



Multifamily Market Survey

Second Quarter 2018

Economics & Housing Policy Group

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Multifamily Builder and Developer Confidence Edged Down Slightly in Second Quarter

WASHINGTON, Aug. 23 – Confidence in the multifamily housing market edged down in the second quarter of 2018, according to the Multifamily Production Index (MPI) released today by the National Association of Home Builders (NAHB). The MPI dipped two points to 51 compared to the previous quarter.

The MPI measures builder and developer sentiment about current conditions in the apartment and condo market on a scale of 0 to 100. The index and all of its components are scaled so that a number above 50 indicates that more respondents report conditions are improving than report conditions are getting worse.

The MPI is a weighted average of three key elements of the multifamily housing market: construction of low-rent units—apartments that are supported by low-income tax credits or other government subsidy programs; market-rate rental units—apartments that are built to be rented at the price the market will hold; and for-sale units—condominiums. The component measuring low-rent units rose three points to 57, while the component measuring market rate rental units fell six points to 50 and the component measuring for-sale units dropped three points to 46.

The Multifamily Vacancy Index (MVI), which measures the multifamily housing industry's perception of vacancies, rose three points to 45. The MVI is a weighted average of current occupancy indexes for class A, B, and C multifamily units, and can vary from 0 to 100, where any number over 50 indicates more property managers report more vacant apartments. Although the MPI increased in the second quarter, a reading of 45 is still seen as a healthy number for the multifamily market.

“Multifamily builders and developers are seeing strong demand, but there are headwinds that have impacted further development,” said Steve Lawson, president of The Lawson Companies in Virginia Beach, Va., and chairman of NAHB’s Multifamily Council. “Some developers have had difficulty getting projects off the ground due to regulatory burdens and neighborhood opposition in certain parts of the country.”

“Although the MPI is down two points in the second quarter, it is still above 50, reflecting a solid number of multifamily starts so far this year,” said NAHB Chief Economist Robert Dietz. “In addition to regulatory costs, developers still need to monitor the impact of tariffs and the threat of further trade restrictions on building materials prices, especially lumber.”

Historically, the MPI and MVI have performed well as leading indicators of U.S. Census figures for multifamily starts and vacancy rates, providing information on likely movement in the Census figures one to three quarters in advance.

For data tables on the MPI and MVI, visit www.nahb.org/mms.

For more information on the NAHB Multifamily program, please visit NAHB Multifamily:
<https://www.nahb.org/en/members/committees-and-councils/councils/multifamily-council/nahb-multifamily.aspx>.

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ABOUT NAHB: The National Association of Home Builders is a Washington-based trade association representing more than 140,000 members involved in home building, remodeling, multifamily construction, property management, subcontracting, design, housing finance, building product manufacturing and other aspects of residential and light commercial construction. NAHB is affiliated with 700 state and local home builders associations around the country. NAHB's builder members will construct about 80 percent of the new housing units projected for this year.

Introduction:

The National Association of Home Builders (NAHB) conducts a quarterly survey of its multifamily builder members that is used to generate the NAHB Multifamily Production Index (MPI) and the Multifamily Vacancy Index (MVI). The second quarter 2018 Multifamily Market Survey was sent to 1,123 multifamily builders. Responses were received from 57 multifamily builders.

To generate the MPI, the survey asks multifamily builders to rate if the production of new apartments for three key market elements (low-rent, market rent and for-sale) is “stronger,” “about the same” or “weaker” compared to the previous quarter. The overall MPI is a weighted average of the three elements ($.3533 \times \text{Low Rent} + .2806 \times \text{Market Rent} + .3661 \times \text{For Sale}$) and sits on a scale ranging from 0 to 100 with readings above 50 indicating that more respondents report conditions are improving than report conditions are getting worse.

To calculate the MVI, the survey asks multifamily builders to rate if the occupancy of multifamily units is “higher,” “about the same” or “lower” for three classes of apartments (class A, class B and class C apartments) compared to the previous quarter. The overall MVI is a weighted average of the three components: $.3632 \times \text{Class A} + .4630 \times \text{Class B} + .1738 \times \text{Class C}$ and is also calculated on a scale ranging from 0 to 100 with lower numbers indicating fewer vacancies

Historically, the MPI has served as a leading indicator of Census multifamily starts, while the MVI has served as a leading indicator of Census multifamily 5+ vacancy rates.



Multifamily Production Indices - Q2 2018
(Seasonally Adjusted)

PRODUCTION OF NEW APARTMENTS IN CURRENT VS. PRIOR QUARTER

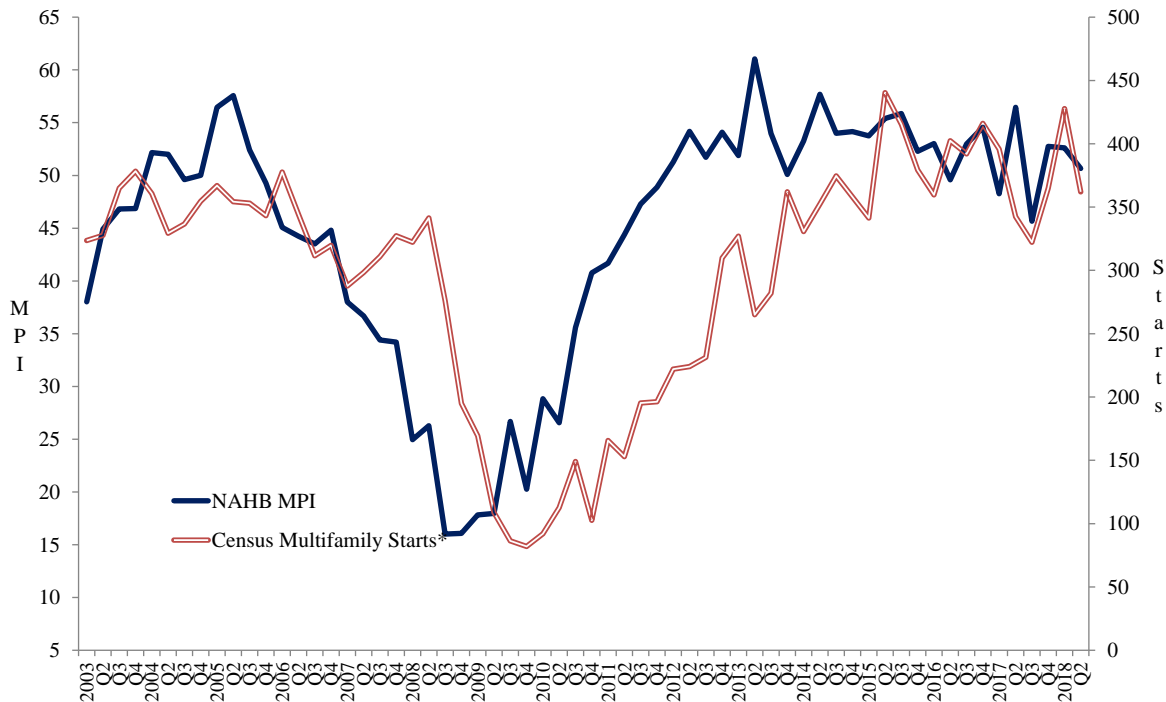
| | 2014 | | | | 2015 | | | | 2016 | | | | 2017 | | | | 2018 | |
|-------------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 |
|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

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 |
| Low Rent Starts | 47 | 51 | 57 | 55 | 54 | 54 | 57 | 53 | 53 | 48 | 54 | 49 | 52 | 56 | 50 | 55 | 58 | 59 |
| Market Rent Starts | 57 | 60 | 57 | 58 | 56 | 63 | 59 | 58 | 52 | 44 | 60 | 52 | 56 | 55 | 45 | 48 | 57 | 47 |
| For Sale Starts | 58 | 55 | 53 | 51 | 56 | 56 | 56 | 51 | 50 | 44 | 57 | 54 | 46 | 57 | 47 | 50 | 50 | 49 |

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 (Stronger - Weaker + 100) / 2. The overall Multifamily Production Index is a weighted average of the 3 components: .3533×Low Rent + .2806×Market Rent + .3661×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.



Multifamily Vacancy Indices - Q2 2018 (Seasonally Adjusted)

RENTAL VACANCY IN CURRENT VS. PRIOR QUARTER

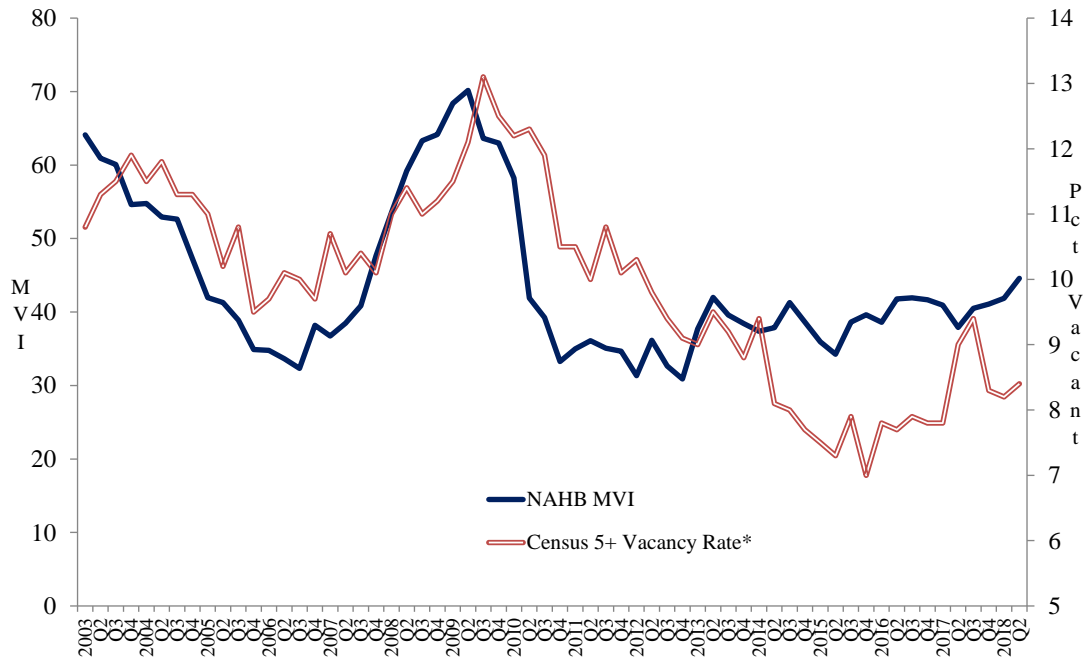
| | 2014 | | | | 2015 | | | | 2016 | | | | 2017 | | | | 2018 | |
|----------------------------------|------|----|----|----|------|----|----|----|------|----|----|----|------|----|----|----|------|----|
| | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 |
| Multifamily Vacancy Index | 37 | 38 | 41 | 39 | 36 | 34 | 39 | 40 | 39 | 42 | 42 | 42 | 41 | 38 | 41 | 41 | 42 | 45 |
| MVI Components: | | | | | | | | | | | | | | | | | | |
| Class A apartments | 38 | 39 | 40 | 39 | 35 | 34 | 41 | 40 | 39 | 44 | 44 | 44 | 47 | 41 | 42 | 44 | 46 | 48 |
| Class B apartments | 35 | 36 | 41 | 37 | 36 | 33 | 36 | 38 | 38 | 40 | 40 | 39 | 37 | 37 | 40 | 39 | 39 | 43 |
| Class C apartments | 41 | 40 | 46 | 41 | 38 | 37 | 42 | 42 | 39 | 41 | 41 | 45 | 38 | 34 | 40 | 40 | 40 | 41 |

