

West Houston Economic Development Summit

Expectations for US, Texas, the Houston-The Woodlands-Sugar Land MSA, and the Greater West Houston Area

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The United States



The US economy is performing quite well and is likely to expand over the next several years.

Global economic conditions are improving, which will enhance growth prospects in the United States. Forecasts from the Organisation for Economic Co-operation and Development (OECD) call for global gross domestic product growth of 3.5% in 2017 and 3.7% in 2018, up from 3% in 2017. The OECD notes that “the upturn has become more synchronised across countries” and that “investment, employ-

ment and trade are expanding.” However, further recovery in business investment and trade as well as further reforms in emerging market economies will be needed to sustain strong future growth.

On the domestic front, the **Federal Reserve** continues to normalize monetary policy, and it is unlikely that this pattern will change significantly with the new Chair. Target rates for interest on federal funds remain low in order to allow for additional strengthening of the labor market. In addition, the Fed has begun to reduce

large asset balances accumulated during the financial crisis and recession which followed. Timing for further tightening will depend on incoming data.

Looking toward the rest of this year and beyond, there are a number of positive signals. The stock market is up, consumer confidence is high, and inflation remains in check.

There are challenges to be dealt with, both domestic and international, but the underlying pattern is generally improving.

PROJECTED KEY INDICATORS

Economic Indicator	2017 Level	2022 Level	Annual Growth	Five Year Increase
Real Gross Product	\$16.8 tr	\$19.3 tr	2.89%	\$2.6 tr
Real Personal Income	\$14.5 tr	\$16.1 tr	2.15%	\$1.6 tr
Population	323.1 m	334.9 m	0.71%	11.7 m
Employment	146.4 m	158.1 m	1.55%	11.7 m
Industrial Production Index	117.3	133.7	2.65%	N/A
Consumer Price Index	114.1	125.2	1.87%	N/A
Interest Rates	2.86%	3.98%	N/A	N/A

The Perryman Group’s most recent short-term forecast for the US economy indicates relatively healthy growth over the next five years.

Real gross product is projected to increase at a 2.89% annual pace, reaching a level of \$19.3 trillion in 2022.

About 11.7 million net new jobs are forecast to be added, for total 2022 employment of 158.1 million.

Consumer prices and interest rates are expected to trend upward slightly over the next five years.

The US **labor market** is improving. The unemployment rate has been trending just over 4%, which many economists consider to be full employment.

Professional and business services and health care have been major sources of net new jobs.

Even with this relatively healthy labor market, however, millions of Americans

remain either unemployed or working part time when they would prefer full-time work. At the same time, there are millions of job openings. The problem is often a mismatch of job skills, and improving training and retraining options can both provide businesses with the workers they need and enhance opportunities for individuals.

The State of Texas

The Texas economy has been growing at a relatively healthy pace and continues to be widely recognized as a good place to do business.

Recovery in the energy sector is improving conditions not only in pro-

ducing areas, but also in other parts of the state. Manufacturing industries are also expanding.

The strength of the Texas economy will help with short-term issues such as the recovery process from Hurri-

cane Harvey as well as with long-term challenges such as preparing for the needs of the future.

Looking ahead, growth in the Texas economy is projected to outpace the nation over the next five years.

PROJECTED INDUSTRY GROWTH THROUGH 2022

Industry Supersector	Employment		Real Gross Product	
	Absolute Change	Annual Growth	Absolute Change	Annual Growth
Agriculture	2,228	0.53%	\$1.022 b	2.29%
Mining	38,766	3.10%	\$63.504 b	6.15%
Utilities	2,491	0.99%	\$5.966 b	3.35%
Construction	58,605	1.53%	\$11.025 b	2.68%
Manufacturing	41,002	0.94%	\$45.366 b	4.11%
Trade	191,913	1.89%	\$47.796 b	4.01%
Transportation & Warehousing	44,604	1.80%	\$9.324 b	3.53%
Information	14,722	1.42%	\$15.235 b	4.88%
Finance, Insurance & Real Estate	50,162	1.26%	\$35.101 b	3.02%
Services	807,048	2.87%	\$88.935 b	4.47%
Government	113,669	1.06%	\$18.251 b	2.24%
All Industries	1,365,210	2.05%	\$341.525 b	4.01%

The Perryman Group estimates that Hurricane Harvey will cause losses in Texas over the next few years of \$114.9 billion in real gross state product and 804,100 job years (when multiplier effects are considered), though a full recovery is expected and much of this pattern will be offset by strength in other areas.

