

# Survey of Market Absorption of New Multifamily Units

## *Characteristics Report (Apartments Completed in 2015 and Absorbed During their First Three Months After Completion)*

H130/15-C  
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Economics and Statistics Administration  
U.S. Census Bureau  
U.S. Department of Housing  
and Urban Development

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## INTRODUCTION

The *2015 Characteristics Report* provides characteristics about units constructed in 2015, and absorbed within three months, such as number of bedrooms, asking rent, and asking price. This publication is of value to builders, bankers, market analysts, land planners, and government officials trying to measure the needs for federal, state and local assistance in providing better housing for everyone for over forty years.

The estimates in this report are based on a survey conducted by the U.S. Census Bureau, U.S. Department of Commerce, for the Department of Housing and Urban Development. The sample consists of approximately 4,000 buildings with five or more housing units. Estimates published in this report are preliminary and are subject to revision in the H-130, Survey of Market Absorption of New Multifamily Units Annual Report that will be released in April 2017. As with all surveys, estimates vary from actual value because of sampling variations or other factors. See *Accuracy of the Estimates*, at the end of this report for more details.

## HIGHLIGHTS<sup>1</sup>

- *NEW CONSTRUCTION, PRIVATE, UNFURNISHED APARTMENT UNITS*: Estimates from the Survey of Market Absorption of New Multifamily Units show that, during 2015, a total of 259,900 privately financed, nonsubsidized, unfurnished rental apartments in buildings with five units or more were completed in permit-issuing areas in the United States. The 2015 estimate represents an increase of approximately 50,400 from the 209,100 units constructed in 2014. This also represents the highest number of completions since 1989, when 246,400 units were constructed ([Tables 1 and 9](#); [Figure 1](#)).
- *BEDROOMS (UNFURNISHED APARTMENTS)*: One-bedroom units accounted for 44 percent (115,300) of the new rental construction in 2015. This percentage did not differ significantly from the 41 percent (106,500) of new two-bedroom unit construction. These two percentages were higher than both the eight percent constructed with three-or-more bedrooms and the six percent designated as efficiencies (no bedroom) units in 2015 ([Table 1](#); [Figure 2](#)).<sup>2</sup>

There were no significant differences detected among the 3-month absorption rate for efficiencies (64 percent), 1-bedroom (60 percent), 2-bedroom (61 percent), and 3-or-more bedroom (71 percent) units built in 2015 ([Table 2](#)).

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<sup>1</sup> Details may not sum to totals because of rounding.

<sup>2</sup> The percent of three-plus units and efficiency units did not differ significantly from each other.

- *RENT (NUMBER OF BEDROOMS)*: The median monthly asking rent for one bedroom units (\$1,275) was lower than for two bedroom apartments (\$1,438) and for those with three or more bedrooms (\$1,540). The \$1,438 and the \$1,540 medians were not statistically different from each other ([Table 2](#)).
- *RENT (REGION)*: The median monthly asking rent for all unfurnished rental apartments completed in 2015 was \$1,381 and was not significantly different from the 2014 national median monthly asking rent of \$1,384. Forty-five percent of all units completed during 2015 fell in the \$1,050 to \$1,649 asking rent ranges ([Table 1](#)). The highest median asking monthly rent for new unfurnished apartments was \$1,899 reported in Northeast. The next highest asking rent was in the West at \$1,569, followed by the South at \$1,363. The Midwest, at \$1,049, had the lowest median asking monthly rent ([Table 2](#); [Figure 3](#)). Absorption rates after three months ranged from 30 percent for units renting from \$2,050 to \$2,249 in the Midwest to 89 percent for units renting for less than \$850 in the West ([Table 2](#)).
- *REGIONS*: In 2015, the South (44 percent) had the highest percentage of new, unfurnished rental completions of any region. The West (27 percent) had the next highest percentage of new rentals followed by the Midwest (18 percent). The Northeast (11 percent) had the least amount of new completions in 2015 ([Table 1](#); [Figure 4](#)).
- *CORE BASED STATISTICAL AREAS (UNFURNISHED APARTMENTS)*: In 2015, of the 259,500 unfurnished rental units constructed, approximately 250,400 (96 percent) were completed inside Core Based Statistical Areas (CBSAs) ([Table 3](#); [Figure 5](#)). Of those units constructed inside CBSA's, approximately 147,000 (59 percent) of the units were built inside principal cities. This figure was higher than the 103,400 (41 percent) which were built outside principal cities. Only 4 percent (9,100) of new rental units were constructed outside of CBSAs ([Table 3](#); [Figure 6](#)).