EXPECTED VACANCY: 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 |
| Class A apartments | 36 | 42 | 44 | 36 | 38 | 33 | 37 | 39 | 47 | 48 | 44 | 45 | 43 | 48 | 45 | 52 | 52 | 48 |
| Class B apartments | 41 | 38 | 41 | 38 | 38 | 36 | 35 | 40 | 36 | 46 | 41 | 39 | 38 | 40 | 41 | 41 | 41 | 42 |
| Class C apartments | 42 | 45 | 45 | 42 | 42 | 40 | 42 | 43 | 45 | 46 | 44 | 45 | 35 | 42 | 37 | 40 | 35 | 39 |

MVI components are based on questions asking if occupancy is higher, about the same, or lower in the current vs. prior quarter. Expected vacancy indices are based on similar questions about occupancy during the next 6 months vs. the current quarter. Individual vacancy indices are calculated from the percentage responses using the formula $(\text{Lower Occupancy} - \text{Higher Occupancy} + 100) / 2$. The overall Multifamily Vacancy Index is a weighted average of the three components: $.3632 \times \text{Class A} + .4630 \times \text{Class B} + .1738 \times \text{Class C}$. The weights are derived from a statistical analysis of the historical relationship between the components and Census rental vacancy rates. Source: Multifamily Market Survey, NAHB Economics and Housing Policy Group.

NAHB Multifamily Vacancy Index (MVI) and 5+ Rental Vacancy Rate



The rental vacancy rate is the number of vacant rental units divided by the number of vacant rental units plus the number of rental units occupied plus the number of rental units rented but not yet occupied.

TABLE 1
Derivation of Multifamily Production Index and Components (Production in Current Compared to Prior Quarter)

| Period | For Rent - Low Rent | | | | | For Rent - Market Rent | | | | | For Sale | | | | | Multifamily Production Index |
|---------------|---------------------|------|--------|-----------|-----------|------------------------|------|--------|-----------|-----------|----------|------|--------|-----------|-----------|------------------------------|
| | Stronger | Same | Weaker | NSA Index | SA Index | Stronger | Same | Weaker | NSA Index | SA Index | Stronger | Same | Weaker | NSA Index | SA Index | |
| 1st Qtr. 2003 | 10 | 60 | 29 | 41 | 38 | 10 | 43 | 48 | 31 | 29 | 18 | 58 | 24 | 47 | 44 | 38 |
| 2nd Qtr. 2003 | 14 | 58 | 28 | 43 | 42 | 13 | 51 | 37 | 38 | 38 | 26 | 55 | 19 | 53 | 53 | 45 |
| 3rd Qtr. 2003 | 7 | 64 | 29 | 39 | 42 | 13 | 54 | 33 | 40 | 40 | 29 | 49 | 22 | 53 | 57 | 47 |
| 4th Qtr. 2003 | 14 | 59 | 28 | 43 | 43 | 12 | 46 | 43 | 35 | 35 | 28 | 62 | 9 | 60 | 60 | 47 |
| 1st Qtr. 2004 | 15 | 69 | 16 | 49 | 47 | 22 | 51 | 26 | 48 | 48 | 40 | 48 | 12 | 64 | 60 | 52 |
| 2nd Qtr. 2004 | 21 | 58 | 21 | 50 | 49 | 22 | 51 | 27 | 47 | 47 | 29 | 60 | 11 | 59 | 58 | 52 |
| 3rd Qtr. 2004 | 15 | 51 | 34 | 40 | 43 | 15 | 53 | 31 | 42 | 42 | 34 | 46 | 20 | 57 | 62 | 50 |
| 4th Qtr. 2004 | 18 | 51 | 31 | 44 | 44 | 22 | 54 | 24 | 49 | 49 | 29 | 57 | 14 | 57 | 57 | 50 |
| 1st Qtr. 2005 | 19 | 66 | 15 | 52 | 49 | 27 | 61 | 12 | 57 | 57 | 45 | 44 | 11 | 67 | 63 | 56 |
| 2nd Qtr. 2005 | 19 | 64 | 17 | 51 | 51 | 36 | 51 | 13 | 61 | 61 | 33 | 58 | 10 | 61 | 61 | 58 |
| 3rd Qtr. 2005 | 10 | 76 | 14 | 48 | 51 | 21 | 54 | 25 | 48 | 48 | 26 | 53 | 21 | 52 | 57 | 52 |
| 4th Qtr. 2005 | 21 | 64 | 16 | 53 | 53 | 23 | 50 | 27 | 48 | 48 | 20 | 55 | 25 | 47 | 46 | 49 |
| 1st Qtr. 2006 | 26 | 53 | 21 | 52 | 49 | 26 | 57 | 17 | 55 | 55 | 15 | 43 | 41 | 37 | 34 | 45 |
| 2nd Qtr. 2006 | 24 | 50 | 26 | 49 | 49 | 29 | 51 | 20 | 54 | 54 | 14 | 36 | 50 | 32 | 32 | 44 |
| 3rd Qtr. 2006 | 24 | 59 | 17 | 54 | 57 | 33 | 44 | 23 | 55 | 55 | 8 | 23 | 69 | 20 | 22 | 44 |
| 4th Qtr. 2006 | 24 | 49 | 27 | 49 | 49 | 37 | 46 | 17 | 60 | 60 | 13 | 33 | 54 | 30 | 29 | 45 |
| 1st Qtr. 2007 | 17 | 59 | 24 | 47 | 43 | 28 | 52 | 21 | 53 | 53 | 10 | 26 | 64 | 23 | 21 | 38 |
| 2nd Qtr. 2007 | 9 | 69 | 23 | 43 | 43 | 26 | 54 | 20 | 53 | 53 | 8 | 21 | 72 | 18 | 18 | 37 |
| 3rd Qtr. 2007 | 16 | 56 | 28 | 44 | 47 | 11 | 66 | 23 | 44 | 44 | 0 | 27 | 73 | 14 | 15 | 34 |
| 4th Qtr. 2007 | 23 | 44 | 33 | 45 | 46 | 20 | 40 | 40 | 40 | 40 | 8 | 21 | 71 | 19 | 19 | 34 |
| 1st Qtr. 2008 | 10 | 43 | 47 | 32 | 29 | 13 | 44 | 44 | 34 | 34 | 4 | 22 | 74 | 15 | 13 | 25 |
| 2nd Qtr. 2008 | 13 | 39 | 47 | 33 | 33 | 14 | 48 | 38 | 38 | 38 | 0 | 20 | 80 | 10 | 10 | 26 |
| 3rd Qtr. 2008 | 5 | 35 | 60 | 22 | 23 | 3 | 25 | 72 | 16 | 16 | 1 | 13 | 85 | 8 | 9 | 16 |
| 4th Qtr. 2008 | 4 | 37 | 59 | 22 | 23 | 6 | 25 | 69 | 19 | 19 | 4 | 8 | 88 | 8 | 8 | 16 |
| 1st Qtr. 2009 | 7 | 39 | 54 | 26 | 24 | 3 | 26 | 70 | 16 | 16 | 3 | 23 | 74 | 15 | 13 | 18 |
| 2nd Qtr. 2009 | 9 | 24 | 67 | 21 | 22 | 7 | 20 | 73 | 17 | 17 | 2 | 26 | 72 | 15 | 15 | 18 |
| 3rd Qtr. 2009 | 12 | 37 | 51 | 30 | 32 | 4 | 31 | 65 | 19 | 19 | 14 | 20 | 66 | 24 | 27 | 27 |
| 4th Qtr. 2009 | 7 | 39 | 54 | 27 | 27 | 5 | 34 | 60 | 22 | 22 | 0 | 24 | 76 | 12 | 12 | 20 |
| 1st Qtr. 2010 | 14 | 49 | 37 | 38 | 35 | 8 | 46 | 47 | 31 | 30 | 6 | 38 | 56 | 25 | 22 | 29 |
| 2nd Qtr. 2010 | 10 | 51 | 39 | 36 | 33 | 11 | 47 | 42 | 35 | 34 | 2 | 30 | 68 | 17 | 14 | 27 |
| 3rd Qtr. 2010 | 21 | 49 | 30 | 46 | 46 | 14 | 47 | 39 | 37 | 39 | 0 | 42 | 58 | 21 | 23 | 36 |
| 4th Qtr. 2010 | 16 | 65 | 19 | 49 | 49 | 21 | 60 | 19 | 51 | 52 | 5 | 40 | 55 | 25 | 25 | 41 |
| 1st Qtr. 2011 | 20 | 58 | 22 | 49 | 46 | 40 | 43 | 17 | 61 | 60 | 5 | 44 | 51 | 27 | 23 | 42 |
| 2nd Qtr. 2011 | 15 | 64 | 20 | 48 | 52 | 36 | 46 | 18 | 59 | 57 | 5 | 43 | 52 | 26 | 28 | 44 |
| 3rd Qtr. 2011 | 22 | 56 | 21 | 51 | 50 | 37 | 48 | 15 | 61 | 64 | 5 | 49 | 46 | 30 | 32 | 47 |
| 4th Qtr. 2011 | 25 | 61 | 14 | 55 | 56 | 36 | 53 | 11 | 63 | 64 | 4 | 53 | 43 | 31 | 31 | 49 |
| 1st Qtr. 2012 | 21 | 62 | 17 | 52 | 53 | 45 | 44 | 11 | 67 | 69 | 8 | 57 | 35 | 37 | 37 | 51 |
| 2nd Qtr. 2012 | 21 | 68 | 11 | 55 | 61 | 46 | 36 | 18 | 64 | 63 | 9 | 55 | 36 | 36 | 41 | 54 |
| 3rd Qtr. 2012 | 14 | 65 | 21 | 47 | 46 | 44 | 44 | 13 | 66 | 69 | 15 | 57 | 28 | 44 | 44 | 52 |
| 4th Qtr. 2012 | 20 | 67 | 13 | 54 | 53 | 38 | 52 | 10 | 64 | 65 | 15 | 63 | 22 | 46 | 46 | 54 |
| 1st Qtr. 2013 | 28 | 59 | 13 | 58 | 55 | 44 | 43 | 14 | 65 | 61 | 22 | 49 | 29 | 47 | 42 | 52 |
| 2nd Qtr. 2013 | 21 | 68 | 11 | 55 | 60 | 39 | 54 | 7 | 66 | 67 | 23 | 60 | 17 | 53 | 58 | 61 |
| 3rd Qtr. 2013 | 14 | 70 | 16 | 49 | 50 | 36 | 50 | 13 | 62 | 64 | 24 | 54 | 23 | 51 | 50 | 54 |
| 4th Qtr. 2013 | 15 | 66 | 19 | 48 | 47 | 31 | 56 | 13 | 59 | 60 | 14 | 66 | 20 | 47 | 46 | 50 |
| 1st Qtr. 2014 | 14 | 71 | 15 | 49 | 48 | 35 | 53 | 12 | 62 | 59 | 28 | 55 | 17 | 55 | 54 | 53 |
| 2nd Qtr. 2014 | 16 | 69 | 15 | 51 | 52 | 42 | 50 | 8 | 67 | 68 | 22 | 62 | 16 | 53 | 56 | 58 |
| 3rd Qtr. 2014 | 8 | 80 | 12 | 48 | 51 | 35 | 55 | 10 | 62 | 64 | 21 | 61 | 18 | 51 | 50 | 54 |
| 4th Qtr. 2014 | 21 | 64 | 15 | 53 | 52 | 31 | 60 | 9 | 61 | 62 | 19 | 61 | 20 | 49 | 50 | 54 |
| 1st Qtr. 2015 | 25 | 58 | 17 | 54 | 54 | 36 | 47 | 16 | 60 | 59 | 24 | 55 | 21 | 51 | 50 | 54 |
| 2nd Qtr. 2015 | 23 | 65 | 12 | 55 | 54 | 30 | 61 | 9 | 61 | 60 | 20 | 65 | 15 | 52 | 53 | 55 |
| 3rd Qtr. 2015 | 24 | 57 | 20 | 52 | 55 | 43 | 40 | 17 | 63 | 64 | 21 | 60 | 19 | 51 | 50 | 56 |
| 4th Qtr. 2015 | 19 | 62 | 18 | 51 | 50 | 30 | 56 | 15 | 57 | 59 | 19 | 56 | 25 | 47 | 49 | 52 |
| 1st Qtr. 2016 | 27 | 56 | 17 | 55 | 54 | 38 | 42 | 20 | 59 | 58 | 17 | 65 | 18 | 49 | 48 | 53 |
| 2nd Qtr. 2016 | 26 | 55 | 19 | 53 | 52 | 31 | 47 | 21 | 55 | 53 | 20 | 52 | 29 | 46 | 45 | 50 |
| 3rd Qtr. 2016 | 25 | 53 | 22 | 52 | 54 | 31 | 52 | 17 | 57 | 57 | 24 | 50 | 26 | 49 | 49 | 53 |
| 4th Qtr. 2016 | 24 | 60 | 16 | 54 | 54 | 29 | 53 | 17 | 56 | 58 | 17 | 65 | 17 | 50 | 52 | 55 |
| 1st Qtr. 2017 | 21 | 58 | 21 | 50 | 48 | 32 | 46 | 22 | 55 | 55 | 18 | 53 | 29 | 45 | 43 | 48 |
| 2nd Qtr. 2017 | 50 | 56 | 18 | 54 | 53 | 38 | 48 | 15 | 61 | 60 | 35 | 45 | 20 | 58 | 57 | 56 |
| 3rd Qtr. 2017 | 50 | 49 | 24 | 52 | 54 | 15 | 56 | 29 | 43 | 43 | 12 | 57 | 31 | 40 | 40 | 46 |
| 4th Qtr. 2017 | 50 | 66 | 11 | 56 | 56 | 31 | 46 | 24 | 53 | 54 | 20 | 54 | 26 | 47 | 49 | 53 |
| 1st Qtr. 2018 | 50 | 53 | 19 | 55 | 54 | 30 | 51 | 19 | 55 | 56 | 18 | 64 | 18 | 50 | 49 | 53 |
| 2nd Qtr. 2018 | 50 | 71 | 6 | 58 | 57 | 18 | 64 | 18 | 50 | 50 | 12 | 68 | 20 | 46 | 46 | 51 |

