



The Perryman Group

The Economic Outlook for Texas and the Permian Basin: Projected Recession and Recovery from COVID-19 April 2020

Drastic, but necessary, measures to “flatten the curve” and prevent a major spike in COVID-19 infections have involved shutting down much of the economy. The inevitable result has been the loss of millions of jobs and a sudden and unprecedented downturn.

Massive layoffs and talk of double-digit unemployment have led to ubiquitous comparisons to the Great Depression. These assertions are simply wrong! Prior to the Great Depression, there were massive structural problems in the economy, and policy responses were less well understood. The current situation emanates from a horrific pandemic, but the economic structure was basically sound as we entered this situation.

Aggressive actions are being taken by the Federal Reserve, the federal government, and states and local areas across the country to help mitigate the economic damage. Assuming the underlying structure remains essentially in place, the downturn, while sharp and painful, will likely be more of a pause than a fundamental change. There will certainly be permanent changes in many aspects of the economy, some of them major, but the overall size and scope of

activity should return to essentially its prior path in the coming years.

TEXAS ECONOMIC OUTLOOK

The Perryman Group’s most recent projections incorporate the potential effects of COVID-19. For Texas, the negative effects of COVID-19 have been compounded by turmoil in energy markets, with a price war between Saudi Arabia and Russia causing an increase in supply even as demand dwindled with COVID-19 disruptions. Although recent agreements have reduced global oil production, the market remains oversupplied and prices have fallen dramatically.

The Perryman Group’s forecast for Texas indicates losses this year of a projected 861,000 jobs (a 6.48% decrease) and \$133.8 billion in output (real gross domestic product), which is a 7.6% decline. For 2021, the state is forecast to add almost 685,000 jobs for a 5.51% gain, with an increase in output of \$154.4 billion (9.5% growth). Projections indicate that employment does not get back to 2019 levels until 2022, with about two to five years required to achieve pre-virus baseline expectation (assuming no additional shutdowns are required).

State of Texas Wage & Salary Employment Change from Pre-Virus Projections

Results by industry sector

Industry Sector	Change
Agriculture	-6,441
Mining	-95,959
Utilities	-5,003
Construction	-49,551
Manufacturing	-120,938
Wholesale Trade	-49,604
Retail Trade	-178,945
Transportation and Warehousing	-54,926
Information	-22,614
Finance and Insurance	-24,602
Real Estate and Rental/Leasing	-8,757
Professional, Scientific, Technical Services	-36,701
Management of Companies	-9,191
Administrative, Support, Waste Management	-34,568
Educational Services	-14,956
Health Care and Social Assistance	+3,436
Arts, Entertainment, and Recreation	-41,282
Accommodation and Food Services	-301,917
Other Services	-64,769
Government and Government Enterprises	+5,565
Total, All Industries	-1,111,724

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Components may not sum due to rounding.

PERMIAN BASIN ECONOMIC OUTLOOK

Obviously, the rapid decline in energy demand has magnified the effects of COVID-19 in the Permian Basin. In the midst of the oil market turmoil, unfavorable comparisons to the 1980s oil bust are inevitably being drawn. However, the current situation is completely different. In the 1980s, prices fell and did not recover for an extended period of time due to massive structural problems in the market, Cold War geopolitics, and a weak economy (from the savings and loan and real estate collapse) which exacerbated a growing oversupply situation.

By contrast, the current situation is caused by a health crisis that rapidly shuttered much of the world economy. There were no major structural problems prior to COVID-19, and once the economy can reopen, a substantial portion of global oil consumption should resume quickly. In fact, with the recent OPEC++ agreement and the related effects of bringing fewer wells online in the US and elsewhere, only about half of the lost demand must be restored to facilitate a more orderly market.

State of Texas Economic Outlook through 2021

Results by key economic indicator

Economic Indicator	Loss in 2020		Recovery in 2021	
	Absolute	Percent	Absolute	Percent
Nominal Gross Product	-\$78.6 b	-4.11%	+\$204.3 b	+11.13%
Real Gross Product	-\$133.8 b	-7.60%	+\$154.4 b	+9.50%
Total Employment	-860,967	-6.48%	+684,793	+5.51%

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Monetary values given in billions of current US dollars, "real" values given in billions of 2012 US dollars.

