# MORNINGSTAR®

# Single-Family Rental Research

## Performance Summary Covering All Morningstar-Rated Securitizations

January 2019

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**Introduction**

The blended rent change for single borrower, single-family rental securitizations rated by Morningstar Credit Ratings, LLC increased by 2.3% in December, down from 3.6% in November. The average vacancy rate increased by 10 basis points to 4.6% in December from a revised 4.5% in November. The average retention rate for expiring leases declined 110 basis points to 77.7% in November, the latest month available, from a revised 78.8% in October, but has remained over 75% for the past year. Among the top 20 metropolitan statistical areas, the Houston MSA had the highest vacancy rate at 6.5%, down from a revised 6.8% in November, followed by the Denver-Aurora and Indianapolis MSAs at 5.8% each. The Las Vegas MSA experienced the highest blended rent growth at 4.1%, followed by the Raleigh-Cary, North Carolina MSA at 3.4% and the Memphis, Tennessee MSA at 3.2%. The Chicago MSA experienced the experienced the lowest rent growth at 0.6% followed by the Indianapolis MSA at 0.7% and the Houston MSA at 1.4%. With the exception of the Fort Lauderdale, Houston, and Phoenix MSAs, rents for properties included in single-family rental securitizations continue to exceed the RentRange rents for three- and four-bedroom properties located in the same MSAs. IH 2018-SFR4 was added to the December Single-Family Rental Performance Summary, bringing the report to 24 single-borrower deals with close to 86,000 properties.

Morningstar publishes our performance summary to provide market participants detailed property-level information on each single-family rental securitization that Morningstar has rated. The data below summarizes issuer-reported property-level information through December. Page 5 includes a summary of the multiborrower transactions. For deals seasoned at least one year, we provide Morningstar Surveillance Analysis reports, available on our website, www.morningstarcreditratings.com.

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**Single-Borrower Performance**

Lease expirations decreased to 4.8% in December, down from 5.3% in November, following a seasonal trend of declining in the fall and winter months. The decrease in lease expirations is expected to lead to a decline in the vacancy rate in the coming months. One securitization had a lease expiration rate over 10.0%: PRD 2018-SFR2 at 13.2%, followed by PRD 2017-SFR1 at 8.5%. The average retention rate on full-term leases declined 110 basis points to 77.7% in November, the latest month for which data is available, from a revised 78.8% in October. The overall turnover rate declined to 2.5% in November, the latest month for which data is available, from 3.0% in October. The average delinquency rate increased 20 basis points to 0.9% in December, with two transactions reporting delinquency rates of 2.0% each. Please note that any review of delinquency should be viewed within the context of the delinquency definitions in Table 7.

Rents grew 2.3% in December, compared with a 3.6% increase in November. Chart 1 shows that the rent gains for securitized properties trailed rent gains for three-bedroom and four-bedroom properties. The RentRange benchmarks track the year-over-year change on three- and four-bedroom median rents, weighted by MSA to match the geographic concentration of the Morningstar database.

Chart 2 shows the rental change of renewals versus vacant-to-occupied properties. For November, the latest month for which data is available, the rent change for renewal properties increased 4.6%, up from a 4.4% increase in October, and for vacant-to-occupied properties increased by 1.2%. Chart 3 shows that the average contractual rents by MSA have been largely in line with, or exceed, their property-level RentRange estimates. Chart 4 shows the MSA-level blended rent change. MSAs with rent changes above the 2.3% average are in blue, while those below are in red. The size of the circle indicates the percentage of properties by count from a given MSA in Morningstar's database. Table 3 shows the MSA-level blended rent change for the past 12 months.

Table 11b shows the percentage of loans rented out under a month-to-month lease. TAH 2016-SFR1 had the highest percentage of MTM leases, at 6.0% of its portfolio, for the third-consecutive month.

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**Multiborrower Performance**

CAF 2018-2 started reporting in January, bringing the most recent remittance report to 935 total loans securing 10 multiborrower transactions. The number of loans 30-59 days delinquent increased by six to 16, while the number of loans 60-89 days delinquent increased by three to seven, and the loans over 90 days delinquent remained at 23. Loans in foreclosure declined by one to three, and loans in special servicing remained unchanged at 31.

**Table 1 – Multiborrower Loan Performance by Percentage of Balance**

|  | 30-59 Delinquent | 60-89 Delinquent | 90+ Delinquent | Foreclosure | Real Estate Owned | Special Servicing |
|---|---|---|---|---|---|---|
| B2R 2015-1 | 1.53 | 0.00 | 0.32 | 0.02 | 0.32 | 0.48 |
| FKL 2015-SFR1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| CAF 2015-1 | 0.00 | 0.00 | 2.21 | 0.00 | 0.00 | 8.49 |
| B2R 2015-2 | 0.67 | 0.15 | 1.34 | 0.25 | 0.00 | 1.70 |
| CAF 2016-1 | 0.85 | 0.00 | 1.65 | 0.00 | 0.00 | 1.66 |
| B2R 2016-1 | 1.38 | 1.41 | 2.38 | 0.25 | 0.00 | 2.74 |
| CAF 2016-2 | 0.26 | 0.00 | 3.99 | 2.67 | 0.00 | 4.27 |
| CAF 2017-1 | 2.33 | 0.00 | 1.51 | 0.00 | 0.00 | 1.52 |
| CAF 2018-1 | 0.00 | 0.59 | 0.31 | 0.00 | 0.31 | 0.90 |
| CAF 2018-2 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