Services industries will drive job gains, with wholesale and retail trade businesses also forecast to see notable hiring.

Real gross product in all major industry groups is projected to expand through 2022, with the services, mining, trade, and manufacturing segments likely to experience the largest growth in annual real gross product.

DETAILED INDUSTRY RANKINGS BY PROJECTED GROWTH THROUGH 2022

Employment			Real Gross Product		
#1	Food services and drinking places	+134,329 jobs	#1	Oil and gas extraction	\$57.8 b
#2	Ambulatory health care services	+124,405 jobs	#2	Real estate	\$19.9 b
#3	Administrative and support services	+117,205 jobs	#3	Administrative and support services	\$14.0 b
#4	Local government	+76,824 jobs	#4	Ambulatory health care services	\$13.3 b
#5	Hospitals	+62,237 jobs	#5	Local government	\$10.3 b

The Texas population is forecast to grow by 2.1 million over the next five years.

An estimated 1.4 million net new jobs are projected for the Texas economy by 2022, representing a 2.05% annual rate of growth over the period.

PROJECTED KEY INDICATORS

Economic Indicator	2017 Level	2022 Level	Annual Growth	Five Year Increase
Real Gross Product	\$1.6 tr	\$1.9 tr	4.01%	\$341.5 b
Real Personal Income	\$1.2 tr	\$1.4 tr	3.83%	\$241.3 b
Real Retail Sales	\$396.6 b	\$474.5 b	3.65%	\$77.9 b
Population	28.3 m	30.5 m	1.47%	2.1 m
Employment	12.8 m	14.1 m	2.05%	1.4 m
Housing Permits	155,925	171,623	1.94%	15,698

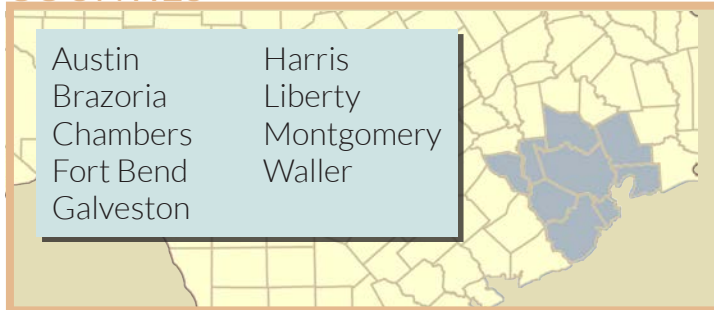
Houston-The Woodlands-Sugar Land metropolitan statistical area

The Houston-The Woodlands-Sugar Land Metropolitan Statistical Area has been experiencing notable job gains. The area continues to recover from Hurricane Harvey, which is causing a temporary uptick in construction associated with

repairs and replacement of damaged structures. While exploration and production activity has increased in response to higher oil prices, corporate-level hiring has not yet begun in earnest. Although the Hurricane's effects will continue to be felt

for years to come, growth in other areas will mask the negative impact. On balance, The Perryman Group's projections call for economic expansion over the next five years, with momentum building through the period.

