An Overview of Houston Real Estate: Life on the Other Side of the Pandemic

Robert W. Gilmer, Ph.D.
C.T. Bauer College of Business
May 2022
Overview of Presentation

• Stimulus, interest rates, and post-pandemic growth in Houston
• Houston existing home markets powers through the pandemic
• New home construction meets with lot shortages and sharply rising costs of labor and materials
• The apartment market tightens quickly with stimulus income and post-pandemic job return. Will it last as stimulus wanes?
• The office market has struggled since 2015 ... Even $100 oil can’t fix this problem
• A cautious retail market finds steady business with its focus mainly in the suburbs
• Industrial today is all about distribution and warehousing for e-commerce and container imports
Monetary and Fiscal Stimulus Helped the Pandemic Economy Soar, But Now and Policy Has Changed
Lower Mortgage Rates and Fiscal Stimulus Lit a Fire Under U.S. Home Sales

30-Year Fixed Mortgage (%)

U.S. Single-Family Permits (000) at annual rate

25.7% above pre-COVID

-33.3%

FRED St Louis Fed
Post-Lockdowns: Sales Rocket Back, Inventory Shortages, and Price Spike

Sales of New Homes
Million, Seasonally Adjusted Annual Rate

-23.0%

29.2%
Above
Pre-COVID

Median Price of New Homes:
$ 000 Quarterly

Census Bureau
The COVID Recovery Has Seen Inflation Surge: After a December Peak at a 6.1% Annual Rate, March retreated to 3.5%

Core inflation excludes food and energy prices which have been major contributors to headline figures.

Avg 2007-2019 = 1.9%
Where Does Inflation Go From Here?

- Expected inflation by consumers according to the U of Michigan May consumer survey is 5.4% over the next 12 months and 3.0% over 5-10 years.
- *Survey of Professional Forecasters* says 6.1% CPI inflation this year, followed by 2.4% in 2023 and 2.3% in 2024.
- Breakeven TIPS rates most recently 3.0 percent annually over the next 5 years and 2.7 percent over 10 years.
- Measure this against a two percent average long-run Fed target rate.

FRED, St Louis Fed, 5/13/2022
Wage Price Spiral?
Wages Are Surging Along With Prices

- In 2021, civilian workers saw wages and salaries rise 3.9 percent, following prices higher, then accelerate to 5.1% in 2022Q1
- Wage price spiral sees prices rise as employees press for wages to keep up with inflation, employers raise consumer prices because of higher wages
- Upward pressure requires labor to hold and maintain a strong hand, e.g., unions, employee solidarity, or just a tight labor market
- In the 1970’s, Federal Reserve action broke such a spiral by invoking a serious recession in 1981-82. Today’s Federal Reserve has responded to wage pressure with heightened motivation
The Federal Reserve has reiterated strongly that its objective remains two percent inflation over the longer term.

The committee raised its key policy rate by 0.25% and 0.5% in the last two meetings. In March, the FOMC provided projections from individual committee members of 4 to 6 more increases over the coming year.

The 2024 terminal rate in these projections has moved up to near 3.0 percent since December. This implies maybe 6 percent for 10-year Treasury by 2024?

$3\%\ Federal\ Funds +1\%\ 10-year + 2\%\ inflation = 6\%$

The May meeting brought a commitment to shrink the balance sheet starting June 1 by 48 billion per month and rising to $95 billion per monthly in September.
Rising Rates Ahead: Mortgage Originations for Purchase Down 12.2% by 2023 Compared to February Forecast

Projected Interest Rates

Mortgage Originations

Mortgage Bankers Association, April Forecast
Most Pandemic Stimulus Should Finally Disappear in 2022

- Chart on left shows the major sources of federal stimulus after the early 2021 package in $ billion at annual rates.
- In April 2021, this was primarily paycheck protection loans and expanded unemployment compensation.
- As this was funding mostly exhausted, an expanded and accelerated 2021 child tax credit came in July.
- Expanded Childcare tax credit ends in April 2022, and College Loan Forbearance now ends in September.