**Table 2 – Multiborrower Loan Performance by Loan Count**

|  | Total Loans | 30-59 Delinquent | 60-89 Delinquent | 90+ Delinquent | Foreclosure | Real Estate Owned | Special Servicing |
|---|---|---|---|---|---|---|---|
| B2R 2015-1 | 115 | 5 | 0 | 1 | 1 | 1 | 3 |
| FKL 2015-SFR1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| CAF 2015-1 | 49 | 0 | 0 | 2 | 0 | 0 | 3 |
| B2R 2015-2 | 175 | 3 | 1 | 6 | 1 | 0 | 8 |
| CAF 2016-1 | 66 | 1 | 0 | 1 | 0 | 0 | 1 |
| B2R 2016-1 | 152 | 5 | 5 | 6 | 1 | 0 | 8 |
| CAF 2016-2 | 64 | 1 | 0 | 3 | 0 | 0 | 3 |
| CAF 2017-1 | 80 | 1 | 0 | 3 | 0 | 0 | 3 |
| CAF 2018-1 | 117 | 0 | 1 | 1 | 0 | 1 | 2 |
| CAF 2018-2 | 115 | 0 | 0 | 0 | 0 | 0 | 0 |
| Overall | 935 | 16 | 7 | 23 | 3 | 2 | 31 |

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**Single-Borrower Charts and Tables**

**Chart 1 – Single-Family Rental Rent Change Versus RentRange Year-Over-Year Rent Change**
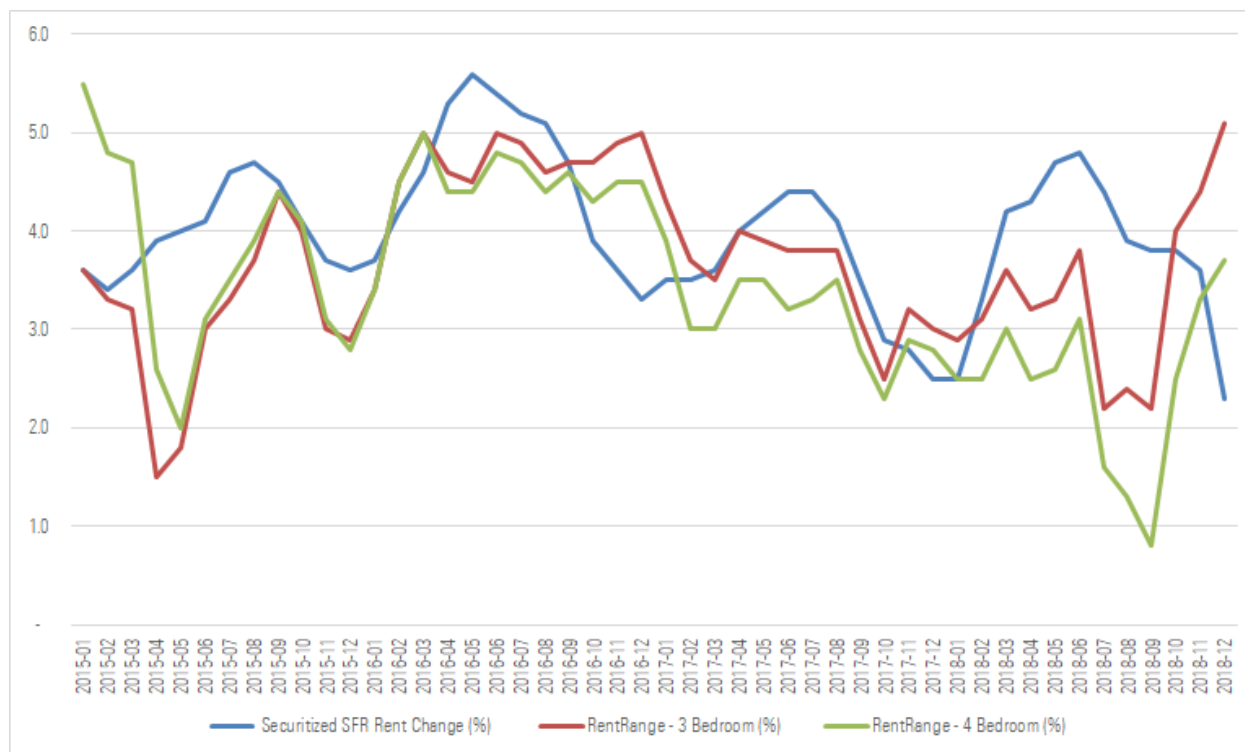