Each MPI component is based on a survey question asking if production conditions are stronger, about the same, or weaker in the current compared to the prior quarter. An MPI component is then calculated from the percentage responses using the diffusion-index formula (Stronger - Weaker + 100) / 2. The Multifamily Production Index is a weighted average of the three component indices: .3533xLow Rent + .2806xMarket Rent + .3661xFor 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. Q2 2018 results based on 57 responses.



Chart 1

Components of the Multifamily Production Index (MPI)

(production in current vs. prior quarter)

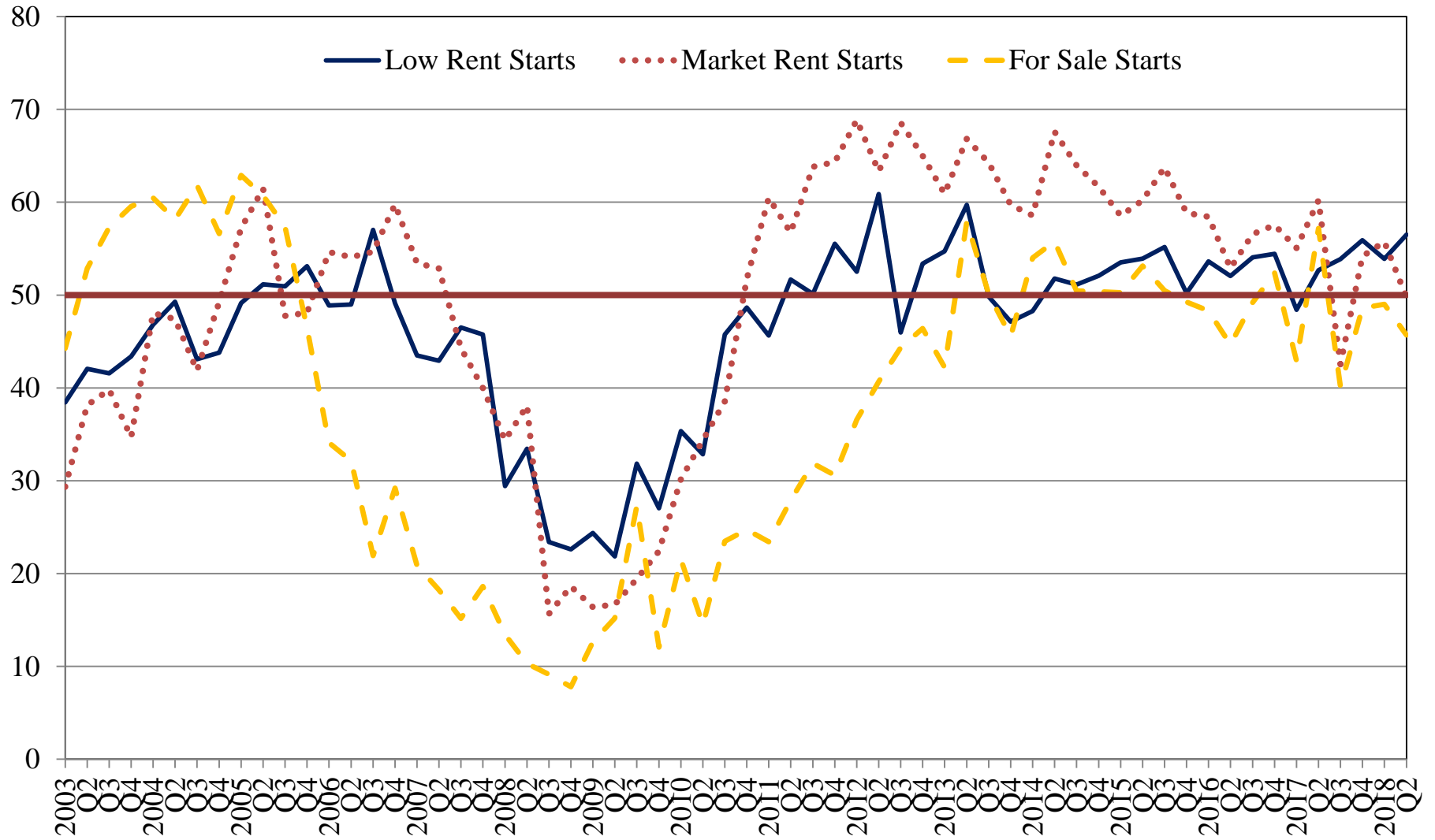


TABLE 2
Derivation of Indices for Production Expected During the Next 6 Months (Compared to Current Quarter)