### $ Billion at Annual Rates

<table>
<thead>
<tr>
<th></th>
<th>Apr 21</th>
<th>Dec 21</th>
<th>Jan 22</th>
<th>Feb 22</th>
<th>Mar 22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Food Assistance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>15.5</td>
<td>0.0</td>
<td>0.3</td>
<td>0.2</td>
<td>1.3</td>
</tr>
<tr>
<td>Paycheck Protection Loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Farm</td>
<td>10.4</td>
<td>0.0</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Business</td>
<td>163.7</td>
<td>0.1</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Not-for-Profit</td>
<td>22.8</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>196.9</td>
<td>0.1</td>
<td>0.3</td>
<td>0.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Unemployment Comp</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extended State Benefits</td>
<td>9.7</td>
<td>1.4</td>
<td>0.8</td>
<td>0.7</td>
<td>0.6</td>
</tr>
<tr>
<td>Pandemic Extensions</td>
<td>105.8</td>
<td>1.8</td>
<td>1.1</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Gig/Contractor Relief</td>
<td>90.9</td>
<td>1.4</td>
<td>1.1</td>
<td>0.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Additional $600/week</td>
<td>258.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td></td>
<td>464.6</td>
<td>4.7</td>
<td>3.0</td>
<td>2.5</td>
<td>2.0</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College Loan Forbearance</td>
<td>37.8</td>
<td>37.8</td>
<td>37.8</td>
<td>37.8</td>
<td>37.7</td>
</tr>
<tr>
<td>Expanded Medicare</td>
<td>14.1</td>
<td>14.7</td>
<td>14.9</td>
<td>14.9</td>
<td>14.9</td>
</tr>
<tr>
<td>Expanded Child Tax Credit</td>
<td>34.4</td>
<td>226.3</td>
<td>105.6</td>
<td>105.6</td>
<td>105.6</td>
</tr>
<tr>
<td></td>
<td>86.3</td>
<td>278.8</td>
<td>158.3</td>
<td>158.4</td>
<td>158.8</td>
</tr>
<tr>
<td>Grand Total</td>
<td>763.3</td>
<td>283.6</td>
<td>161.0</td>
<td>161.3</td>
<td>161.8</td>
</tr>
</tbody>
</table>
A Strong Backdrop for Houston’s Job Growth to 2025

- We added 151,3000 jobs last year and expect 90,000 this year. This is higher than normal growth. *But be careful – we are still trying to just get back the lockdown job losses*

- The first half of 2022 and 40,000 jobs are dedicated to getting back to where we started in **2020Q2**. We lost two years of growth to COVID

- The column with $65 oil and annual growth off around 63,000 in future years jobs reflects a typical year for future growth

- Could we see a few years of higher oil prices? It is unlikely that even an event like Ukraine and $100 oil boom will bring a boom like past years will return. But 2022 will benefit from both the end of COVID and better (but cautious) investments by the oil industry

<table>
<thead>
<tr>
<th>Houston Payroll Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Annual Change (000)</strong></td>
</tr>
<tr>
<td><strong>Oil Price</strong></td>
</tr>
<tr>
<td>2019</td>
</tr>
<tr>
<td>2020</td>
</tr>
<tr>
<td>2021</td>
</tr>
<tr>
<td>2022</td>
</tr>
<tr>
<td>2023</td>
</tr>
<tr>
<td>2024</td>
</tr>
<tr>
<td>2025</td>
</tr>
</tbody>
</table>

Note Houston long-term average job growth should be 1.7% annually or about 63,000 jobs
Houston Existing Homes Follow Stimulus and U.S. Recovery to Power Through the Pandemic in 2021
Houston Existing Home Sales Soar in Stimulus-Driven Pandemic

(Houston MLS sales, s.a.)

- Houston existing home sales had picked up a little in 2019 as the Fed paused in its push to raise interest rates
- The initial response to the pandemic was a sharp pull-back in sales due to the stay-home orders and nonessential business closings
- Then a sharp drop in interest rates and a check from the federal government ignited a sharp increase in sales
- Sales through January were still strong and up 14.2% from pre-pandemic levels despite a lack of inventory.

Source: Texas A&M Real Estate Center, HAR, seasonally adjusted by IRF
Houston Existing Home Sales: Pandemic Shrinks Inventory and Raises Prices

Months Supply: 3.8 mo. in Dec 2018
Hovers near low of 1.3 mo.