The three month absorption rate for total units (259,500) and those units constructed outside CBSA's was 62 percent. After three months, 68 percent of units constructed outside of principal cities were absorbed, that was 11 percentage points higher than the 57 percent absorbed inside principal cities ([Table 3](#)).

- *NUMBER OF FLOORS (UNFURNISHED APARTMENTS)*: Of the 259,500 total rental apartment units constructed in 2015, approximately 40 percent were in buildings with three floors, the next highest percentage was 28 percent built with four or five floors. Both these figures were higher than the 15 percent of one or two floor buildings and the 16 percent for buildings with six or more floors ([Table 4](#); [Figure 7](#)).<sup>3</sup>

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<sup>3</sup> There were no significant differences detected between the percent of 1 to 2 floor buildings and those buildings with six or more floors.

Of the 40 percent of buildings with three floors, 65 percent of those were absorbed after three months. Sixty-six percent of the buildings with one or two floors were absorbed after three months while 61 percent of buildings with four or five floors were absorbed after three months. Buildings with six floors or more had the lowest absorption rate after three months, nine percent ([Table 4](#)).

- *UNITS PER BUILDING (UNFURNISHED APARTMENTS)* Of the 259,500 newly constructed units in 2015, 36 percent (93,400) contained 20 to 49 units. Another 33 percent (84,600) contained 100 or more units.<sup>4</sup> Buildings containing 50 to 99 units accounted 13 percent, followed by those with 13 to 19 units (9 percent). The lowest percentages were those with 5 to 9 units and 10 to 12 units both accounting for 5 percent each ([Table 4](#); [Figure 8](#)).<sup>5</sup> After three months 81 percent of buildings with 10 to 12 units were absorbed and units with five to nine units had a three month absorption rate of 73 percent ([Table 4](#)). The remaining three month absorption rates range from 55 percent for buildings with 13 to 19 and 100 plus units, up to 65 percent for buildings with 20 - 49 units.
- *AMENITIES (UNFURNISHED APARTMENTS):* Of the 259,500 unfurnished rental apartments constructed in 2015, WiFi or internet service was available in 99 percent of the units and it was included in the monthly rent in 12 percent of those units. Cable or satellite service was available in 98 percent of the units with 6 percent having it included in their rent. Off-street parking was available to 86 percent of the units with approximately 75 percent of the units having it included with their monthly rent. Eighty-two percent had a swimming pool available and approximately 74 percent had the cost for using it included in their monthly rent ([Table 5a](#); [Figure 9](#)).

There were no significant differences in the three month absorption rates for units that included amenities such as, WiFi/ internet, cable/satellite, or use of a swimming pool in the monthly rent, versus those that charged a fee for those services with the exception of parking. Seventy-one percent of the units that did not include parking were absorbed within three months as opposed to those 61 percent that included parking with rent ([Table 5a](#)).

- *UTILITIES (UNFURNISHED APARTMENTS):* Four percent of the total apartment units constructed included electricity in the monthly rent; 10 percent included gas; 21 percent included water; and 25 percent included sewer service. Sixty-six percent of the units where fuel gas was available were absorbed within three months. This rate was higher than the 58 percent of units where fuel gas was not available ([Table 5b](#)). Ninety percent provided individual laundry connections in the units. Six percent reported shared laundry facilities, while two percent reported both individual and shared (laundry room)

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<sup>4</sup> No significant differences were detected among these two percentages.

