



Priority Midland by the Numbers

An Initial Overview of the Economic Impact of Anticipated Increases in Regional Energy Activity in the Midland Area

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Overview

Recent advances and developments in the petroleum sector have led major analysts and energy companies to broadly anticipate enormous increases in Permian Basin production over the next few years. It is also widely expected that new market realities will lead to much more stable and less erratic production patterns than in the past. This emerging and ongoing phenomenon has significant global implications.

Much of this activity will be centered in the Midland area, the headquarters for the Permian Basin petroleum sector as well as a location for substantial drilling and extraction activity.

The resulting growth brings enormous potential benefits, but also has profound implications for workforce needs, housing, education, job training, infrastructure, health care capacity, and other aspects of the local socioeconomic complex.

Proactive efforts to deal with issues and prepare for the coming growth can position the area to emerge stronger and more prosperous in the future.

How did this happen?

Hydraulic Fracturing, Horizontal Drilling, and Discoveries

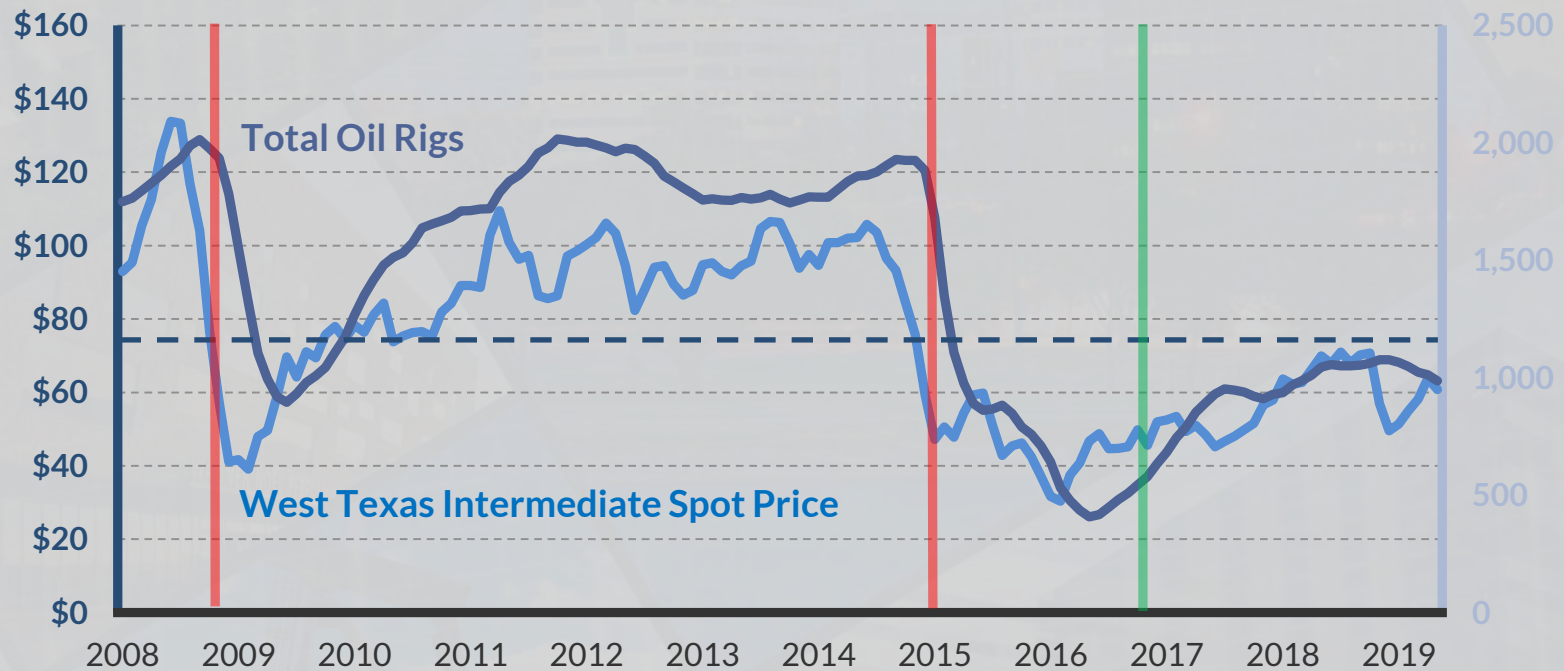
Exports and Global Demand

Infrastructure Advances and Cost Reductions

The Cost Revolution - A “simple” graph

Oil in the United States

West Texas Intermediate spot price versus total rig count



Source: US Energy Information Agency, Baker-Hughes Oilfield Services

What Does it Mean?

**Less
volatility**

**Larger scale drilling programs
and increased cycle times**

**Larger permanent workforce
with high earnings**

**Larger permanent
population**

Overview



Priority Midland

- Serve as a catalyst for proactive efforts to accommodate anticipated growth
- Marshal community commitment and resources
- Help maintain and enhance quality of place and livability
- Position Midland to fully capitalize on the emerging opportunities

The Perryman Group's Analysis

- Quantify magnitude of expected expansion
- Provide detailed economic, demographic, and fiscal information to
 - support current and future efforts to leverage the globally significant transformation of the petroleum sector into long-term, sustainable, and desirable growth in Midland
 - facilitate strategic planning for dealing with likely future challenges for Midland and the surrounding region

Priority Midland Data Analysis

Petroleum Sector Impact Analysis

- **Baseline Energy Price Impact by NAICS Sector**
 - Impact on **Permian Basin** (2019, 2025, 2030)
 - Impact on **Midland MSA** (2019, 2025, 2030)
- **Low Energy Price Impact by NAICS Sector**
 - Impact on **Permian Basin** (2019, 2025, 2030)
 - Impact on **Midland MSA** (2019, 2025, 2030)
- **High Energy Price Impact by NAICS Sector**
 - Impact on **Permian Basin** (2019, 2025, 2030)
 - Impact on **Midland MSA** (2019, 2025, 2030)

Economic Forecast Analysis

- Covers both **Permian Basin** and **Midland MSA**
- Separate forecasts for **three energy price scenarios**
- Annually from **2001-2030**
 - **Key Indicators**
 - **Population** by age group for regions and ISDs
 - **Housing demand** by housing type
 - **Gross Product**
 - Nominal (US\$) by NAICS Subsector
 - Real (2019\$) by NAICS Subsector
 - **Employment**
 - By NAICS Subsector
 - By Detailed Occupational Group
- Special focus on **2019, 2025, and 2030**
 - Occupational growth, replacement, demand
 - Instructional program demands
 - 400 industry focus by NAICS Industry Group

Note: NAICS refers to the North American Industry Classification System, comprised of 20 **Sectors** that are broken down into 88 **Subsectors** and 295 **Industry Groups**. Occupations are classified by the **Standard Occupational Classification System**, comprised of 934 occupations.

Overview

Population Growth

Midland County is the most populated county in the Permian Basin Region.

From 2010 to 2018, the City of Midland greatly outpaced state and national population growth:

- City of Midland: **+3.12%**
- Texas: **+1.62%**
- United States: **+0.70%**

This expansion is expected to continue and intensify as the area adjusts to a “new normal.”



Note: Population growth given as the compound annual growth rate from 2010 to 2018.

Source: US Census Bureau

Overview



Oil and Gas Production Growth

Texas oil production has risen dramatically in recent years, up about **500%** since 2010 after decades of falling production and talk of “peak oil” and the effective end of the industry.

Permian Basin production levels:

- 0.7 million barrels per day (bpd) at the trough in 2008
- 2.0 million bpd in July 2016 (topping the prior record from 1973)
- 3.0 million bpd in February 2018
- 4.1 million in May 2019

Production levels are projected to continue to rise rapidly over the next decade.



Economic Impacts of the Petroleum Sector on Business Activity in the Permian Basin

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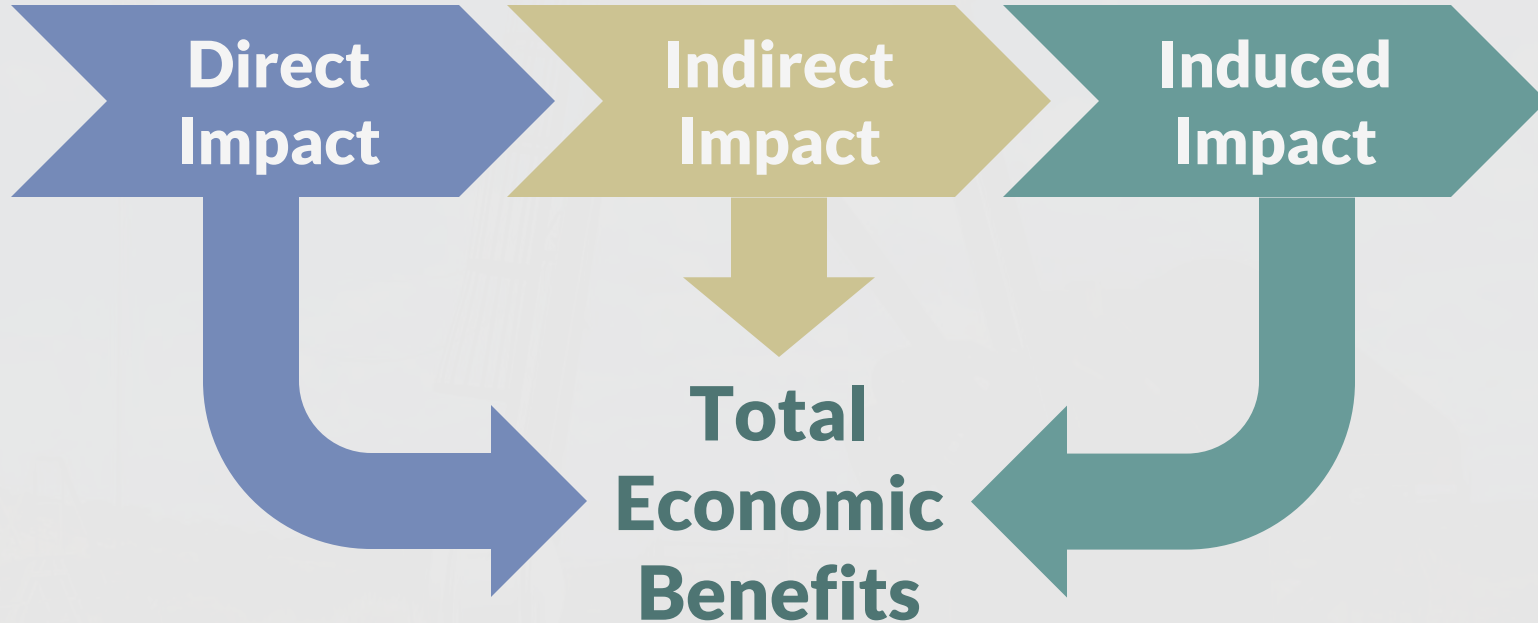
CONCLUSION

Measuring Economic Benefits

Investment in the petroleum sector and ongoing outlays for payroll, operations, and associated spending enter the Permian Basin economy.

Local spending by firms supplying goods and services throughout the supply chain provides additional stimulus.