Home Prices Absorb Pandemic Shock, And Jump 33.1% on Strong Demand/No Supply

Source: Texas A&M Real Estate Center, seasonal adjustment by IRF
Ship Channel Cities Find Post-Pandemic Housing Is Still Busy
Baytown, Channelview, Pasadena

Sales boom after a pause in 2019 when chemical boom ends

Inventory still tight at less than 2.0%

Source: Texas A&M Real Estate Center, calculations of IRF
South Houston Holding Up With High Post-Pandemic Sales and Prices
South Belt, Clear Lake, League City

Sales still strong, price slows some

Inventory remains very low

Source: Texas A&M Real Estate Center, calculations of IRF
Close-In and Upscale Homes Make Post-Harvey/Post-Pandemic Recovery
Rice Military, Heights, Galleria

Hurt by fracking bust and Harvey
Sales Recover But Not Price

Inventories normally near six months,
Now at 1.2 months

Source: Texas A&M Real Estate Center, calculations of IRF
South Of I-10 West:
Same Post-Harvey/Post-Pandemic Response
Memorial and Energy Corridor

Again, Hurt By Oil Bust and Harvey
Now Sales Recovery, But Not Price

Inventory peaked near 6.5 months
after Harvey, now 1.5 months

Source: Texas A&M Real Estate Center, calculations of IRF
Distant Suburbs: High Sales and Higher Prices Hold
Pearland, Sugar Land, Kingwood, Katy, Cypress

Sales and price very flat after 2014
Then Pandemic Boost

Inventories average 3.5 percent after 2017, drop hard in pandemic

Source: Texas A&M Real Estate Center, calculations of IRF
Houston’s Home Affordability Is Comparable to U.S., But Affordability Collapsed Everywhere After the Pandemic

Wells Fargo Housing Opportunity Index
The Largest Dozen U.S. Metros in 2021 Finds Houston Ranks #5 Based on the Ability of the Median Income Family to Buy a Home

<table>
<thead>
<tr>
<th>City</th>
<th>Opportunity Index</th>
<th>Opportunity Rank</th>
<th>Median Home Price</th>
<th>Median Income</th>
</tr>
</thead>
<tbody>
<tr>
<td>Washington, DC</td>
<td>67.6</td>
<td>103</td>
<td>462</td>
<td>122.1</td>
</tr>
<tr>
<td>Chicago</td>
<td>64.5</td>
<td>114</td>
<td>290</td>
<td>87.1</td>
</tr>
<tr>
<td>Atlanta</td>
<td>64.4</td>
<td>105</td>
<td>331</td>
<td>86.2</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>61.7</td>
<td>124</td>
<td>248</td>
<td>67.5</td>
</tr>
<tr>
<td>Houston</td>
<td>56.4</td>
<td>141</td>
<td>296</td>
<td>79.2</td>
</tr>
<tr>
<td>Dallas-Fort-Worth</td>
<td>49.8</td>
<td>156</td>
<td>355</td>
<td>86.9</td>
</tr>
<tr>
<td>Phoenix</td>
<td>44.5</td>
<td>174</td>
<td>418</td>
<td>79.0</td>
</tr>
<tr>
<td>Boston</td>
<td>45.4</td>
<td>174</td>
<td>575</td>
<td>113.7</td>
</tr>
<tr>
<td>Miami</td>
<td>32.3</td>
<td>203</td>
<td>370</td>
<td>61.0</td>
</tr>
<tr>
<td>New York</td>
<td>27.0</td>
<td>216</td>
<td>575</td>
<td>85.5</td>
</tr>
<tr>
<td>San Francisco</td>
<td>13.0</td>
<td>234</td>
<td>1,495</td>
<td>145.4</td>
</tr>
<tr>
<td>Los Angeles</td>
<td>7.5</td>
<td>237</td>
<td>801</td>
<td>80.0</td>
</tr>
</tbody>
</table>

The Wells Fargo Housing Opportunity Index is the percentage of local families that qualify for a mortgage based on income and housing prices. Dallas-Fort Worth is a population weighted average of the metropolitan divisions.
New Homes: Builders Ration Sales Until Lots, Labor, and Materials Catch Up
Mortgage Rates to Rise, Goods Prices Soar, Construction Labor Now Tighter Than Pre-COVID

- Hires > Quits level at pre-pandemic rates. Demand is strong but low numbers indicate a tight labor market – joined by serious supply-chain and general material shortages.