Sources: Morningstar Credit Ratings, LLC; RentRange

**Chart 2 – Rental Changes for Renewals Versus Vacant-to-Occupied Properties**
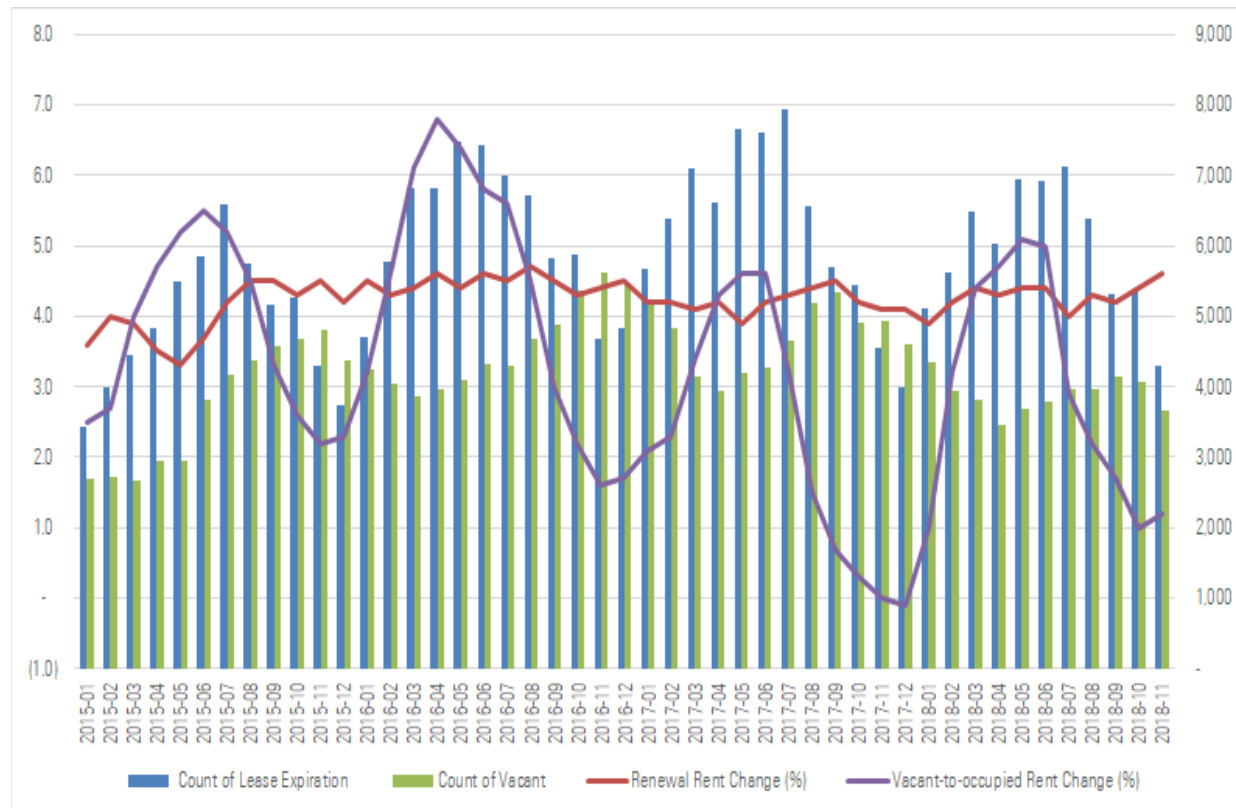


Source: Morningstar Credit Ratings, LLC

**Chart 3 – November Average Contractual Rent Versus Property-Level RentRange Estimate by MSA**
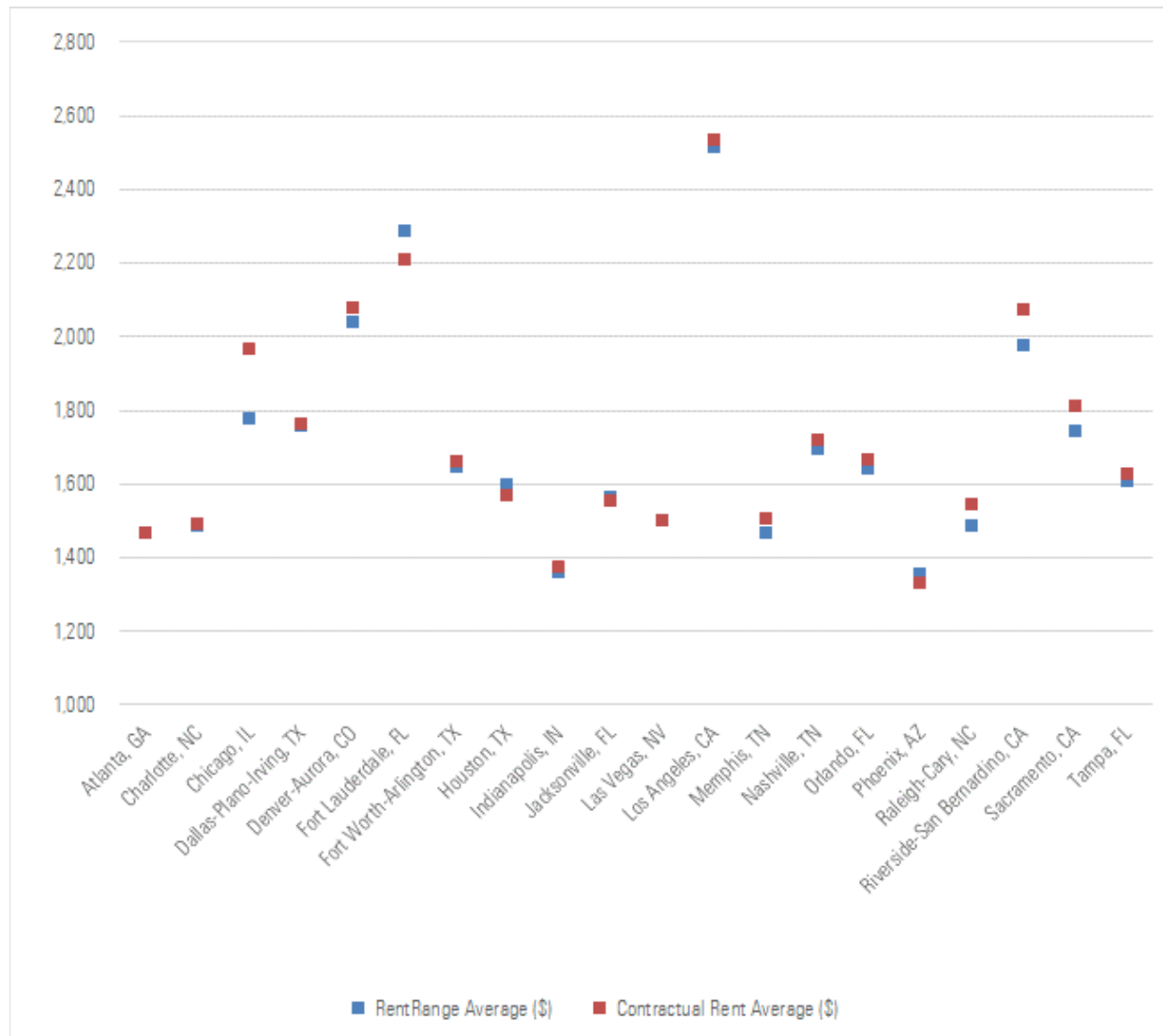


Sources: Morningstar Credit Ratings, LLC; RentRange

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**Chart 4 – MSA-Level Blended Rent Change***



Sources: Morningstar Credit Ratings, LLC; Tableau Software
*The size of the circles represents the total percentage (by count) of properties in each MSA, ranging from 1.43% to 14.84%. Because of their proximity, the Fort Worth-Arlington, Texas, MSA is hidden behind the Dallas-Plano-Irving, Texas, MSA.