<sup>5</sup> No significant differences were detected among these two percentages.

connections. Washing machines and dryers were available in 87 percent of those unfurnished rental apartments with connections ([Table 5b](#); [Figure 10](#)).

Sixty-three percent of the units that included laundry connections were absorbed within three months. This was 22 percentage points higher than those units that reported both shared and in-unit laundry connections. The three month absorption rates for apartments did not differ significantly based on the availability or not of a washer and dryer ([Table 5b](#)).

- *CONDOMINIUMS AND COOPERATIVES*: Approximately 12,100 condominium and cooperative apartments were constructed in 2015 ([Table 6](#)). This was the highest total of Condominiums and Cooperatives constructed since 2011 when, 11,300 were completed ([Table 9](#); [Figure 11](#)). Of the 12,100 condominium and cooperative apartments constructed in 2015, 68 percent were absorbed within their first three months on the market. Ninety-nine percent (11,900) of the 12,100 units constructed were designated as condominiums ([Table 7](#)).
- *CONDOMINIUMS (BEDROOMS)*: In 2015, more condominium apartments were constructed with two bedrooms (58 percent) than with those offering fewer than two bedrooms (19 percent) or those with 3 or more bedrooms (23 percent). ([Table 7](#) and [Figure 12](#)).<sup>6</sup> Eighty-one percent of all new condominiums constructed in 2015 offered two or more bedrooms; of those, 67 percent were sold (absorbed) within three months. No significant differences were detected among the 3-month absorption rates for those condominiums with fewer than 2 bedrooms (71 percent), two bedrooms (62 percent), and three bedrooms or more (78 percent) ([Table 7](#)).
- *CONDOMINIUMS (ASKING PRICE)*: The median asking price for all new condominium apartments built in 2015 was \$446,900. This figure did not differ significantly from the \$389,100 reported in 2014.<sup>7</sup> The median price for new condominiums built in 2015 did not differ significantly by region. In the West, a new condominium had a median selling price of \$536,300. In the South, the median was \$440,900, the Midwest \$383,000, and the Northeast \$350,700 ([Table 7](#); [Figure 13](#)). Overall, 67 percent of all condominium apartments were absorbed after three months. The three month absorption rates for condominiums selling from \$450,000 to \$499,999 (87 percent), \$550,000 to \$599,999 (86 percent), and \$700,000 or more (78 percent) were higher than the three month absorption rate of 36 percent for units selling between \$200,000 and \$249,999. There were no differences detected between the remaining three month absorption rates by selling price ranges ([Table 7](#)).

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<sup>6</sup> There was no significant difference detected between the percentage of units with fewer than two bedrooms and the percentage for three bedrooms or more.

<sup>7</sup> The 2014 Median Asking/Selling Price figure of \$389,100 is the revised figure as reported in the SOMA 2015 Annual Absorptions (2014 Completions) Report.

- *CONDOMINIUMS (REGIONS)*: Among the 11,900 condominium apartments constructed in 2015, there were no differences detected in proportions completed between the Northeast (38 percent), West (29 percent), and the South (26 percent). However, all three were higher than the 7 percent constructed in the Midwest ([Table 7](#); [Figure 14](#)). After three months 84 percent of the units in the West were absorbed, 69 percent in the South, 57 percent in the Northeast, and 50 percent in the Midwest ([Table 7](#)).
- *CORE BASED STATISTICAL AREAS (CONDOMINIUMS)*: In 2015, all of the 12,100 condominium and cooperative units were constructed inside Core Based Statistical Areas (CBSAs) ([Table 6](#)). Of those units, approximately 7,700 (64 percent) of the units were built inside principal cities. This figure was higher than the 4,300 (36 percent) which were built outside principal cities ([Table 6](#); [Figure 15](#)).