- Hourly wages in the industry have trended up at 2.8% annually for a decade, and but are quickly up 6.7 percent from pre-COVID levels.

- The Producer Price index for construction materials has jumped 46.7% from pre-COVID levels led by steel mill products, plastics, lumber, and plywood.

*BLS, Zonda: JOLTS, net separations are total separations or quits minus hires*
Houston’s Single-Family Permits Now Match the 2005 Sub-Prime Boom
(monthly permits, seas. adj.)

*Houston metropolitan area permits, FRED St Louis Fed*
Same Story As For Existing Homes: Stimulus, Low Rates, a Need for Extra Space

Houston’s Starts & Closings Soar After the Pandemic (12-Month Change)

Subprime Boom and Bust

Fracking Bust and Recovery

The Pandemic Pulls the Local New Home Market Far Above Trend

Zonda
New Home Market in Houston Has Been a Starter/Move-Up Market Since 2014

Closing By Price Range, 2022Q1

Inventory 2022Q1 (months supply)
Pandemic Surge Briefly Left Vacant Developed Lots in Short Supply and New Home Sales Rationed

Months Supply of Vacant Lots Were Hard Presses By the Pandemic

Lot Deliveries Have Turned Up And Are Catching Up to Demand

VDL (months supply)

‘000 annualized
Large Planned Communities in the Distant Suburbs Provide Most of Houston’s Lots and Housing Growth
Houston’s Future Lot Supply Is Healthy – Both in the Near-Future and Longer-Term

Total of 319,149 future lots identified across the market.

33,116 of these are currently under development.
Houston’s Apartment Market: Is Construction Getting Ahead of the Market?
Since 2005 Houston’s Apartment Market Booms and Busts Along with the Local Economy

- It has been a wild ride for the Houston apartment market since 2005 with hurricanes, an oil boom, an oil bust, and now a pandemic
- Each event triggered an equal and opposite reaction -- with a big decline and bigger recovery in absorption and rents
- The post-lockdown/stimulus absorption increase exceeded that of Katrina and the New Orleans evacuation
- Houston’s development community never wastes time in getting new product on the ground. When the market changes, rents and construction swing quickly with local supply and demand

Apartment Data Services
Pandemic Shock Saw Occupancy and Rents Plummet and Recover with Returning Jobs and Stimulus Checks

- Class A is where growth in the apartment begins as new units are built and enter the market, only to be absorbed by consumers as needed.

- The pandemic caught a soft market as it watched a big exit of Hurricane Harvey tenants who had been waiting for homes to be repaired.

- Then came the pandemic shock with a temporary collapse of jobs, rents and occupancy.

- Recovery comes quickly with renewed job growth and a powerful positive boost from stimulus. Stable units less those in lease-up are 93.5 percent occupied.
As the Apartment Market Recovers, Normality Prevails with a Tight Class A Market