## Table 3 – Blended Rent Change (by Percentage) - Top MSAs

| | | Year 2018 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| Atlanta, GA | | 3.1 | 3.8 | 5.1 | 4.8 | 5.3 | 5.1 | 4.4 | 4.8 | 4.1 | 4.4 | 4.5 | 3.1 |
| Charlotte, NC | | 1.4 | 2.5 | 3.4 | 3.0 | 4.0 | 3.8 | 4.4 | 3.4 | 3.3 | 3.0 | 2.5 | 1.9 |
| Chicago, IL | | 0.7 | 1.3 | 1.6 | 2.9 | 4.3 | 4.4 | 3.0 | 3.2 | 2.5 | 2.3 | 2.0 | 0.6 |
| Dallas-Plano-Irving, TX | | 2.5 | 3.1 | 3.8 | 4.0 | 4.0 | 4.2 | 4.1 | 3.7 | 4.7 | 3.5 | 1.8 | 2.0 |
| Denver-Aurora, CO | | 1.6 | 4.3 | 5.8 | 5.3 | 4.6 | 5.1 | 2.4 | 2.3 | 2.5 | 2.4 | 2.2 | 2.8 |
| Fort Lauderdale, FL | | 1.7 | 2.5 | 2.9 | 2.9 | 3.8 | 3.3 | 3.6 | 3.2 | 2.6 | 2.9 | 2.4 | 2.0 |
| Fort Worth-Arlington, TX | | 2.1 | 3.1 | 4.1 | 4.1 | 4.1 | 5.1 | 5.3 | 4.1 | 3.9 | 2.2 | 2.4 | 2.7 |
| Houston, TX | | 1.3 | 1.4 | 3.1 | 3.6 | 3.3 | 3.3 | 3.0 | 2.9 | 2.5 | 1.4 | 1.7 | 1.4 |
| Indianapolis, IN | | -0.1 | 2.9 | 3.4 | 3.3 | 4.2 | 4.6 | 3.8 | 3.0 | 2.7 | 2.6 | 2.5 | 0.7 |
| Jacksonville, FL | | 2.9 | 3.3 | 4.1 | 5.2 | 5.4 | 5.3 | 5.6 | 5.3 | 4.6 | 4.2 | 3.2 | 1.9 |
| Las Vegas, NV | | 4.1 | 5.1 | 5.6 | 5.3 | 6.2 | 6.1 | 5.1 | 5.2 | 6.4 | 5.6 | 5.5 | 4.1 |
| Los Angeles, CA | | 6.2 | 4.4 | 5.7 | 5.7 | 5.8 | 6.2 | 5.1 | 4.5 | 5.1 | 6.1 | 5.3 | 1.5 |
| Memphis, TN | | 0.9 | 1.5 | 3.4 | 4.0 | 4.4 | 4.2 | 5.4 | 5.1 | 3.6 | 2.9 | 3.6 | 3.2 |
| Nashville, TN | | 1.5 | 1.6 | 2.8 | 3.0 | 4.6 | 4.2 | 4.5 | 4.2 | 3.5 | 3.1 | 1.7 | 2.4 |
| Orlando, FL | | 3.3 | 5.0 | 5.0 | 5.2 | 5.3 | 6.0 | 6.2 | 5.2 | 4.7 | 4.9 | 5.0 | 2.2 |
| Phoenix, AZ | | 4.2 | 5.3 | 6.5 | 6.4 | 6.3 | 6.7 | 6.1 | 5.4 | 6.0 | 5.9 | 5.4 | 2.8 |
| Raleigh-Cary, NC | | 1.3 | 1.6 | 2.4 | 3.0 | 3.9 | 3.2 | 3.2 | 2.9 | 2.6 | 2.3 | 2.4 | 3.4 |
| Riverside-San Bernardino, CA | | 4.5 | 4.9 | 5.2 | 5.5 | 5.5 | 6.7 | 4.4 | 3.6 | 4.6 | 5.1 | 5.5 | 1.9 |
| Sacramento, CA | | 4.9 | 5.7 | 6.9 | 7.4 | 8.0 | 8.0 | 6.9 | 5.8 | 7.4 | 7.3 | 6.0 | 1.8 |
| Tampa, FL | | 1.9 | 3.0 | 3.6 | 4.2 | 4.3 | 4.4 | 3.8 | 3.5 | 2.7 | 3.0 | 3.1 | 1.8 |

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## Table 4a – Month-End Vacancy (by Count)

