New Construction Identification, Housing Supply Changes, and Home Prices

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The views expressed are those of the presenters alone and do not necessarily represent those of the American Enterprise Institute
Expanding Supply Has Been and Continues to Be a Challenge

Principles of Planning Small Houses (FHA, 1936)

Two general comments may be made upon the results of this interest [in meeting the demand for low cost dwellings].

• In the first place, it may fairly be stated that the standards of accommodation and equipment which have too frequently been given serious consideration are not only much above that now customary to the groups for whom the housing is planned, but are likewise, under present conditions in the building market, beyond a price which is within the means of such groups.

• In the second place, too great dependence has been placed upon the achieving of cost reduction through prefabrication and industrial reorganization, the prospect of which is not immediately present.

Will homebuilding finally evolve? Lessons from the American experience with factory-built housing (Fisher and Ganz, 2019)

• ...industrialized housing has never provided serious competition to site-built housing as the dominant method for erecting single-family homes in the US

• Returning to the question of whether factory production can meaningfully increase affordability of traditional US housing, we think the answer remains no.
Comparing AEI’s new construction sales to the census bureaus’ shows that AEI sales generally exceed Census totals (adding ~280,000 units or about 8% to Census totals over the period). However, the difference between both series has been narrowing. AEI’s series tracks home sales through the public records, while the Census Bureau tracks them through builder surveys using a stratified sampling design.*

*For stratified sampling, the population is divided into separate groups, called strata, with a probability sample is drawn from each group. Strattrec.com

Note: Data are for all new construction sales, including institutionally and non-institutionally financed and cash sales.

Market share of all institutionally financed home sales in 2018 by tier.

Note: Data excludes Rural Housing Service. In 2017, Rural Housing Service loans made up 3% of the low tier, 2% of the low-medium tier, and a negligible amount of the two upper tiers.

Source: AEI Housing Center, www.AEI.org/housing.
New Construction Share of Sales by Price Tier Affects the Supply/Demand Imbalance

*Market share of all institutionally financed home sales in 2018 by tier. Source: AEI Housing Center, [www.AEI.org/housing](http://www.AEI.org/housing).
* All sales includes institutionally and non-institutionally financed and cash sales.

Source: AEI Housing Center, [www.AEI.org/housing](http://www.AEI.org/housing).
New Construction Share of Sales by Census Tract:
Dallas-Fort Worth vs Pittsburgh

Pittsburgh Metro
New construction share of all sales in 2018*: 6%

Dallas-Fort Worth Metro
New construction share of all sales in 2018*: 22%

* All sales includes institutionally and non-institutionally financed and cash sales.
Source: AEI Housing Center, www.AEI.org/housing.
Relationship between new supply and house price appreciation

- We regress the months’ supply and share of new home sales on the year over year rate of house price appreciation (HPA) for each price tier in each metro area from 2013 to 2018.
- We find that a 10 percentage point increase in the new sale share of all home sales within a price tier results in a 0.7 percentage point decrease in the rate of HPA in the same tier in the same quarter (calculated at the median new sale share).

<table>
<thead>
<tr>
<th>Price Tier</th>
<th>Median New Sale Share of All Sales (%)</th>
<th>Impact on HPA of 10 ppts. Increase in New Sales Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>3.9</td>
<td>-0.8</td>
</tr>
<tr>
<td>Low-Med</td>
<td>9.6</td>
<td>-0.7</td>
</tr>
<tr>
<td>Med-High</td>
<td>18.1</td>
<td>-0.5</td>
</tr>
<tr>
<td>High</td>
<td>14.4</td>
<td>-0.6</td>
</tr>
<tr>
<td>Overall</td>
<td>10.4</td>
<td>-0.7</td>
</tr>
</tbody>
</table>

- The size of this relationship is significant when one considers the following fact situation. Assume year-over-year HPA for the low-med price bin is 6% and wages are growing at 3.5%. The wedge between the two is 2.5 ppts. If instead, year-over-year HPA were 5.3%, the wedge is now 1.7 ppts., a reduction of 30% in size.
- This would operate to keep unsustainable levels of HPA more in check with wages.
  - Adding to supply (especially in the low, low-med, and bottom half of the med-high price bins) has the salutary effect of tamping down home price increases for moderate income households.

Source: AEI Housing Center, [www.AEI.org/housing](http://www.AEI.org/housing).
Expanding New Construction Is Key to Keeping Up with Demand

Key Metrics, by Metro

Note: Data are limited to institutionally financed sales (excludes cash and other financed sales).