<table>
<thead>
<tr>
<th>Year</th>
<th>Absorption (units) Market</th>
<th>Absorption (units) Class A</th>
<th>Occupancy (%) Market</th>
<th>Occupancy (%) Class A</th>
</tr>
</thead>
<tbody>
<tr>
<td>2019Q4</td>
<td>1,186</td>
<td>1,745</td>
<td>89.3</td>
<td>83.6</td>
</tr>
<tr>
<td>2020Q1</td>
<td>2,617</td>
<td>2,753</td>
<td>89.1</td>
<td>82.9</td>
</tr>
<tr>
<td>2020Q2</td>
<td>1,841</td>
<td>1,167</td>
<td>88.4</td>
<td>79.9</td>
</tr>
<tr>
<td>2020Q3</td>
<td>5,484</td>
<td>4,671</td>
<td>88.7</td>
<td>80.7</td>
</tr>
<tr>
<td>2020Q4</td>
<td>1,981</td>
<td>3,648</td>
<td>88.4</td>
<td>80.8</td>
</tr>
<tr>
<td>2021Q1</td>
<td>4,951</td>
<td>5,234</td>
<td>88.8</td>
<td>82.8</td>
</tr>
<tr>
<td>2021Q2</td>
<td>17,032</td>
<td>9,889</td>
<td>90.6</td>
<td>86.2</td>
</tr>
<tr>
<td>2021Q3</td>
<td>11,865</td>
<td>7,476</td>
<td>91.6</td>
<td>87.9</td>
</tr>
<tr>
<td>2021Q4</td>
<td>4,098</td>
<td>2,949</td>
<td>91.5</td>
<td>86.9</td>
</tr>
<tr>
<td>2022Q1</td>
<td>1,708</td>
<td>2,743</td>
<td>91.1</td>
<td>87.8</td>
</tr>
</tbody>
</table>

Quarterly Changes in Absorption Are Back to Pre-Pandemic Levels (units)

-- Market absorption and occupancy have returned to pre-pandemic levels
-- Class A occupancy is 4.2 percent above early 2020 levels, and adjusted for units in lease-up occupancy is 93.5 percent
A Post-Pandemic Apartment Recovery Is Still a Mixed Bag?

- Houston is still 45,000 jobs below recovery of the jobs lost to the pandemic. We still have 18,000 more unemployed than we had in early 2020.
- Recent population growth is led by births and deaths in Houston. International migration is mostly noneconomic family reunification, and we have trailed in the Texas domestic population boom.
- Oil will help this year, but the hey-day of $100 oil is over.
- Pandemic stimulus is mostly gone and coming quickly to an end -- slowing income growth in many households.
- *Does the end of stimulus also mean a return to more doubling up with relatives and room mates?*
Back to Near Trend for Apartments in 2022?

Strong Job Growth *But Stimulus Income Ends*

- **How many units do we need?** Rule of thumb: Absorb one unit for each five jobs
  - 30,000 jobs = 6,000 units
  - 60,000 jobs = 12,000 units
  - 90,000 jobs = 18,000 units

- **90,000 Jobs in 2022? Not so fast ...**
  - 45,000 from Q1 & Q2 will finally restore the earlier job losses from the pandemic
  - But only 45,000 in Q3/Q4 move us to a new peak level of employment
  - *As stimulus support wears off this year, the economic impact of 45,000 jobs and 9,000 units sounds more realistic*
  - If no doubling-up, another 7,000 to make up for the tight Class A? Maybe 16,000 total units?

- **Permit data says construction is running near trend growth near 22,000 units so far this year. A softer market ahead ...?**
Office Market Still Treading Deep Water
The Houston Office Market Has Been Badly Over-Built and Stressed Since 2014

- The collapse of oil markets in 2014 created a serious problem with 18.6 million sq-ft on the drawing boards. Houston then delivered them in 2015-16, with only 3.6 million absorbed.

- With oil-bust followed by pandemic, the office market has slowly worsened with net absorption falling 5.2 million ft-sq while another 12.3 million were delivered. Work-from-home restrictions added brought negative absorption, as did continued attrition in oil-related employment.

- Recent office deliveries are typically non-oil and build-to-suit space for niche businesses or neighborhoods. Also, the new premium Class A+ buildings like the Texas Tower and Capitol Tower are changing the CBD market and skyline.

- Oil and fracking have adopted a new and conservative financial model that makes even a multi-year period of $100 oil a partial long-term solution at best.
Absorption and Deliveries Were in Lockstep Until 2015 When the Oil BoomCollapsed