| | | Year 2018 Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Count |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 233 | 217 | 186 | 166 | 128 | 135 | 152 | 168 | 195 | 185 | 172 | 184 | 4,546 |
| AH4R 2014-SFR3 | | 266 | 265 | 243 | 227 | 200 | 208 | 189 | 199 | 247 | 249 | 252 | 239 | 4,588 |
| AH4R 2015-SFR1 | | 309 | 294 | 253 | 256 | 198 | 159 | 171 | 173 | 211 | 240 | 236 | 236 | 4,697 |
| AH4R 2015-SFR2 | | 235 | 217 | 229 | 248 | 234 | 202 | 182 | 180 | 190 | 214 | 191 | 187 | 4,178 |
| CSH 2016-2 | | 256 | 229 | 214 | 217 | 223 | 232 | 205 | 207 | 228 | 227 | 191 | 183 | 3,902 |
| HPA 2016-2 | | 52 | 45 | 41 | 53 | 75 | 86 | 98 | 86 | 76 | 78 | 74 | 69 | 1,285 |
| HPA 2017-1 | | 53 | 34 | 39 | 46 | 49 | 42 | 38 | 61 | 84 | 93 | 94 | 92 | 1,330 |
| HPA 2018-1 | | | | | | | | 94 | 113 | 141 | 149 | 145 | 126 | 1,758 |
| IH 2017-SFR2 | | 177 | 158 | 136 | 124 | 141 | 179 | 204 | 204 | 189 | 183 | 171 | 172 | 4,369 |
| IH 2018-SFR1 | | | | 131 | 131 | 193 | 230 | 233 | 219 | 210 | 188 | 187 | 192 | 4,277 |
| IH 2018-SFR2 | | | | | | | 248 | 236 | 198 | 231 | 233 | 269 | 240 | 5,474 |
| IH 2018-SFR3 | | | | | | | | | | | 279 | 284 | 281 | 6,640 |
| IH 2018-SFR4 | | | | | | | | | | | | | 256 | 5,388 |
| PRD 2015-SFR2 | | 93 | 95 | 102 | 95 | 126 | 117 | 108 | 151 | 157 | 157 | 140 | 137 | 3,287 |
| PRD 2015-SFR3 | | 114 | 83 | 80 | 87 | 107 | 140 | 149 | 172 | 182 | 158 | 132 | 141 | 3,149 |
| PRD 2016-SFR2 | | 104 | 104 | 105 | 98 | 109 | 134 | 160 | 203 | 211 | 181 | 160 | 144 | 3,742 |
| PRD 2017-SFR1 | | 94 | 67 | 60 | 60 | 71 | 90 | 74 | 88 | 102 | 121 | 130 | 131 | 2,708 |
| PRD 2018-SFR1 | | | | | 36 | 30 | 44 | 56 | 84 | 107 | 123 | 132 | 115 | 2,113 |
| PRD 2018-SFR2 | | | | | | | | | | 24 | 50 | 56 | 99 | 2,116 |
| SWH 2017-1 | | 219 | 238 | 239 | 231 | 233 | 265 | 269 | 192 | 237 | 206 | 179 | 174 | 4,396 |
| TAH 2016-SFR1 | | 161 | 150 | 162 | 136 | 167 | 156 | 186 | 230 | 186 | 181 | 163 | 180 | 3,432 |
| TAH 2017-SFR1 | | 152 | 145 | 124 | 84 | 109 | 76 | 120 | 136 | 100 | 96 | 110 | 160 | 3,480 |
| TAH 2017-SFR2 | | 109 | 93 | 94 | 109 | 96 | 79 | 99 | 120 | 95 | 110 | 98 | 114 | 2,620 |
| TAH 2018-SFR1 | | | | | | 104 | 80 | 98 | 112 | 72 | 98 | 99 | 109 | 2,509 |
| Overall SFR | | 2,627 | 2,434 | 2,438 | 2,404 | 2,593 | 2,902 | 3,121 | 3,296 | 3,475 | 3,799 | 3,665 | 3,961 | 85,984 |

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## Table 4b – Month-End Vacancy (by Percentage)

| | | Year 2018 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| AH4R 2014-SFR2 | | 5.2 | 4.8 | 4.2 | 3.7 | 2.9 | 3.0 | 3.4 | 3.7 | 4.4 | 4.1 | 3.8 | 4.0 |
| AH4R 2014-SFR3 | | 5.9 | 5.9 | 5.4 | 5.0 | 4.4 | 4.6 | 4.2 | 4.4 | 5.5 | 5.5 | 5.5 | 5.2 |
| AH4R 2015-SFR1 | | 6.6 | 6.3 | 5.4 | 5.5 | 4.3 | 3.4 | 3.7 | 3.7 | 4.6 | 5.2 | 5.0 | 5.0 |
| AH4R 2015-SFR2 | | 5.7 | 5.3 | 5.6 | 6.0 | 5.7 | 4.9 | 4.4 | 4.4 | 4.6 | 5.2 | 4.6 | 4.5 |
| CSH 2016-2 | | 6.4 | 5.7 | 5.4 | 5.5 | 5.6 | 5.9 | 5.2 | 5.2 | 5.8 | 5.8 | 4.9 | 4.7 |
| HPA 2016-2 | | 3.9 | 3.4 | 3.1 | 4.0 | 5.7 | 6.6 | 7.6 | 6.6 | 5.9 | 6.0 | 5.7 | 5.4 |
| HPA 2017-1 | | 3.9 | 2.5 | 2.9 | 3.4 | 3.6 | 3.1 | 2.8 | 4.5 | 6.3 | 7.0 | 7.1 | 6.9 |
| HPA 2018-1 | | | | | | | | 5.3 | 6.4 | 8.0 | 8.5 | 8.2 | 7.2 |
| IH 2017-SFR2 | | 4.0 | 3.6 | 3.1 | 2.8 | 3.2 | 4.1 | 4.6 | 4.6 | 4.3 | 4.2 | 3.9 | 3.9 |
| IH 2018-SFR1 | | | | 3.1 | 3.1 | 4.5 | 5.4 | 5.4 | 5.1 | 4.9 | 4.4 | 4.4 | 4.5 |
| IH 2018-SFR2 | | | | | | | 4.4 | 4.2 | 3.5 | 4.1 | 4.2 | 4.9 | 4.4 |
| IH 2018-SFR3 | | | | | | | | | | | 4.2 | 4.3 | 4.2 |
| IH 2018-SFR4 | | | | | | | | | | | | | 4.8 |
| PRD 2015-SFR2 | | 2.8 | 2.9 | 3.1 | 2.9 | 3.8 | 3.6 | 3.3 | 4.6 | 4.8 | 4.8 | 4.3 | 4.2 |
| PRD 2015-SFR3 | | 3.6 | 2.6 | 2.5 | 2.8 | 3.4 | 4.4 | 4.7 | 5.5 | 5.8 | 5.0 | 4.2 | 4.5 |
| PRD 2016-SFR2 | | 2.8 | 2.8 | 2.8 | 2.6 | 2.9 | 3.6 | 4.3 | 5.4 | 5.6 | 4.8 | 4.3 | 3.8 |
| PRD 2017-SFR1 | | 3.5 | 2.5 | 2.2 | 2.2 | 2.6 | 3.3 | 2.7 | 3.2 | 3.8 | 4.5 | 4.8 | 4.8 |
| PRD 2018-SFR1 | | | | | 1.7 | 1.4 | 2.1 | 2.7 | 4.0 | 5.1 | 5.8 | 6.2 | 5.4 |
| PRD 2018-SFR2 | | | | | | | | | | 1.1 | 2.4 | 2.6 | 4.7 |
| SWH 2017-1 | | 4.9 | 5.4 | 5.4 | 5.2 | 5.3 | 6.0 | 6.1 | 4.3 | 5.4 | 4.7 | 4.1 | 4.0 |
| TAH 2016-SFR1 | | 4.7 | 4.4 | 4.7 | 4.0 | 4.9 | 4.5 | 5.4 | 6.7 | 5.4 | 5.3 | 4.7 | 5.2 |
| TAH 2017-SFR1 | | 4.4 | 4.2 | 3.6 | 2.4 | 3.1 | 2.2 | 3.4 | 3.9 | 2.9 | 2.8 | 3.2 | 4.6 |
| TAH 2017-SFR2 | | 4.2 | 3.5 | 3.6 | 4.2 | 3.7 | 3.0 | 3.8 | 4.6 | 3.6 | 4.2 | 3.7 | 4.4 |
| TAH 2018-SFR1 | | | | | | 4.1 | 3.2 | 3.9 | 4.5 | 2.9 | 3.9 | 3.9 | 4.3 |
| Overall SFR | | 4.7 | 4.4 | 4.1 | 3.9 | 4.0 | 4.1 | 4.3 | 4.6 | 4.7 | 4.7 | 4.5 | 4.6 |