The three month absorption rate for all condominium and cooperative units was 68 percent. There was no significant differences in the three month absorption rates for units constructed inside principal cities (72 percent) and those constructed outside principal cities (60 percent) ([Table 6](#)).

- *AMENITIES (CONDOMINIUM APARTMENTS)*: Of the 11,900 condominium apartments completed in 2015, WiFi or internet service was available to 95 percent of the apartments. However, only 10 percent included WiFi in their condo fees. Cable or satellite service was included in the condo fees for 20 percent of the condominiums. Off-street parking was included in the condo fees for 60 percent of the condominiums. Approximately 65 percent had a swimming pool with 54 percent including it in the condo fees ([Table 5a](#); [Figure 9](#)).

Seventy-six percent of the condominiums that provided parking with their condo fee were absorbed after three months. This figure was higher than the 42 percent absorbed after three months for condominiums that did not offer parking with their condo fee. There were no significant differences in the three month absorption rates based on whether a unit did or did not provide amenities such as WiFi/internet, Cable/satellite, or a swimming pool.

- *UTILITIES (CONDOMINIUM APARTMENTS)*: Eight percent of the condominium apartments included electricity in the condo fees, 20 percent included gas, 51 percent included water usage, and 57 percent included sewer service. Eighty-one percent provided individual laundry connections in all condominiums. Seven percent reported shared laundry facilities. Washing machines and dryers were in 77 percent of the condominium apartments completed in 2015 ([Table 5b](#); [Figure 10](#)). There were no significant differences detected in the three month absorption rates based on the availability of utilities, laundry connections, or washers and dryers ([Table 5b](#)).

- *FURNISHED APARTMENT UNITS*: There were approximately 7,000 furnished apartment units constructed in 2015. This did not differ significantly from 7,900 furnished units reported in 2014<sup>8</sup> ([Table 9](#); [Figure 16](#)). The median asking rent for a furnished unit in 2015 was \$1,636 and, after 3 months, and 66 percent of the 7,000 units had been rented (Table 8). There was no difference detected in the absorption rates for furnished and unfurnished rental units after three months of completion ([Tables 2](#) and [8](#)).
- *ALL APARTMENTS (SUMMARY)*: In 2015, there were approximately 310,300 apartments constructed in residential buildings with five units or more. This number is 54,700 units greater than the 255,600 reported in 2014, and is the largest number since 2000 when 300,000 units were constructed ([Figure 17](#)). Of the 310,300 units, 84 percent were nonsubsidized, unfurnished rental apartments; 10 percent were subsidized and tax credit units; 4 percent were condominiums and cooperatives; and 2 percent were furnished rental units ([Table 9](#)).

## CHARACTERISTICS OF THE DATA

All statistics from the Survey of Market Absorption of New Multifamily Units (SOMA) refer to apartments in newly constructed buildings with five units or more. Absorption rates reflect the first time an apartment is rented after completion or the first time a condominium or cooperative apartment is sold after completion. If apartments initially intended to be sold as condominium or cooperative units are, instead, offered by the builder or building owner for rent, they are counted as rental apartments. Units categorized as subsidized and tax credited are those built under two Department of Housing and Urban Development programs (Section 8, Low Income Housing Assistance and Section 202, Senior Citizens Housing Direct Loans) and all units in buildings containing apartments in the Federal Housing Administration (FHA) rent supplement program. The data on privately financed units include privately owned housing subsidized by state and local governments. Other units include time-share units, continuing care retirement units, and turnkey units (privately built for and sold to local public housing authorities after completion) and are considered to be outside the scope of the survey.