<table>
<thead>
<tr>
<th>Year</th>
<th>Deliveries</th>
<th>Absorption</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>2.0</td>
<td>5.0</td>
</tr>
<tr>
<td>2013</td>
<td>4.5</td>
<td>4.6</td>
</tr>
<tr>
<td>2014</td>
<td>8.1</td>
<td>8.5</td>
</tr>
<tr>
<td>2015</td>
<td>12.9</td>
<td>3.7</td>
</tr>
<tr>
<td>2016</td>
<td>5.7</td>
<td>-0.1</td>
</tr>
<tr>
<td>2017</td>
<td>4.1</td>
<td>-1.4</td>
</tr>
<tr>
<td>2018</td>
<td>2.7</td>
<td>0.4</td>
</tr>
<tr>
<td>2019</td>
<td>1.6</td>
<td>0.8</td>
</tr>
<tr>
<td>2020</td>
<td>1.5</td>
<td>-4.1</td>
</tr>
<tr>
<td>2021</td>
<td>2.3</td>
<td>-1.6</td>
</tr>
</tbody>
</table>

Vacancy (%) Soars After 2015 Then Continues Up with Pandemic

NAI Partners, calculations of IRF
Rising Class A Rent Are the Signal for a Tightening Market and New Construction: None Here!

No Improvement Since the Fracking Bust Ended in 2017
Office Rents ($/ft²)

Low and Stable Class A Rents Signal the On-Going Glut
Class A Rent Premium ($/ft²)
Class A versus Market

NAI Partners, calculations of IRF
The Pandemic Impact on Houston’s Office Market Was Limited. But ... Will Work-from-Home Force Right Sizing?

• The pandemic had a peripheral effect on Houston’s office glut with availability (vacancy + sublease) rising about 3.1 percent to 29.0% and saw rents remain stable

• Most employers are anxious to end work-from-home, seeing less collaboration, creativity, mentorship, and innovation from employees. Still, only about 40 percent of workers have returned from the pandemic

• Employees are pushing back on a return to full-time work, with a recent PwC survey finding only 41% of employees wanting to continue full-time remote work. Younger workers and those without a home office want to return to the office. Tight labor markets give these workers clout

• So far, there are few signs of any evolving corporate trend toward right-sizing of existing space. A surge in corporate leasing activity in 2021Q2 was interrupted by Omicron, and there is plenty of sublease space available nationwide
Can $100 Oil Fix the Local Office Market?
The Fracking Boom of 2003-14 Is Over

- After three rounds of bankruptcy and cost $300 billion in losses, fracking has been forced into a new financial model, diverting 30% or more free cash flow away from the oil fields and to investors.

- Even $100 oil does not breed the old-style oil boom even with three years of steady $100 oil prices.

- Oil-related Job losses by 2021Q4 totaled 70,400 from the 2014 peak. The return of $100 oil for three years might bring back 39,000 oil jobs or 55 percent; $80 oil would return 31,000.

- It is too early to assume oil prices will be $100 a year from now. Investors are convinced it is foolish to chase it.

R.W. Gilmer, Possible Implications of $100 Oil for Houston: The Return of Boom Times Will Be Harder Than You Think. IRF Website, 3/11/2022
Fracking’s Reluctance to Move Forward Persists

*Dallas Fed Energy Survey*

**How Much Will You Increase Production in 2022?**

<table>
<thead>
<tr>
<th>Company Size</th>
<th>Large</th>
<th>Small</th>
</tr>
</thead>
<tbody>
<tr>
<td>0% or less</td>
<td>25%</td>
<td>21%</td>
</tr>
<tr>
<td>0 to 10%</td>
<td>45%</td>
<td>23%</td>
</tr>
<tr>
<td>10-20%</td>
<td>15%</td>
<td>23%</td>
</tr>
<tr>
<td>20% or more</td>
<td>15%</td>
<td>33%</td>
</tr>
</tbody>
</table>

**How Much Will You Increase Employment in 2022?**

<table>
<thead>
<tr>
<th>Company Type</th>
<th>Producers</th>
<th>Services</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significantly</td>
<td>0%</td>
<td>18%</td>
</tr>
<tr>
<td>Small</td>
<td>31%</td>
<td>48%</td>
</tr>
<tr>
<td>Same</td>
<td>63%</td>
<td>32%</td>
</tr>
<tr>
<td>Decrease</td>
<td>6%</td>
<td>2%</td>
</tr>
</tbody>
</table>

*Federal Reserve bank of Dallas Energy Survey, March 23*
Steady and Balanced Suburban Retail Growth
The Pressure on Brick and Mortar Remains Intense in Houston and Across the U.S.

