PHILADELPHIA HOUSE PRICE INDICES

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House Price Indices 1980-2016: 1980Q1=100
Philadelphia County v. Philadelphia MSA and U.S. Average

* Empirically estimated by Kevin C. Gillen, Ph.D.
**Courtesy of the Federal Housing Finance Agency (FHFA).
“MSA”=Metropolitan Statistical Area, which is the entire 9-county region.

HPIs are available through 2015Q4 only.
Total House Price Appreciation Rates by Geographic Market

<table>
<thead>
<tr>
<th>Period</th>
<th>Philadelphia County*</th>
<th>Philadelphia MSA**</th>
<th>U.S.A.**</th>
</tr>
</thead>
<tbody>
<tr>
<td>37-Year</td>
<td>155.5%</td>
<td>172.9%</td>
<td>130.1%</td>
</tr>
<tr>
<td>10-Year</td>
<td>6.5%</td>
<td>15.6%</td>
<td>5.9%</td>
</tr>
<tr>
<td>1-Year</td>
<td>8.2%</td>
<td>6.6%</td>
<td>5.5%</td>
</tr>
<tr>
<td>1-Quarter</td>
<td>3.9%</td>
<td>4.0%</td>
<td>1.4%</td>
</tr>
</tbody>
</table>

*Empirically estimated by Kevin C. Gillen Ph.D.

**Source: U.S. Federal Housing Finance Agency (FHFA). These numbers are through 2015Q4 only. “MSA”=“Metropolitan Statistical Area”, which is the entire 10-county region.
House Price Appreciation 1987-2016: Philadelphia v. 10-City Composite

% Change | 10-City | Philadelphia
--- | --- | ---
1998 to Peak: | +173% | +137%
From Peak: | -11% | +1%

*Source: S&P/Case-Shiller. The 10-City Composite index includes Boston, Chicago, Denver, Las Vegas, Los Angeles, Miami, New York, San Diego, San Francisco, and Washington, DC. It does not include Philadelphia.
## Philadelphia House Price Appreciation Rates by Neighborhood

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>36-year</td>
<td>170.5%</td>
<td>157.9%</td>
<td>135.0%</td>
<td>155.5%</td>
<td>172.0%</td>
<td>200.2%</td>
<td>180.8%</td>
<td>163.7%</td>
<td>168.6%</td>
</tr>
<tr>
<td>10-year</td>
<td>6.3%</td>
<td>9.0%</td>
<td>-10.2%</td>
<td>-0.8%</td>
<td>-2.9%</td>
<td>28.3%</td>
<td>9.6%</td>
<td>-4.9%</td>
<td>12.6%</td>
</tr>
<tr>
<td>1-Year</td>
<td>4.3%</td>
<td>11.2%</td>
<td>7.4%</td>
<td>-1.6%</td>
<td>2.8%</td>
<td>11.1%</td>
<td>3.3%</td>
<td>3.4%</td>
<td>9.4%</td>
</tr>
<tr>
<td>1-Quarter</td>
<td>5.2%</td>
<td>5.8%</td>
<td>2.7%</td>
<td>5.8%</td>
<td>1.0%</td>
<td>7.4%</td>
<td>1.3%</td>
<td>2.4%</td>
<td>0.9%</td>
</tr>
</tbody>
</table>

This table gives the total % change in average house prices by neighborhood, through 2016 Q1, from different starting points in time.
Median Philadelphia House Price v. Indexed Philadelphia House Price
1980-2016

* Empirically estimated by Kevin C. Gillen, PhD
Average House Price Minus Median House Price: 1980-2016
Only arms-length transactions between private sector entities were included in these numbers.
Number of Philadelphia Home Sales* per Quarter with Price>=1 Million: 1997-2015

*Only arms-length transactions between private sector entities were included in these numbers.
Philadelphia House Sales in 2016 Q1

$Price/SqFt

- >$170
- $120-170
- $85-120
- $45-85
- <$45

Sales are color-coded by the quintiles of the distribution of $Price/SqFt. Hence, each of the five categories covers exactly 20% of all sales.
Center City House Sales in 2016 Q1

$Price/SqFt

- >$170
- $120-170
- $85-120
- $45-85
- <$45

Sales are color-coded by the quintiles of the distribution of $Price/SqFt. Hence, each of the five categories covers exactly 20% of all sales.
South Philadelphia House Sales in 2016 Q1

Sales are color-coded by the quintiles of the distribution of $Price/Sq Ft. Hence, each of the five categories covers exactly 20% of all sales.
West Philadelphia House Sales in 2016 Q1

$Price/SqFt
- >$170
- $120-170
- $85-120
- $45-85
- <$45

Sales are color-coded by the quintiles of the distribution of $Price/SqFt. Hence, each of the five categories covers exactly 20% of all sales.

Created by Kevin Ol' Gillen, Ph.D.
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North Philadelphia House Sales in 2016 Q1

$Price/SqFt

- >$170
- $120-170
- $85-120
- $45-85
- <$45

Sales are color-coded by the quintiles of the distribution of $Price/SqFt. Hence, each of the five categories covers exactly 20% of all sales.

Created by Kevin C. Gillen, Ph.D.
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Northeast Philadelphia House Sales in 2016 Q1

Sales are color-coded by the quintiles of the distribution of $Price/SqFt. Hence, each of the five categories covers exactly 20% of all sales.