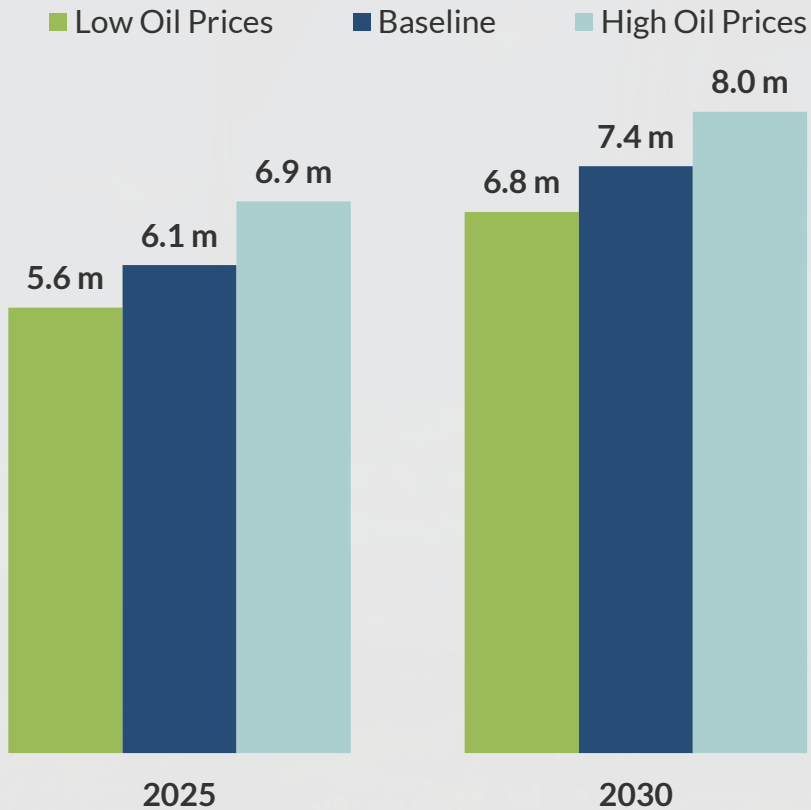
Local spending by employees in the petroleum sector and other workers throughout the supply chain provides further economic gains.



Oil Price Scenarios

Projected Daily Oil Production in the Permian Basin

Millions of barrels per day



Low Oil Prices

- Trade wars and other concerns create a notable slowing of world economic growth
- OPEC nations opt to increase production to monetize reserves
- Prices fall: **\$40-\$48 per barrel**

Baseline Oil Prices

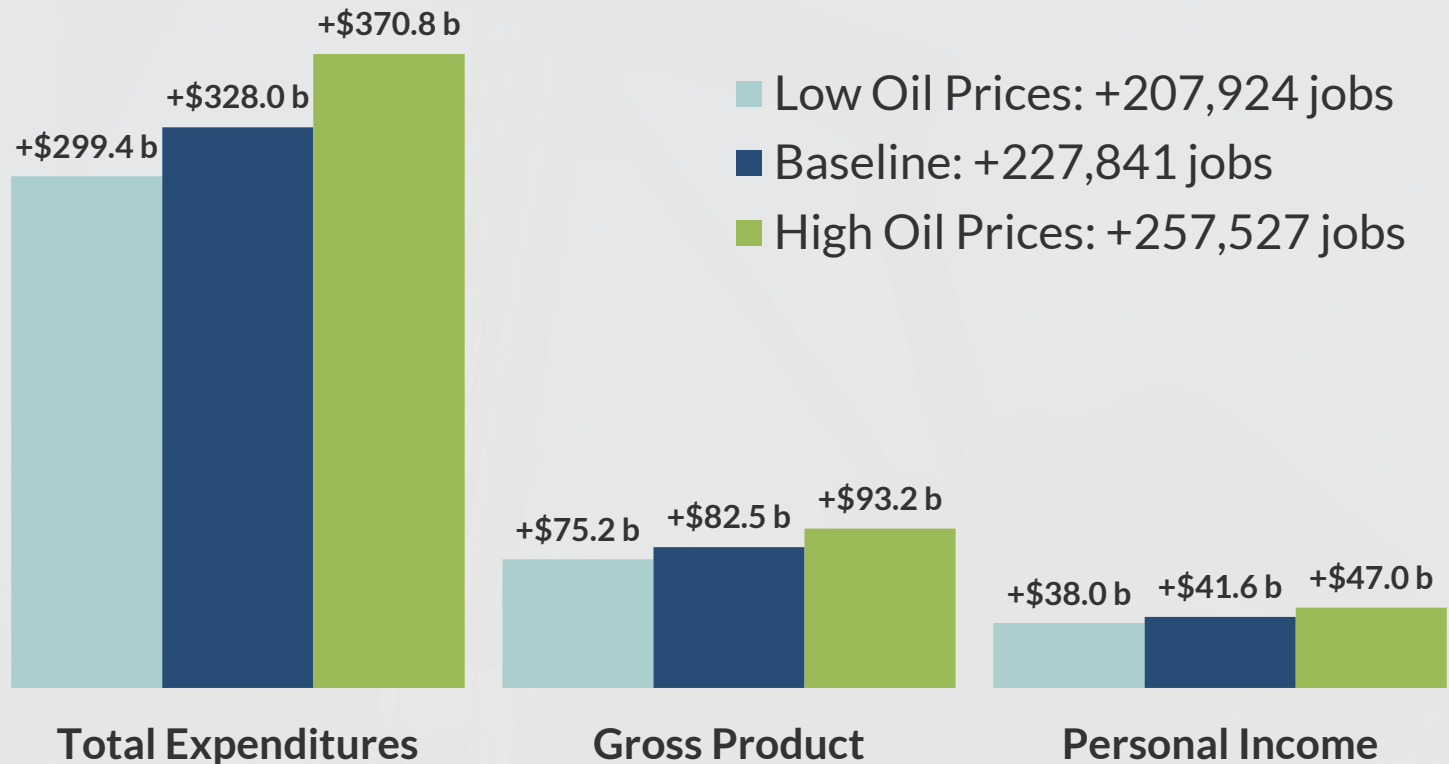
- Technological advances continue
- OPEC remains relatively disciplined to maintain economic stabilities
- Trade wars are resolved w/o major disruptions
- Global growth stabilizes: 3.5-4.9% range
- Prices stabilize: **\$63-\$70 per barrel**

High Oil Prices

- Turmoil in the Middle East, Russia or other producing regions creates global supply concerns and market speculation
- Global growth accelerates: +4% per year
- Prices rise: **approx. \$80 per barrel**

The Annual Impact of the Petroleum Sector on Business Activity in the Permian Basin

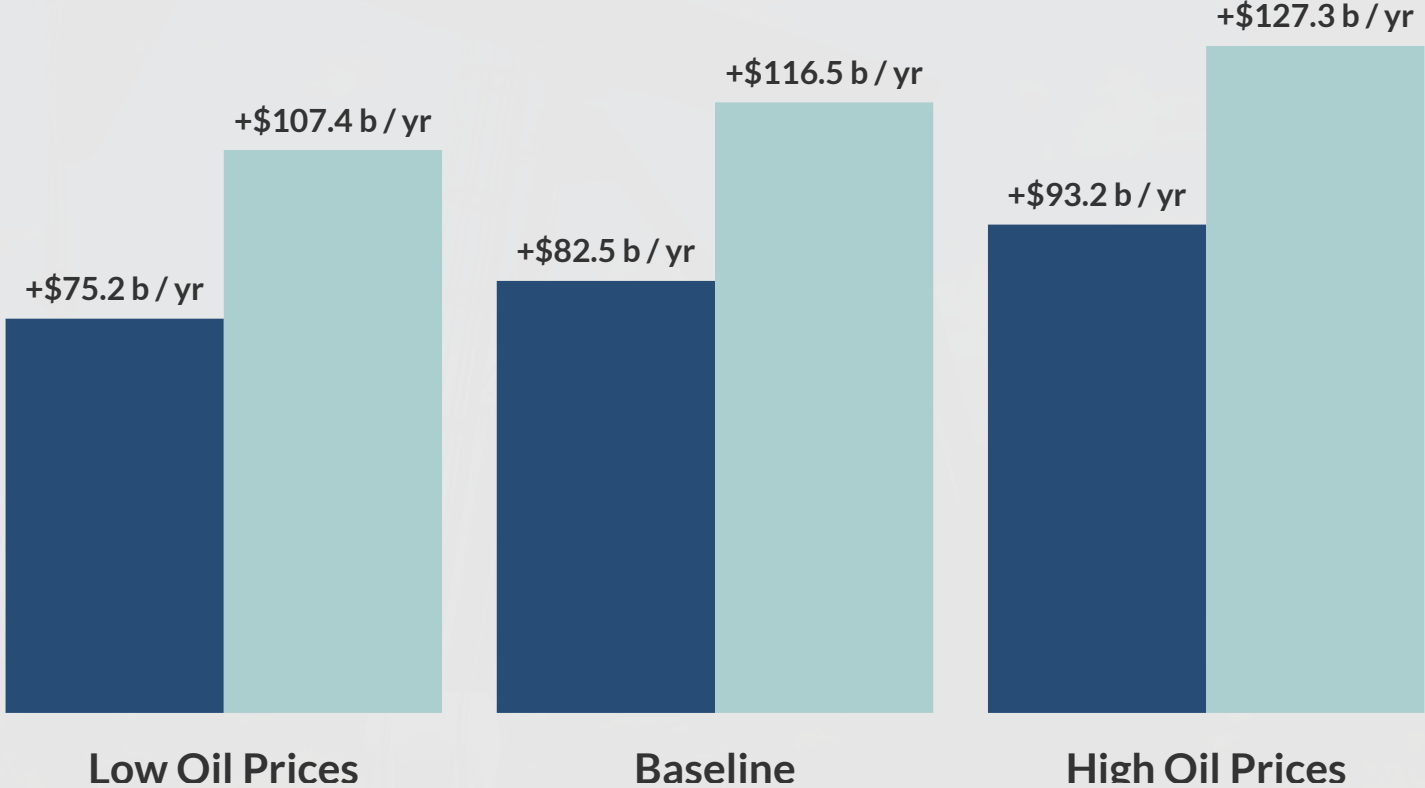
Results as of 2025 under varying price assumptions



Note: Monetary values in billions of 2019 US dollars per year
Source: US Multi-Regional Impact Assessment System, The Perryman Group

The Annual Impact of the Petroleum Sector on Business Activity in the Permian Basin

Real gross product as of **2025** and **2030** under varying price assumptions



Note: Monetary values in billions of 2019 US dollars per year
Source: US Multi-Regional Impact Assessment System, The Perryman Group

Midland is a magnet for the benefits of the surging Permian Basin petroleum sector.

Over 85% of the regional gross product (value-added) in the Permian Basin oil and gas sector flows to the Midland MSA.

Flows from the Permian Basin to Midland

Slightly more than 10% of Permian Basin oil production occurs in Midland County, with the most significant growth occurring in the Southern Delaware Basin (especially Reeves County). Nonetheless, **more than 60% of the oil and gas workers** in the region are employed by firms in Midland County.

The percentage of regional gross product (value-added) in the Permian Basin oil and gas sector that flows to Midland MSA is expected to **increase in the future under all of the oil price scenarios.**



Economic Forecasts for Midland MSA

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Economic Forecasts

The Perryman Group performed detailed economic forecasts for the Midland MSA and the Permian Basin Region. These projections include results for approximately **400 industrial sectors**.

Analyses are performed for each of the **three oil price scenarios**.

These projections are “aspirational” in the sense that they assume that effective initiatives are implemented which result in the area overcoming current shortages and constraints by 2030.