| Period | For Rent - Low Rent | | | | | For Rent - Market Rent | | | | | For Sale | | | | |
|---------------|---------------------|------|--------|-----------|-----------|------------------------|------|--------|-----------|-----------|----------|------|--------|-----------|-----------|
| | Stronger | Same | Weaker | NSA Index | SA Index | Stronger | Same | Weaker | NSA Index | SA Index | Stronger | Same | Weaker | NSA Index | SA Index |
| 1st Qtr. 2003 | 17 | 67 | 17 | 50 | 49 | 14 | 55 | 31 | 41 | 40 | 19 | 58 | 22 | 49 | 49 |
| 2nd Qtr. 2003 | 17 | 64 | 19 | 49 | 49 | 15 | 61 | 23 | 46 | 45 | 23 | 60 | 17 | 53 | 55 |
| 3rd Qtr. 2003 | 11 | 71 | 18 | 46 | 50 | 15 | 60 | 25 | 45 | 49 | 23 | 61 | 16 | 54 | 55 |
| 4th Qtr. 2003 | 19 | 67 | 13 | 53 | 51 | 23 | 57 | 19 | 52 | 50 | 35 | 54 | 11 | 62 | 58 |
| 1st Qtr. 2004 | 20 | 64 | 16 | 52 | 50 | 29 | 56 | 15 | 57 | 55 | 27 | 57 | 16 | 55 | 56 |
| 2nd Qtr. 2004 | 31 | 57 | 12 | 59 | 59 | 30 | 51 | 19 | 55 | 55 | 13 | 60 | 27 | 43 | 44 |
| 3rd Qtr. 2004 | 16 | 56 | 28 | 44 | 48 | 22 | 55 | 23 | 49 | 54 | 29 | 50 | 21 | 54 | 56 |
| 4th Qtr. 2004 | 23 | 56 | 21 | 51 | 49 | 32 | 51 | 17 | 58 | 55 | 33 | 56 | 12 | 60 | 57 |
| 1st Qtr. 2005 | 21 | 65 | 14 | 53 | 51 | 24 | 62 | 14 | 55 | 54 | 21 | 62 | 17 | 52 | 51 |
| 2nd Qtr. 2005 | 25 | 55 | 20 | 53 | 53 | 31 | 56 | 14 | 58 | 58 | 26 | 58 | 16 | 55 | 56 |
| 3rd Qtr. 2005 | 15 | 75 | 10 | 52 | 57 | 23 | 61 | 17 | 53 | 58 | 22 | 53 | 24 | 49 | 53 |
| 4th Qtr. 2005 | 30 | 54 | 16 | 57 | 55 | 33 | 52 | 15 | 59 | 57 | 13 | 53 | 34 | 39 | 38 |
| 1st Qtr. 2006 | 24 | 51 | 24 | 50 | 47 | 32 | 51 | 17 | 58 | 55 | 9 | 56 | 36 | 37 | 35 |
| 2nd Qtr. 2006 | 28 | 52 | 20 | 54 | 55 | 39 | 45 | 16 | 61 | 60 | 13 | 42 | 45 | 34 | 34 |
| 3rd Qtr. 2006 | 29 | 51 | 20 | 55 | 61 | 37 | 47 | 16 | 60 | 67 | 11 | 33 | 56 | 28 | 31 |
| 4th Qtr. 2006 | 35 | 49 | 16 | 59 | 57 | 51 | 37 | 12 | 70 | 68 | 31 | 35 | 33 | 49 | 48 |
| 1st Qtr. 2007 | 32 | 57 | 11 | 61 | 56 | 38 | 52 | 10 | 64 | 60 | 11 | 45 | 45 | 33 | 30 |
| 2nd Qtr. 2007 | 11 | 69 | 20 | 46 | 47 | 31 | 50 | 19 | 56 | 55 | 13 | 26 | 61 | 26 | 26 |
| 3rd Qtr. 2007 | 9 | 59 | 31 | 39 | 44 | 24 | 47 | 29 | 47 | 52 | 8 | 25 | 67 | 21 | 24 |
| 4th Qtr. 2007 | 27 | 43 | 30 | 49 | 47 | 30 | 39 | 30 | 50 | 50 | 17 | 25 | 58 | 29 | 29 |
| 1st Qtr. 2008 | 18 | 54 | 28 | 45 | 41 | 34 | 34 | 31 | 52 | 47 | 16 | 28 | 57 | 30 | 26 |
| 2nd Qtr. 2008 | 8 | 51 | 41 | 33 | 35 | 24 | 33 | 43 | 40 | 40 | 6 | 30 | 64 | 21 | 21 |
| 3rd Qtr. 2008 | 8 | 25 | 67 | 20 | 23 | 7 | 24 | 69 | 19 | 21 | 0 | 20 | 80 | 10 | 12 |
| 4th Qtr. 2008 | 8 | 41 | 51 | 29 | 28 | 6 | 33 | 61 | 23 | 23 | 4 | 18 | 78 | 13 | 13 |
| 1st Qtr. 2009 | 19 | 39 | 42 | 38 | 34 | 11 | 39 | 49 | 31 | 27 | 8 | 35 | 57 | 25 | 21 |
| 2nd Qtr. 2009 | 13 | 51 | 36 | 38 | 40 | 7 | 52 | 42 | 33 | 32 | 7 | 41 | 53 | 27 | 27 |
| 3rd Qtr. 2009 | 13 | 56 | 31 | 41 | 47 | 9 | 47 | 44 | 33 | 37 | 14 | 33 | 53 | 30 | 37 |
| 4th Qtr. 2009 | 11 | 54 | 35 | 38 | 37 | 9 | 51 | 40 | 34 | 36 | 2 | 49 | 49 | 26 | 27 |
| 1st Qtr. 2010 | 20 | 49 | 30 | 45 | 40 | 22 | 44 | 35 | 43 | 38 | 11 | 44 | 45 | 33 | 27 |
| 2nd Qtr. 2010 | 17 | 50 | 33 | 42 | 37 | 22 | 43 | 35 | 43 | 38 | 9 | 37 | 54 | 27 | 22 |
| 3rd Qtr. 2010 | 27 | 46 | 27 | 50 | 57 | 24 | 53 | 23 | 51 | 58 | 2 | 49 | 49 | 27 | 33 |
| 4th Qtr. 2010 | 23 | 65 | 12 | 55 | 54 | 40 | 48 | 12 | 64 | 67 | 10 | 56 | 34 | 38 | 39 |
| 1st Qtr. 2011 | 27 | 56 | 17 | 55 | 49 | 46 | 37 | 17 | 64 | 57 | 11 | 46 | 44 | 33 | 28 |
| 2nd Qtr. 2011 | 20 | 65 | 16 | 52 | 53 | 43 | 43 | 14 | 64 | 62 | 9 | 48 | 44 | 32 | 31 |
| 3rd Qtr. 2011 | 17 | 59 | 23 | 47 | 50 | 41 | 42 | 18 | 62 | 67 | 3 | 56 | 41 | 31 | 37 |
| 4th Qtr. 2011 | 30 | 56 | 14 | 58 | 57 | 47 | 40 | 13 | 67 | 68 | 11 | 55 | 34 | 38 | 39 |
| 1st Qtr. 2012 | 23 | 59 | 18 | 52 | 52 | 44 | 42 | 15 | 65 | 65 | 9 | 63 | 28 | 41 | 41 |
| 2nd Qtr. 2012 | 25 | 64 | 11 | 57 | 59 | 42 | 44 | 14 | 64 | 63 | 13 | 59 | 28 | 43 | 41 |
| 3rd Qtr. 2012 | 20 | 65 | 14 | 53 | 56 | 43 | 48 | 9 | 67 | 72 | 20 | 60 | 21 | 49 | 57 |
| 4th Qtr. 2012 | 21 | 68 | 11 | 55 | 53 | 43 | 45 | 12 | 66 | 65 | 23 | 61 | 16 | 53 | 50 |
| 1st Qtr. 2013 | 33 | 54 | 14 | 60 | 57 | 42 | 47 | 11 | 66 | 62 | 29 | 55 | 16 | 56 | 51 |
| 2nd Qtr. 2013 | 28 | 61 | 12 | 58 | 60 | 41 | 50 | 9 | 66 | 67 | 30 | 56 | 14 | 58 | 60 |
| 3rd Qtr. 2013 | 25 | 58 | 18 | 54 | 56 | 37 | 51 | 11 | 63 | 65 | 24 | 58 | 17 | 54 | 58 |
| 4th Qtr. 2013 | 23 | 64 | 14 | 55 | 53 | 33 | 55 | 13 | 60 | 58 | 24 | 59 | 16 | 54 | 50 |
| 1st Qtr. 2014 | 15 | 67 | 18 | 48 | 47 | 35 | 47 | 19 | 58 | 57 | 34 | 52 | 14 | 60 | 58 |
| 2nd Qtr. 2014 | 15 | 71 | 14 | 50 | 51 | 33 | 51 | 16 | 59 | 60 | 22 | 62 | 16 | 53 | 55 |
| 3rd Qtr. 2014 | 19 | 70 | 11 | 54 | 57 | 29 | 55 | 16 | 56 | 57 | 22 | 57 | 22 | 50 | 53 |
| 4th Qtr. 2014 | 25 | 64 | 12 | 56 | 55 | 33 | 52 | 15 | 59 | 58 | 26 | 54 | 20 | 53 | 51 |
| 1st Qtr. 2015 | 23 | 62 | 15 | 54 | 54 | 32 | 47 | 21 | 55 | 56 | 28 | 58 | 13 | 57 | 56 |
| 2nd Qtr. 2015 | 26 | 60 | 14 | 56 | 54 | 39 | 49 | 12 | 63 | 63 | 25 | 60 | 15 | 55 | 56 |
| 3rd Qtr. 2015 | 24 | 61 | 15 | 55 | 57 | 35 | 46 | 18 | 59 | 59 | 25 | 59 | 16 | 54 | 56 |
| 4th Qtr. 2015 | 20 | 69 | 11 | 55 | 53 | 31 | 56 | 13 | 59 | 58 | 18 | 66 | 16 | 51 | 51 |
| 1st Qtr. 2016 | 25 | 56 | 19 | 53 | 53 | 28 | 47 | 25 | 52 | 52 | 22 | 62 | 17 | 53 | 50 |
| 2nd Qtr. 2016 | 18 | 61 | 21 | 48 | 48 | 20 | 51 | 30 | 45 | 44 | 19 | 49 | 32 | 44 | 44 |
| 3rd Qtr. 2016 | 22 | 63 | 15 | 53 | 54 | 35 | 48 | 17 | 59 | 60 | 27 | 56 | 17 | 55 | 57 |
| 4th Qtr. 2016 | 23 | 55 | 22 | 51 | 49 | 26 | 53 | 21 | 53 | 52 | 18 | 68 | 14 | 52 | 54 |
| 1st Qtr. 2017 | 21 | 61 | 18 | 52 | 52 | 29 | 53 | 19 | 55 | 56 | 18 | 63 | 19 | 49 | 46 |
| 2nd Qtr. 2017 | 33 | 46 | 21 | 56 | 56 | 34 | 43 | 23 | 56 | 55 | 31 | 51 | 18 | 57 | 57 |
| 3rd Qtr. 2017 | 24 | 55 | 22 | 51 | 50 | 19 | 51 | 31 | 44 | 45 | 16 | 61 | 24 | 46 | 47 |
| 4th Qtr. 2017 | 30 | 53 | 17 | 57 | 55 | 24 | 51 | 25 | 49 | 48 | 17 | 65 | 19 | 49 | 50 |
| 1st Qtr. 2018 | 33 | 49 | 19 | 57 | 58 | 34 | 43 | 23 | 55 | 57 | 20 | 64 | 16 | 52 | 50 |
| 2nd Qtr. 2018 | 24 | 68 | 8 | 58 | 59 | 20 | 57 | 23 | 48 | 47 | 12 | 71 | 16 | 48 | 49 |