<table>
<thead>
<tr>
<th>Metro</th>
<th>Price tier cut-offs for</th>
<th>Share of sales (new &amp; ehs) in respective price tier</th>
<th>New construction as a % of sales in respective price tier</th>
<th>New construction in respective tier as a % of all new construction sales</th>
<th>Cumulative employment growth (1990-2017)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>low vs low-med</td>
<td>low-med vs med-high vs med-high vs high</td>
<td>low vs low-med vs med-high vs med-high vs high</td>
<td>low vs low-med vs med-high vs high</td>
<td>low vs low-med vs med-high vs high</td>
</tr>
<tr>
<td>Nation*</td>
<td>$184,000</td>
<td>$263,000</td>
<td>$566,000</td>
<td>26% 28% 38% 7% 100%</td>
<td>4% 10% 20% 16% 13% 9% 23% 50% 9%</td>
</tr>
<tr>
<td>Atlanta, GA</td>
<td>$177,000</td>
<td>$266,000</td>
<td>$566,000</td>
<td>25% 30% 37% 7% 100%</td>
<td>5% 12% 12% 11% 10% 13% 35% 45% 8%</td>
</tr>
<tr>
<td>Columbus, OH</td>
<td>$150,000</td>
<td>$240,000</td>
<td>$566,000</td>
<td>25% 32% 38% 4% 100%</td>
<td>2% 4% 18% 19% 9% 7% 13% 72% 9%</td>
</tr>
<tr>
<td>Dallas, TX</td>
<td>$210,000</td>
<td>$294,000</td>
<td>$566,000</td>
<td>25% 28% 40% 6% 100%</td>
<td>11% 25% 37% 34% 27% 10% 26% 56% 8%</td>
</tr>
<tr>
<td>Denver, CO</td>
<td>$325,000</td>
<td>$421,000</td>
<td>$661,000</td>
<td>24% 28% 38% 11% 100%</td>
<td>4% 11% 28% 23% 17% 5% 18% 62% 15%</td>
</tr>
<tr>
<td>Kansas City, MO</td>
<td>$151,000</td>
<td>$235,000</td>
<td>$566,000</td>
<td>22% 29% 45% 4% 100%</td>
<td>3% 4% 19% 31% 12% 6% 10% 73% 10%</td>
</tr>
<tr>
<td>Los Angeles, CA</td>
<td>$440,000</td>
<td>$580,000</td>
<td>$850,000</td>
<td>18% 23% 32% 27% 100%</td>
<td>2% 5% 7% 10% 6% 4% 18% 34% 44% 100%</td>
</tr>
<tr>
<td>Memphis, TN</td>
<td>$150,000</td>
<td>$239,000</td>
<td>$566,000</td>
<td>34% 29% 33% 3% 100%</td>
<td>4% 7% 17% 19% 10% 15% 22% 58% 6%</td>
</tr>
<tr>
<td>Nashville, TN</td>
<td>$210,000</td>
<td>$305,000</td>
<td>$618,000</td>
<td>23% 32% 37% 7% 100%</td>
<td>13% 27% 40% 38% 29% 10% 30% 51% 9%</td>
</tr>
<tr>
<td>Orlando, FL</td>
<td>$215,000</td>
<td>$275,000</td>
<td>$566,000</td>
<td>28% 26% 41% 5% 100%</td>
<td>6% 24% 38% 37% 25% 6% 25% 62% 7%</td>
</tr>
<tr>
<td>Phoenix, AZ</td>
<td>$210,000</td>
<td>$269,000</td>
<td>$566,000</td>
<td>24% 26% 43% 7% 100%</td>
<td>6% 17% 23% 23% 17% 9% 25% 58% 9%</td>
</tr>
<tr>
<td>Pittsburgh, PA</td>
<td>$122,000</td>
<td>$190,000</td>
<td>$566,000</td>
<td>24% 29% 44% 3% 100%</td>
<td>1% 1% 14% 20% 7% 3% 4% 84% 9%</td>
</tr>
<tr>
<td>Portland, OR</td>
<td>$310,000</td>
<td>$395,000</td>
<td>$566,000</td>
<td>22% 29% 33% 15% 100%</td>
<td>7% 10% 17% 19% 13% 12% 23% 43% 22%</td>
</tr>
<tr>
<td>Raleigh, NC</td>
<td>$205,000</td>
<td>$285,000</td>
<td>$566,000</td>
<td>22% 27% 43% 7% 100%</td>
<td>12% 30% 41% 43% 31% 8% 26% 56% 10%</td>
</tr>
<tr>
<td>Riverside, CA</td>
<td>$290,000</td>
<td>$385,000</td>
<td>$566,000</td>
<td>27% 26% 34% 12% 100%</td>
<td>2% 9% 22% 20% 13% 4% 19% 59% 18%</td>
</tr>
<tr>
<td>San Jose, CA</td>
<td>$550,000</td>
<td>$670,000</td>
<td>$850,000</td>
<td>8% 6% 16% 70% 100%</td>
<td>5% 14% 17% 10% 11% 4% 8% 25% 64%</td>
</tr>
<tr>
<td>Seattle, WA</td>
<td>$323,000</td>
<td>$442,000</td>
<td>$834,000</td>
<td>20% 26% 39% 14% 100%</td>
<td>2% 9% 16% 17% 11% 4% 20% 54% 22%</td>
</tr>
<tr>
<td>St. Louis, MO</td>
<td>$134,000</td>
<td>$207,000</td>
<td>$566,000</td>
<td>25% 30% 41% 3% 100%</td>
<td>3% 4% 12% 21% 8% 9% 17% 65% 9%</td>
</tr>
<tr>
<td>Tampa, FL</td>
<td>$186,000</td>
<td>$250,000</td>
<td>$566,000</td>
<td>29% 27% 39% 5% 100%</td>
<td>5% 22% 28% 19% 19% 7% 31% 57% 5%</td>
</tr>
<tr>
<td>Washington, DC</td>
<td>$293,000</td>
<td>$425,000</td>
<td>$850,000</td>
<td>23% 29% 41% 8% 100%</td>
<td>4% 12% 19% 17% 13% 7% 25% 57% 10%</td>
</tr>
</tbody>
</table>