Key Economic Indicator Growth for Midland MSA

Results by varying oil price assumptions

Annual growth rates

| Economic Indicator | Baseline | | Low Oil Prices | | High Oil Prices | |
|----------------------|----------|---------|----------------|---------|-----------------|---------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Real Gross Product | +3.26% | +4.19% | +1.86% | +3.51% | +5.19% | +4.95% |
| Real Personal Income | +3.27% | +4.39% | +1.87% | +3.70% | +5.21% | +5.16% |
| Real Retail Sales | +3.15% | +4.27% | +1.74% | +3.57% | +5.08% | +5.03% |
| Population | +3.92% | +3.73% | +2.74% | +3.17% | +5.56% | +4.35% |
| Employment | +4.18% | +4.64% | +3.00% | +4.08% | +5.82% | +5.27% |

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

Key Economic Indicator Growth for Midland MSA

Results by varying oil price assumptions

Absolute growth

| Economic Indicator | Baseline | | Low Oil Prices | | High Oil Prices | |
|----------------------|-----------|-----------|----------------|-----------|-----------------|-----------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Real Gross Product | +\$11.6 b | +\$31.1 b | +\$6.4 b | +\$25.1 b | +\$19.3 b | +\$38.2 b |
| Real Personal Income | +\$4.6 b | +\$12.9 b | +\$2.5 b | +\$10.5 b | +\$7.6 b | +\$15.8 b |
| Real Retail Sales | +\$0.9 b | +\$2.5 b | +\$0.5 b | +\$2.0 b | +\$1.5 b | +\$3.1 b |
| Population | +48,726 | +93,013 | +33,085 | +76,860 | +72,036 | +112,169 |
| Employment | +32,064 | +74,515 | +22,326 | +63,610 | +46,572 | +87,460 |

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

Projected Midland MSA Output Growth

Results by industry under varying oil price assumptions

Annual growth rates

| Industry Sector | Baseline | | Low Oil Prices | | High Oil Prices | |
|---------------------------------|---------------|---------------|----------------|---------------|-----------------|---------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Agriculture | +2.89% | +3.57% | +1.72% | +2.94% | +4.53% | +4.22% |
| Mining | +2.68% | +3.62% | +1.13% | +2.85% | +4.79% | +4.45% |
| Utilities | +2.94% | +3.91% | +1.46% | +3.22% | +4.96% | +4.65% |
| Construction | +3.92% | +4.81% | +3.58% | +4.59% | +4.43% | +5.06% |
| Manufacturing | +8.74% | +10.39% | +7.27% | +9.64% | +10.78% | +11.21% |
| Wholesale & Retail Trade | +4.78% | +4.50% | +3.88% | +4.10% | +6.05% | +4.95% |
| Transportation & Warehousing | +3.37% | +5.14% | +1.80% | +4.37% | +5.50% | +5.99% |
| Information | +4.57% | +5.11% | +3.11% | +4.51% | +6.58% | +5.76% |
| Finance, Insurance, Real Estate | +3.08% | +3.90% | +2.42% | +3.58% | +4.02% | +4.26% |
| Other Services | +4.05% | +4.33% | +3.05% | +3.92% | +5.44% | +4.78% |
| Government | +2.71% | +2.28% | +2.09% | +1.94% | +3.60% | +2.76% |
| Total, All Industries | +3.26% | +4.19% | +1.86% | +3.51% | +5.19% | +4.95% |

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

Projected Midland MSA Employment Growth

Results by industry under varying oil price assumptions

Annual growth rates

| Industry Sector | Baseline | | Low Oil Prices | | High Oil Prices | |
|---------------------------------|---------------|---------------|----------------|---------------|-----------------|---------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Agriculture | +2.15% | +2.85% | +0.97% | +2.23% | +3.74% | +3.51% |
| Mining | +3.75% | +3.87% | +2.18% | +3.11% | +5.89% | +4.71% |
| Utilities | +2.34% | +3.35% | +0.87% | +2.67% | +4.36% | +4.09% |
| Construction | +4.25% | +5.39% | +3.90% | +5.17% | +4.76% | +5.64% |
| Manufacturing | +4.30% | +5.40% | +3.37% | +4.92% | +5.60% | +5.94% |
| Wholesale & Retail Trade | +4.83% | +4.55% | +3.64% | +4.00% | +6.48% | +5.17% |
| Transportation & Warehousing | +3.12% | +5.31% | +1.56% | +4.54% | +5.25% | +6.16% |
| Information | +2.71% | +3.63% | +1.30% | +3.03% | +4.69% | +4.27% |
| Finance, Insurance, Real Estate | +2.92% | +3.65% | +2.25% | +3.34% | +3.89% | +4.01% |
| Other Services | +5.16% | +5.87% | +3.96% | +5.34% | +6.82% | +6.46% |
| Government | +2.27% | +2.02% | +1.66% | +1.68% | +3.16% | +2.50% |
| Total, All Industries | +4.18% | +4.64% | +3.00% | +4.08% | +5.82% | +5.27% |

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

Projected Midland MSA Employment Demand

Results for 2019-25 by major occupation group

Baseline oil price assumptions

| Occupation | Job Growth | Replacements | Demand |
|--|------------|--------------|--------|
| Management | +1,609 | 294 | 1,903 |
| Business and Financial Operations | +1,451 | 344 | 1,795 |
| Computer and Mathematical | +739 | 120 | 859 |
| Architecture and Engineering | +766 | 151 | 917 |
| Life, Physical, and Social Science | +367 | 94 | 461 |
| Community and Social Services | +333 | 72 | 405 |
| Legal | +228 | 40 | 268 |
| Education, Training, and Library | +774 | 163 | 937 |
| Arts, Design, Entertainment, Sports, and Media | +367 | 72 | 439 |
| Healthcare Practitioners and Technical | +748 | 110 | 858 |
| Healthcare Support | +442 | 137 | 579 |

Source: US Multi-Regional Industry-Occupation System, The Perryman Group

Projected Midland MSA Employment Demand (cont.)

Results for 2019-25 by major occupation group

Baseline oil price assumptions

| Occupation | Job Growth | Replacements | Demand |
|---|---------------|--------------|--------------|
| Protective Service | +388 | 120 | 508 |
| Food Preparation and Serving Related | +3,729 | 927 | 4,656 |
| Building /Grounds Cleaning and Maintenance | +1,040 | 215 | 1,255 |
| Personal Care and Service | +1,207 | 297 | 1,504 |
| Sales and Related | +3,515 | 892 | 4,407 |
| Office and Administrative Support | +2,967 | 988 | 3,955 |
| Farming, Fishing, and Forestry | +58 | 33 | 91 |
| Construction and Extraction | +6,019 | 1,534 | 7,553 |
| Installation, Maintenance, and Repair | +1,431 | 312 | 1,743 |
| Production | +1,282 | 367 | 1,649 |
| Transportation and Material Moving | +2,604 | 758 | 3,362 |

Note: Highlights indicate occupations with the top five largest demands from 2019-25 under baseline oil price assumptions.

Source: US Multi-Regional Industry-Occupation System, The Perryman Group



Focus on: Housing
Overview, Economic Forecast, and Applications

Overview

Availability of Housing

Over the past few years, growth in the petroleum sector has contributed to rapid growth in population and, therefore, housing demand.

The tight market has contributed to higher prices and difficulty finding houses, particularly in lower price ranges.

According to the Midland Reporter-Telegram, over **3,400 apartment units have been approved since 2018**, with **800 more currently being reviewed**. These additional units will help ease the pressure presently seen in Midland's multi-family housing market.

The single-family market is likely to remain tight for the next few years.



Overview



Cost of Housing

Home values in the Midland area have recently been increasing as indicated by median home value data. While the table below shows estimated median values covering all homes in the area, in June 2019 the median price of homes sold was \$311,000.

One-third of residents live in renter-occupied housing units; in February 2019 the median rent for a typical two-bedroom apartment was **48.14% higher than Texas.**

| | City of Midland | State of Texas |
|-------------------------------|-----------------|----------------|
| Median Home Value Index | \$262,000 | \$196,900 |
| Percent Change Over Past Year | +15.1% | +5.7% |

Source: Midland and Texas Home Prices & Values, Data through June 30, 2019, Zillow.com.

Applications

Projected Housing Demand

The need for housing is driven primarily by population growth. The Perryman Group projects that the Midland population will expand to nearly **236,500** by **2025** and close to **280,800** by **2030** under **baseline oil price assumptions**, with significant economic growth.

This rate of population and economic expansion leads to the need for an estimated:

- +**16,207** single-family residences,
 - +**9,938** multi-family residences
- in the MSA by 2030.



Applications

Single-Family Housing Needs

In order to meet the housing demand for the Midland MSA approximately **1,473 new single-family residences** per year through 2030 would be required under the baseline scenario.

Over the past year ending in May 2019, the Midland MSA has issued **1,288 single-family housing permits**, according to the Texas A&M Real Estate Center. Thus the area needs to increase the rate at which it is producing new single-family units.



Projected Midland MSA Housing Demand

Demand from 2019 to 2030 by varying oil price assumptions

| Region | Baseline | | Low Oil Prices | | High Oil Prices | |
|-----------------|---------------|--------------|----------------|--------------|-----------------|--------------|
| | Single-Family | Multi-Family | Single-Family | Multi-Family | Single-Family | Multi-Family |
| City of Midland | 14,127 | 7,451 | 13,314 | 7,022 | 15,090 | 7,959 |
| Midland County | 15,683 | 9,616 | 14,781 | 9,063 | 16,753 | 10,272 |
| Midland MSA | 16,207 | 9,938 | 15,275 | 9,366 | 17,313 | 10,616 |

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

Applications

Construction Availability

Midland's ability to provide for the increased housing demand will be largely dependent on the availability of construction workers in the area.

Under the baseline oil price scenario, the demand for building and specialty construction workers is expected to top 6,000 over the 2019-30 time period. Attracting workers to provide for the increased housing demand could be a challenge considering the competition existing with the oil and gas industry for workers.



Projected Midland MSA Building & Specialty Construction Industry Employment Demand

Results by occupation under varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|--|--------------|--------------|----------------|--------------|-----------------|--------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Construction Supervisors | 116 | 297 | 108 | 283 | 128 | 312 |
| Construction Trades Workers | 1,020 | 2,669 | 947 | 2,545 | 1,130 | 2,808 |
| Construction Helpers | 77 | 197 | 73 | 190 | 84 | 209 |
| Other Construction Workers | 24 | 63 | 24 | 58 | 26 | 65 |
| Total, All Construction Workers | 1,237 | 3,226 | 1,152 | 3,076 | 1,368 | 3,394 |



Focus on: Infrastructure
Overview, Economic Forecast, and Applications

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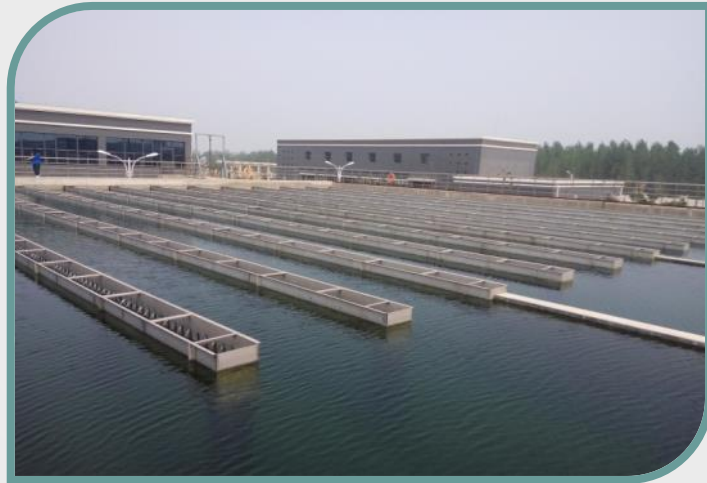
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Water and Sewage

The City of Midland has slowly been building up its water infrastructure over the past decade. The city has increased the **miles of storm sewer by 36.2%** and **miles of sanitary sewer by 13.4%** since FY2010 and expanded system capacity **from 51 million gallons to 55 million gallons** in FY2015.