Recovery of oil prices is particularly critical to the Permian Basin. As the global economy begins to recover from COVID-19 restrictions and travel prohibitions, oil markets can normalize expeditiously. Prices should recover to sustainable levels for West Texas producers (where costs were falling notably for years before the pandemic) in the next few months.

The forecast for the Permian Basin calls for significant losses this year of an estimated 35,900 jobs and \$14.1 billion in output (real gross domestic product). However, some recovery is expected once the worst virus issues have passed and oil markets begin to recover, with the addition of a projected 23,100 jobs in 2021 (a 10.43% gain) and \$10.8 billion in output (24.57% growth).

CONCLUSION

Although several years will be required for recovery, The Perryman Group's long-term outlook remains positive for Texas and the Permian Basin. As noted, the economy was sound going into the COVID-19 pandemic and should be able to emerge and recover in a reasonable period of time.

Permian Basin Wage & Salary Employment Change from Pre-Virus Projections

Results by industry sector

Industry Sector	Change
Agriculture	-241
Mining	-23,286
Utilities	-136
Construction	-1,170
Manufacturing	-1,421
Wholesale Trade	-1,351
Retail Trade	-3,296
Transportation and Warehousing	-1,255
Information	-307
Finance and Insurance	-215
Real Estate and Rental/Leasing	-199
Professional, Scientific, Technical Services	-385
Management of Companies	-95
Administrative, Support, Waste Management	-363
Educational Services	-197
Health Care and Social Assistance	+33
Arts, Entertainment, and Recreation	-776
Accommodation and Food Services	-5,435
Other Services	-1,242
Government and Government Enterprises	+73
Total, All Industries	-41,264

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Components may not sum due to rounding.

Permian Basin Economic Outlook through 2021

Results by key economic indicator

Economic Indicator	Loss in 2020		Recovery in 2021	
	Absolute	Percent	Absolute	Percent
Nominal Gross Product	-\$10.0 b	-19.07%	+\$10.5 b	+24.79%
Real Gross Product	-\$14.1 b	-24.22%	+\$10.8 b	+24.57%
Total Employment	-35,902	-13.92%	+23,157	+10.43%

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Monetary values given in billions of current US dollars, "real" values given in billions of 2012 US dollars.

Texas Wage & Salary Employment Outlook through 2021

Results by industry sector

Industry Sector	Loss/Gain in 2020		Recovery in 2021	
	Absolute	Percent	Absolute	Percent
Agriculture	-6,076	-7.19%	+3,394	+4.33%
Mining	-88,660	-34.11%	+50,558	+29.52%
Utilities	-4,485	-8.59%	+2,744	+5.75%
Construction	-39,923	-5.02%	+29,609	+3.92%
Manufacturing	-114,996	-12.64%	+64,821	+8.16%
Wholesale Trade	-38,418	-6.29%	+30,399	+5.31%
Retail Trade	-156,548	-11.59%	+99,901	+8.37%
Transportation and Warehousing	-44,621	-8.44%	+32,657	+6.74%
Information	-20,193	-9.91%	+12,504	+6.81%
Finance and Insurance	-17,878	-3.04%	+16,600	+2.91%
Real Estate and Rental/Leasing	-5,587	-2.38%	+6,227	+2.72%
Professional, Scientific, Technical Services	-12,433	-1.53%	+30,559	+3.82%
Management of Companies	-5,322	-3.63%	+6,529	+4.63%
Administrative, Support, Waste Management	-13,658	-1.63%	+27,706	+3.36%
Educational Services	-9,275	-4.70%	+10,330	+5.50%
Health Care and Social Assistance	+50,744	+3.31%	+22,127	+1.40%
Arts, Entertainment, and Recreation	-36,539	-24.13%	+23,034	+20.05%
Accommodation and Food Services	-268,392	-21.32%	+167,737	+16.93%
Other Services	-48,958	-7.53%	+42,918	+7.14%
Government and Government Enterprises	+20,251	+0.97%	+4,437	+0.21%
Total, All Industries	-860,967	-6.48%	+684,793	+5.51%

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Components may not sum due to rounding.

