Lodging Places, Amusements	\$6,879,651	\$3,456,084	\$2,267,311	61
Personal Services	\$7,880,012	\$4,827,773	\$3,756,087	70
Business Services	\$19,358,936	\$12,407,052	\$10,120,976	136
Eating & Drinking Places	\$23,211,811	\$13,597,900	\$7,234,807	361
Health Services	\$12,104,990	\$8,453,268	\$7,147,316	130
Miscellaneous Services	\$10,910,137	\$4,636,586	\$4,019,534	106
Households	\$509,400	\$509,400	\$498,620	38
<b>Total</b>	<b>\$393,063,727</b>	<b>\$210,838,520</b>	<b>\$127,436,183</b>	<b>2,883</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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



**Table 3**  
**The Annual Impact (as of 2011) of Direct Medical Cost Savings Associated with Expanding the NorthSTAR Approach to Providing Mental Health and Substance Abuse Services on Business Activity in Texas: Assuming Maintaining Current Service Levels and Implementing Only in Large Urban Areas Where the Population Base Served by the Local Mental Health Authority (LMHA) Exceeds 1,000,000 Persons Results by Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)*
Agricultural Products & Services	\$5,275,845	\$1,400,008	\$953,483	17
Forestry & Fishery Products	\$128,164	\$123,002	\$45,619	1
Coal Mining	\$564,315	\$163,060	\$171,827	1
Crude Petroleum & Natural Gas	\$10,956,576	\$2,399,627	\$1,106,705	6
Miscellaneous Mining	\$229,557	\$100,080	\$58,832	1
New Construction	\$1,689,701	\$739,448	\$609,352	9
Maintenance & Repair Construction	\$6,577,429	\$3,543,476	\$2,920,045	45
Food Products & Tobacco	\$10,492,113	\$2,703,799	\$1,381,229	25
Textile Mill Products	\$149,981	\$35,540	\$30,070	1
Apparel	\$2,065,859	\$1,147,488	\$581,450	17
Paper & Allied Products	\$2,008,559	\$892,897	\$403,672	6
Printing & Publishing	\$3,661,783	\$1,867,526	\$1,218,977	23
Chemicals & Petroleum Refining	\$10,840,519	\$1,773,492	\$832,757	7
Rubber & Leather Products	\$1,488,881	\$641,086	\$374,777	8
Lumber Products & Furniture	\$917,121	\$325,089	\$231,770	5
Stone, Clay, & Glass Products	\$1,422,194	\$746,241	\$390,287	7
Primary Metal	\$956,771	\$267,091	\$198,809	3
Fabricated Metal Products	\$1,984,761	\$736,951	\$475,777	9
Machinery, Except Electrical	\$1,600,248	\$650,098	\$464,433	5
Electric & Electronic Equipment	\$1,871,923	\$1,059,675	\$633,510	6
Motor Vehicles & Equipment	\$850,723	\$182,652	\$118,663	2
Transp. Equip., Exc. Motor Vehicles	\$460,711	\$210,139	\$137,318	2
Instruments & Related Products	\$373,459	\$158,785	\$120,691	2
Miscellaneous Manufacturing	\$841,674	\$334,073	\$230,413	4
Transportation	\$8,660,382	\$5,876,182	\$3,886,299	59
Communication	\$11,077,112	\$6,784,541	\$2,896,537	28
Electric, Gas, Water, Sanitary Services	\$16,506,760	\$3,742,743	\$1,633,233	7
Wholesale Trade	\$14,650,212	\$9,913,703	\$5,716,330	70
Retail Trade	\$74,326,509	\$61,590,197	\$36,828,969	1,067
Finance	\$4,480,252	\$2,455,156	\$1,429,644	14
Insurance	\$8,496,701	\$5,802,281	\$3,468,830	46
Real Estate	\$32,687,220	\$6,006,157	\$967,722	9
Hotels, Lodging Places, Amusements	\$5,250,908	\$2,637,863	\$1,730,530	46
Personal Services	\$6,014,435	\$3,684,808	\$2,866,842	53
Business Services	\$14,775,749	\$9,469,708	\$7,724,856	104
Eating & Drinking Places	\$17,716,464	\$10,378,626	\$5,521,982	276
Health Services	\$9,239,159	\$6,451,975	\$5,455,204	99
Miscellaneous Services	\$8,327,185	\$3,538,884	\$3,067,918	81
Households	\$388,800	\$388,800	\$380,573	29
<b>Total</b>	<b>\$300,006,718</b>	<b>\$160,922,945</b>	<b>\$97,265,935</b>	<b>2,200</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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