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## Table 4c – Month-End Vacancy (by Percentage) – Top MSAs

| Year 2018 | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlanta, GA | | 4.6 | 4.6 | 4.0 | 4.2 | 4.2 | 4.3 | 4.7 | 5.2 | 4.5 | 5.0 | 4.8 | 4.7 |
| Charlotte, NC | | 5.8 | 5.5 | 5.4 | 4.5 | 4.5 | 4.4 | 3.8 | 4.6 | 4.9 | 5.1 | 4.2 | 4.5 |
| Chicago, IL | | 4.5 | 4.6 | 4.3 | 4.9 | 4.8 | 3.4 | 3.4 | 4.2 | 5.3 | 6.0 | 5.7 | 5.6 |
| Dallas-Plano-Irving, TX | | 5.0 | 4.5 | 4.5 | 4.3 | 4.1 | 4.5 | 4.9 | 5.8 | 5.9 | 5.6 | 5.8 | 5.5 |
| Denver-Aurora, CO | | 4.8 | 5.0 | 4.0 | 4.0 | 5.6 | 7.0 | 6.1 | 5.2 | 7.0 | 6.5 | 6.0 | 5.8 |
| Fort Lauderdale, FL | | 5.1 | 4.2 | 4.8 | 4.9 | 6.0 | 6.0 | 5.2 | 6.0 | 4.4 | 4.5 | 3.9 | 4.9 |
| Fort Worth-Arlington, TX | | 5.0 | 4.3 | 4.0 | 4.0 | 4.2 | 4.8 | 5.0 | 5.4 | 6.1 | 5.1 | 4.9 | 4.6 |
| Houston, TX | | 8.8 | 7.3 | 6.4 | 6.3 | 5.8 | 5.8 | 6.0 | 6.7 | 6.8 | 6.6 | 6.8 | 6.5 |
| Indianapolis, IN | | 4.4 | 5.1 | 4.4 | 4.1 | 3.2 | 3.8 | 4.3 | 5.5 | 5.9 | 5.4 | 6.0 | 5.8 |
| Jacksonville, FL | | 4.6 | 4.0 | 3.3 | 2.6 | 3.5 | 3.6 | 4.0 | 4.5 | 4.4 | 4.7 | 4.7 | 4.5 |
| Las Vegas, NV | | 2.6 | 2.5 | 2.8 | 2.2 | 2.9 | 3.1 | 3.5 | 3.2 | 3.6 | 3.5 | 3.2 | 2.8 |
| Los Angeles, CA | | 5.0 | 3.7 | 3.2 | 3.9 | 4.0 | 5.5 | 5.4 | 5.5 | 5.0 | 4.9 | 4.7 | 4.5 |
| Memphis, TN | | 5.2 | 4.3 | 4.4 | 4.0 | 3.6 | 3.9 | 3.8 | 5.0 | 5.3 | 5.4 | 4.9 | 4.9 |
| Nashville, TN | | 7.3 | 5.9 | 4.7 | 4.2 | 3.7 | 4.0 | 4.7 | 5.5 | 5.2 | 5.4 | 4.6 | 4.5 |
| Orlando, FL | | 3.3 | 3.1 | 3.6 | 2.6 | 2.9 | 3.6 | 3.5 | 3.4 | 3.5 | 3.4 | 3.9 | 4.1 |
| Phoenix, AZ | | 3.2 | 3.2 | 2.7 | 2.2 | 2.7 | 3.0 | 3.3 | 3.3 | 3.5 | 2.7 | 2.9 | 3.1 |
| Raleigh-Cary, NC | | 5.8 | 5.1 | 5.4 | 4.8 | 4.2 | 3.9 | 4.0 | 4.0 | 5.1 | 5.1 | 4.8 | 4.7 |
| Riverside-San Bernardino, CA | | 3.8 | 4.1 | 3.7 | 3.5 | 3.7 | 4.1 | 4.0 | 3.4 | 4.3 | 4.3 | 3.8 | 2.8 |
| Sacramento, CA | | 3.6 | 2.6 | 3.0 | 2.9 | 2.9 | 2.7 | 3.1 | 3.5 | 3.8 | 4.0 | 2.9 | 3.5 |
| Tampa, FL | | 4.5 | 4.0 | 4.0 | 4.1 | 4.5 | 4.8 | 5.2 | 5.2 | 5.0 | 4.9 | 4.3 | 4.6 |
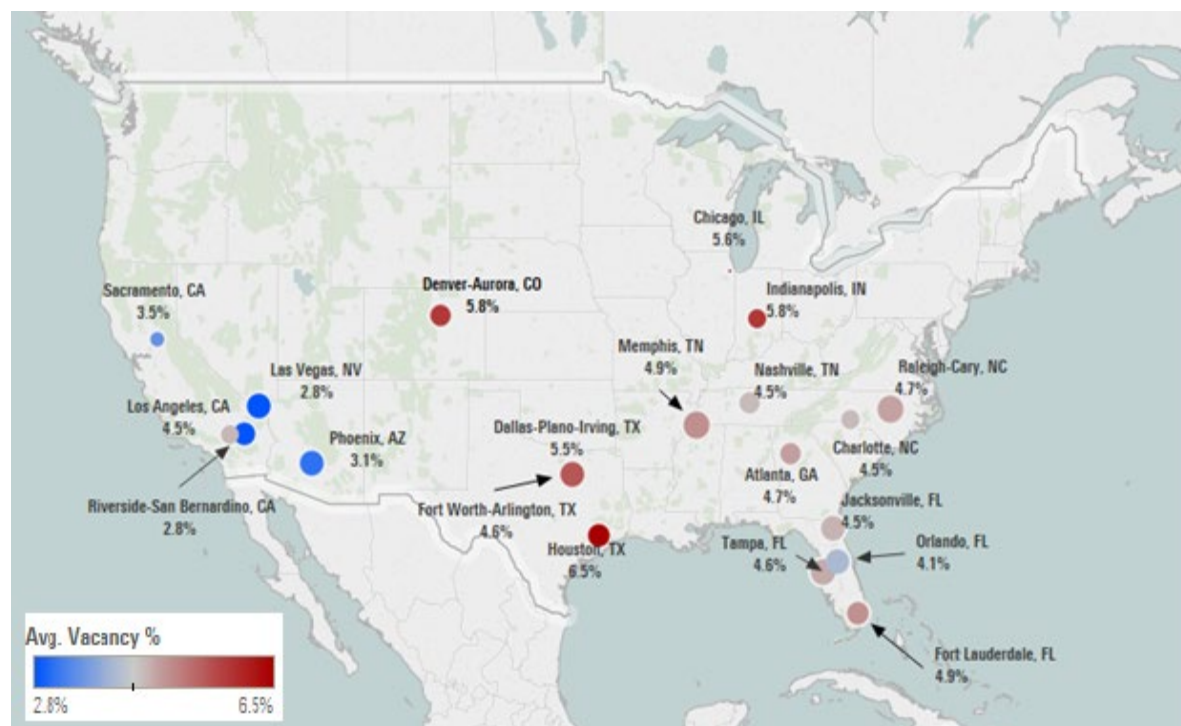
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**Chart 5 – MSA-Level Vacancy and Lease Expiration Percentage (by Count)\***