Texas Real Gross Product Outlook through 2021

Results by industry sector, in millions of 2012 US dollars

Industry Sector	Loss/Gain in 2020		Recovery in 2021	
	Absolute	Percent	Absolute	Percent
Agriculture	-\$799.5 m	-6.51%	+\$583.2 m	+5.08%
Mining	-\$72,719.0 m	-31.03%	+\$54,281.1 m	+33.58%
Utilities	-\$1,904.8 m	-7.34%	+\$1,731.2 m	+7.20%
Construction	-\$2,987.1 m	-3.92%	+\$3,754.3 m	+5.12%
Manufacturing	-\$22,672.5 m	-9.82%	+\$23,977.3 m	+11.51%
Wholesale Trade	-\$6,594.6 m	-4.54%	+\$10,041.2 m	+7.25%
Retail Trade	-\$9,404.7 m	-9.55%	+\$9,572.2 m	+10.75%
Transportation and Warehousing	-\$3,918.5 m	-6.87%	+\$4,525.5 m	+8.51%
Information	-\$5,245.6 m	-7.13%	+\$7,134.9 m	+10.44%
Finance and Insurance	-\$827.5 m	-1.05%	+\$3,855.9 m	+4.95%
Real Estate and Rental/Leasing	-\$1,089.1 m	-0.68%	+\$7,025.7 m	+4.45%
Professional, Scientific, Technical Services	+\$50.4 m	+0.04%	+\$6,687.6 m	+5.45%
Management of Companies	-\$461.7 m	-1.76%	+\$1,705.9 m	+6.63%
Administrative, Support, Waste Management	+\$171.4 m	+0.31%	+\$2,947.7 m	+5.37%
Educational Services	-\$417.3 m	-3.66%	+\$726.1 m	+6.62%
Health Care and Social Assistance	+\$4,770.8 m	+4.57%	+\$2,858.9 m	+2.62%
Arts, Entertainment, and Recreation	-\$2,596.3 m	-23.51%	+\$1,772.0 m	+20.98%
Accommodation and Food Services	-\$8,610.0 m	-19.84%	+\$6,638.9 m	+19.09%
Other Services	-\$2,115.8 m	-6.80%	+\$2,298.0 m	+7.93%
Government and Government Enterprises	+\$3,554.7 m	+2.18%	+\$2,328.2 m	+1.40%
Total, All Industries	-\$133,816.6 m	-7.60%	+\$154,445.8 m	+9.50%

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Components may not sum due to rounding.

Permian Basin Wage & Salary Employment Outlook through 2021

Results by industry sector

Industry Sector	Loss/Gain in 2020		Recovery in 2021	
	Absolute	Percent	Absolute	Percent
Agriculture	-224	-7.03%	+128	+4.32%
Mining	-21,675	-38.80%	+12,219	+35.74%
Utilities	-122	-8.64%	+74	+5.79%
Construction	-919	-4.99%	+711	+4.06%
Manufacturing	-1,306	-11.34%	+786	+7.71%
Wholesale Trade	-1,025	-6.28%	+839	+5.49%
Retail Trade	-2,856	-11.58%	+1,854	+8.50%
Transportation and Warehousing	-1,004	-8.45%	+754	+6.93%
Information	-265	-9.71%	+174	+7.08%
Finance and Insurance	-147	-2.72%	+149	+2.84%
Real Estate and Rental/Leasing	-126	-2.40%	+144	+2.80%
Professional, Scientific, Technical Services	-124	-1.50%	+324	+3.97%
Management of Companies	-31	-1.29%	+79	+3.39%
Administrative, Support, Waste Management	-167	-2.32%	+280	+3.97%
Educational Services	-165	-14.71%	+114	+11.96%
Health Care and Social Assistance	+459	+3.26%	+198	+1.37%
Arts, Entertainment, and Recreation	-714	-35.60%	+419	+32.48%
Accommodation and Food Services	-4,805	-21.04%	+3,034	+16.83%
Other Services	-941	-7.62%	+821	+7.20%
Government and Government Enterprises	+254	+0.82%	+52	+0.17%
Total, All Industries	-35,902	-13.92%	+23,157	+10.43%

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Components may not sum due to rounding.