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## Case 2: Constant Funding Levels



**Table 4**  
**The Annual Impact (as of 2011) of Direct Medical Cost Savings Associated with Expanding the NorthSTAR Approach to Providing Mental Health and Substance Abuse Services on Business Activity in Texas: Assuming Maintaining Current Funding Levels and Expanding Coverage and Implementing in all Urban and Rural Areas of the State Results by Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)*
Agricultural Products & Services	\$56,563,023	\$16,708,173	\$10,787,286	186
Forestry & Fishery Products	\$3,193,004	\$1,369,570	\$483,924	8
Coal Mining	\$6,537,371	\$1,850,179	\$1,987,910	15
Crude Petroleum & Natural Gas	\$276,896,660	\$101,318,210	\$41,982,352	132
Miscellaneous Mining	\$3,334,964	\$1,512,558	\$1,069,754	14
New Construction	\$61,225,195	\$28,644,138	\$23,101,604	301
Maintenance & Repair Construction	\$70,819,491	\$41,294,094	\$33,694,584	485
Food Products & Tobacco	\$115,980,885	\$29,457,783	\$15,093,816	277
Textile Mill Products	\$1,661,110	\$389,577	\$332,441	8
Apparel	\$18,485,529	\$10,215,763	\$5,193,571	157
Paper & Allied Products	\$19,229,719	\$8,359,375	\$3,910,267	64
Printing & Publishing	\$37,205,478	\$19,822,428	\$12,596,597	212
Chemicals & Petroleum Refining	\$232,998,614	\$52,072,303	\$29,810,382	100
Rubber & Leather Products	\$19,220,796	\$8,370,463	\$5,146,409	93
Lumber Products & Furniture	\$11,681,626	\$4,288,842	\$3,140,842	68
Stone, Clay, & Glass Products	\$15,607,425	\$8,278,775	\$4,569,368	70
Primary Metal	\$13,876,969	\$4,035,566	\$3,243,266	36
Fabricated Metal Products	\$28,740,065	\$12,042,084	\$7,975,097	129
Machinery, Except Electrical	\$36,380,412	\$13,588,514	\$10,629,834	90
Electric & Electronic Equipment	\$30,746,194	\$16,624,787	\$11,493,008	93
Motor Vehicles & Equipment	\$14,747,864	\$4,119,362	\$2,553,613	32
Transp. Equip., Exc. Motor Vehicles	\$8,893,891	\$4,388,204	\$2,886,010	42
Instruments & Related Products	\$5,115,556	\$1,902,287	\$1,577,819	20
Miscellaneous Manufacturing	\$8,858,792	\$3,206,779	\$2,588,358	37
Transportation	\$108,978,102	\$73,061,981	\$49,193,632	700
Communication	\$113,483,203	\$72,288,055	\$31,586,922	301
Electric, Gas, Water, Sanitary Services	\$260,301,409	\$57,103,757	\$25,748,022	96
Wholesale Trade	\$158,218,022	\$113,310,296	\$66,394,070	768
Retail Trade	\$616,364,108	\$513,029,011	\$307,586,668	8,825
Finance	\$74,715,867	\$39,067,304	\$25,943,244	263
Insurance	\$72,380,344	\$46,886,755	\$28,010,978	401
Real Estate	\$514,853,672	\$103,399,312	\$17,011,322	169
Hotels, Lodging Places, Amusements	\$58,083,837	\$29,788,103	\$19,923,297	502
Personal Services	\$79,962,070	\$49,685,427	\$38,701,795	736
Business Services	\$206,009,222	\$139,248,776	\$119,308,096	1,471
Eating & Drinking Places	\$195,225,795	\$115,524,580	\$61,887,405	3,166
Health Services	\$142,532,313	\$106,003,522	\$89,625,341	1,608
Miscellaneous Services	\$106,586,050	\$46,846,914	\$40,541,175	1,071
Households	\$4,735,945	\$4,735,945	\$4,347,692	305
<b>Total</b>	<b>\$3,810,430,594</b>	<b>\$1,903,839,554</b>	<b>\$1,161,657,771</b>	<b>23,054</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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



