



Multifamily Production Indices - Q4 2018
(Seasonally Adjusted)

PRODUCTION OF NEW APARTMENTS IN CURRENT VS. PRIOR QUARTER

| | 2014 | | | | 2015 | | | | 2016 | | | | 2017 | | | | 2018 | | | |
|-------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Multifamily Production Index | 53 | 58 | 54 | 54 | 54 | 55 | 56 | 52 | 53 | 50 | 53 | 55 | 48 | 56 | 46 | 53 | 53 | 51 | 48 | 47 |
| MPI Components: | | | | | | | | | | | | | | | | | | | | |
| Low Rent Starts | 48 | 52 | 51 | 52 | 54 | 54 | 55 | 50 | 54 | 52 | 54 | 54 | 48 | 53 | 54 | 56 | 54 | 57 | 59 | 48 |
| Market Rent Starts | 59 | 68 | 64 | 62 | 59 | 60 | 64 | 59 | 58 | 53 | 57 | 58 | 55 | 60 | 43 | 54 | 56 | 50 | 46 | 49 |
| For Sale Starts | 54 | 56 | 50 | 50 | 50 | 53 | 50 | 49 | 48 | 45 | 49 | 52 | 43 | 57 | 40 | 49 | 49 | 46 | 39 | 44 |

EXPECTED PRODUCTION: NEXT 6 MONTHS VS. CURRENT QUARTER

| | 2014 | | | | 2015 | | | | 2016 | | | | 2017 | | | | 2018 | | | |
|--------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Low Rent Starts | 47 | 51 | 57 | 55 | 54 | 54 | 57 | 53 | 53 | 48 | 54 | 49 | 52 | 56 | 50 | 55 | 58 | 59 | 60 | 54 |
| Market Rent Starts | 57 | 60 | 57 | 58 | 56 | 63 | 59 | 58 | 52 | 44 | 60 | 52 | 56 | 55 | 45 | 48 | 57 | 47 | 45 | 48 |
| For Sale Starts | 58 | 55 | 53 | 51 | 56 | 56 | 56 | 51 | 50 | 44 | 57 | 54 | 46 | 57 | 47 | 50 | 50 | 49 | 37 | 44 |

MPI components are based on questions asking if production is stronger, about the same, or weaker in the current vs. prior quarter.

Expected production indices are based on similar questions about production during the next 6 months vs. the current quarter.

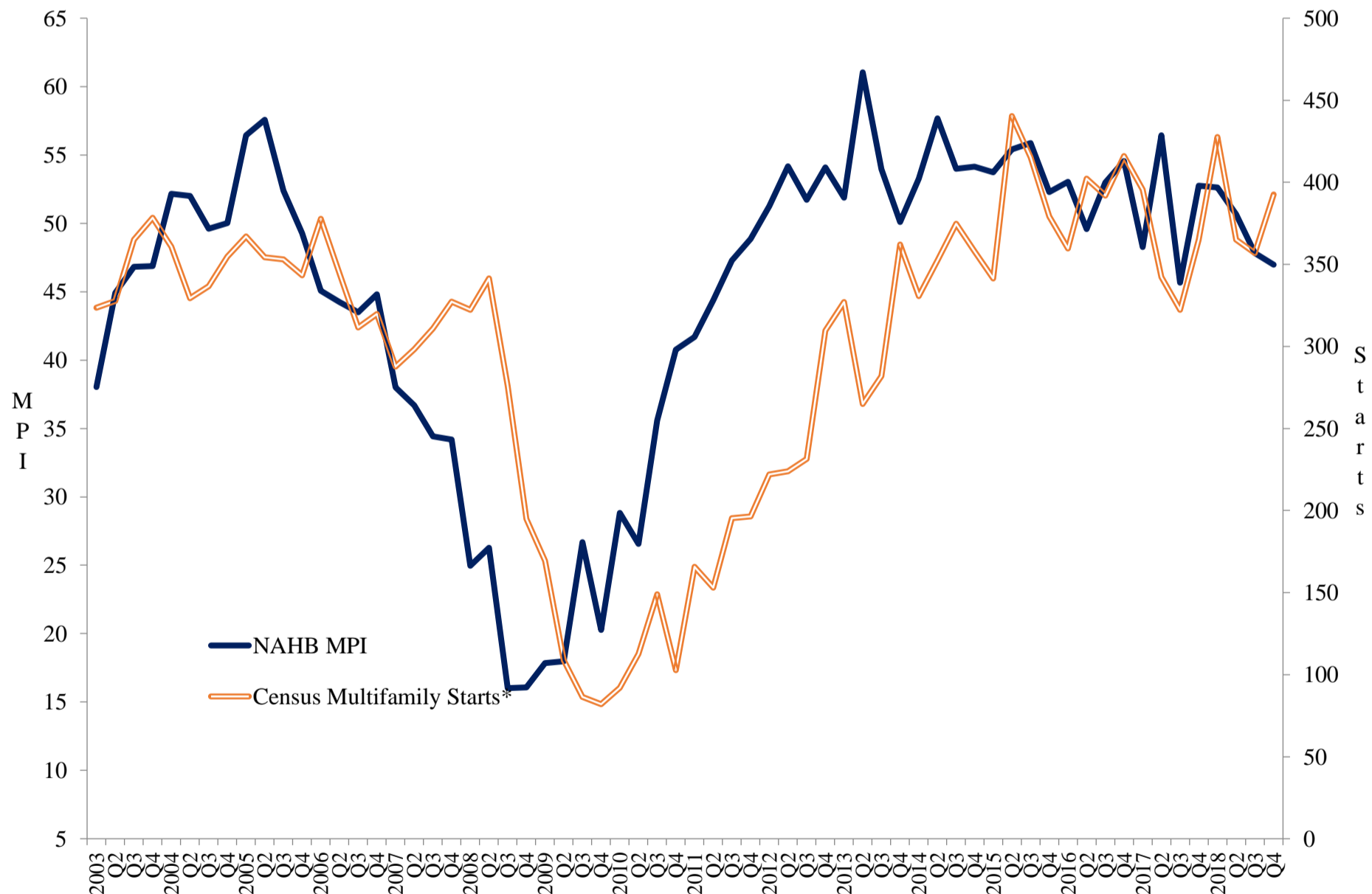
Numbers in the table are diffusion-type indices - calculated from the percentage responses using the formula $(\text{Stronger} - \text{Weaker} + 100) / 2$.

The overall Multifamily Production Index is a weighted average of the 3 components: $.3533 \times \text{Low Rent} + .2806 \times \text{Market Rent} + .3661 \times \text{For Sale}$.

The weights are derived from a statistical analysis of the historical relationship between the components and the Census series on multifamily starts.

Source: Multifamily Market Survey, NAHB Economics and Housing Policy Group.

NAHB Multifamily Production Index (MPI) and Multifamily Starts (in thousands)



*Multifamily Starts: U.S. Census Bureau, New Residential Construction (<http://www.census.gov/construction/nrc/index.html>).

The quarterly Multifamily Starts is the average of the three months of seasonally adjusted multifamily housing starts from that quarter.