Each expected production index is based on a survey question asking if production is expected to be stronger, about the same, or weaker during the next 6 months compared to the current quarter.

An individual index is calculated from the percentage responses using the diffusion index formula (Stronger - Weaker + 100) / 2.

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

Q2 2018 results based on 57 responses.



Chart 2
Expected Production Indices
(production next 6 months vs. current quarter)

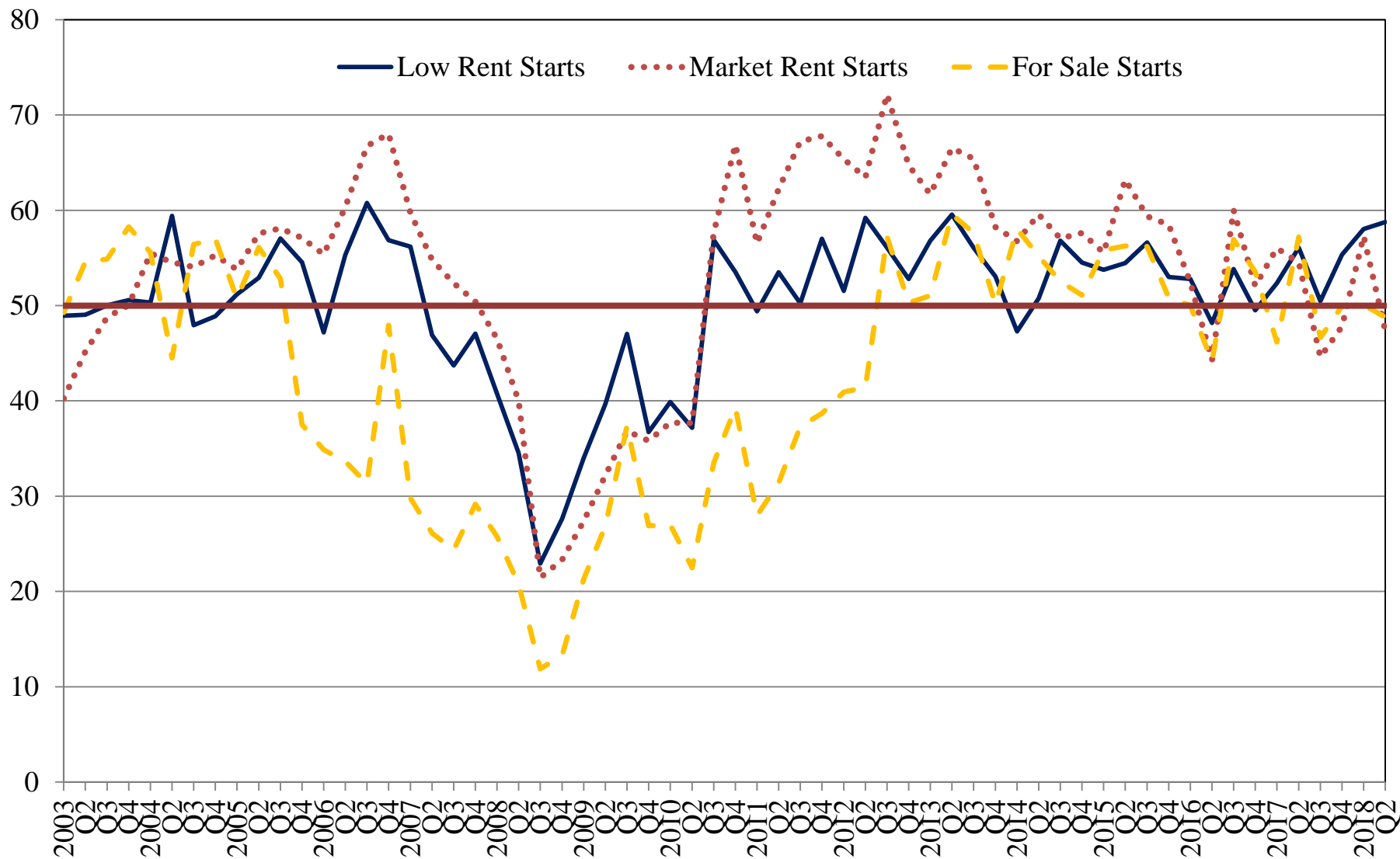


TABLE 3
Derivation of Multifamily Vacancy Index and Components (Rental Vacancy in Current vs. Prior Quarter)