Sources: Morningstar Credit Ratings, LLC; Tableau Software
\*The size of the circles represents the past three months of lease expirations by count as a percentage of each MSA, ranging from 10.778% to 19.205%. Because of their proximity, the Fort Worth-Arlington, Texas, MSA is hidden behind the Dallas-Plano-Irving, Texas, MSA.

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## Table 5a – Lease Expiration (by Count)

| | | Year 2018 Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total Count |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 310 | 346 | 368 | 329 | 423 | 411 | 378 | 354 | 265 | 215 | 200 | 172 | 4,546 |
| AH4R 2014-SFR3 | | 348 | 332 | 311 | 280 | 361 | 410 | 439 | 382 | 280 | 240 | 198 | 161 | 4,588 |
| AH4R 2015-SFR1 | | 360 | 354 | 291 | 247 | 278 | 347 | 405 | 364 | 279 | 276 | 252 | 231 | 4,697 |
| AH4R 2015-SFR2 | | 238 | 310 | 397 | 315 | 438 | 425 | 376 | 271 | 181 | 155 | 173 | 153 | 4,178 |
| CSH 2016-2 | | 232 | 257 | 306 | 325 | 392 | 354 | 302 | 332 | 275 | 251 | 187 | 168 | 3,902 |
| HPA 2016-2 | | 14 | 12 | 105 | 155 | 235 | 281 | 191 | 49 | 27 | 24 | 24 | 20 | 1,285 |
| HPA 2017-1 | | 91 | 74 | 110 | 114 | 73 | 17 | 74 | 119 | 98 | 144 | 139 | 100 | 1,330 |
| HPA 2018-1 | | | | | | | | 229 | 179 | 172 | 122 | 73 | 71 | 1,758 |
| IH 2017-SFR2 | | 242 | 247 | 292 | 294 | 330 | 391 | 373 | 314 | 235 | 243 | 197 | 183 | 4,369 |
| IH 2018-SFR1 | | | | 311 | 346 | 323 | 363 | 380 | 347 | 375 | 324 | 251 | 206 | 4,277 |
| IH 2018-SFR2 | | | | | | | | 331 | 378 | 345 | 330 | 346 | 306 | 277 | 5,474 |
| IH 2018-SFR3 | | | | | | | | | | | 416 | 401 | 324 | 6,640 |
| IH 2018-SFR4 | | | | | | | | | | | | | 250 | 5,388 |
| PRD 2015-SFR2 | | 189 | 234 | 260 | 307 | 324 | 216 | 200 | 179 | 161 | 221 | 229 | 195 | 3,287 |
| PRD 2015-SFR3 | | 81 | 120 | 108 | 187 | 292 | 287 | 341 | 342 | 224 | 223 | 140 | 149 | 3,149 |
| PRD 2016-SFR2 | | 150 | 145 | 148 | 165 | 271 | 333 | 364 | 465 | 323 | 270 | 193 | 172 | 3,742 |
| PRD 2017-SFR1 | | 162 | 133 | 127 | 89 | 136 | 145 | 183 | 188 | 203 | 310 | 232 | 231 | 2,708 |
| PRD 2018-SFR1 | | | | | 54 | 52 | 97 | 151 | 208 | 249 | 423 | 379 | 85 | 2,113 |
| PRD 2018-SFR2 | | | | | | | | | | | 6 | 7 | 8 | 279 | 2,116 |
| SWH 2017-1 | | 284 | 385 | 418 | 475 | 442 | 381 | 342 | 318 | 268 | 217 | 195 | 164 | 4,396 |
| TAH 2016-SFR1 | | 124 | 159 | 197 | 235 | 225 | 260 | 263 | 250 | 181 | 203 | 135 | 137 | 3,432 |
| TAH 2017-SFR1 | | 241 | 229 | 241 | 119 | 159 | 176 | 188 | 221 | 209 | 244 | 168 | 162 | 3,480 |
| TAH 2017-SFR2 | | 141 | 161 | 197 | 124 | 154 | 157 | 155 | 166 | 145 | 156 | 111 | 113 | 2,620 |
| TAH 2018-SFR1 | | | | | | 160 | 137 | 133 | 166 | 150 | 172 | 112 | 119 | 2,509 |
| Overall SFR | | 3,207 | 3,498 | 4,187 | 4,160 | 5,068 | 5,519 | 5,845 | 5,559 | 4,636 | 5,202 | 4,303 | 4,122 | 85,984 |