Tables 1 through 5 are restricted to privately financed, nonsubsidized, unfurnished rental apartments. Table 6 is restricted to privately financed, nonsubsidized, condominium and cooperative apartments, while Table 7 is limited to privately financed, nonsubsidized condominium apartments only. Table 8 covers privately financed, nonsubsidized, furnished rental apartments and Table 9 is a historical summary of the totals for all types of newly

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<sup>8</sup> The 2014 furnished apartment figure of 7,900 is the revised figure as reported in the SOMA 2015 Annual Absorptions (2014 Completions) Report.

constructed apartments in buildings with five units or more. Estimates published in this report are preliminary and are subject to revision in the H-130, Market Absorption of Apartments annual report.

Additionally, SOMA tabulates and reports absorption rates for units based on their Core Based Statistical Area (CBSA). CBSA's include an urban center of at least 10,000 people and adjacent areas that are socioeconomically tied to the urban center by commuting. The term "CBSA" refers collectively to both metropolitan statistical areas and micropolitan areas. Micropolitan areas are based around Census Bureau-defined urban clusters of at least 10,000 and fewer than 50,000 people. Absorption rates within the CBSA's are further divided into Inside Principal City and Outside Principal City.

**Principal Cities** of a CBSA are the largest incorporated places with a population of at least 10,000 in the CBSA. If there is no such place present in the CBSA, the largest incorporated place or census designated place (CDP) in the CBSA is termed the Principal City. Principal cities also include any additional incorporated place or CDP with a population of at least 250,000 or in which 100,000 or more persons work.

## SAMPLE DESIGN

The U.S. Census Bureau designed the survey to provide data concerning the rate at which privately financed, nonsubsidized, unfurnished units in buildings with five or more units are rented or sold (absorbed). In addition, the survey collects data on characteristics such as number of bedrooms, asking rent, and asking price.

Buildings for the survey came from those included in the Census Bureau's Survey of Construction (SOC).<sup>9</sup> For the SOC, the United States is first divided into primary sampling units (PSUs), which are stratified based on population and building permits. The PSUs to be used for the survey are then randomly selected from each stratum. Next, a sample of geographic locations that issue permits is chosen within each of the selected PSUs. All newly constructed buildings with five units or more within sampled places and a subsample of buildings with one to four units are included in the SOC.

For the SOMA, the Census Bureau selects, each quarter, a sample of buildings with five or more units that have been reported in the SOC sample as having been completed during that quarter. The SOMA does not include buildings in areas that do not issue permits. In each of the subsequent four quarters, the proportion of units in the quarterly sample that are sold or rented (absorbed) are recorded, providing data for absorption rates 3, 6, 9, and 12 months after completion.

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<sup>9</sup> See <http://www.census.gov/const/www/newresconstdoc.html#sample> for further details on the SOC sample design.



## ESTIMATION

Beginning with data on completions in the fourth quarter of 1990 (which formed the base for absorptions in the first quarter of 1991), the Census Bureau modified the estimation procedure and applied the new estimation procedure to data for the other 3 quarters of 1990 so that annual estimates using the same methodology for 4 quarters could be derived. The Census Bureau did not perform any additional re-estimation of past data.

Using the original estimation procedure, the Census Bureau created design-unbiased quarterly estimates by multiplying the counts for each building by its base weight (the inverse of its probability of selection) and then summing over all buildings. Multiplying the design-unbiased estimate by the following ratio-estimate factor for the country as a whole provides the following estimate:

Total Units in Buildings with Five Units or More in permit-issuing areas as estimated by the SOC for that quarter DIVIDED by Total Units in Buildings with Five Units or More as estimated by the SOMA for that quarter.

Beginning with January 2001 completions, the SOC revised its methodology for estimating the number of units completed for 5+ multi-unit structures. See

[http://www.census.gov/ftp/pub/const/www/new\\_methodology\\_const.html](http://www.census.gov/ftp/pub/const/www/new_methodology_const.html)

for these changes. Thus, caution is required when comparing data from 2001 and forward to any estimates prior to 2001.