*Price tier cut-offs are computed at the metro level. For the nation, we are showing the median price cut-off for all metros.

Source: AEI Housing Center, [www.AEI.org/housing](http://www.AEI.org/housing).
Keeping Home Prices in Check with Wage Growth Is Key

House Price and Wage Growth

Source: Federal Housing Finance Agency, and Bureau of Economic Analysis, Personal Income and Employment by Major Component
Metros such as Austin and Raleigh, with high levels of employment growth combined with a high share of new construction sales (particularly the entry-level) have been better at keeping house price appreciation in check. The same applies to metros with medium employment growth. This relationship is missing in metros with low employment growth.

Source: AEI Housing Center, www.AEI.org/housing.
Largest Metros in 2018: Share of New Construction Sales by Tier
Ordered by Share in Combined Low, Low-Med, and Med-High (Lower) Tiers
Bar size reflects share by tier; labels reflect FHA percentage of respective tier

Note: Data for share of new construction sales by tier is for all new construction sales, including institutionally and non-institutionally financed and cash sales. FHA percentage of respective tier is for institutionally financed new construction sales.

Source: AEI Housing Center, www.AEI.org/housing.
Largest Builders in 2018: Share of Sales by Tier (Ordered by Share in Low Tier)

Bar size reflects share by tier; label reflects FHA percentage of respective tier tier.

Note: Data for share of new construction sales by tier is for all new construction sales, including institutionally and non-institutionally financed and cash sales. FHA percentage of respective tier is for institutionally financed new construction sales.

Source: AEI Housing Center, [www.AEI.org/housing](http://www.AEI.org/housing).
WADE JURNEY SAMPLE HOMES

- Palm Bay, Brevard County, **Florida**
  - Price: $179,990 (County Zillow Home Value Index (ZHVI)*: $213,100)
  - Bedrooms: 3
  - Baths: 2.5
  - SQFT: 1709

- Kendleton, Fort Bend County, **Texas**
  - Price: $100,990 (ZHVI*: $257,600)
  - Bedrooms: 3
  - Baths: 2
  - SQFT: 1,000

Source: Wade Jurney Homes
**LGI SAMPLE HOMES**

- **Bennett, Adams County, Colorado**
  - Price: $314,900 (ZHVI*: $341,200)
  - Bedrooms: 3
  - Baths: 2.5
  - Stories: 2
  - SQFT: 1,250

- **Cove, Chambers County, Texas**
  - Price: $224,900 (ZHVI*: $233,100)
  - Bedrooms: 4
  - Baths: 2.5
  - Stories: 2
  - SQFT: 2,300