Permian Basin Real Gross Product Outlook through 2021

Results by industry sector, in millions of 2012 US dollars

Industry Sector	Loss/Gain in 2020		Recovery in 2021	
	Absolute	Percent	Absolute	Percent
Agriculture	-\$17.5 m	-6.47%	+\$12.5 m	+4.93%
Mining	-\$13,118.8 m	-35.93%	+\$9,359.0 m	+40.01%
Utilities	-\$39.1 m	-7.39%	+\$35.5 m	+7.24%
Construction	-\$62.6 m	-3.88%	+\$81.6 m	+5.26%
Manufacturing	-\$193.1 m	-8.49%	+\$230.0 m	+11.05%
Wholesale Trade	-\$173.0 m	-4.53%	+\$270.8 m	+7.43%
Retail Trade	-\$167.7 m	-9.54%	+\$173.1 m	+10.89%
Transportation and Warehousing	-\$61.4 m	-6.88%	+\$72.4 m	+8.71%
Information	-\$45.9 m	-6.99%	+\$65.0 m	+10.65%
Finance and Insurance	-\$4.9 m	-0.72%	+\$33.2 m	+4.89%
Real Estate and Rental/Leasing	-\$16.3 m	-0.70%	+\$104.5 m	+4.53%
Professional, Scientific, Technical Services	+\$0.7 m	+0.07%	+\$55.4 m	+5.61%
Management of Companies	+\$2.7 m	+0.63%	+\$23.6 m	+5.37%
Administrative, Support, Waste Management	-\$2.2 m	-0.40%	+\$32.9 m	+5.99%
Educational Services	-\$7.4 m	-13.78%	+\$6.1 m	+13.14%
Health Care and Social Assistance	+\$43.4 m	+4.52%	+\$26.0 m	+2.59%
Arts, Entertainment, and Recreation	-\$44.4 m	-35.08%	+\$27.5 m	+33.51%
Accommodation and Food Services	-\$148.0 m	-19.56%	+\$115.5 m	+18.98%
Other Services	-\$42.3 m	-6.90%	+\$45.6 m	+7.99%
Government and Government Enterprises	+\$44.6 m	+2.03%	+\$30.4 m	+1.35%
Total, All Industries	-\$14,053.3 m	-24.22%	+\$10,800.5 m	+24.57%

Source: US Multi-Regional Econometric Model, The Perryman Group

Notes: Components may not sum due to rounding.

METHODS AND ASSUMPTIONS

These projections are based on The Perryman Group's forecasting system, the US Multi-Regional Econometric Model, which provides detailed industry-level projections for the various regions and metropolitan areas within the United States. It is formulated in an internally consistent manner and is designed to permit the integration of relevant global, national, state, and local factors into the projection process. The model is the result of more than four decades of continuing research in econometrics, economic theory, statistical methods, key policy issues, and behavioral patterns, as well as intensive, ongoing study of all aspects of the economy. It is extensively used by scores of federal and State governmental entities on an ongoing basis, as well

as hundreds of major corporations.

The firm's US Multi-Regional Impact Assessment System was also integrated in this dynamic analysis of COVID-19's effects on the outlook for the US and Texas. The Perryman Group developed a scenario for estimating the effects of COVID-19 which reflects a variety of public and private source materials including, among others, data from sectors that have been particularly affected, information from areas where the pandemic spread earlier (as well as prior pandemics and natural disasters), performance patterns in other economic downturns and recoveries, and historical responses to oil price fluctuations. Reasonable measures of potential direct effects by detailed industrial category were developed and

used as inputs to the impact assessment system. The anticipated effects of the virus going forward and recent and expected monetary and fiscal policy actions were incorporated into projections of economic indicators.

These systems have been developed, maintained, and expanded by The Perryman Group over the past four decades. They have been used in thousands of applications, including numerous crisis situations (including several natural disasters), major health care issues (such as cancer and diabetes), pressing social concerns (such as hunger, child maltreatment, homelessness, and indigent health care), and substantial disruptions in global energy markets.

THE PERRYMAN GROUP



The Perryman Group is a focused team of analysts who know how to address complex economic information tasks and present our findings effectively.

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M. RAY PERRYMAN, PH.D.

Dr. Perryman is the President and CEO of the Perryman Group and Distinguished Professor of Economic Theory and Method at the International Institute for Advanced Studies. Over the past 40 years, Dr. Perryman has helped recruit corporations providing tens of thousands of jobs through economic development work, resolved billion-dollar legal issues, and revamped public policy through impact assessments and other studies. His firm has measured economic impacts for corporate locations and expansions involving billions in investments, and his economic forecasts are used by corporations and government agencies alike.



He has provided economic analysis and expert testimony for civil litigation across a wide range of practice areas including antitrust and competition, intellectual property disputes, securities, and commercial and complex litigation. His work combines strong expertise in economic damages calculation, asset valuation, market analysis, and statistical methods and econometrics.

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