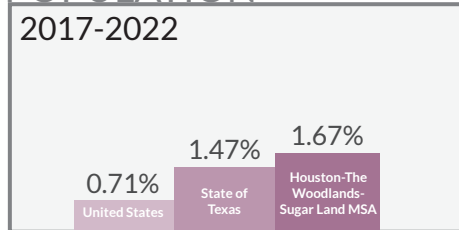
COUNTIES



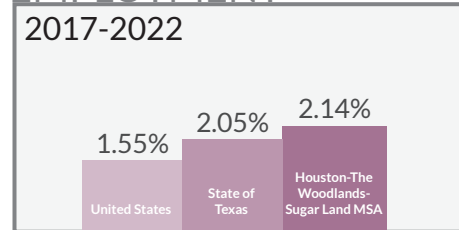
PROJECTED KEY INDICATORS

Economic Indicator	2017 Level	2022 Level	Annual Growth	Five Year Increase
Real Gross Product	\$481.7 b	\$589.2 b	4.11%	\$107.5 b
Real Personal Income	\$327.3 b	\$395.0 b	3.83%	\$67.7 b
Real Retail Sales	\$111.6 b	\$134.0 b	3.72%	\$22.4 b
Population	6.9 m	7.5 m	1.67%	593,576
Employment	3.2 m	3.5 m	2.14%	354,806
Housing Permits	40,435	45,806	2.53%	5,371

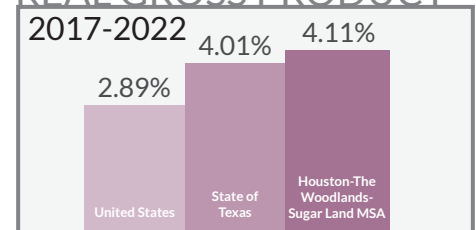
POPULATION



EMPLOYMENT



REAL GROSS PRODUCT



PROJECTED INDUSTRY GROWTH THROUGH 2022

Industry Supersector	Employment		Real Gross Product	
	Absolute Change	Annual Growth	Absolute Change	Annual Growth
Agriculture	168	0.73%	\$0.037 b	2.54%
Mining	14,158	3.10%	\$24.762 b	6.14%
Utilities	723	0.91%	\$2.392 b	3.29%
Construction	18,199	1.52%	\$3.841 b	2.66%
Manufacturing	10,600	0.90%	\$15.294 b	4.06%
Trade	47,421	1.88%	\$13.898 b	3.92%
Transportation & Warehousing	11,867	1.79%	\$2.852 b	3.52%
Information	2,300	1.36%	\$2.412 b	4.81%
Finance, Insurance & Real Estate	10,254	1.23%	\$10.170 b	2.94%
Services	215,467	2.95%	\$27.900 b	4.56%
Government	23,650	1.11%	\$3.911 b	2.28%
All Industries	354,806	2.14%	\$107.468 b	4.11%

Growth in the Houston-The Woodlands-Sugar Land area is expected to occur at a pace significantly faster than the state and nationwide rates through 2022.

Employment is projected to grow by more than 354,800 net new positions by 2022, with expansion concentrated in the latter years of the forecast horizon.

Real gross product is forecast to expand at a 4.11% annual pace, resulting in a gain of about \$107.5 billion by 2022. The services and mining sectors are expected to be growth leaders, expanding by \$27.9 billion and \$24.7 billion, respectively.

Greater West Houston Area

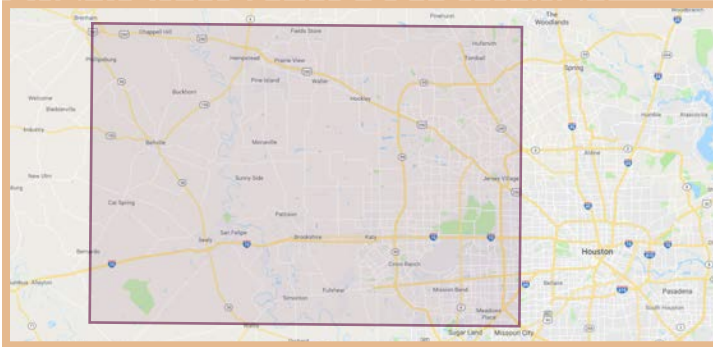
custom economic region

The Perryman Group examined the economy and likely growth patterns in the West Houston area, a subset of the Houston-The Woodlands-Sugar

Land MSA. West Houston has been characterized by significant economic expansion, and has been somewhat insulated from the effects of Hur-

ricane Harvey and the the slowdown in energy. West Houston is likely to outperform the national, state, and overall MSA economies.