**Table 5**  
**The Annual Impact (as of 2011) of Direct Medical Cost Savings Associated**  
**with Expanding the NorthSTAR Approach to Providing Mental Health and**  
**Substance Abuse Services on Business Activity in Texas:**  
**Assuming Current Funding Levels are Maintained and Coverage is Expanding**  
**and Implementing Only in Large and Mid-Sized Urban Areas Where the**  
**Population Base Served by the Local Mental Health Authority (LMHA) Exceeds**  
**700,000 Persons**  
**Results by Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)*
Agricultural Products & Services	\$38,001,695	\$11,225,335	\$7,247,406	125
Forestry & Fishery Products	\$2,145,210	\$920,142	\$325,123	6
Coal Mining	\$4,392,113	\$1,243,037	\$1,335,571	10
Crude Petroleum & Natural Gas	\$186,032,182	\$68,070,332	\$28,205,716	89
Miscellaneous Mining	\$2,240,585	\$1,016,207	\$718,711	10
New Construction	\$41,133,962	\$19,244,477	\$15,520,742	202
Maintenance & Repair Construction	\$47,579,860	\$27,743,312	\$22,637,604	326
Food Products & Tobacco	\$77,921,406	\$19,791,122	\$10,140,735	186
Textile Mill Products	\$1,116,012	\$261,736	\$223,349	5
Apparel	\$12,419,447	\$6,863,429	\$3,489,285	106
Paper & Allied Products	\$12,919,428	\$5,616,221	\$2,627,101	43
Printing & Publishing	\$24,996,388	\$13,317,638	\$8,462,985	142
Chemicals & Petroleum Refining	\$156,539,413	\$34,984,619	\$20,028,015	67
Rubber & Leather Products	\$12,913,433	\$5,623,671	\$3,457,599	62
Lumber Products & Furniture	\$7,848,265	\$2,881,445	\$2,110,165	46
Stone, Clay, & Glass Products	\$10,485,801	\$5,562,070	\$3,069,916	47
Primary Metal	\$9,323,200	\$2,711,283	\$2,178,978	24
Fabricated Metal Products	\$19,308,925	\$8,090,438	\$5,358,045	87
Machinery, Except Electrical	\$24,442,070	\$9,129,402	\$7,141,622	61
Electric & Electronic Equipment	\$20,656,738	\$11,169,313	\$7,721,543	63
Motor Vehicles & Equipment	\$9,908,308	\$2,767,581	\$1,715,637	22
Transp. Equip., Exc. Motor Vehicles	\$5,975,333	\$2,948,202	\$1,938,957	28
Instruments & Related Products	\$3,436,871	\$1,278,045	\$1,060,053	14
Miscellaneous Manufacturing	\$5,951,753	\$2,154,465	\$1,738,980	25
Transportation	\$73,216,608	\$49,086,471	\$33,050,593	470
Communication	\$76,243,346	\$48,566,511	\$21,221,578	203
Electric, Gas, Water, Sanitary Services	\$174,882,713	\$38,364,986	\$17,298,731	64
Wholesale Trade	\$106,298,299	\$76,127,179	\$44,606,655	516
Retail Trade	\$414,102,358	\$344,676,987	\$206,651,171	5,929
Finance	\$50,197,629	\$26,247,250	\$17,429,890	177
Insurance	\$48,628,515	\$31,500,724	\$18,819,091	269
Real Estate	\$345,902,880	\$69,468,515	\$11,429,005	114
Hotels, Lodging Places, Amusements	\$39,023,450	\$20,013,047	\$13,385,406	337
Personal Services	\$53,722,275	\$33,381,003	\$26,001,684	494
Business Services	\$138,406,672	\$93,553,869	\$80,156,783	988
Eating & Drinking Places	\$131,161,859	\$77,614,839	\$41,578,866	2,127
Health Services	\$95,759,903	\$71,218,145	\$60,214,514	1,081
Miscellaneous Services	\$71,609,515	\$31,473,957	\$27,237,466	719
Households	\$3,181,830	\$3,181,830	\$2,920,984	205
<b>Total</b>	<b>\$2,560,026,250</b>	<b>\$1,279,088,836</b>	<b>\$780,456,254</b>	<b>15,489</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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