At the same time, **daily average consumption has decreased** due to conservation efforts such as watering schedules, rate increases, and behavioral change. **The city is currently using 32.7% of its daily water infrastructure capacity on average.**

Overview

Commercial Transportation

The expansion of the oil and gas industry has also put a major strain on roadways and traffic, especially with intensified commercial traffic.

Hydraulic fracturing (fracking) can utilize up to **1,200** loaded trucks per new well and **350** loaded trucks each year per existing well.

Traffic counts on many of the roads in the Permian Basin increased by 65% to 150% between 2016 and 2017.



Source: Texas Department of Transportation

Overview

Personal Transportation

According to the latest Census data, the most prevalent means of transportation to work for employed individuals in the Midland area was driving by themselves (85.4% of the City of Midland), while less than 10% carpooled.

A greater proportion of the population drove themselves to work compared to the state (80.6%) and nation (76.4%), while a much lower percentage took advantage of public transportation.



Applications

Water Supply

Recent city estimates of water supply for the City of Midland have base water supply of **45,924 acre-feet per year** starting in **2020** and **28,002 acre-feet per year** starting in **2030**.

Options for future water resources:

- contract with the **West Texas Partnership** for 15,000 acre-feet per year (13.4 million gallons daily, or MGD)
- a new contract with the **Colorado River Municipal Water District** for 11,201 acre-feet per year (10 MGD)
- Some combination of both



Applications

Water Supply

Projected demand values were initially based on population estimates from the Texas Water Development Board.

Perryman Group population projections yield substantially higher demand values but are still within the potential supply from a contract with the West Texas Water Partnership through 2030 (except for the 2030 drought year demand under the high oil price scenario).

Even with both supply options fully implemented, reserve levels would be very limited with high oil prices and drought conditions.



Projected City of Midland Water Supply and Demand

In acre-feet (approx. 325,851 gallons) of water per year

| Projected Supply | | | | | | |
|-------------------------------|---------------|---------------|----------------|---------|-----------------|---------|
| | 2020 | 2030 | | | | |
| Base Projected Supply | 45,924 | 28,002 | | | | |
| West Texas Water Partnership | 0 | 15,000 | | | | |
| New CRMWD Contract | 0 | 11,201 | | | | |
| Total Potential Supply | 45,924 | 54,203 | | | | |
| Projected Demand | | | | | | |
| Texas Water Development Board | 2020 | 2030 | | | | |
| Population | 141,690 | 164,437 | | | | |
| Drought year (168-176 GPCD) | 27,972 | 31,803 | | | | |
| Normal year (153 GPCD) | 24,285 | 28,185 | | | | |
| The Perryman Group | Baseline | | Low Oil Prices | | High Oil Prices | |
| | 2020 | 2030 | 2020 | 2030 | 2020 | 2030 |
| Population | 155,073 | 234,103 | 152,752 | 220,635 | 158,484 | 250,075 |
| Drought year (168-176 GPCD) | 30,614 | 45,277 | 30,156 | 42,672 | 31,287 | 48,366 |
| Normal year (153 GPCD) | 26,579 | 40,126 | 26,181 | 37,818 | 27,163 | 42,864 |

Notes: The base projected supply has potential water from Ivie (10 MGD), the No. 66 Contract with CRMWD through 2029 (16 MGD), T-Bar (10 MGD), and Paul Davis (5 MGD). CRMWD stands for the Colorado River Municipal Water District and GPCD stands for gallons per capita daily.

Source: Midland Utility Report (Midland Utilities) and The Perryman Group

Applications

Recent Capital Improvement Assumptions

A recent impact study relied on historical housing permit data for 10-year growth assumptions underlying recommendations for roadway, water, and wastewater capital improvement plans.

These projections assume an average of **759 single-family** and **450 multi-family building permits** will be issued per year (2018-2028).

The Perryman Group's forecasted housing demand shows a need for **1,284 single-family units** and **677 multi-family units** on average annually (2019-2030).



Applications

Additional Real Estate Needs

Growth in Midland's economy will lead to the need for additional real estate, both in terms of housing as well as industrial, warehouse, retail, and office space.

The Perryman Group used detailed economic forecasts, the associated additional workers, and estimates of typical additional square feet of space required per employee by type to estimate incremental space needed.

This additional occupied real estate will require further improvements to roadways and water/wastewater infrastructure.



Additional Real Estate Demands 2019-2030

Demand for real estate square footage by building type

| Building Type | Baseline | Low Oil Prices | High Oil Prices |
|---------------|-------------------|------------------|-------------------|
| Industry | 1,969,718 | 1,748,913 | 2,228,038 |
| Warehouse | 1,871,346 | 1,729,559 | 2,030,610 |
| Retail | 5,040,385 | 4,150,599 | 6,096,634 |
| Office | 1,619,755 | 1,465,911 | 1,802,099 |
| Total | 10,501,205 | 9,094,981 | 12,157,382 |

Infrastructure Land Use

Given the high demand for available land in the Midland area, governmental entities, in cooperation with surface owners and energy companies, must actively preserve right of way corridors for future infrastructure development (such as roads, sewer lines, water lines, and drainage) and other community needs (such as parks and schools). Failure to do so will further escalate the cost of future infrastructure development as well as potentially limit expansion.

Applications

Demand for Infrastructure Workers

The structure of the Midland economy and, in particular, its role as a center for oilfield activity requires a higher level of workers in heavy and civil engineering occupations.

As noted on the following slide, the current level of employment in these sectors is significantly higher than for similarly sized cities or the state as a whole.

Future demand is expected to remain strong for these occupations.



Current Heavy and Civil Engineering Construction Industry Employment per Capita

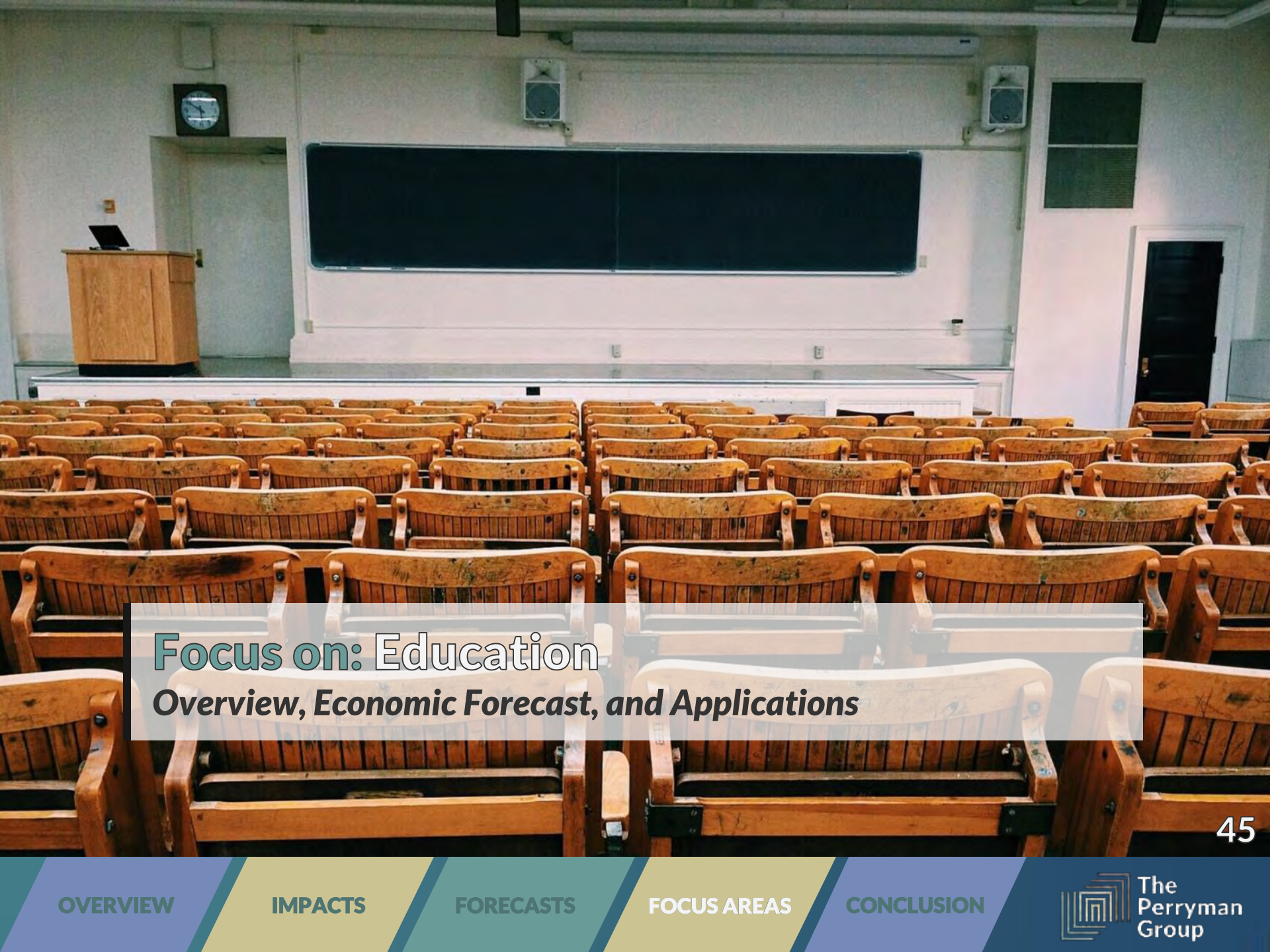
Employment per 100,000 people in 2019 by region

| Occupation | Midland MSA | Abilene MSA | Sherman-Denison MSA | State of Texas |
|-----------------------------|-------------|-------------|---------------------|----------------|
| Civil Engineers | 119.3 | 73.7 | 49.1 | 106.1 |
| Construction Supervisors | 65.5 | 21.1 | 58.1 | 39.8 |
| Construction Trades Workers | 411.2 | 133.1 | 367.7 | 250.0 |
| Construction Helpers | 7.5 | 2.3 | 7.4 | 4.7 |
| Other Construction Workers | 13.8 | 5.1 | 11.2 | 8.0 |

Projected Midland MSA Heavy and Civil Engineering Construction Industry Employment Demand

Results by occupation under varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|-----------------------------|------------|------------|----------------|------------|-----------------|------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Civil Engineers | 4 | 11 | 3 | 10 | 4 | 11 |
| Construction Supervisors | 37 | 99 | 34 | 95 | 42 | 105 |
| Construction Trades Workers | 235 | 627 | 215 | 595 | 264 | 663 |
| Construction Helpers | 5 | 13 | 5 | 13 | 6 | 14 |
| Other Construction Workers | 8 | 20 | 7 | 20 | 8 | 22 |
| Total, All Workers | 285 | 759 | 261 | 723 | 320 | 804 |



Focus on: Education
Overview, Economic Forecast, and Applications

Overview



Public School Enrollment

2017-2018 enrollment:

- Midland ISD: **25,663**
- Greenwood ISD: **2,679**

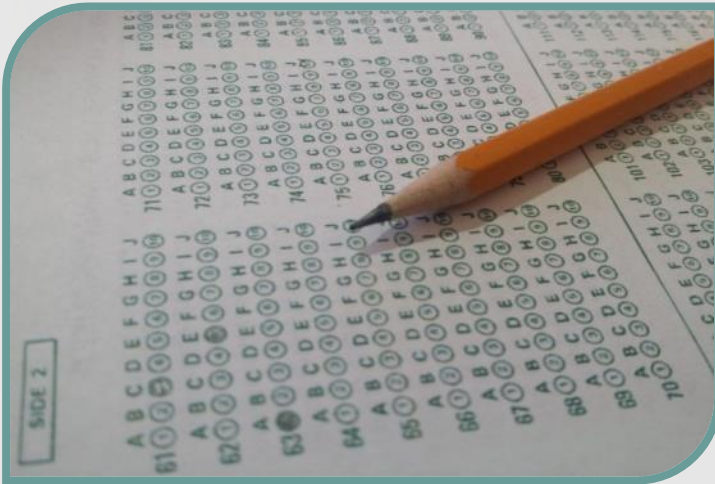
While Greenwood ISD has a similar distribution across schools as the state in the 2017-2018 school year (though slightly younger), Midland ISD has a larger proportion at the elementary school level.

| | Midland | Greenwood | Texas |
|---------------|---------|-----------|-------|
| Elementary | 52.4% | 49.6% | 49.0% |
| Middle School | 21.5% | 23.5% | 22.3% |
| High School | 26.1% | 26.9% | 28.7% |

Notes: Elementary includes Early Childhood Education, Pre-K, Kindergarten, and Grades 1-5; Middle School includes Grades 6-8, and High School includes Grades 9-12.