GREATER WEST HOUSTON AREA

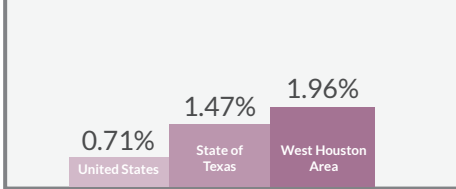


PROJECTED KEY INDICATORS

Economic Indicator	2017 Level	2022 Level	Annual Growth	Five Year Increase
Real Gross Product	\$95.2 b	\$118.2 b	4.42%	\$23.0 b
Real Personal Income	\$95.2 b	\$116.6 b	4.13%	\$21.4 b
Population	1.8 m	1.9 m	1.96%	179,990
Employment	0.7 m	0.8 m	2.51%	87,670

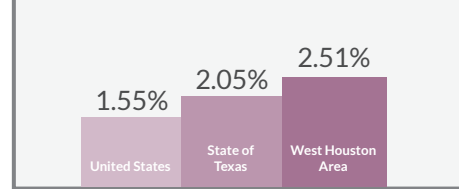
POPULATION

2017-2022



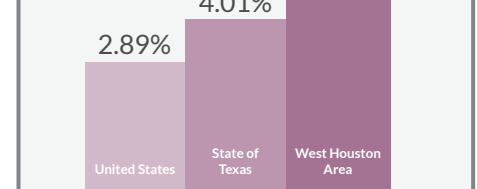
EMPLOYMENT

2017-2022



REAL GROSS PRODUCT

2017-2022



PROJECTED INDUSTRY GROWTH THROUGH 2022

Industry Supersector	Employment		Real Gross Product	
	Absolute Change	Annual Growth	Absolute Change	Annual Growth
Agriculture	3	0.99%	\$0.001 b	2.80%
Mining	2,111	3.37%	\$3.553 b	6.42%
Utilities	139	1.17%	\$0.386 b	3.55%
Construction	3,525	1.78%	\$0.698 b	2.93%
Manufacturing	1,666	1.17%	\$1.988 b	4.33%
Trade	12,483	2.14%	\$3.206 b	4.21%
Transportation & Warehousing	1,044	2.05%	\$0.235 b	3.79%
Information	1,099	1.62%	\$1.021 b	5.08%
Finance, Insurance & Real Estate	2,441	1.49%	\$2.160 b	3.20%
Services	57,071	3.24%	\$8.818 b	4.94%
Government	6,087	1.37%	\$0.909 b	2.54%
All Industries	87,670	2.51%	\$22.976 b	4.42%

Growth in the West Houston area is expected to occur at a much faster rate than the national average.

Employment is projected to grow by 87,670 net new positions, led by the services sector. This pace exceeds the Houston-The Woodlands-Sugar Land rate.

Real gross product is forecast to expand at a 4.42% annual pace, resulting in a gain of about \$23.0 billion by 2022. The services sector is expected to contribute around \$8.8 billion of the increase.

Greater West Houston Area the economy in depth

Sector Wage & Salary Employment	2012	2017	2022	2012-2017 CAGR	2017-2022 CAGR
Agriculture, Forestry, Fishing, and Hunting	60	69	73	2.91%	0.99%
Mining, Quarrying, and Oil & Gas	13,725	11,708	13,819	-3.13%	3.37%
Utilities	2,421	2,309	2,448	-0.94%	1.17%
Construction	30,458	38,145	41,670	4.60%	1.78%
Manufacturing	29,078	27,933	29,599	-0.80%	1.17%
Wholesale Trade	30,190	35,019	39,025	3.01%	2.19%
Retail Trade	69,573	76,742	85,219	1.98%	2.12%
Transportation & Warehousing	8,578	9,756	10,800	2.61%	2.05%
Information	12,615	13,099	14,199	0.76%	1.62%
Finance & Insurance	18,293	20,396	22,002	2.20%	1.53%
Real Estate and Rental & Leasing	9,968	11,373	12,208	2.67%	1.43%
Professional, Scientific, and Technical Services	59,837	69,945	82,069	3.17%	3.25%
Management of Companies and Enterprises	19,752	33,894	39,975	11.40%	3.36%
Administrative and Support and Waste Management	40,408	46,327	54,096	2.77%	3.15%
Educational Services	6,166	7,558	8,980	4.15%	3.51%
Health Care and Social Assistance	62,260	76,007	90,682	4.07%	3.59%
Arts, Entertainment, and Recreation	6,732	8,424	10,001	4.59%	3.49%
Accommodation & Food Services	51,444	65,420	75,282	4.92%	2.85%
Other Services	20,264	22,977	26,539	2.54%	2.92%
Government	76,392	86,620	92,708	2.54%	1.37%