**Table 6**  
**The Annual Impact (as of 2011) of Direct Medical Cost Savings Associated with Expanding the NorthSTAR Approach to Providing Mental Health and Substance Abuse Services on Business Activity in Texas: Assuming Maintaining Current Funding Levels and Expanding Coverage and Implementing Only in Large Urban Areas Where the Population Base Served by the Local Mental Health Authority (LMHA) Exceeds 1,000,000 Persons Results by Detailed Industrial Category**

<b>Category</b>	<b>Total Expenditures (2010 Dollars)*</b>	<b>Gross Product (2010 Dollars)*</b>	<b>Personal Income (2010 Dollars)*</b>	<b>Employment (Permanent Jobs)*</b>
Agricultural Products & Services	\$29,004,874	\$8,567,761	\$5,531,598	95
Forestry & Fishery Products	\$1,637,336	\$702,300	\$248,151	4
Coal Mining	\$3,352,290	\$948,751	\$1,019,377	8
Crude Petroleum & Natural Gas	\$141,989,455	\$51,954,824	\$21,528,072	68
Miscellaneous Mining	\$1,710,131	\$775,623	\$548,558	7
New Construction	\$31,395,583	\$14,688,388	\$11,846,239	155
Maintenance & Repair Construction	\$36,315,429	\$21,175,141	\$17,278,199	249
Food Products & Tobacco	\$59,473,677	\$15,105,616	\$7,739,937	142
Textile Mill Products	\$851,799	\$199,771	\$170,472	4
Apparel	\$9,479,169	\$5,238,527	\$2,663,204	81
Paper & Allied Products	\$9,860,781	\$4,286,593	\$2,005,140	33
Printing & Publishing	\$19,078,546	\$10,164,715	\$6,459,391	109
Chemicals & Petroleum Refining	\$119,479,037	\$26,702,084	\$15,286,424	51
Rubber & Leather Products	\$9,856,205	\$4,292,278	\$2,639,020	48
Lumber Products & Furniture	\$5,990,205	\$2,199,269	\$1,610,588	35
Stone, Clay, & Glass Products	\$8,003,310	\$4,245,262	\$2,343,120	36
Primary Metal	\$7,115,952	\$2,069,392	\$1,663,110	18
Fabricated Metal Products	\$14,737,578	\$6,175,044	\$4,089,539	66
Machinery, Except Electrical	\$18,655,461	\$6,968,036	\$5,450,858	46
Electric & Electronic Equipment	\$15,766,298	\$8,525,001	\$5,893,484	48
Motor Vehicles & Equipment	\$7,562,537	\$2,112,362	\$1,309,464	17
Transp. Equip., Exc. Motor Vehicles	\$4,560,686	\$2,250,221	\$1,479,913	22
Instruments & Related Products	\$2,623,199	\$975,471	\$809,088	10
Miscellaneous Manufacturing	\$4,542,688	\$1,644,400	\$1,327,280	19
Transportation	\$55,882,730	\$37,465,352	\$25,225,934	359
Communication	\$58,192,895	\$37,068,492	\$16,197,414	155
Electric, Gas, Water, Sanitary Services	\$133,479,600	\$29,282,157	\$13,203,293	49
Wholesale Trade	\$81,132,401	\$58,104,230	\$34,046,123	394
Retail Trade	\$316,064,498	\$263,075,437	\$157,726,942	4,526
Finance	\$38,313,446	\$20,033,269	\$13,303,400	135
Insurance	\$37,115,816	\$24,042,994	\$14,363,711	206
Real Estate	\$264,011,102	\$53,021,990	\$8,723,212	87
Hotels, Lodging Places, Amusements	\$29,784,731	\$15,275,000	\$10,216,440	257
Personal Services	\$41,003,639	\$25,478,121	\$19,845,840	377
Business Services	\$105,639,184	\$71,405,187	\$61,179,834	754
Eating & Drinking Places	\$100,109,565	\$59,239,690	\$31,735,157	1,624
Health Services	\$73,088,948	\$54,357,399	\$45,958,855	825
Miscellaneous Services	\$54,656,113	\$24,022,564	\$20,789,053	549
Households	\$2,428,539	\$2,428,539	\$2,229,447	156
<b>Total</b>	<b>\$1,953,945,432</b>	<b>\$976,267,251</b>	<b>\$595,684,881</b>	<b>11,822</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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