Source: Texas Education Agency

Overview



College Preparedness

There is room for improvement in **college preparedness**. Both school districts lag the state in college-ready reading levels and Midland ISD also scored below the state in math preparedness. However, for those that took the SAT or ACT, the average score was above the state level.

| | Midland | Greenwood | Texas |
|--------------------------|---------|-----------|-------|
| College Readiness | | | |
| Reading | 42.3% | 52.7% | 53.2% |
| Math | 34.1% | 45.0% | 42.0% |
| Reading + Math | 30.1% | 36.4% | 37.8% |
| Average SAT | 1065 | 1049 | 1019 |
| Average ACT | 21.8 | 22.6 | 20.3 |

Note: Student has met or exceeded the college-ready criteria on the Texas Success Initiative Assessment (TSIA) test, the SAT, or the ACT. The maximum score for the SAT is 2400 and ACT is 36.

Source: Texas Education Agency

Overview

Educational Attainment

The percentage of the population which has completed high school is higher in the Midland area than for the state but is somewhat below the US.

A slightly higher proportion of people in the area have attained a Bachelor's degree than the statewide rate, but the percentage lags the nation.



Midland Area Educational Attainment in 2017

Results for population 25 years and over

| | City of Midland | Midland County | Midland MSA | State of Texas | United States |
|---------------------------------------|-----------------|----------------|--------------|----------------|---------------|
| Less than 9th Grade | 6.4% | 5.8% | 5.9% | 8.1% | 5.1% |
| 9th to 12th Grade, no diploma | 8.4% | 9.2% | 9.6% | 8.2% | 6.9% |
| High school graduate or higher | 85.2% | 85.0% | 84.5% | 83.6% | 88.0% |
| High school graduate | 27.6% | 28.7% | 28.6% | 25.1% | 27.1% |
| Some college, no degree | 20.5% | 20.4% | 20.1% | 21.7% | 20.4% |
| Associate's degree | 7.4% | 8.2% | 8.1% | 7.3% | 8.5% |
| Bachelor's degree or higher | 29.7% | 27.7% | 27.6% | 29.6% | 32.0% |
| Bachelor's degree | 21.8% | 20.4% | 20.1% | 19.3% | 19.7% |
| Graduate or professional degree | 7.9% | 7.3% | 7.5% | 10.3% | 12.3% |

Source: US Census Bureau, American Community Survey, 1-Year Estimates, DP02, 2017

Overview

UT Permian Basin

Fall 2018 enrollment totaled **5,834**, including **4,744** undergraduate students and **1,090** graduate students.

There were 698 students accepted for the fall semester out of 846 undergraduate applicants, for an acceptance rate of 82.5% (which is higher than the state average acceptance rate for four-year institutions of 70.8%).



Overview

Midland College

Midland College is the primary two-year institution in the Midland area and offers Bachelor's and Associate's degrees as well as certificates. The college had a total enrollment of **5,259** in the Fall of 2018.

The college awarded **863** degrees and certificates in fiscal year 2018. Based on graduates from fiscal year 2017, **89.9% of graduates from academic programs and 91.6% from technical programs were either employed** by the fourth quarter of the calendar year following graduation or enrolled in another two- or four-year institution by the following fall.



Current Higher Education Graduation Rates for the Midland Area

Results by institution

| Institution | 4-Year | | 6-Year | | 8-Year | |
|-------------------------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Full-time | Part-time | Full-time | Part-time | Full-time | Part-time |
| Four-Year Public | | | | | | |
| UT Permian Basin | 25.1% | 16.7% | 50.1% | 33.3% | 50.6% | 55.6% |
| Statewide | 38.6% | 26.4% | 61.6% | 43.5% | 68.1% | 46.5% |
| Two-Year Public | | | | | | |
| Midland College | 23.8% | 9.4% | 29.8% | 16.7% | 38.8% | 19.8% |
| Odessa College | 28.5% | 15.7% | 45.5% | 36.7% | 35.7% | 22.1% |
| Howard College | 30.9% | 14.9% | 28.5% | 23.2% | 32.4% | 20.3% |
| Statewide | 23.3% | 11.7% | 30.5% | 18.5% | 36.9% | 22.6% |

Source: Texas Higher Education Coordinating Board, 2019 Texas Public Higher Education Almanac

Applications

Student Population Growth

In the Midland and Greenwood ISDs, the school-aged population is projected to grow by a total of over **11,000 through 2025** and nearly **24,800 through 2030** under the baseline scenario. The **majority of growth will occur at the Elementary school level** (55.9% of growth through 2025 and 55.3% of growth through 2030).

Since The Perryman Group's estimates are based on expected economic growth and the resulting rates of immigration, they are higher than those prepared by Davis Demographics in their “Ten Year Student Population Projections” report prepared for Midland ISD.



Projected Midland ISD Population Growth

Results by school level and varying oil price assumptions

| | Baseline | | Low Oil Prices | | High Oil Prices | |
|----------------------------|---------------|----------------|----------------|----------------|-----------------|----------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Annual Growth Rates | | | | | | |
| Elementary | +4.04% | +4.35% | +2.86% | +3.79% | +5.69% | +4.98% |
| Junior High | +3.90% | +4.65% | +2.72% | +4.09% | +5.54% | +5.28% |
| High School | +4.73% | +4.88% | +3.54% | +4.32% | +6.38% | +5.51% |
| Total | +4.20% | +4.53% | +3.02% | +3.97% | +5.85% | +5.16% |
| Absolute Growth | | | | | | |
| Elementary | +5,611 | +12,483 | +3,858 | +10,563 | +8,224 | +14,761 |
| Junior High | +1,255 | +3,156 | +851 | +2,695 | +1,859 | +3,703 |
| High School | +2,920 | +6,299 | +2,123 | +5,410 | +4,110 | +7,353 |
| Total | +9,786 | +21,939 | +6,832 | +18,667 | +14,193 | +25,817 |

Notes: Elementary contains Pre-Kindergarten, Kindergarten, and Grades 1-6; Junior High contains grades 7-8.

Projections are with respect to school-aged population, not enrollment.

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

Projected Greenwood ISD Population Growth

Results by school level and varying oil price assumptions

| | Baseline | | Low Oil Prices | | High Oil Prices | |
|----------------------------|---------------|---------------|----------------|---------------|-----------------|---------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Annual Growth Rates | | | | | | |
| Elementary | +5.01% | +5.17% | +3.82% | +4.61% | +6.67% | +5.80% |
| Middle School | +4.60% | +5.32% | +3.41% | +4.75% | +6.25% | +5.95% |
| High School | +5.57% | +5.71% | +4.37% | +5.14% | +7.24% | +6.34% |
| Total | +5.04% | +5.36% | +3.85% | +4.79% | +6.70% | +5.99% |
| Absolute Growth | | | | | | |
| Elementary | +564 | +1,227 | +417 | +1,061 | +783 | +1,424 |
| Middle School | +327 | +812 | +236 | +704 | +463 | +939 |
| High School | +370 | +810 | +282 | +707 | +501 | +930 |
| Total | +1,261 | +2,848 | +935 | +2,473 | +1,747 | +3,293 |

Notes: Elementary contains Pre-Kindergarten, Kindergarten, and Grades 1-4; Middle School contains grades 5-8.

Projections are with respect to school-aged population, not enrollment.

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

Applications

Need for Additional Educators

The Perryman Group's detailed forecast of demand for additional workers also indicates significant needs within the education system.

When growth and replacement needs are considered, an estimated **990 additional workers in all education occupations** will be needed by 2025 and **2,360** by 2030 under baseline oil price assumptions, with even more needed if prices are higher.

Particularly large numbers of **postsecondary teachers, teacher assistants, and elementary teachers** will be needed.



Current Education Employment per Capita

Employment per 100,000 people in 2019 by region

| Occupation | Midland MSA | Abilene MSA | Sherman-Denison MSA | State of Texas |
|---|-------------|-------------|---------------------|----------------|
| Education Administrators | 83.2 | 141.7 | 98.3 | 110.3 |
| Preschool & Childcare Center/Program | 10.7 | 12.6 | 11.9 | 13.2 |
| Elementary and Secondary School | 38.9 | 70.3 | 46.9 | 51.2 |
| Postsecondary | 27.2 | 49.7 | 33.5 | 35.9 |
| All Other | 6.4 | 9.1 | 6.0 | 10.0 |
| Preschool, Primary, Secondary Teachers | 655.0 | 1,141.5 | 792.7 | 858.9 |
| Preschool Teachers | 84.1 | 104.0 | 97.5 | 106.5 |
| Kindergarten Teachers | 24.0 | 42.9 | 29.0 | 31.4 |
| Elementary Teachers | 218.4 | 396.6 | 265.0 | 287.1 |
| Middle School Teachers | 96.9 | 177.1 | 118.3 | 127.8 |
| Secondary Teachers | 157.1 | 286.8 | 191.3 | 207.5 |
| Special Education Teachers | 74.5 | 134.1 | 91.6 | 98.6 |
| Postsecondary Teachers | 288.7 | 533.7 | 358.0 | 384.2 |
| Other Teachers and Instructors | 222.6 | 351.4 | 242.6 | 286.4 |
| Librarians, Curators, and Archivists | 66.0 | 83.4 | 67.7 | 77.2 |
| Other Education, Training, and Library | 256.7 | 435.4 | 304.4 | 339.9 |
| Instructional Coordinators | 26.6 | 45.1 | 29.0 | 36.3 |
| Teacher Assistants | 208.8 | 354.3 | 251.6 | 273.5 |

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

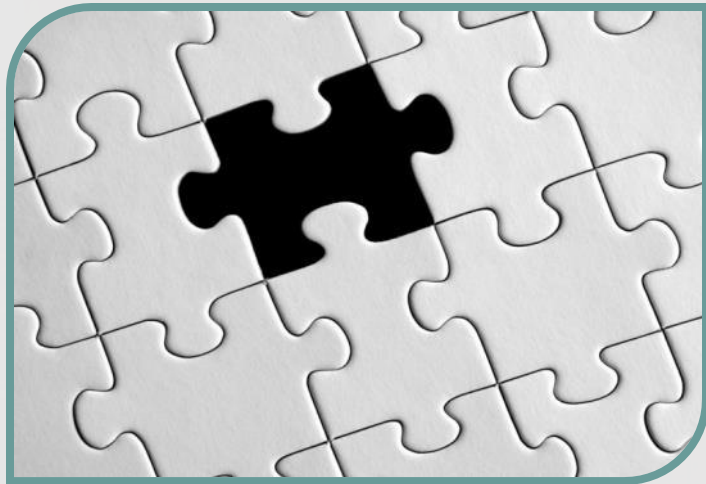
Projected Demand for Education Occupations