- Since 2000, the rapid growth of non-store and internet sales has allowed remote sales to capture 38% of the U.S. retail market.
- The pandemic forced a surge to near 20% growth in remote sales in 2020, but growth fell back to 12 percent last year. Brick and mortar grew about 3%.
- As malls close and many famous retail names shrink or disappear, retail projects often require substantial upfront commitment by developers and their bankers. This breeds caution ...
- The recent statistics on rents, vacancy and occupancy all reflect this caution.

Annual growth Rate of Non-Store and Internet Sales vs Brick-and-Mortar

- Nonstore
- Internet
- Brick/Mortar

Census Bureau Retail Sales
A Cautious Retail Market in Recent Years: Deliveries and Absorption Moved in Lockstep

- For the last decade, Houston’s retail deliveries and absorption have remained balanced, with net positive absorption paving the way.
- The pandemic saw a brief collapse in absorption, but this has been quickly corrected.
- Most of the construction surge since 2017 is tied to the on-going build-out of housing around the Grand Parkway. Small grocery-anchored shopping centers are the chief product.

NAI Partners, Calculations of IRF
Fiscal Support and Cheap Money Drove Record U.S. Retail Sales: Inflation and Waning Fiscal Support Becoming Apparent

*U.S. Census Bureau, Mar 15, 2022*
The Boost to Retail Sales from Stimulus
Quickly Healed Vacancy Rates and Rents

- Rents slowed during the first year of the pandemic, but never fell. They rose rapidly in recent quarters.
- Since 2019Q4 rents have risen at rates above trend (6.4% vs 5.0%), although on trend after allowing for inflation (2.0% vs 1.9%)
- Vacancy rates had been steady near 5.4% before the pandemic, but surges to 6.4% by early 2021
- Improvement came quickly in 2021 with the arrival of the vaccines and less need for social distancing and other public health restrictions.
The Boost to Retail Sales from Stimulus Quickly Healed Vacancy Rates and Rents

- During the lockdown and the following three quarters, retail absorption fell by 353,000 square feet, only to rise by 3.4 million over most recent four quarters
- This recent absorption is above pre-pandemic trends and recent construction is still lagging. This leaves room for continued improvement in vacancy rates and rents ahead
- Because of the current focus on grocery-anchored shopping centers and other small retail, projects can be brought online relatively quickly
- This rapid response to market conditions makes it harder for the market to over-build as conditions change
Industrial Set for a Slowdown?
Can We See The Warning Signs in Time?
Warehouse and Distribution Dominate Recent Industrial Deliveries and Construction

• Metro-wide warehousing and distribution made up 76.9% of industrial inventory in 2019, but over 92 percent of recent industrial deliveries or current construction. Flex and manufacturing remain in the doldrums

• Through pandemic and recovery, the dominance of warehousing remains the same in 2022Q1. Manufacturing is heavily oil-related in Houston and in the backseat for now

• The 18.4% of metro-wide warehouse space under construction in the South and Southeast is historically dominated by logistics through the Port of Houston and other container terminals, as well as bagging and rail shipments of chemical pellets. A massive 2015-2019 chemical boom is over for now, and this activity is all but gone

• The space under construction in the North and Northwest (a combined 47.3% of the 2021 total) is mostly domestic land logistics and e-commerce – and was accelerated by COVID

<table>
<thead>
<tr>
<th>Percent Share Warehouse/Distribution</th>
<th>Inventory</th>
<th>Deliveries</th>
<th>Under Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2019</td>
<td>2019</td>
<td>2021 ‘22Q1</td>
</tr>
<tr>
<td>Metro</td>
<td>76.9%</td>
<td>93.5%</td>
<td>94.4% 90.3%</td>
</tr>
<tr>
<td>North</td>
<td>77.4%</td>
<td>93.4%</td>
<td>91.4% 71.95</td>
</tr>
<tr>
<td>Northwest</td>
<td>60.8%</td>
<td>88.1%</td>
<td>97.2% 98.2%</td>
</tr>
<tr>
<td>Southeast</td>
<td>80.6%</td>
<td>99.6%</td>
<td>96.4% 100%</td>
</tr>
<tr>
<td>Southwest</td>
<td>73.1%</td>
<td>96.1%</td>
<td>97.4% 93.4</td>
</tr>
<tr>
<td>Other</td>
<td>77.5%</td>
<td>89.1%</td>
<td>NA 100%</td>
</tr>
</tbody>
</table>