| Period | Class A Apartment | | | | | Class B Apartment | | | | | Class C Apartment | | | | | Multifamily Vacancy Index |
|---------------|-------------------|------|-------|-----------|-----------|-------------------|------|-------|-----------|-----------|-------------------|------|-------|-----------|-----------|---------------------------|
| | Occupancy | | | Vacancy | | Occupancy | | | Vacancy | | Occupancy | | | Vacancy | | |
| | Higher | Same | Lower | NSA Index | SA Index | Higher | Same | Lower | NSA Index | SA Index | Higher | Same | Lower | NSA Index | SA Index | |
| 1st Qtr. 2003 | 7 | 45 | 48 | 70 | 71 | 10 | 60 | 30 | 60 | 62 | 15 | 61 | 24 | 55 | 56 | 64 |
| 2nd Qtr. 2003 | 13 | 53 | 34 | 60 | 64 | 17 | 52 | 31 | 57 | 60 | 17 | 57 | 26 | 55 | 57 | 61 |
| 3rd Qtr. 2003 | 7 | 58 | 35 | 64 | 62 | 9 | 58 | 33 | 62 | 61 | 14 | 59 | 27 | 57 | 56 | 60 |
| 4th Qtr. 2003 | 13 | 54 | 33 | 60 | 58 | 14 | 57 | 29 | 57 | 53 | 13 | 63 | 23 | 55 | 52 | 55 |
| 1st Qtr. 2004 | 20 | 53 | 27 | 53 | 54 | 16 | 59 | 25 | 55 | 57 | 22 | 58 | 21 | 49 | 51 | 55 |
| 2nd Qtr. 2004 | 24 | 51 | 25 | 51 | 55 | 19 | 63 | 18 | 49 | 53 | 21 | 68 | 11 | 45 | 48 | 53 |
| 3rd Qtr. 2004 | 11 | 56 | 33 | 61 | 58 | 18 | 59 | 23 | 53 | 51 | 33 | 43 | 25 | 46 | 45 | 53 |
| 4th Qtr. 2004 | 14 | 62 | 24 | 55 | 52 | 24 | 54 | 22 | 49 | 44 | 31 | 41 | 28 | 48 | 45 | 47 |
| 1st Qtr. 2005 | 34 | 51 | 14 | 40 | 40 | 28 | 65 | 7 | 39 | 42 | 27 | 60 | 13 | 43 | 45 | 42 |
| 2nd Qtr. 2005 | 38 | 50 | 13 | 38 | 43 | 34 | 61 | 5 | 35 | 40 | 31 | 62 | 8 | 38 | 42 | 41 |
| 3rd Qtr. 2005 | 33 | 55 | 13 | 40 | 37 | 34 | 49 | 17 | 42 | 40 | 31 | 56 | 14 | 42 | 40 | 39 |
| 4th Qtr. 2005 | 44 | 37 | 19 | 38 | 34 | 35 | 49 | 16 | 41 | 35 | 34 | 48 | 18 | 42 | 38 | 35 |
| 1st Qtr. 2006 | 37 | 49 | 14 | 38 | 38 | 50 | 43 | 7 | 29 | 31 | 43 | 49 | 9 | 33 | 36 | 35 |
| 2nd Qtr. 2006 | 54 | 39 | 7 | 27 | 33 | 46 | 50 | 4 | 29 | 34 | 44 | 48 | 8 | 32 | 35 | 34 |
| 3rd Qtr. 2006 | 42 | 50 | 8 | 33 | 31 | 36 | 60 | 4 | 34 | 32 | 27 | 69 | 4 | 38 | 36 | 32 |
| 4th Qtr. 2006 | 29 | 61 | 11 | 41 | 37 | 21 | 69 | 10 | 45 | 39 | 23 | 71 | 6 | 41 | 38 | 38 |
| 1st Qtr. 2007 | 36 | 50 | 14 | 39 | 39 | 46 | 42 | 12 | 33 | 35 | 40 | 56 | 4 | 32 | 36 | 37 |
| 2nd Qtr. 2007 | 34 | 59 | 7 | 36 | 41 | 41 | 53 | 6 | 32 | 37 | 36 | 60 | 4 | 34 | 36 | 38 |
| 3rd Qtr. 2007 | 24 | 56 | 20 | 48 | 47 | 34 | 52 | 14 | 40 | 38 | 36 | 54 | 11 | 38 | 35 | 41 |
| 4th Qtr. 2007 | 18 | 50 | 32 | 57 | 54 | 21 | 55 | 24 | 51 | 46 | 33 | 50 | 17 | 42 | 39 | 48 |
| 1st Qtr. 2008 | 17 | 48 | 35 | 59 | 59 | 22 | 54 | 24 | 51 | 53 | 33 | 52 | 15 | 41 | 44 | 54 |
| 2nd Qtr. 2008 | 12 | 44 | 44 | 66 | 69 | 26 | 46 | 28 | 51 | 55 | 21 | 59 | 21 | 50 | 51 | 59 |
| 3rd Qtr. 2008 | 9 | 44 | 47 | 69 | 69 | 16 | 44 | 40 | 62 | 61 | 15 | 50 | 35 | 60 | 58 | 63 |
| 4th Qtr. 2008 | 3 | 41 | 56 | 76 | 75 | 9 | 57 | 34 | 63 | 59 | 15 | 55 | 30 | 58 | 56 | 64 |
| 1st Qtr. 2009 | 2 | 41 | 57 | 78 | 77 | 8 | 56 | 36 | 64 | 65 | 13 | 65 | 23 | 55 | 58 | 68 |
| 2nd Qtr. 2009 | 6 | 42 | 52 | 73 | 75 | 8 | 49 | 43 | 68 | 70 | 14 | 52 | 34 | 60 | 60 | 70 |
| 3rd Qtr. 2009 | 10 | 39 | 51 | 71 | 71 | 6 | 64 | 30 | 62 | 61 | 16 | 52 | 32 | 58 | 56 | 64 |
| 4th Qtr. 2009 | 9 | 47 | 44 | 67 | 65 | 4 | 56 | 40 | 68 | 64 | 16 | 53 | 30 | 57 | 56 | 63 |
| 1st Qtr. 2010 | 11 | 61 | 28 | 58 | 58 | 11 | 65 | 24 | 57 | 58 | 14 | 59 | 28 | 57 | 59 | 58 |
| 2nd Qtr. 2010 | 30 | 58 | 12 | 41 | 40 | 32 | 55 | 12 | 40 | 42 | 31 | 57 | 12 | 40 | 43 | 42 |
| 3rd Qtr. 2010 | 35 | 46 | 18 | 41 | 42 | 39 | 47 | 15 | 38 | 37 | 34 | 45 | 21 | 44 | 41 | 39 |
| 4th Qtr. 2010 | 28 | 60 | 12 | 42 | 37 | 35 | 60 | 5 | 35 | 28 | 29 | 62 | 9 | 40 | 38 | 33 |
| 1st Qtr. 2011 | 38 | 52 | 10 | 36 | 34 | 50 | 36 | 14 | 32 | 34 | 42 | 44 | 15 | 36 | 40 | 35 |
| 2nd Qtr. 2011 | 46 | 47 | 7 | 30 | 36 | 50 | 44 | 5 | 27 | 34 | 28 | 60 | 13 | 42 | 43 | 36 |
| 3rd Qtr. 2011 | 40 | 50 | 10 | 35 | 35 | 38 | 52 | 10 | 36 | 34 | 28 | 62 | 10 | 41 | 38 | 35 |
| 4th Qtr. 2011 | 34 | 55 | 10 | 38 | 33 | 34 | 54 | 11 | 39 | 34 | 34 | 52 | 14 | 40 | 39 | 35 |
| 1st Qtr. 2012 | 44 | 44 | 11 | 34 | 29 | 42 | 48 | 10 | 34 | 30 | 29 | 55 | 15 | 43 | 42 | 31 |
| 2nd Qtr. 2012 | 49 | 44 | 7 | 29 | 35 | 43 | 49 | 7 | 32 | 38 | 42 | 50 | 8 | 33 | 33 | 36 |
| 3rd Qtr. 2012 | 41 | 52 | 7 | 33 | 33 | 41 | 53 | 6 | 33 | 31 | 36 | 55 | 9 | 37 | 35 | 33 |
| 4th Qtr. 2012 | 37 | 56 | 6 | 35 | 30 | 38 | 56 | 6 | 34 | 30 | 35 | 58 | 8 | 36 | 37 | 31 |
| 1st Qtr. 2013 | 35 | 51 | 13 | 39 | 38 | 32 | 61 | 7 | 37 | 37 | 32 | 59 | 8 | 38 | 40 | 38 |
| 2nd Qtr. 2013 | 34 | 56 | 9 | 38 | 42 | 34 | 60 | 6 | 36 | 41 | 26 | 60 | 14 | 44 | 43 | 42 |
| 3rd Qtr. 2013 | 35 | 57 | 8 | 36 | 36 | 25 | 66 | 10 | 42 | 42 | 26 | 64 | 10 | 42 | 41 | 40 |
| 4th Qtr. 2013 | 32 | 57 | 11 | 39 | 36 | 27 | 63 | 10 | 42 | 39 | 24 | 65 | 11 | 43 | 43 | 38 |
| 1st Qtr. 2014 | 34 | 54 | 12 | 39 | 38 | 36 | 57 | 7 | 36 | 35 | 32 | 54 | 14 | 41 | 41 | 37 |
| 2nd Qtr. 2014 | 39 | 53 | 8 | 34 | 39 | 39 | 56 | 4 | 32 | 36 | 29 | 63 | 8 | 40 | 40 | 38 |
| 3rd Qtr. 2014 | 30 | 60 | 9 | 40 | 40 | 23 | 71 | 6 | 42 | 41 | 18 | 71 | 10 | 46 | 46 | 41 |
| 4th Qtr. 2014 | 28 | 60 | 12 | 42 | 39 | 28 | 65 | 7 | 39 | 37 | 28 | 62 | 10 | 41 | 41 | 39 |
| 1st Qtr. 2015 | 40 | 49 | 11 | 36 | 35 | 37 | 54 | 9 | 36 | 36 | 33 | 57 | 10 | 38 | 38 | 36 |
| 2nd Qtr. 2015 | 46 | 47 | 8 | 31 | 34 | 46 | 49 | 6 | 30 | 33 | 35 | 56 | 9 | 37 | 37 | 34 |
| 3rd Qtr. 2015 | 35 | 49 | 15 | 40 | 41 | 34 | 58 | 9 | 38 | 36 | 27 | 59 | 14 | 43 | 42 | 39 |
| 4th Qtr. 2015 | 31 | 53 | 16 | 43 | 40 | 29 | 60 | 11 | 41 | 38 | 24 | 68 | 8 | 42 | 42 | 40 |
| 1st Qtr. 2016 | 31 | 58 | 11 | 40 | 39 | 32 | 62 | 7 | 38 | 38 | 31 | 61 | 8 | 39 | 39 | 39 |
| 2nd Qtr. 2016 | 31 | 55 | 14 | 42 | 44 | 34 | 59 | 7 | 37 | 40 | 31 | 57 | 12 | 40 | 41 | 42 |
| 3rd Qtr. 2016 | 30 | 50 | 20 | 45 | 44 | 27 | 63 | 11 | 42 | 40 | 26 | 61 | 13 | 44 | 41 | 42 |
| 4th Qtr. 2016 | 25 | 58 | 18 | 47 | 44 | 23 | 70 | 7 | 42 | 39 | 20 | 68 | 12 | 46 | 45 | 42 |
| 1st Qtr. 2017 | 23 | 58 | 18 | 48 | 47 | 34 | 59 | 7 | 36 | 37 | 39 | 49 | 12 | 37 | 38 | 41 |
| 2nd Qtr. 2017 | 37 | 51 | 12 | 37 | 41 | 42 | 51 | 7 | 32 | 37 | 45 | 44 | 11 | 33 | 34 | 38 |
| 3rd Qtr. 2017 | 25 | 64 | 11 | 43 | 42 | 27 | 63 | 11 | 42 | 40 | 31 | 55 | 15 | 42 | 40 | 41 |
| 4th Qtr. 2017 | 25 | 58 | 18 | 46 | 44 | 29 | 57 | 14 | 42 | 39 | 25 | 65 | 9 | 42 | 40 | 41 |
| 1st Qtr. 2018 | 24 | 58 | 18 | 47 | 46 | 33 | 59 | 9 | 38 | 39 | 37 | 49 | 14 | 38 | 40 | 42 |
| 2nd Qtr. 2018 | 28 | 56 | 17 | 44 | 48 | 33 | 56 | 12 | 39 | 43 | 29 | 65 | 6 | 38 | 41 | 45 |

Each MVI component is based on a survey question asking if occupancy is higher, about the same, or lower in the current compared to the prior quarter.
 An MVI component is then calculated from the percentage responses using the diffusion-index formula (Lower Occupancy - Higher Occupancy + 100) / 2.
 The Multifamily Vacancy Index is a weighted average of three component indices: .3632×Class A + .4630×Class B + .1738×Class C.
 The weights are derived from a statistical analysis of the historical relationship between the components and the Census series on rental vacancy rates in structures with at least 5 apartments.
 Source: Multifamily Market Survey, NAHB Economics and Housing Policy Group. Q2 2018 results based on 57 responses.