Sector Real Gross Product	2012	2017	2022	2012-2017 CAGR	2017-2022 CAGR
Agriculture, Forestry, Fishing, and Hunting	\$3.0 m	\$4.2 m	\$4.8 m	7.03%	2.80%
Mining, Quarrying, and Oil & Gas	\$7.8 b	\$9.7 b	\$13.3 b	4.53%	6.42%
Utilities	\$1.9 b	\$2.0 b	\$2.4 b	0.96%	3.55%
Construction	\$3.6 b	\$4.5 b	\$5.2 b	4.67%	2.93%
Manufacturing	\$8.0 b	\$8.4 b	\$10.4 b	1.03%	4.33%
Wholesale Trade	\$7.3 b	\$8.5 b	\$10.3 b	3.06%	4.07%
Retail Trade	\$4.3 b	\$5.6 b	\$6.9 b	5.24%	4.41%
Transportation & Warehousing	\$1.5 b	\$1.2 b	\$1.4 b	-4.67%	3.79%
Information	\$2.9 b	\$3.6 b	\$4.6 b	4.40%	5.08%
Finance & Insurance	\$2.8 b	\$3.3 b	\$3.9 b	3.13%	3.35%
Real Estate and Rental & Leasing	\$8.1 b	\$9.4 b	\$10.9 b	2.98%	3.15%
Professional, Scientific, and Technical Services	\$9.6 b	\$11.3 b	\$14.3 b	3.21%	4.88%
Management of Companies and Enterprises	\$4.1 b	\$7.7 b	\$10.0 b	13.44%	5.34%
Administrative and Support and Waste Management	\$2.8 b	\$3.7 b	\$4.8 b	5.56%	5.16%
Educational Services	\$0.4 b	\$0.4 b	\$0.5 b	4.01%	4.62%
Health Care and Social Assistance	\$3.9 b	\$4.9 b	\$6.2 b	5.02%	4.81%
Arts, Entertainment, and Recreation	\$0.4 b	\$0.6 b	\$0.8 b	7.40%	4.29%
Accommodation & Food Services	\$1.8 b	\$2.4 b	\$3.1 b	6.29%	4.72%
Other Services	\$1.0 b	\$1.2 b	\$1.4 b	3.87%	3.69%
Government	\$5.8 b	\$6.8 b	\$7.7 b	3.25%	2.54%

DEFINITIONS

Real Gross Product: Also called "output;" the final value of all goods and services produced in an economy during a given period of time (adjusted for inflation and given in 2009 dollars).

Personal Income (by place of residence): The total income accruing to households where the income-earner resides rather than works (adjusted for inflation and given in 2009 dollars).

Retail Sales: The total volume of retail goods sold (adjusted for inflation and given in 2009 dollars).

Population: The total number of persons residing in a specific area.

Employment: (Wage and salary) a measure of the number of persons in the workforce excluding proprietors, but including agricultural workers and military personnel.

Housing Permits: Reflects the total number of permits for single and multi-family housing during a given period.

Annual Growth: Growth rate compounded annually, meaning that it reflects changes in the base from which growth is calculated.

Industrial Production Index: A measure of output in the core production sectors of the economy expressed as an index with 2009=100.