Results by varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|---|------------|--------------|----------------|--------------|-----------------|--------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Education Administrators | 53 | 126 | 42 | 111 | 70 | 147 |
| Preschool & Childcare Center/Program | 9 | 26 | 7 | 23 | 12 | 30 |
| Elementary and Secondary School | 23 | 53 | 18 | 46 | 30 | 62 |
| Postsecondary | 16 | 37 | 13 | 33 | 22 | 44 |
| All Other | 5 | 10 | 4 | 9 | 6 | 11 |
| Preschool, Primary, Secondary Teachers | 400 | 987 | 305 | 862 | 539 | 1,154 |
| Preschool Teachers | 72 | 211 | 54 | 185 | 98 | 244 |
| Kindergarten Teachers | 15 | 35 | 12 | 31 | 20 | 40 |
| Elementary Teachers | 123 | 292 | 94 | 254 | 165 | 343 |
| Middle School Teachers | 54 | 126 | 41 | 110 | 72 | 149 |
| Secondary Teachers | 88 | 209 | 68 | 182 | 119 | 245 |
| Special Education Teachers | 41 | 97 | 30 | 85 | 55 | 113 |
| Postsecondary Teachers | 178 | 401 | 139 | 348 | 233 | 465 |
| Other Teachers and Instructors | 159 | 373 | 128 | 331 | 206 | 427 |
| Librarians, Curators, and Archivists | 35 | 69 | 28 | 62 | 44 | 80 |
| Other Education, Training, and Library | 165 | 404 | 129 | 355 | 219 | 469 |
| Instructional Coordinators | 17 | 39 | 14 | 35 | 22 | 45 |
| Teacher Assistants | 136 | 337 | 106 | 296 | 181 | 392 |
| Total, All Education Occupations | 990 | 2,360 | 771 | 2,069 | 1,311 | 2,742 |

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

Applications



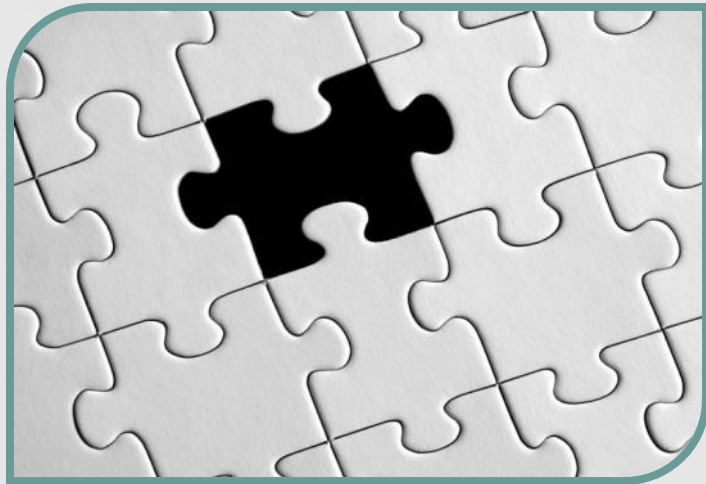
Education Gap Analysis

The Perryman Group's detailed occupational forecasts were compared to degrees and certificates awarded by regional universities and colleges.

Where the need for workers with certain skills is larger than the numbers of awards, other actions may be worth considering including:

- **expanding** programs
- **recruiting** efforts
- **partnering** with other institutions

Applications



Education Gap Analysis

This analysis is based on "crosswalks" maintained by the Bureau of Labor Statistics which link occupation codes to specific instructional programs. Although based on empirical evidence, the crosswalk process is imperfect and should be viewed as a tool for high-level assessment.

In some cases, degrees in one field can be useful across a variety of occupations. Students may receive training at regional institutions, but leave the area. Individuals trained elsewhere move in to fill jobs. In addition, not only program capacity but also student choices affect the numbers of awards.

Projected Education Gaps in the Permian Basin

Degree programs offered by Midland College

| Instructional Program Group | Average Awards | | Average Demand | Average Gap | |
|--|-----------------|----------------|----------------|-----------------|-------------|
| | Midland College | Nearby Schools | | Midland College | All Schools |
| Business, Management, Marketing, Related | 53.4 | 149.8 | 2,000.9 | 1,947.5 | 1,797.7 |
| Transportation and Materials Moving | 0.2 | 0.0 | 805.6 | 805.4 | 805.4 |
| Mechanics and Repairers | 40.4 | 99.6 | 525.4 | 485.0 | 385.4 |
| Work and Family Studies | 11.4 | 26.8 | 293.6 | 282.2 | 255.4 |
| Precision Production Trades | 24.0 | 35.8 | 217.8 | 193.8 | 158.0 |
| Engineering Technology | 45.4 | 89.8 | 227.5 | 182.1 | 92.3 |
| Health Services and Sciences | 159.8 | 314.2 | 561.6 | 401.8 | 87.6 |
| Personal and Culinary Services | 20.6 | 123.4 | 220.7 | 200.1 | 76.7 |
| Education | 16.8 | 46.6 | 119.2 | 102.4 | 55.8 |
| Legal Studies | 6.4 | 30.8 | 50.7 | 44.3 | 13.5 |

Note: Average awards cover Fall 2014-2018, “nearby schools” include Odessa College and Howard County Junior College District. Demand consists of projected average annual demand (2019-2030) for jobs in the Permian Basin which require a postsecondary non-degree award (certificate) or Associate’s degree.

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

Projected Education Gaps in the Permian Basin

Bachelor's degree programs offered by UT Permian Basin

| Instructional Program Group | Average Awards | Average Demand | Average Gap |
|---|----------------|----------------|-------------|
| Business, Management, Marketing, Related | 168.4 | 1,036.8 | 868.4 |
| Engineering | 60.4 | 326.2 | 265.8 |
| Computer, Information Sciences, Support | 25.8 | 194.5 | 168.7 |
| Human Services | 10.2 | 79.3 | 69.1 |
| Engineering Technology | 12.4 | 53.8 | 41.4 |
| Visual and Performing Arts | 12.4 | 50.8 | 38.4 |
| Physical Sciences | 21.0 | 45.2 | 24.2 |
| Health Services and Sciences | 36.0 | 60.0 | 24.0 |
| Communication, Journalism, and Related Programs | 32.4 | 54.7 | 22.3 |
| Homeland Security and Protective Services | 5.4 | 15.4 | 10.0 |
| Work and Family Studies | 28.6 | 37.0 | 8.4 |
| Mathematics and Statistics | 9.4 | 17.5 | 8.1 |
| Multi-/Interdisciplinary Studies | 59.6 | 65.0 | 5.4 |

Note: Average awards cover Fall 2014-2018. Demand consists of projected average annual demand (2019-2030) for jobs in the Permian Basin which require a Bachelor's degree.

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



Focus on: Health and Wellness
Overview, Economic Forecast, and Applications

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Overview



Access to Health Care

The health and well-being of a community is driven by factors such as access to health care and the supply of health care professionals. Shortages among physicians and other health care workers are widespread, and in a rapidly growing community such as Midland, it can be difficult to avoid issues.

Midland leaders and the health care community are working to deal with current shortages and likely future needs for additional health care providers in the area. The Perryman Group's analysis indicates these efforts are worthy of significant support given anticipated future population growth and demographic patterns.

Overview



Access to Health Care

A major indicator of access to affordable health care is health insurance, whether from a private insurance company or through a public insurance program. The Midland area has lower rates of health insurance coverage than the state and the nation.

Percent of Population with Health Insurance

| | |
|-----------------|-------|
| City of Midland | 81.6% |
| Midland County | 80.4% |
| Midland MSA | 80.6% |
| Texas | 82.7% |
| United States | 91.3% |

Source: US Census Bureau, American Community Survey, 1-Year Estimates, S2701, 2017.

Overview



Poverty Levels in Midland Area

A significant body of empirical research links income level to health. In general, lower income is correlated with shorter life expectancies, reduced access to medical care, and higher rates of chronic disease.

| | Individuals Below Poverty Line | Percent of Population |
|-----------------|--------------------------------|-----------------------|
| City of Midland | 12,191 | 9.1% |
| Midland County | 17,398 | 10.7% |
| Midland MSA | 17,695 | 10.6% |
| Texas | 4,076,905 | 14.7% |
| United States | 42,583,651 | 13.4% |

Source: US Census Bureau, American Community Survey, 1-Year Estimates, S2701, 2017.

Overview

Supply of Physicians and Health Care Workers

Midland County is experiencing a shortage of medical professionals, including primary care physicians, dentists, and mental health professionals, compared to the rest of the state and nation.

The county has experienced 28% growth in physicians over the past ten years, falling behind the 39% growth experienced in the state as a whole.



Applications

Impact of Population Growth Estimates by Age

The two population groups that are primary consumers of health services will also be expanding rapidly, thus putting pressure on local resources.

+11,521 (+3.91%)

Under 15

+4,248 (+3.50%)

Over 65



Note: Values reflect the absolute growth amount and the annual growth rate from 2019-2025 under the baseline oil price scenario.

Projected Midland MSA Population Growth

Results by varying oil price assumptions

| Age Group | Baseline | | Low Oil Prices | | High Oil Prices | | Statewide | |
|----------------------------|----------|---------|----------------|---------|-----------------|---------|---------------|---------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Annual Growth Rates | | | | | | | | |
| Under 15 | +3.91% | +3.55% | +2.73% | +2.99% | +5.55% | +4.17% | +0.89% | +1.04% |
| 15 to 64 | +3.99% | +3.91% | +2.81% | +3.35% | +5.63% | +4.54% | +1.12% | +1.12% |
| 65 and Over | +3.50% | +2.85% | +2.33% | +2.29% | +5.14% | +3.46% | +3.82% | +3.47% |
| Absolute Growth | | | | | | | | |
| Under 15 | +11,521 | +20,830 | +7,811 | +17,067 | +17,050 | +25,293 | | |
| 15 to 64 | +32,956 | +65,491 | +22,531 | +54,551 | +48,494 | +78,465 | | |
| 65 and Over | +4,248 | +6,692 | +2,743 | +5,242 | +6,492 | +8,411 | | |

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

Applications

Need for Additional Health Care Providers

The Perryman Group's detailed forecast of demand for additional workers indicates strong growth in demand for health care occupations.

An estimated **922 additional workers across all health care fields will be needed by 2025** and **1,304** by 2030 under baseline oil price assumptions when growth and replacement needs are considered, with even more demand if prices are higher.

Particularly large numbers of **registered nurses** and **licensed vocational nurses** will be needed.