Chart 3
Components of the Multifamily Vacancy Index (MVI)
(rental vacancy in current vs. prior quarter)

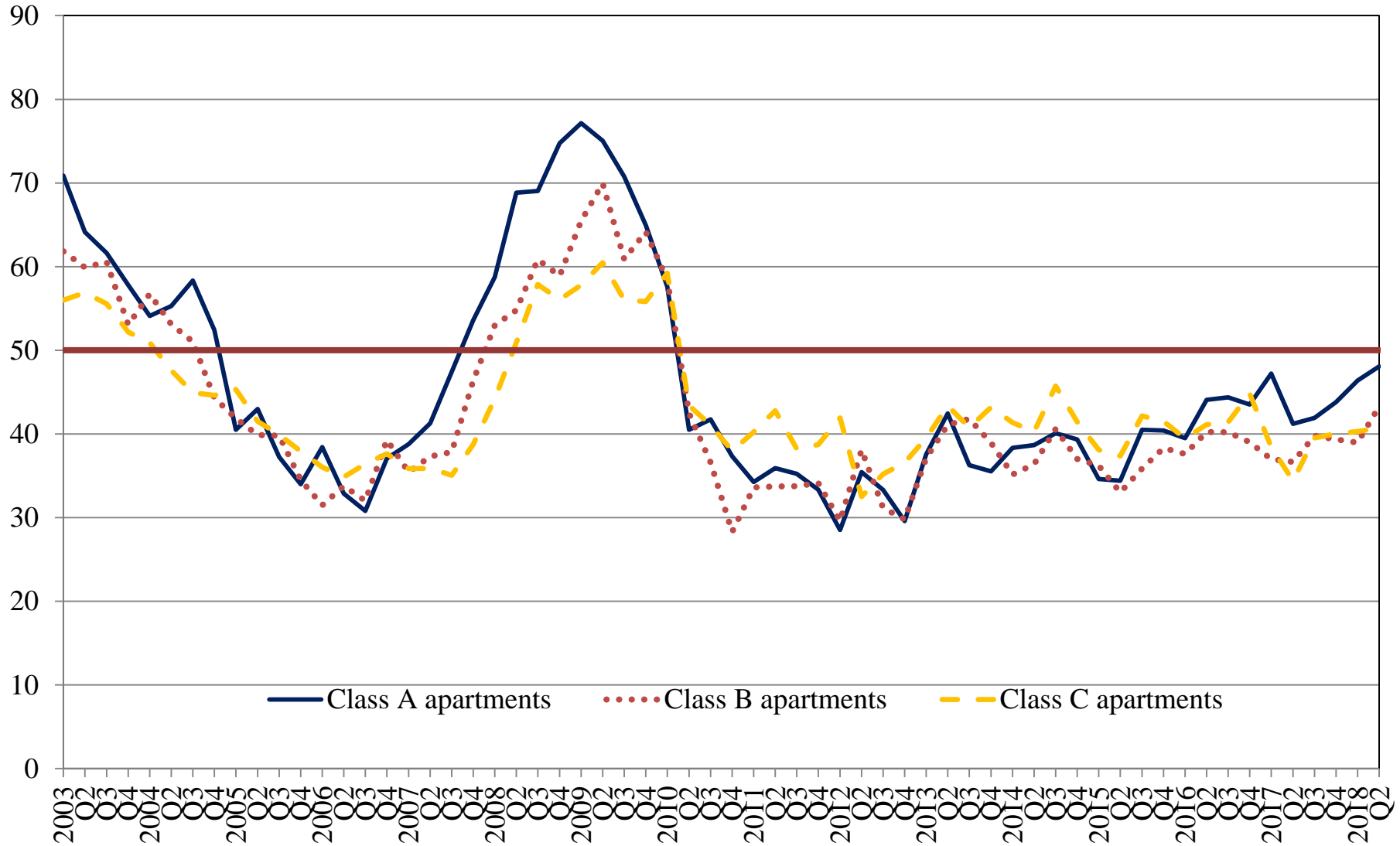


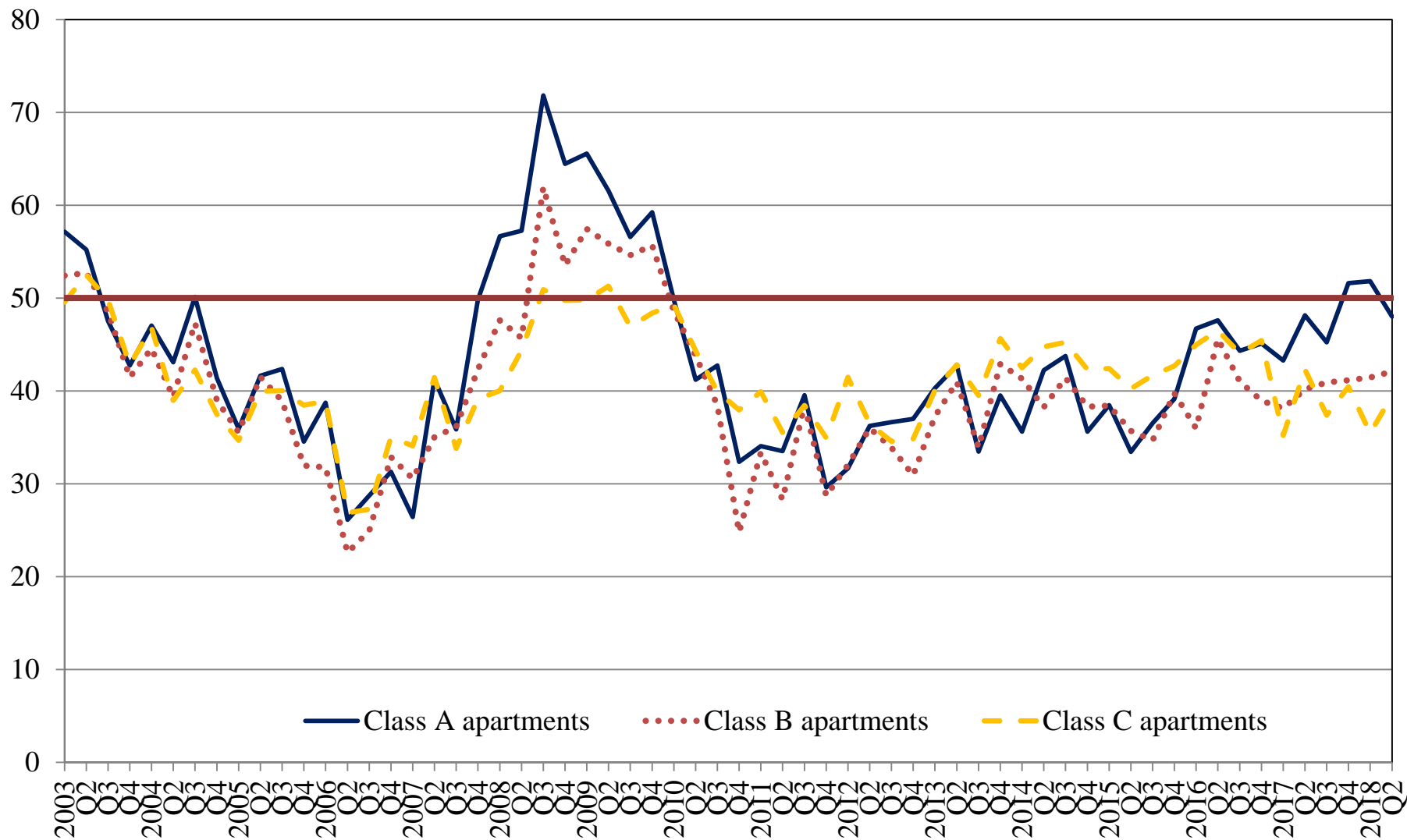
TABLE 4
Derivation of Indices for Expected Vacancy During the Next 6 Months (Compared to Current Quarter)