Source: LGI Homes
# Top Builder Summary Statistics

## Detailed Breakouts for the three largest builders by size in 2017

<table>
<thead>
<tr>
<th>Builder</th>
<th>Median</th>
<th>Institutionally-financed sales</th>
<th>All sales</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Year</td>
<td>Sale Price</td>
<td>Income***</td>
</tr>
<tr>
<td>DR. HORTON</td>
<td>2012</td>
<td>$206,000</td>
<td>71</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>$227,500</td>
<td>78</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>$240,000</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>$249,711</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>$253,099</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>$262,775</td>
<td>84</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>$267,665</td>
<td>84</td>
</tr>
<tr>
<td>LENNAR</td>
<td>2012</td>
<td>$252,600</td>
<td>86</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>$279,400</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>$301,600</td>
<td>95</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>$323,500</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>$339,500</td>
<td>104</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>$346,602</td>
<td>103</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>$353,000</td>
<td>104</td>
</tr>
<tr>
<td>PULTE</td>
<td>2012</td>
<td>$234,411</td>
<td>83</td>
</tr>
<tr>
<td></td>
<td>2013</td>
<td>$265,000</td>
<td>89</td>
</tr>
<tr>
<td></td>
<td>2014</td>
<td>$292,100</td>
<td>97</td>
</tr>
<tr>
<td></td>
<td>2015</td>
<td>$292,100</td>
<td>93</td>
</tr>
<tr>
<td></td>
<td>2016</td>
<td>$344,200</td>
<td>105</td>
</tr>
<tr>
<td></td>
<td>2017</td>
<td>$354,950</td>
<td>107</td>
</tr>
<tr>
<td></td>
<td>2018</td>
<td>$382,100</td>
<td>102</td>
</tr>
</tbody>
</table>

Note: Data are weighted.  Entry-level refers to sales in the low and low-medium price tiers.  RHS % are not available for 2018.

* Ratio of median house price to county median house price for all new homes.
** Gross annual income in $1,000.
**** FTB share is for Agency sales only.
****** Prior to 2016, we combine Ryland and Standard Pacific Homes, which merged to form CalAtlantic in 2015.

Source: AEI Housing Center, www.AEI.org/housing
Appendix
Price Tier Methodology

• Goal: create leverage-based price tiers.
• Rational: segmenting the market by price tier is important because housing policies, new construction activity, and access to leverage vary by these price tier. Thus, these factors can create very different home price appreciation trends depending on the price tier.
• 4 Price Tiers:
  • Low: all sales below the 40th percentile of FHA sales prices
  • Low-medium: all sales at or below the 80th percentile of FHA sales prices
  • Medium-high: all sales at or below 125% of the GSE loan limit
  • High: all other sales
• Data Inputs:
  • Public Records (near-real time with latency and coverage problems).
  • FHA Snapshot (monthly dataset of all FHA endorsements; released around mid-month with a one month lag).
  • FHFA loan limits at the county level.
• Assumptions and Construction:
  • On average, the difference between loan origination and endorsement is one month. (We have confirmed this on aggregate by comparing monthly FHA Snapshot to NMRI counts.)
  • Price Tiers are set quarterly at the metro level. When there are fewer than 50 FHA loans in a quarter, we pool all FHA loans at the non-metro state level.
  • For the demarcation between medium-high and high tier, we multiply a perspective's county loan limit by 1.25 to account for an 80% LTV, which is the median LTV of loans taken out at the loan limit.
• Result:

<table>
<thead>
<tr>
<th>2018</th>
<th>Price Tier</th>
<th>Overall</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Low</td>
<td>Low-Med</td>
</tr>
<tr>
<td>Mortgage Risk Index</td>
<td>16.0%</td>
<td>14.6%</td>
</tr>
<tr>
<td>Market Share*</td>
<td>26%</td>
<td>28%</td>
</tr>
</tbody>
</table>

*For institutionally financed sales. May not round to 100% due to rounding.
New Construction Identification (NC) Methodology (still refining)

- To address supply shortfall, need a robust identification of NC at micro level
  - Traditional NC flag identified 62% of NC sales against AEI method
  - AEI method: 10% new construction share of all transactions nationwide

- Data Inputs
  - Public Records (Deed & Assessor files)
  - Zillow API and/or Listings data

- Identification of NC
  - Year Built in Assessor data
  - If Year Built is missing:
    - Seller name (we have assembled a list of over 400 builders with their subsidiaries and key words to identify smaller builders.) If a seller is a builder and the Year Built is missing, then it is most likely a new construction that has not yet been assessed.
    - Ping Zillow API for Year Built and Use Code. Data not perfect, along with other data helps determine status.
    - Sellers with multiple sales that are not individuals/gov’t/lender/other corporation are most likely builders. (Relatively small number.)
  - Count only first sale of home as a new construction.

- Verification – Quality Control, Quality Control, Quality Control
  - Random sampling and checking of new constructions and existing homes using Zillow data, Google street view/satellite images.
  - Find 2% false positives and 1% false negatives.
  - Builder example: AEI NC found 93% of DR Horton sales (unweighted) and 105% (weighted)

- Final dataset allows us to:
  - Monitor new constructions at the property level,
  - Accurately estimate new home sales at fine geographic levels when combined with Home Sales #s,
  - Estimate additions to the existing housing stock when combined with Assessor data,
  - Estimate sales by builder and track builder, and
  - Combine new construction numbers with Months’ Supply and house price appreciation.

- Other considerations
  - Lag in data; originally estimated at ~4 quarters; with more data processed, looks like 1-2 months.
  - Hard to identify owner-built homes without a long lag.