Current Physician Employment per Capita

Employment per 100,000 people in 2019 by region

| Occupation | Midland MSA | Abilene MSA | Sherman-Denison MSA | State of Texas |
|--------------------------------|-------------|-------------|---------------------|----------------|
| Anesthesiologists | 8.5 | 10.9 | 14.1 | 10.7 |
| Family & General Practitioners | 33.0 | 46.3 | 56.6 | 42.5 |
| Internists, General | 12.2 | 17.1 | 21.6 | 15.6 |
| Obstetricians/Gynecologists | 5.3 | 7.4 | 9.7 | 7.0 |
| Pediatricians, General | 7.5 | 10.3 | 12.7 | 9.4 |
| Psychiatrists | 5.9 | 9.7 | 10.4 | 8.3 |
| Surgeons | 11.2 | 14.9 | 19.4 | 14.2 |
| Physician Assistants | 28.8 | 40.6 | 49.1 | 37.8 |
| All Other Physicians/Surgeons | 82.0 | 118.3 | 138.4 | 118.2 |

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

Projected Midland MSA Physician Demand

Results by varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|--------------------------------|-----------|------------|----------------|------------|-----------------|------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Anesthesiologists | 2 | 8 | 1 | 7 | 4 | 9 |
| Family & General Practitioners | 10 | 31 | 5 | 27 | 18 | 36 |
| Internists, General | 3 | 10 | 1 | 9 | 6 | 12 |
| Obstetricians/Gynecologists | 2 | 5 | 1 | 4 | 3 | 6 |
| Pediatricians, General | 2 | 7 | 1 | 6 | 4 | 8 |
| Psychiatrists | 2 | 5 | 1 | 4 | 3 | 6 |
| Surgeons | 3 | 10 | 1 | 9 | 6 | 12 |
| Physician Assistants | 17 | 39 | 12 | 35 | 24 | 44 |
| All Other Physicians/Surgeons | 24 | 71 | 13 | 61 | 41 | 82 |
| Total, All Physicians | 65 | 186 | 36 | 162 | 109 | 215 |

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

Current Nursing Employment per Capita

Employment per 100,000 people in 2019 by region

| Occupation | Midland MSA | Abilene MSA | Sherman-Denison MSA | State of Texas |
|----------------------------|-------------|-------------|---------------------|----------------|
| Registered Nurses | 578.4 | 1,166.3 | 1,215.5 | 881.1 |
| Nurse Anesthetists | 10.1 | 14.9 | 17.9 | 13.6 |
| Nurse Midwives | 1.6 | 2.3 | 3.0 | 2.2 |
| Nurse Practitioners | 40.5 | 60.6 | 71.5 | 53.2 |
| Licensed Vocational Nurses | 161.4 | 259.4 | 266.5 | 205.4 |

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

Projected Midland MSA Nursing Demand

Results by varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|----------------------------|------------|------------|----------------|------------|-----------------|------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Registered Nurses | 223 | 542 | 152 | 475 | 329 | 622 |
| Nurse Anesthetists | 4 | 10 | 2 | 8 | 6 | 12 |
| Nurse Midwives | 1 | 2 | 0 | 1 | 1 | 2 |
| Nurse Practitioners | 22 | 54 | 15 | 47 | 32 | 61 |
| Licensed Vocational Nurses | 68 | 186 | 43 | 163 | 106 | 212 |
| Total, All Nurses | 318 | 794 | 212 | 694 | 474 | 909 |

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



Focus on: Quality of Place

Overview, Economic Forecast, and Applications

OVERVIEW

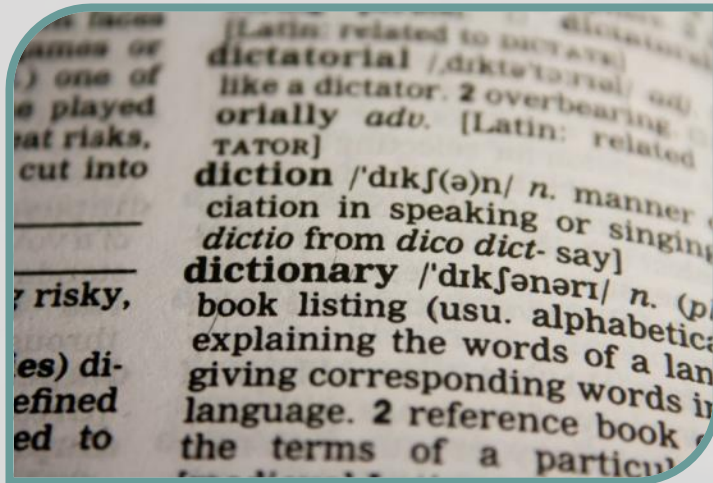
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Definition

Quality of place has been defined as “the physical characteristics of a community, the way it is planned, designed, developed, and maintained that affect the quality of life of people living and working in it and those visiting it both now and in the future.”

- Quality of public goods (health care and schools)
- Cultural amenities (libraries, art, entertainment)
- Restaurants and bars
- Crime rates
- Housing costs
- Diversity and inclusivity
- University enrollment
- Parks and green space
- Public transit
- Walkability

Overview



Community Density and Dynamics

The age demographic with the largest rate of population growth since 2010 has been 25 to 34 year olds, followed by 35 to 44 year olds.

The population aged 25 to 34 years that had at least a Bachelor's degree grew by **188.4% in the City of Midland** and **190.0% in Midland County** from 2010 to 2017, greatly outpacing state and national growth.

| | 2010-2018 | 2017-2018 |
|-----------------------|---------------|--------------|
| Natural Growth | 13,550 | 1,741 |
| Births | 22,260 | 2,847 |
| Deaths | 8,710 | 1,106 |
| Net Migration | 21,718 | 5,425 |
| International | 3,065 | 461 |
| Domestic | 18,653 | 4,964 |
| Total | 35,706 | 7,192 |

Source: US Census Bureau, Population Estimates Program

Overview



Community Density and Dynamics

Employed in Midland: 66,895

Lived in Midland: 48.6%

Lived Outside: 51.4%

- Lived in Odessa: 7,369 (11.0%)
- Lived in West Odessa CDP: 1,212 (1.8%)
- Lived in Big Spring: 1,023 (1.5%)
- Lived in Lubbock: 890 (1.3%)
- Lived in El Paso: 832 (1.2%)

Lived in Midland: 57,088

Employed in Midland: 56.9%

Employed Outside: 43.1%

- Employed in Odessa: 5,229 (9.2%)
- Employed in Lubbock: 1,158 (2.0%)
- Employed in Houston: 664 (1.2%)

Overview

Entertainment

Current entertainment options according to the City of Midland Annual Budget

- 2 Movie Theatres (25 screens)
- 1 Drive-in movie (3 screens)
- Midland Community Theatre
- Midland/Odessa Symphony and Chorale
- Commemorative Air Force Museum
- Petroleum Museum
- Museum of the Southwest
- George W. Bush Childhood Home
- Midland Rockhounds
- Wagner Noel Performing Arts Center
- Marion Blackwell Planetarium
- I-20 Wildlife Preserve
- Skate Park
- BMX Park
- Dog Park



Overview



Public Safety

The crime rate in the City of Midland has generally fallen since 2010, though there have been fluctuations year to year. In general, Midland has less violent crime per 100,000 than Texas, though the area reported more property crime in 2017, mostly in the increased incidence of larceny and/or theft (table below).

| | City of Midland | Texas |
|-----------------------------|-----------------|-------------|
| Total Violent Crime | 377 | 439 |
| Homicide | 2 | 5 |
| Rape | 37 | 51 |
| Robbery | 59 | 114 |
| Aggravated assault | 279 | 269 |
| Total Property Crime | 2677 | 2563 |
| Burglary | 431 | 474 |
| Larceny/theft | 2026 | 1849 |
| Motor vehicle theft | 220 | 240 |
| Arson | 5 | 12 |

Source: Crime Data Explorer, Federal Bureau of Investigation

Overview



Public Safety

At the same time, employment in the police and fire department has increased since 2010, though year-to-year fluctuations have also occurred. In FY2019, there were 199 police officers and 52 civilian employees (251 total personnel). That same year, there were 231 total employees in the fire department, 225 firefighters and 6 civilian employees.

| | 2014 | 2015 | 2016 | 2017 |
|--------------------------|------|------|------|------|
| Police Department | | | | |
| Police officers | 179 | 179 | 167 | 199 |
| Civilian employees | 46 | 47 | 47 | 52 |
| Fire Department | | | | |
| Firefighters | 176 | 173 | 193 | 214 |
| Civilian employees | 5 | 5 | 5 | 6 |

Note: Data listed by end year of fiscal year.

Sources: City of Midland 2010-2019 Annual Budgets

Application

Public Safety

Compared to similarly sized metropolitan areas or the state as a whole, Midland currently employs fewer persons in protective services occupations.

Employment of firefighters, detectives, and police officers is significantly lower in Midland (per 100,000 residents) than the state average.

The need for additional workers is projected to be lead by **police and sheriff's patrol officers**.



Current Protective Service Employment per Capita

Employment per 100,000 people in 2019 by region

| Occupation | Midland MSA | Abilene MSA | Sherman-Denison MSA | State of Texas |
|---------------------------------------|-------------|-------------|---------------------|----------------|
| First-Line Supervisors | | | | |
| Police and Detectives | 37.3 | 43.4 | 37.2 | 43.1 |
| Fire Fighting and Prevention Workers | 23.4 | 24.0 | 23.8 | 24.3 |
| Firefighters | 129.4 | 132.6 | 132.5 | 134.5 |
| Detectives and Criminal Investigators | 28.2 | 32.6 | 20.1 | 48.8 |
| Police and Sheriff's Patrol Officers | 256.2 | 292.0 | 262.7 | 279.2 |

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

Projected Midland MSA Protective Service Demand

Demand by varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|---------------------------------------|----------|---------|----------------|---------|-----------------|---------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| First-Line Supervisors | | | | | | |
| Police and Detectives | 13 | 22 | 10 | 18 | 17 | 27 |
| Fire Fighting and Prevention Workers | 10 | 17 | 8 | 15 | 13 | 20 |
| Firefighters | 52 | 92 | 42 | 79 | 68 | 109 |
| Detectives and Criminal Investigators | 10 | 17 | 8 | 15 | 13 | 20 |
| Police and Sheriff's Patrol Officers | 103 | 178 | 81 | 154 | 135 | 215 |

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

Application

Demand for Knowledge Workers

Over 25% of new jobs demanded through 2025 and 2030 require at least some form of postsecondary award or degree.

In particular, it is projected that the area will need **14,820 workers with a bachelor's degree through 2030**. Meeting this need will necessarily involve attracting new workers from other areas of the state and nation.

Nearly 70% of new jobs demanded will involve short-term to moderate on-the-job training.



Projected Midland MSA Employment Demand

Demand by educational requirements under varying oil price assumptions

| Educational Requirement | Baseline | | Low Oil Prices | | High Oil Prices | |
|-----------------------------------|---------------|---------------|----------------|---------------|-----------------|----------------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| No formal educational credential | 15,233 | 31,825 | 11,660 | 27,533 | 20,551 | 36,996 |
| High school diploma or equivalent | 14,043 | 33,206 | 10,725 | 29,262 | 18,982 | 37,945 |
| Postsecondary nondegree award | 2,150 | 5,597 | 1,510 | 4,834 | 3,111 | 6,505 |
| Associate's degree | 947 | 2,293 | 675 | 1,999 | 1,358 | 2,643 |
| Some college, no degree | 665 | 1,651 | 496 | 1,452 | 916 | 1,894 |
| Bachelor's degree | 6,286 | 14,820 | 4,726 | 13,028 | 8,609 | 16,955 |
| Master's degree | 306 | 723 | 232 | 641 | 417 | 831 |
| Doctoral or professional degree | 474 | 1,120 | 342 | 985 | 668 | 1,286 |
| Total, All Occupations | 40,104 | 91,235 | 30,366 | 79,734 | 54,612 | 105,055 |

Note: Demand includes workers needed due to economic growth as well as replacement needs.

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

Application

Food Service

As a center for regional business activity, the Midland economy currently employs more food service workers per 100,000 residents than many areas.

Over the next few years, thousands more food preparation workers will be required. The level of difficulty in finding these workers is likely to increase from what is already a challenging situation.