$Price/SqFt
- >$170
- $120-170
- $85-120
- $45-85
- <$45
2016 Q1 House Price Rate of Change by Neighborhood

- Upper NE Phila: +2.4%
- Lower NE Phila: +2.7%
- North Phila: +5.8%
- Kensington/Frankford: +5.8%
- Center City/Fairmount: +5.2%
- South Phila: +7.4%
- NW Phila: +1.0%
- Univ. City: +1.3%
- West Phila: +0.9%

Note: Each neighborhood is extruded by its average change in house values during 2016 Q1 in order to reflect its growth (or depreciation) rate relative to other neighborhoods.
+$1 Million Dollar House Sales in 2016 Q1

<table>
<thead>
<tr>
<th>PRICE</th>
<th>ADDRESS</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1,025,000</td>
<td>7305 EMLEN ST</td>
</tr>
<tr>
<td>$1,050,000</td>
<td>530 PINE ST</td>
</tr>
<tr>
<td>$1,060,000</td>
<td>814 S 10TH ST</td>
</tr>
<tr>
<td>$1,063,000</td>
<td>1901 KATER ST</td>
</tr>
<tr>
<td>$1,063,840</td>
<td>241 DELANCEY ST</td>
</tr>
<tr>
<td>$1,100,000</td>
<td>222 DELANCEY ST</td>
</tr>
<tr>
<td>$1,100,000</td>
<td>2036 RITTENHOUSE SQ</td>
</tr>
<tr>
<td>$1,150,000</td>
<td>113 W CHESTNUT HILL AVE</td>
</tr>
<tr>
<td>$1,175,000</td>
<td>2050 LOCUST ST</td>
</tr>
<tr>
<td>$1,270,000</td>
<td>105 PINE ST</td>
</tr>
<tr>
<td>$1,270,000</td>
<td>321 S 17TH ST</td>
</tr>
<tr>
<td>$1,485,000</td>
<td>233 DELANCEY ST</td>
</tr>
<tr>
<td>$1,540,000</td>
<td>112 BAINBRIDGE ST</td>
</tr>
<tr>
<td>$1,840,000</td>
<td>273 S 04TH ST</td>
</tr>
<tr>
<td>$2,600,000</td>
<td>1808 SPRUCE ST</td>
</tr>
<tr>
<td>$2,800,000</td>
<td>1827 DELANCEY PL</td>
</tr>
</tbody>
</table>
The diffusion index measures how varied the direction of house price changes are across Philadelphia neighborhoods. It is computed as the percent difference between the number of neighborhoods in which prices rose in a given quarter, and the number of neighborhoods in which prices fell. A value of -100% indicates that prices fell in all neighborhoods in a given quarter, while a value of +100% indicates that prices rose in all neighborhoods. A value of 0% indicates that house price changes were evenly split between increases and decreases, across neighborhoods. Diffusion indexes are commonly used in financial economics as a leading indicator of turning points in a market's direction.
This chart compares the Philadelphia House Price Index (in red) to the percent of Philadelphia neighborhoods that experienced house price declines (in blue), in each quarter from 1980-2016.
The Dispersion Index measures how varied house price changes are across the city's neighborhoods. It is computed as the standard deviation of quarterly house prices changes across submarkets. High values of the index imply large variation in house price changes between different neighborhoods, while low values imply that house price changes are relatively the same across the city.

*Affordability is measured as the ratio of the median Philadelphia house price to the median Philadelphia household income. High values of the index mean that housing has become less affordable to the average Philadelphian.
Average House Price-to-Rent Ratios*: 1980-2016
Philadelphia v. U.S.

*Computed by taking the ratio of average house price to the average annual rent of a comparable housing unit. The P/R ratio is to real estate what the P/E ratio is to other assets. Contact Kevin.C.Gillen@Drexel.edu for further details.
1980Q1=100

*The empirically estimated house price index is deflated by the rate of inflation over time, using the national Consumer Price Index as the proxy for the national rate of inflation. This procedure converts the house price index from "nominal" to "real" terms, and thus shows house price changes net of general inflation.
"%Absorbed" is defined as the percent of homes listed for sale in a given month that also sold in that same month.

Source: Trend MLS

Philadelphia Houses Listed For Sale: Inventory v. Absorption Rate

% Absorbed = (#Sales/#Listings)
The Index represents the current sentiment of U.S. homebuilders. The index is computed via a regular monthly survey of homebuilders. An index value above 50 indicates that more builders are optimistic than pessimistic, while an index value below 50 indicates that more builders are pessimistic than optimistic.
The PHLX Housing Sector Index is a modified cap-weighted index composed of 20 companies whose primary lines of business are directly associated with the U.S. housing construction market. The index composition encompasses residential builders, suppliers of aggregate, lumber and other construction materials, manufactured housing and mortgage insurers.

Note: the index underwent a significant rebalancing in January of 2006.
Building Permits Issued for Construction of Residential Units in Philadelphia: Single-Family v. Multifamily

*Structures with 1-4 dwelling units
**Structures with >=5 dwelling units
***Note: 2016 Numbers are YTD numbers through March 2016.

Source: U.S. Census
Zillow.com is currently forecasting Philadelphia house prices to rise an average of 2.2% over the next year, which is a slight downgrade from its previous annual forecast of 2.4% made three months ago.

Source: http://www.zillow.com/philadelphia-pa/home-values/