In the modified estimation procedure, instead of applying a single ratio-estimate factor for the entire country, the Census Bureau computes separate ratio-estimate factors for each of the four geographic regions. Multiplying the unbiased regional estimates by the corresponding ratio-estimate factors provides the final estimates for regions. The Census Bureau obtains the final estimates for the country by summing the final regional estimates.

This procedure produces estimates of the units completed in a given quarter that are consistent with published figures from the SOC and reduces, to some extent, the sampling variability of the estimates of totals. Annual absorption rates are obtained by computing a weighted average of the four quarterly estimates.

Absorption rates and other characteristics of units not included in the interviewed group or not accounted for are assumed to be identical to rates for units about which data were obtained. The non-interviewed and not-accounted-for cases constitute less than 2 percent of the sample housing units in this survey.

A survey interview is complete once the Field Representative collects information for the bedrooms. SOMA does not include data for subsidized units, therefore, if any unit is subsidized by Section 8 or receives any government assistance, the interview is then complete.

An interview is considered a sufficient partial interview when at least the building type (Unfurnished Rental, Furnished Rental, Cooperative, Condominium, or Owned or Leased by a Public Housing Agency) is recorded.

The response rates for SOMA are calculated by dividing the number of building interviews by the number of eligible buildings:

$$\frac{\text{Interviews}}{\text{Interviews plus Type A non-interviews}} \times 100$$

Out of Scope cases (i.e., dormitories, townhouses, group quarters, timeshare, continuing-care, retirement unit) are excluded in this calculation.

Sample Sizes and Weighted Response Rates by Quarter of Completion in 2015:

2015 Completions	Eligible		Ineligible	Weighted Response Rate
	Interviews	Non-interviews		
First Quarter	794	5	15	99.5
Second Quarter	938	33	27	98.2
Third Quarter	1,145	67	21	95.2
Fourth Quarter	814	123	40	89.2
<b>2015 Total</b>	3,691	228	103	95.5

#### NOTE TO DATA USERS

The SOMA adopted new ratio estimation procedures in 1990 to derive more accurate estimates of completions.<sup>10</sup> This new procedure was used for the first time in processing annual data for 1990. Please use caution when comparing completions in 1990 and following years with those in earlier years.

<sup>10</sup>See ESTIMATION section below.

## ACCURACY OF THE ESTIMATES

The Survey of Market Absorption of New Multifamily Units is a sample survey and consequently all statistics in this report are subject to sampling variability. Estimates derived from different samples would differ from these.

Two types of possible errors are associated with data from sample surveys: non-sampling and sampling.

### Non-sampling Errors

In general, non-sampling errors can be attributed to many sources: inability to obtain information about all cases in the sample, difficulties with definitions, differences in interpretation of questions, inability or unwillingness of the respondents to provide correct information, and data processing errors. Although no direct measurements of any bias that might result from non-sampling errors has been obtained, the Census Bureau thinks that most of the important response and operational errors were detected during review of the data for reasonableness and consistency.

### Sampling Errors

The particular sample used for this survey is one of many possible samples of the same size that could have been selected using the same design. Even if the same questionnaires, instructions, and interviewers were used, estimates from different samples would likely differ from each other. The deviation of a sample estimate from the average of all possible samples is defined as the sampling error. The standard error of a survey estimate provides a measure of this variation and, thus, is a measure of the precision with which an estimate from a sample approximates the average result from all possible samples.

If all possible samples were selected, if each was surveyed under the same general conditions, and if an estimate and its estimated standard error were calculated from each sample, then:

- Approximately 68 percent of the intervals from one standard error below the estimate to one standard error above the estimate (i.e., the 68-percent confidence interval) would include the average result from all possible samples.
- Approximately 90 percent of the intervals from 1.645 standard errors below the estimate to 1.645 standard errors above the estimate (i.e., the 90-percent confidence interval) would include the average result from all possible samples.

- Approximately 95 percent of the intervals from two standard errors below the estimate to two standard errors above the estimate (i.e., the 95-percent confidence interval) would include the average result from all possible samples.