Current Food Service Employment per Capita

Employment per 100,000 people in 2019 by region

| Occupation | Midland MSA | Abilene MSA | Sherman-Denison MSA | State of Texas |
|---|-------------|-------------|---------------------|----------------|
| Food Preparation and Serving Related | 4,612.7 | 4,574.2 | 3,743.9 | 4,227.4 |
| Supervisors of Food Preparation/Serving | 366.9 | 365.1 | 297.0 | 338.0 |
| Cooks and Food Preparation Workers | 1,097.6 | 1,110.3 | 908.8 | 1,015.7 |
| Food and Beverage Serving Workers | 2,650.1 | 2,614.8 | 2,138.4 | 2,421.0 |
| Other Related Workers | 498.0 | 484.0 | 399.7 | 452.8 |

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

Projected Midland MSA Food Service Demand

Demand by varying oil price assumptions

| Occupation | Baseline | | Low Oil Prices | | High Oil Prices | |
|---|----------|---------|----------------|---------|-----------------|---------|
| | 2019-25 | 2019-30 | 2019-25 | 2019-30 | 2019-25 | 2019-30 |
| Food Preparation and Serving Related | 4,656 | 9,695 | 3,631 | 8,410 | 6,188 | 11,249 |
| Supervisors of Food Preparation/Serving | 357 | 741 | 275 | 641 | 478 | 862 |
| Cooks and Food Preparation Workers | 1,013 | 2,135 | 776 | 1,841 | 1,369 | 2,492 |
| Food and Beverage Serving Workers | 2,802 | 5,796 | 2,203 | 5,038 | 3,698 | 6,713 |
| Other Related Workers | 484 | 1,023 | 377 | 890 | 643 | 1,182 |

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



Conclusion

The Importance of Proactive Efforts

Conclusion

A unique combination of events has created an enormous opportunity for the Midland area. Midland stands at the epicenter of an economic phenomenon of global importance.

The efforts of Priority Midland will not determine whether or not the oil and gas in the Permian Basin will be produced – that will happen! It is driven by forces that extend well beyond the local area. In fact, these factors lie at the very heart of future international prosperity.

The efforts of Priority Midland will, however, play a major role in the future of this community and the lifestyle that will be experienced for generations to come. Enhanced educational performance, health care delivery, infrastructure availability, housing options, and amenities will enrich and invigorate the area with its own brand of energy and open up new avenues for progress. A failure to act will sacrifice the potential bounty and leave conditions deteriorating despite the explosion in oil and gas production.

Midland Can Do It!

Tax Supported Debt Outstanding in 2018

| City | Population | Debt per Capita | Income per Capita (2017) |
|----------------|----------------|-----------------|--------------------------|
| Killeen | 149,103 | \$1,225 | \$20,877 |
| McAllen | 143,433 | \$638 | \$21,538 |
| Mesquite | 142,816 | \$1,296 | \$21,105 |
| Midland | 142,344 | \$985 | \$38,218 |
| Denton | 138,541 | \$5,325 | \$27,358 |
| Waco | 138,183 | \$3,072 | \$21,922 |
| Carrollton | 136,879 | \$1,273 | \$34,399 |
| Round Rock | 128,739 | \$1,477 | \$32,195 |
| Abilene | 122,999 | \$2,554 | \$24,206 |
| Pearland | 122,149 | \$2,540 | \$41,282 |

The City of Midland's Low Debt Situation

The City of Midland's tax supported debt outstanding of \$140,255,000 and tax supported debt outstanding per capita of \$985 is much lower than most similarly sized cities.

With the exception of Killeen and McAllen (whose bonds are not rated) all of the comparable cities have a high investment grade rating by Moody's (either Aa1 like Midland or Aa2).

Notes: Tax supported debt outstanding is general obligation debt and does not include revenue debt, although some portion may be self-supporting such as for part of the Midland debt.

Source: Texas Bond Review Board, US Census Bureau Population Division, American Fact Finder, and US Census Bureau, 2017 American Community Survey 1-Year Estimates.

Midland Can Do It!

Tax Supported Debt Outstanding in 2018

| County | Population | Debt per Capita | Income per Capita (2017) |
|----------------|----------------|-----------------|--------------------------|
| Ellis | 179,436 | \$206 | \$29,922 |
| Midland | 172,578 | \$90 | \$36,572 |
| Johnson | 171,361 | \$158 | \$26,688 |
| Guadalupe | 163,694 | \$83 | \$28,584 |
| Ector | 162,124 | \$180 | \$24,264 |
| Comal | 148,373 | \$989 | \$36,833 |
| Parker | 138,371 | \$878 | \$34,311 |
| Taylor | 137,640 | \$350 | \$27,386 |
| Randall | 136,271 | \$339 | \$32,592 |
| Grayson | 133,991 | \$272 | \$27,795 |

Midland County's Low Debt Situation

With the exception of Guadalupe County, Midland County's tax supported debt outstanding of \$15,535,000 and tax supported debt outstanding per capita of \$90 is much lower than comparable counties.

Even before the expected growth in revenues in the future, Midland could currently support significantly more debt when compared to other Texas counties of similar size.

Notes: Tax supported debt outstanding is general obligation debt and does not include revenue debt, although some portion may be self-supporting such as for part of the Midland debt.

Source: Texas Bond Review Board, US Census Bureau Population Division, American Fact Finder, and US Census Bureau, 2017 American Community Survey 1-Year Estimates.

Midland Can Do It!

Tax Supported Debt Outstanding in 2018

| ISD | Enrollment | Debt per Student | Income per Capita (2017) |
|---------------------------|---------------|------------------|--------------------------|
| Midland | 25,716 | \$8,077 | \$37,560 |
| Pflugerville | 25,306 | \$16,509 | \$31,635 |
| Carrollton-Farmers Branch | 25,297 | \$7,067 | \$34,800 |
| McKinney | 24,959 | \$21,314 | \$41,631 |
| Alvin | 24,852 | \$26,900 | \$34,791 |
| Laredo | 24,069 | \$12,461 | \$11,615 |
| Goose Creek | 23,795 | \$18,712 | \$24,340 |
| McAllen | 23,721 | \$3,513 | \$22,252 |
| Birdville | 23,691 | \$10,703 | \$28,096 |
| Hurst-Euless-Bedford | 23,429 | \$12,792 | \$31,908 |

Midland ISD's Low Debt Situation

Midland ISD's debt per student is lower than many comparably sized districts by a substantial margin. **The debt level of \$8,077 per student is less than half or even one-third of other districts with similar numbers of students.** Moreover, the area's income per capita is among the highest of the districts reviewed.

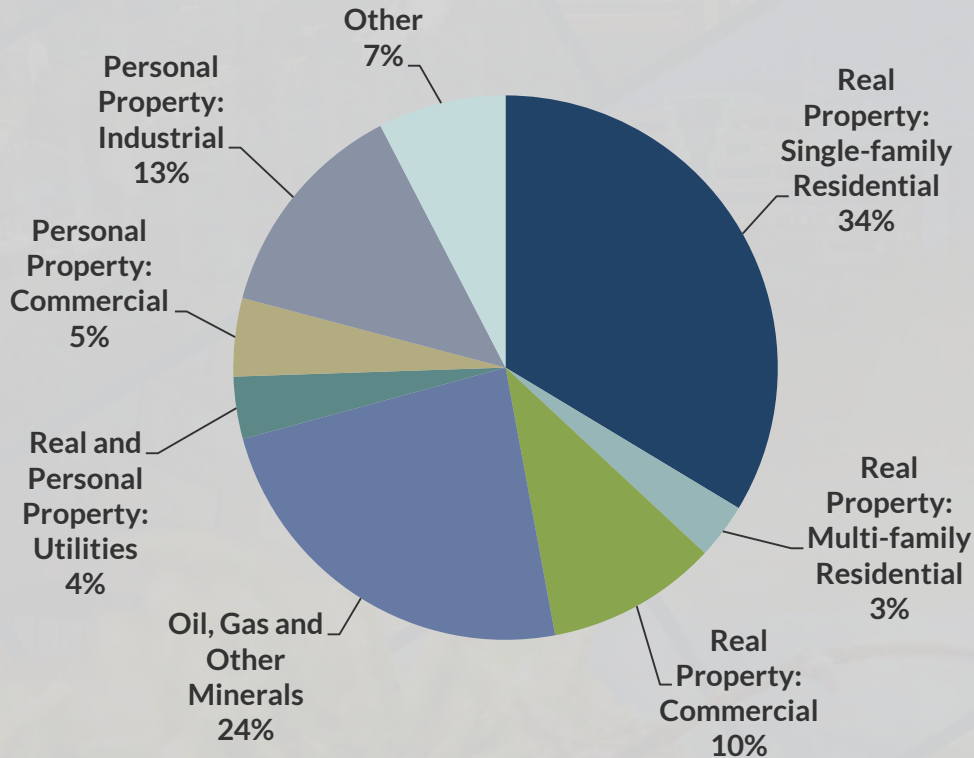
Like the City of Midland and Midland County, the Midland ISD could currently support significantly more debt, even before expected future increases.

Notes: Tax supported debt outstanding is general obligation debt including voter approved and maintenance and operations tax supported debt and does not include revenue debt. Some school districts qualify to receive some funding for debt service from the state, which could make debt outstanding per student somewhat misleading to the relative school district debt service tax burden for those districts.

Source: Texas Bond Review Board, Texas Education Agency, and US Census Bureau, 2017 American Community Survey 1-Year Estimates.

Midland Central Appraisal District Market Values

Composition of market values by classification



A much larger portion of taxes is paid by oil and gas property owners in Midland compared to Texas as a whole. For the Midland area in 2018, Single-Family Residential was 33.6% of the total market value while **Oil, Gas, and Other Minerals** comprised **23.7%**. For the state as of 2017, Single Family Residential was 46.39% of total market value and **Oil, Gas, and Other Minerals** was only **2.47%**.

Note: Other includes Vacant Lots and Tracts, Qualified Agricultural Land, Non-Qualified Land, Farm and Ranch Improvements, Nonbusiness Vehicles, Mobile Homes, Residential Inventory, and Special Inventory

Source: Midland Central Appraisal District

What if...

Proactive initiatives had been undertaken five years ago?

Midland MSA

Output (gross product)

+\$22.4 billion from 2014-2019
+10.9% higher

Employment

+40,300 job-years from 2014-2019
+7.9% higher

Permian Basin

Output (gross product)

+\$37.4 billion from 2014-2019
+12.4% higher

Employment

+80,000 job-years from 2014-2019
+6.8% higher

What if...

Midland does not take proactive measures to implement initiatives?

Midland MSA

Lost gross product over 2020-30

Baseline: **-\$22.7 billion**

Low Oil Prices: **-\$13.2 billion**

High Oil Prices: **-\$35.6 billion**

Lost employment over 2020-30

Baseline: **-180,500 job-years**

Low Oil Prices: **-124,900 job-years**

High Oil Prices: **-256,200 job-years**

Permian Basin

Lost gross product over 2020-30

Baseline: **-\$41.2 billion**

Low Oil Prices: **-\$22.5 billion**

High Oil Prices: **-\$66.6 billion**

Lost employment over 2020-30

Baseline: **-445,400 job-years**

Low Oil Prices: **-308,000 job-years**

High Oil Prices: **-632,000 job-years**

Thinking Beyond Tomorrow

Assuming that the goals of Priority Midland are achieved and the area becomes a desirable location with the **housing, infrastructure, educational opportunities, health facilities, and quality of place** to attract knowledge workers, the area can become a major hub for:

Energy Technology
(Petroleum and Renewable)

Water Conservation
Technology

Environmental Technology





Priority Midland is well
named and well timed.

Its mission is essential and
its success is imperative.

Effective economics, accessible analysis

The Perryman Group provides the economic insights needed for the board room, the courtroom, the hearing room, or any other room where decisions are made

We are a focused team of analysts who can answer your economic questions clearly and effectively—no matter how complex or consequential. Dr. Ray Perryman, President and CEO, has more than 40 years of experience in developing systems, analyzing complex problems, and communicating effectively with governments, judges and juries, Fortune 500 companies, small businesses, community leaders, and audiences of all types.

Our thousands of clients include over half of the Fortune 100, two-thirds of the Global 25, and the 12 largest technology firms and 6 largest energy companies in the world.