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## Pharmacy Component



**Table 7**  
**The Annual Impact of Direct Medical Cost Savings Associated with**  
**Implementing the ValueOptions/NorthSTAR Pharmacy Program for Mental**  
**Health and Substance Abuse Services on Business Activity in Texas**  
**(as of 2011)—Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)
Agricultural Products & Services	\$5,385,272	\$1,429,045	\$973,259	17
Forestry & Fishery Products	\$130,822	\$125,553	\$46,566	1
Coal Mining	\$576,019	\$166,442	\$175,391	1
Crude Petroleum & Natural Gas	\$11,183,828	\$2,449,398	\$1,129,659	6
Miscellaneous Mining	\$234,318	\$102,155	\$60,052	1
New Construction	\$1,724,747	\$754,785	\$621,990	10
Maintenance & Repair Construction	\$6,713,853	\$3,616,972	\$2,980,611	46
Food Products & Tobacco	\$10,709,732	\$2,759,879	\$1,409,877	26
Textile Mill Products	\$153,092	\$36,277	\$30,694	1
Apparel	\$2,108,707	\$1,171,289	\$593,510	18
Paper & Allied Products	\$2,050,219	\$911,417	\$412,045	7
Printing & Publishing	\$3,737,733	\$1,906,260	\$1,244,260	23
Chemicals & Petroleum Refining	\$11,065,364	\$1,810,276	\$850,029	7
Rubber & Leather Products	\$1,519,762	\$654,383	\$382,550	8
Lumber Products & Furniture	\$936,144	\$331,831	\$236,577	5
Stone, Clay, & Glass Products	\$1,451,692	\$761,719	\$398,382	7
Primary Metal	\$976,616	\$272,630	\$202,932	3
Fabricated Metal Products	\$2,025,928	\$752,237	\$485,646	9
Machinery, Except Electrical	\$1,633,439	\$663,582	\$474,066	5
Electric & Electronic Equipment	\$1,910,749	\$1,081,654	\$646,650	6
Motor Vehicles & Equipment	\$868,368	\$186,441	\$121,124	2
Transp. Equip., Exc. Motor Vehicles	\$470,266	\$214,498	\$140,166	2
Instruments & Related Products	\$381,205	\$162,078	\$123,194	2
Miscellaneous Manufacturing	\$859,131	\$341,002	\$235,192	4
Transportation	\$8,840,008	\$5,998,061	\$3,966,905	60
Communication	\$11,306,864	\$6,925,260	\$2,956,615	29
Electric, Gas, Water, Sanitary Services	\$16,849,129	\$3,820,371	\$1,667,108	8
Wholesale Trade	\$14,954,074	\$10,119,324	\$5,834,893	72
Retail Trade	\$75,868,125	\$62,867,647	\$37,592,843	1,089
Finance	\$4,573,177	\$2,506,079	\$1,459,297	14
Insurance	\$8,672,932	\$5,922,627	\$3,540,778	47
Real Estate	\$33,365,190	\$6,130,731	\$987,794	9
Hotels, Lodging Places, Amusements	\$5,359,818	\$2,692,576	\$1,766,423	47
Personal Services	\$6,139,182	\$3,761,235	\$2,926,303	54
Business Services	\$15,082,214	\$9,666,121	\$7,885,079	106
Eating & Drinking Places	\$18,083,923	\$10,593,890	\$5,636,514	281
Health Services	\$9,430,789	\$6,585,796	\$5,568,351	101
Miscellaneous Services	\$8,499,901	\$3,612,285	\$3,131,550	82
Households	\$396,864	\$396,864	\$388,466	29
<b>Total</b>	<b>\$306,229,197</b>	<b>\$164,260,669</b>	<b>\$99,283,341</b>	<b>2,246</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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