This report uses a 90-percent confidence level as its standard for statistical significance.

For very small estimates, the lower limit of the confidence interval may be negative. In this case, a better approximation to the true interval estimate can be achieved by restricting the interval estimate to positive values, that is, by changing the lower limit of the interval estimate to zero.

The reliability of an estimated absorption rate (i.e., a percentage) computed by using sample data for both the numerator and denominator depends on both the size of the rate and the size of the total on which the rate is based. Estimated rates of this kind are relatively more reliable than the corresponding estimates of the numerators of the rates, particularly if the rates are 50 percent or more.

In this report, [Tables A, B, and C](#) present approximations to the standard errors of various estimates shown. [Table A](#) presents standard errors for estimated totals, and [Tables B and C](#) present standard errors for estimated percentages for rental apartments and condominiums, respectively. To derive standard errors that would be applicable to a wide variety of items and could be prepared at moderate cost, a number of approximations were required. As a result, the tables of standard errors provide an indication of the order of magnitude of the standard errors rather than the precise standard error for any specific item. Standard errors for values not shown in [Tables A, B, or C](#) can be obtained by linear interpolation.

## ILLUSTRATIVE USE OF THE STANDARD ERROR TABLES

[Table 2](#) of this report shows that in 2015, there were approximately 115,300 new privately financed, nonsubsidized, unfurnished one-bedroom rental apartments in buildings with five units or more constructed in permit-issuing areas in the United. [Table A](#) shows the standard error of an estimate of this size to be approximately 5,574 using linear interpolation ([see Example A-1](#)). To obtain a 90-percent confidence interval, multiply 5,574 by 1.645, and add and subtract the result (9,170) from 115,300, yielding limits of 106,130 and 124,470. The true value of these one-bedroom units completed in 2015 may or may not be included in this computed interval, but one can say that it is included in the constructed interval with a specified confidence of 90 percent.

[Table 2](#) also shows that the rate of absorption after 3 months for these one-bedroom units is 60 percent. [Table B](#) shows the standard error on a 60 percent rate on a base of 115,300 to be approximately 3.11 percentage points using linear interpolation ([see Example B-1](#)). Multiply

3.11 by 1.645, and add and subtract the result (5.1) from 60. The 90-percent confidence interval for the absorption rate of 60 percent is from 54.9 percent to 65.1 percent.

[Table 2](#) also illustrates that the median asking rent for all new privately financed, nonsubsidized, unfurnished one-bedroom rental apartments in buildings with five units or more built in the United States to be \$1,275. The standard error of this median is about \$44.

Several statistics are needed to calculate the standard error of a median.

The base of the median--the estimated number of units for which the median has been calculated. In this example, 115,300.

The estimated standard error from [Table B](#) of a 50-percent characteristic on the base of the median ( $\sigma_{50\%}$ ). In this example ([see Example B-2](#)), the estimated standard error of a 50-percent characteristic with the base of 115,300 is about 3.11 percent.

The length of the interval that contains the median. In this example, the median lies between \$1,250 to \$1,449. The length of the interval is \$200.

The estimated proportion of the base falling in the interval that contains the median: in this example, 14.14 percent (16,300 units renting for \$1,250 to \$1,449 divided by 115,300 total units times 100 = 14.14 percent).

The standard error of the median is obtained by using the following approximation:

*Standard error of median =  $\sigma_{50\%}$  x length of interval containing the sample median **divided by** the estimated proportion of the base falling within the interval containing the sample median.*

For this example, the standard error of the median of \$1,275:

$$3.11 \times 200 / 14.14 = \$44$$

Therefore, 1.645 standard errors (44 x 1.645), equal \$72. Consequently, an approximate 90-percent confidence interval for the median asking rent of \$1,275 is between \$1,203 and \$1,347 (\$1,275 plus or minus \$72).