Consumer Price Index: A measure of inflation, the escalation of prices of consumer goods, expressed as an index with 2009=100.

Interest Rates: The rate set on the 20-year Treasury note.

Mining includes companies primarily involved in the extraction of minerals occurring naturally (largely oil and gas in Texas).

Construction includes new work, additions, alterations, and repairs of buildings, water systems, highways, utility plants, and other projects.

Trade includes wholesale and retail trade.

Finance, Insurance, and Real Estate includes depository and credit institutions, holding companies, insurance carriers and agents, real estate buyers and sellers, real estate agents, and real estate developers.

Manufacturing involves both non-durable items consumed in a short time period such as paper, bread, chemicals, and clothing as well as durable goods typically consumed over a period of several years such as automobiles, washing machines, industrial machinery, and computers.

Services includes companies providing services to individuals, businesses, or government entities such as health care, business services (excluding finance, insurance, and real estate), hotels, and amusements.

Government includes federal, state, local, and international governments and military activity.

Transportation and Warehousing includes transporting passengers and goods, warehousing and storing goods, and providing similar services.

Utilities includes electric, water, and sanitary services (including all establishments of the US Postal Service).

Agriculture includes farming, ranching, commercial fishing, forestry, hunting and trapping, and related services.

Information includes establishments that create, disseminate, or provide the means to distribute information including data processing; newspaper, book, and periodical publishers; software publishers; broadcasting and telecommunications producers and distributors; motion picture and sound recording industries; and information services.

METHODOLOGY

Economic and population projections were derived using the **Texas Econometric Model**, which was developed by Dr. M. Ray Perryman, President and CEO of The Perryman Group, more than 30 years ago and has been consistently maintained, expanded, and updated since that time. It is formulated in an internally consistent manner and is designed to permit the integration

of relevant global, national, state, and local factors into the projection process. It is the result of more than three decades of continuing research in econometrics, economic theory, statistical methods, and key policy issues and behavioral patterns, as well as intensive, ongoing study of all aspects of the global, US, Texas, and Texas metropolitan area economies. It is extensively

used by scores of federal and state governmental entities on an ongoing basis, as well as hundreds of major corporations. The overall methodology, while certainly not ensuring perfect foresight, has been peer-reviewed on numerous occasions and permits an enormous body of relevant information to impact the economic outlook in a systematic manner.

Effective economic research tailored for you

The Perryman Group provides the economic insights you need for the board room, courtroom, or hearing room.

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We are a focused team of analysts who know how to address any economic information task and present our findings effectively.

Our in-house professionals bring expertise in **finance, statistics, economics, real estate, valuation, systems analysis, mathematics, engineering, technical communications, and marketing**. Dr. Ray Perryman, President and CEO, has almost 40 years of experience in developing systems, analyzing complex problems, and communicating effectively.

We have considerable pride in what we do. Our enthusiasm is both unbridled and conta-

gious; every day brings a new opportunity for us to tackle a new problem or create a new product or service tailored to our clients.

We also understand that the effective use of economic information can be a key ingredient in fostering the betterment of society and humankind. Our commitment to the world in which we live and work is why we also provide major pro bono analyses to promote initiatives that help to improve people's lives.

ABOUT DR. M. RAY PERRYMAN

Dr. Ray Perryman is President and CEO of The Perryman Group, an economic research and analysis firm based in Waco, Texas. His firm has served the needs of more than 2,000 clients ranging from major corporations to small startups and from local communities to the federal government.

Over the past 40 years, Dr. Perryman has helped recruit corporations providing hundreds of thousands of jobs through economic development work, aided in the resolution of 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 hundreds of corporations and government agencies. Dr. Perryman has provided economic analysis and expert testimony for civil litigation across a wide range of practice areas including antitrust and competition, patent infringement, securities, and complex commercial litigation and frequently testifies in legislative hearings.

Some of his most gratifying work has been in the field of economic development; he also dedicates a significant portion of his time to pro bono work aimed at helping to solve pressing social problems such as hunger, indigent health care, and child maltreatment.