| Period | Class A Apartment | | | | | Class B Apartment | | | | | Class C Apartment | | | | |
|---------------|-------------------|------|-------|-----------|-----------|-------------------|------|-------|-----------|-----------|-------------------|------|-------|-----------|-----------|
| | Occupancy | | | Vacancy | | Occupancy | | | Vacancy | | Occupancy | | | Vacancy | |
| | Higher | Same | Lower | NSA Index | SA Index | Higher | Same | Lower | NSA Index | SA Index | Higher | Same | Lower | NSA Index | SA Index |
| 1st Qtr. 2003 | 16 | 55 | 30 | 57 | 57 | 19 | 61 | 21 | 51 | 52 | 21 | 61 | 18 | 49 | 50 |
| 2nd Qtr. 2003 | 13 | 65 | 22 | 54 | 55 | 16 | 64 | 20 | 52 | 53 | 14 | 68 | 17 | 52 | 53 |
| 3rd Qtr. 2003 | 17 | 67 | 17 | 50 | 48 | 19 | 61 | 20 | 50 | 49 | 18 | 59 | 23 | 53 | 50 |
| 4th Qtr. 2003 | 30 | 57 | 13 | 42 | 43 | 26 | 64 | 10 | 42 | 41 | 27 | 63 | 11 | 42 | 43 |
| 1st Qtr. 2004 | 24 | 58 | 18 | 47 | 47 | 28 | 58 | 14 | 43 | 45 | 24 | 60 | 16 | 46 | 47 |
| 2nd Qtr. 2004 | 33 | 51 | 16 | 42 | 43 | 35 | 52 | 13 | 39 | 39 | 35 | 55 | 11 | 38 | 39 |
| 3rd Qtr. 2004 | 21 | 55 | 25 | 52 | 50 | 20 | 63 | 18 | 49 | 47 | 30 | 49 | 21 | 45 | 42 |
| 4th Qtr. 2004 | 31 | 56 | 13 | 41 | 41 | 30 | 60 | 10 | 40 | 39 | 38 | 51 | 11 | 37 | 37 |
| 1st Qtr. 2005 | 38 | 52 | 10 | 36 | 36 | 36 | 61 | 4 | 34 | 36 | 41 | 52 | 7 | 33 | 35 |
| 2nd Qtr. 2005 | 33 | 54 | 13 | 40 | 42 | 30 | 59 | 11 | 41 | 42 | 33 | 55 | 12 | 39 | 40 |
| 3rd Qtr. 2005 | 26 | 60 | 13 | 43 | 42 | 34 | 52 | 14 | 40 | 39 | 29 | 57 | 14 | 43 | 40 |
| 4th Qtr. 2005 | 45 | 41 | 14 | 35 | 35 | 39 | 54 | 7 | 34 | 32 | 35 | 55 | 11 | 38 | 38 |
| 1st Qtr. 2006 | 32 | 59 | 10 | 39 | 39 | 45 | 49 | 5 | 30 | 32 | 33 | 61 | 7 | 37 | 39 |
| 2nd Qtr. 2006 | 59 | 34 | 7 | 24 | 26 | 57 | 43 | 0 | 21 | 23 | 52 | 44 | 4 | 26 | 27 |
| 3rd Qtr. 2006 | 48 | 44 | 8 | 30 | 29 | 63 | 25 | 13 | 25 | 25 | 46 | 46 | 8 | 31 | 27 |
| 4th Qtr. 2006 | 45 | 47 | 8 | 32 | 31 | 33 | 62 | 5 | 36 | 33 | 33 | 64 | 3 | 35 | 35 |
| 1st Qtr. 2007 | 54 | 39 | 7 | 27 | 26 | 50 | 42 | 8 | 29 | 31 | 36 | 64 | 0 | 32 | 34 |
| 2nd Qtr. 2007 | 34 | 52 | 14 | 40 | 41 | 41 | 50 | 9 | 34 | 35 | 33 | 52 | 15 | 41 | 41 |
| 3rd Qtr. 2007 | 39 | 48 | 13 | 37 | 36 | 30 | 70 | 0 | 35 | 36 | 30 | 67 | 4 | 37 | 34 |
| 4th Qtr. 2007 | 34 | 32 | 34 | 50 | 50 | 32 | 45 | 24 | 46 | 42 | 36 | 50 | 14 | 39 | 39 |
| 1st Qtr. 2008 | 16 | 53 | 31 | 57 | 57 | 25 | 57 | 18 | 46 | 48 | 36 | 52 | 12 | 38 | 40 |
| 2nd Qtr. 2008 | 15 | 58 | 27 | 56 | 57 | 26 | 58 | 16 | 45 | 46 | 30 | 52 | 18 | 44 | 44 |
| 3rd Qtr. 2008 | 9 | 38 | 53 | 72 | 72 | 18 | 42 | 40 | 61 | 62 | 21 | 52 | 27 | 53 | 51 |
| 4th Qtr. 2008 | 12 | 45 | 42 | 65 | 64 | 20 | 46 | 34 | 57 | 54 | 21 | 58 | 21 | 50 | 50 |
| 1st Qtr. 2009 | 6 | 56 | 38 | 66 | 66 | 14 | 59 | 27 | 56 | 57 | 21 | 63 | 17 | 48 | 50 |
| 2nd Qtr. 2009 | 6 | 67 | 27 | 60 | 62 | 16 | 58 | 26 | 55 | 56 | 16 | 65 | 18 | 51 | 51 |
| 3rd Qtr. 2009 | 10 | 68 | 22 | 56 | 57 | 9 | 77 | 15 | 53 | 55 | 18 | 66 | 16 | 49 | 47 |
| 4th Qtr. 2009 | 9 | 60 | 30 | 60 | 59 | 8 | 65 | 27 | 59 | 56 | 21 | 60 | 19 | 49 | 48 |
| 1st Qtr. 2010 | 21 | 57 | 22 | 50 | 50 | 26 | 54 | 20 | 47 | 49 | 25 | 55 | 20 | 47 | 49 |
| 2nd Qtr. 2010 | 28 | 61 | 11 | 42 | 41 | 27 | 63 | 10 | 42 | 44 | 27 | 62 | 11 | 42 | 44 |
| 3rd Qtr. 2010 | 29 | 61 | 10 | 40 | 43 | 34 | 59 | 7 | 36 | 38 | 29 | 59 | 13 | 42 | 40 |
| 4th Qtr. 2010 | 35 | 59 | 6 | 36 | 32 | 42 | 54 | 4 | 31 | 25 | 30 | 62 | 7 | 38 | 38 |
| 1st Qtr. 2011 | 38 | 53 | 8 | 35 | 34 | 47 | 44 | 10 | 31 | 33 | 37 | 50 | 13 | 38 | 40 |
| 2nd Qtr. 2011 | 40 | 55 | 5 | 32 | 34 | 50 | 47 | 4 | 27 | 28 | 36 | 57 | 7 | 35 | 36 |
| 3rd Qtr. 2011 | 37 | 50 | 13 | 38 | 40 | 37 | 51 | 12 | 37 | 38 | 29 | 62 | 9 | 40 | 38 |
| 4th Qtr. 2011 | 41 | 54 | 5 | 32 | 30 | 40 | 55 | 5 | 32 | 29 | 35 | 59 | 5 | 35 | 35 |
| 1st Qtr. 2012 | 43 | 46 | 11 | 34 | 32 | 39 | 51 | 10 | 36 | 32 | 30 | 57 | 13 | 42 | 41 |
| 2nd Qtr. 2012 | 39 | 55 | 6 | 34 | 36 | 37 | 59 | 5 | 34 | 36 | 36 | 56 | 8 | 36 | 36 |
| 3rd Qtr. 2012 | 37 | 53 | 10 | 37 | 37 | 38 | 54 | 8 | 35 | 34 | 34 | 59 | 7 | 37 | 35 |
| 4th Qtr. 2012 | 33 | 58 | 9 | 38 | 37 | 37 | 61 | 2 | 33 | 31 | 34 | 64 | 2 | 34 | 35 |
| 1st Qtr. 2013 | 33 | 52 | 15 | 41 | 40 | 32 | 62 | 6 | 37 | 37 | 28 | 64 | 8 | 40 | 40 |
| 2nd Qtr. 2013 | 31 | 57 | 12 | 41 | 43 | 29 | 65 | 6 | 39 | 41 | 24 | 69 | 7 | 42 | 43 |
| 3rd Qtr. 2013 | 39 | 54 | 7 | 34 | 33 | 34 | 61 | 5 | 35 | 34 | 28 | 62 | 10 | 41 | 40 |
| 4th Qtr. 2013 | 33 | 53 | 14 | 40 | 40 | 21 | 71 | 8 | 43 | 43 | 20 | 71 | 9 | 45 | 46 |
| 1st Qtr. 2014 | 37 | 53 | 10 | 36 | 36 | 26 | 66 | 8 | 41 | 41 | 21 | 72 | 7 | 43 | 42 |
| 2nd Qtr. 2014 | 37 | 45 | 18 | 40 | 42 | 32 | 63 | 5 | 37 | 38 | 23 | 66 | 11 | 44 | 45 |
| 3rd Qtr. 2014 | 26 | 60 | 14 | 44 | 44 | 24 | 68 | 8 | 42 | 41 | 19 | 69 | 12 | 46 | 45 |
| 4th Qtr. 2014 | 35 | 57 | 8 | 37 | 36 | 30 | 63 | 7 | 38 | 38 | 27 | 65 | 8 | 41 | 42 |
| 1st Qtr. 2015 | 39 | 45 | 16 | 39 | 38 | 33 | 56 | 11 | 39 | 38 | 29 | 56 | 15 | 43 | 42 |
| 2nd Qtr. 2015 | 43 | 48 | 9 | 33 | 33 | 34 | 63 | 3 | 35 | 36 | 30 | 61 | 9 | 40 | 40 |
| 3rd Qtr. 2015 | 36 | 52 | 12 | 38 | 37 | 33 | 61 | 6 | 37 | 35 | 25 | 63 | 12 | 43 | 42 |
| 4th Qtr. 2015 | 35 | 55 | 11 | 38 | 39 | 30 | 63 | 7 | 39 | 40 | 28 | 64 | 9 | 41 | 43 |
| 1st Qtr. 2016 | 27 | 52 | 21 | 47 | 47 | 31 | 64 | 5 | 37 | 36 | 23 | 62 | 15 | 46 | 45 |
| 2nd Qtr. 2016 | 28 | 51 | 22 | 47 | 48 | 26 | 60 | 14 | 44 | 46 | 25 | 57 | 17 | 46 | 46 |
| 3rd Qtr. 2016 | 21 | 65 | 14 | 46 | 44 | 23 | 69 | 8 | 42 | 41 | 21 | 66 | 13 | 46 | 44 |
| 4th Qtr. 2016 | 31 | 51 | 18 | 43 | 45 | 30 | 62 | 8 | 39 | 39 | 24 | 66 | 10 | 43 | 45 |
| 1st Qtr. 2017 | 33 | 45 | 22 | 44 | 43 | 34 | 56 | 10 | 38 | 38 | 40 | 48 | 12 | 36 | 35 |
| 2nd Qtr. 2017 | 29 | 47 | 24 | 47 | 48 | 31 | 60 | 9 | 39 | 40 | 33 | 50 | 17 | 42 | 42 |
| 3rd Qtr. 2017 | 25 | 57 | 18 | 46 | 45 | 27 | 63 | 11 | 42 | 41 | 33 | 56 | 11 | 39 | 37 |
| 4th Qtr. 2017 | 23 | 54 | 23 | 50 | 52 | 28 | 61 | 11 | 41 | 41 | 28 | 67 | 6 | 39 | 40 |
| 1st Qtr. 2018 | 25 | 45 | 30 | 52 | 52 | 24 | 69 | 7 | 41 | 41 | 36 | 57 | 7 | 36 | 35 |
| 2nd Qtr. 2018 | 28 | 48 | 24 | 48 | 48 | 33 | 52 | 15 | 41 | 42 | 31 | 60 | 10 | 39 | 39 |

Each expected vacancy index is based on a survey question asking if occupancy is expected to be higher, about the same, or lower during the next 6 months compared to the current quarter. An index number is calculated from the percentage responses using the diffusion index formula (Lower Occupancy - Higher Occupancy + 100) / 2.
Source: Multifamily Market Survey, NAHB Economics and Housing Policy Group. Q2 2018 results based on 57 responses.



Chart 4
Expected Vacancy Indices
(vacancy next 6 months vs. current quarter)



National Association of Home Builders

Multifamily Market Survey

Second Quarter 2018

1. Please rate the current conditions in your market area for production of new apartments during the current quarter, compared to the previous quarter. Also tell us your expectations for market conditions during the next six months compared to the current quarter.

| Multifamily starts | Current Quarter vs. Prior Quarter | | | Expectations for next 6 months | | |
|--------------------|-----------------------------------|--------------------------|--------------------------|--------------------------------|--------------------------|--------------------------|
| | Stronger | About the same | Weaker | Stronger | About the same | Weaker |
| a. For rent | | | | | | |
| a1. Low Rent* | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| a2. Market Rent | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. For sale | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

* Low-rent units are those supported by low-income tax credits or other government subsidy programs.

2. Please rate the current conditions in your market area for occupancy of multifamily units during the current quarter, compared to the previous quarter. Also tell us your expectations for market conditions during the next six months compared to the current quarter.

| | Current Quarter vs. Prior Quarter | | | Expectations for next 6 months | | |
|-------------------------------------|-----------------------------------|--------------------------|--------------------------|--------------------------------|--------------------------|--------------------------|
| | Higher | About the same | Lower | Higher | About the same | Lower |
| Multifamily rental occupancy | | | | | | |
| a. Class A apartment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| b. Class B apartment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| c. Class C apartment | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

3. Please let us know what is happening with multifamily housing in your area.

~~ THANK YOU ~~