Warehouse/distribution data from NAI Partners publications
Still an East/West Split in Warehouse and Distribution Activity

• From 2015-16, new industrial space in Houston has driven by two factors: e-commerce and petrochemical expansion on the Ship Channel. The chemical industry drove warehousing and bagging of plastic pellets, but has now pulled back back with the chemical buildout completed

• As E-commerce booms, consumers seek the best of all worlds: wide selection, good prices and free delivery in two days or less. The freeway intersections on the north and northwest side of Houston are important gateways for Asian goods. But demands for shorter delivery times increasingly move warehouses into the city

• Oil briefly bounced back in 2018, and with it the traditional oil-related warehousing and manufacturing activity. This is also mostly found in the Northwest. Oil’s collapse in 2020 and a low rig count has kept it inactive

• The Port of Houston adds another kind of logistic activity with booming inbound container activity. Key drivers of growth have been a wider Panama Canal and large retailers like Walmart looking for a Gulf Coast hedge against renewed labor strife at LA-Long Beach. Now add the post-pandemic problems of a surge in goods demand and badly tangled supply chains
East Side Petrochemical Boom Ends
As Pandemic Now Controls Warehouse/Distribution

- Warehousing and distribution construction has a variety of drivers. From 2015 to 2019 a huge expansion of petrochemical facilities drove warehouse needs on the East Side.
- Now, east side double-digit growth is back of container imports through the Port as a result of labor unrest at West Coast ports.
- Stimulus and post-pandemic supply-chain disruptions add to the current surge in East Side warehousing activity.
- The west side distribution continues to be a story about e-commerce and local population growth, with the pandemic acting as a short-term supercharger.
As COVID and the Chemical Boom Recede, the Port Adds a New and Growing Dimension to Local Warehousing

- Container imports at the Port accelerated from 11.4% before 2019 to 18.7% after mid-2021. The acceleration is partly a combination of economic turnaround and a stimulus-driven boost to domestic goods.
- But longer lasting factors include a wider Panama Canal, and large retailers like Walmart looking for a Gulf Coast hedge against renewed labor strife and lack of investment at LA-Long Beach.
- Expansion near the ship channel has limited land availability, has raised land prices near the ship channel, and pushed warehousing to the north and west. This includes the South Belt and even locations much further north.
The Pandemic: Stimulus Surge, Unique E-Commerce Demand, and a Switch to Goods

Absorption, 000 ft²

Deliveries and Construction 000 ft²
Industrial Vacancy Rates Are Back Below Pre-COVID Levels and Rents Are Now Above

Direct Vacancy, %

- East
- West

NNN Rents, $/ft²

- West
- East

NAI Partners, calculations of IRF
Construction Strong and Demand Falling Back? Can We Slow Building In Time?

• The vacancy rate from warehousing and distribution in 2022Q1 was 7.9 percent on the east side and 6.1 percent in the west. These rates are below elevated pre-pandemic levels, but should be compared long-run averages of 5.8% east and 6.5% west.

• Rents are also above pre-pandemic levels by 17% in West Houston and 10.2% in the East. But CPI inflation has taken 10.9% of these rent gains.

• What happens to demand from here forward? Stimulus is evaporating and the pandemic shift away from goods to services hurts good transportation. Will we need even the current e-commerce supply channels in another 12 months? Are post-pandemic supply chains shifting to the U.S.? The impact of Fed on cap rates? Who knows, but …

• Current projects under construction are about 2.1 times the very strong 2021Q4 westside absorption rate and 1.4 times the eastside absorption rate; last quarter, however, absorption slowed in 22Q2 and it would take 3-4 quarters to absorb the current construction underway. Given the relatively short construction times for these projects, developers think they can see the warning signs in time …
An Overview of Houston Real Estate:
Life on the Other Side of the Pandemic

Robert W. Gilmer, Ph.D.
C.T. Bauer College of Business
May 2022