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## Substance Abuse Component



**Table 8**  
**The Net Annual Impact of Implementing the NorthSTAR Approach to Substance Abuse Services on a Statewide Basis on Business Activity in Texas (as of 2011)—Detailed Industrial Category**

Category	Total Expenditures (2010 Dollars)*	Gross Product (2010 Dollars)*	Personal Income (2010 Dollars)*	Employment (Permanent Jobs)
Agricultural Products & Services	\$7,903,418	\$2,334,594	\$1,507,282	26
Forestry & Fishery Products	\$446,151	\$191,367	\$67,618	1
Coal Mining	\$913,452	\$258,521	\$277,766	2
Crude Petroleum & Natural Gas	\$38,690,119	\$14,156,955	\$5,866,095	18
Miscellaneous Mining	\$465,987	\$211,346	\$149,474	2
New Construction	\$8,554,853	\$4,002,378	\$3,227,933	42
Maintenance & Repair Construction	\$9,895,441	\$5,769,927	\$4,708,065	68
Food Products & Tobacco	\$16,205,736	\$4,116,067	\$2,109,023	39
Textile Mill Products	\$232,103	\$54,435	\$46,451	1
Apparel	\$2,582,940	\$1,427,425	\$725,685	22
Paper & Allied Products	\$2,686,923	\$1,168,036	\$546,372	9
Printing & Publishing	\$5,198,634	\$2,769,741	\$1,760,093	30
Chemicals & Petroleum Refining	\$32,556,349	\$7,275,940	\$4,165,335	14
Rubber & Leather Products	\$2,685,677	\$1,169,585	\$719,096	13
Lumber Products & Furniture	\$1,632,246	\$599,270	\$438,862	10
Stone, Clay, & Glass Products	\$2,180,789	\$1,156,774	\$638,467	10
Primary Metal	\$1,938,996	\$563,880	\$453,174	5
Fabricated Metal Products	\$4,015,782	\$1,682,612	\$1,114,342	18
Machinery, Except Electrical	\$5,083,350	\$1,898,691	\$1,485,282	13
Electric & Electronic Equipment	\$4,296,093	\$2,322,942	\$1,605,891	13
Motor Vehicles & Equipment	\$2,060,684	\$575,589	\$356,810	5
Transp. Equip., Exc. Motor Vehicles	\$1,242,722	\$613,153	\$403,255	6
Instruments & Related Products	\$714,785	\$265,802	\$220,465	3
Miscellaneous Manufacturing	\$1,237,818	\$448,076	\$361,665	5
Transportation	\$15,227,254	\$10,208,779	\$6,873,711	98
Communication	\$15,856,741	\$10,100,640	\$4,413,566	42
Electric, Gas, Water, Sanitary Services	\$36,371,304	\$7,978,974	\$3,597,711	13
Wholesale Trade	\$22,107,432	\$15,832,581	\$9,277,087	107
Retail Trade	\$86,123,108	\$71,684,338	\$42,978,362	1,233
Finance	\$10,439,873	\$5,458,783	\$3,624,988	37
Insurance	\$10,113,535	\$6,551,376	\$3,913,908	56
Real Estate	\$71,939,293	\$14,447,743	\$2,376,952	24
Hotels, Lodging Places, Amusements	\$8,115,918	\$4,162,222	\$2,783,835	70
Personal Services	\$11,172,912	\$6,942,428	\$5,407,711	103
Business Services	\$28,785,184	\$19,456,904	\$16,670,640	206
Eating & Drinking Places	\$27,278,441	\$16,141,978	\$8,647,382	442
Health Services	\$19,915,705	\$14,811,623	\$12,523,138	225
Miscellaneous Services	\$14,893,018	\$6,545,809	\$5,664,723	150
Households	\$661,742	\$661,742	\$607,493	43
<b>Total</b>	<b>\$532,422,510</b>	<b>\$266,019,026</b>	<b>\$162,315,710</b>	<b>3,221</b>

\*Results are adjusted to reflect potential inefficiencies associated with transferring the approach to other areas.

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