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## Table 5b – Lease Expiration (by Percentage)

| | | Year 2018 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| AH4R 2014-SFR2 | | 6.9 | 7.7 | 8.2 | 7.3 | 9.4 | 9.2 | 8.4 | 7.9 | 5.9 | 4.8 | 4.4 | 3.8 |
| AH4R 2014-SFR3 | | 7.7 | 7.4 | 6.9 | 6.2 | 8.0 | 9.1 | 9.8 | 8.5 | 6.2 | 5.3 | 4.3 | 3.5 |
| AH4R 2015-SFR1 | | 7.7 | 7.6 | 6.2 | 5.3 | 6.0 | 7.5 | 8.7 | 7.9 | 6.0 | 6.0 | 5.4 | 4.9 |
| AH4R 2015-SFR2 | | 5.8 | 7.5 | 9.6 | 7.6 | 10.6 | 10.3 | 9.1 | 6.6 | 4.4 | 3.8 | 4.1 | 3.7 |
| CSH 2016-2 | | 5.8 | 6.4 | 7.7 | 8.2 | 9.9 | 9.0 | 7.6 | 8.4 | 7.0 | 6.4 | 4.8 | 4.3 |
| HPA 2016-2 | | 1.1 | 0.9 | 7.9 | 11.8 | 17.9 | 21.6 | 14.7 | 3.8 | 2.1 | 1.9 | 1.9 | 1.6 |
| HPA 2017-1 | | 6.7 | 5.4 | 8.1 | 8.4 | 5.4 | 1.3 | 5.5 | 8.9 | 7.3 | 10.8 | 10.4 | 7.5 |
| HPA 2018-1 | | | | | | | | 12.9 | 10.1 | 9.7 | 6.9 | 4.1 | 4.0 |
| IH 2017-SFR2 | | 5.5 | 5.6 | 6.6 | 6.7 | 7.5 | 8.9 | 8.5 | 7.1 | 5.3 | 5.6 | 4.5 | 4.2 |
| IH 2018-SFR1 | | | | 7.3 | 8.1 | 7.5 | 8.5 | 8.9 | 8.1 | 8.7 | 7.6 | 5.9 | 4.8 |
| IH 2018-SFR2 | | | | | | | 5.9 | 6.7 | 6.2 | 5.9 | 6.3 | 5.6 | 5.1 |
| IH 2018-SFR3 | | | | | | | | | | | 6.3 | 6.0 | 4.9 |
| IH 2018-SFR4 | | | | | | | | | | | | | 4.6 |
| PRD 2015-SFR2 | | 5.7 | 7.1 | 7.9 | 9.3 | 9.9 | 6.6 | 6.1 | 5.4 | 4.9 | 6.7 | 7.0 | 5.9 |
| PRD 2015-SFR3 | | 2.6 | 3.8 | 3.4 | 5.9 | 9.3 | 9.1 | 10.8 | 10.9 | 7.1 | 7.1 | 4.4 | 4.7 |
| PRD 2016-SFR2 | | 4.0 | 3.9 | 4.0 | 4.4 | 7.2 | 8.9 | 9.7 | 12.4 | 8.6 | 7.2 | 5.2 | 4.6 |
| PRD 2017-SFR1 | | 6.0 | 4.9 | 4.7 | 3.3 | 5.0 | 5.4 | 6.8 | 6.9 | 7.5 | 11.4 | 8.6 | 8.5 |
| PRD 2018-SFR1 | | | | | 2.6 | 2.5 | 4.6 | 7.1 | 9.8 | 11.8 | 20.0 | 17.9 | 4.0 |
| PRD 2018-SFR2 | | | | | | | | | | 0.3 | 0.3 | 0.4 | 13.2 |
| SWH 2017-1 | | 6.4 | 8.7 | 9.4 | 10.7 | 10.0 | 8.6 | 7.7 | 7.2 | 6.1 | 4.9 | 4.4 | 3.7 |
| TAH 2016-SFR1 | | 3.6 | 4.6 | 5.7 | 6.8 | 6.5 | 7.6 | 7.7 | 7.3 | 5.3 | 5.9 | 3.9 | 4.0 |
| TAH 2017-SFR1 | | 6.9 | 6.6 | 6.9 | 3.4 | 4.6 | 5.1 | 5.4 | 6.4 | 6.0 | 7.0 | 4.8 | 4.7 |
| TAH 2017-SFR2 | | 5.4 | 6.1 | 7.5 | 4.7 | 5.9 | 6.0 | 5.9 | 6.3 | 5.5 | 6.0 | 4.2 | 4.3 |
| TAH 2018-SFR1 | | | | | | 6.4 | 5.5 | 5.3 | 6.6 | 6.0 | 6.9 | 4.5 | 4.7 |
| Overall SFR | | 5.8 | 6.3 | 7.0 | 6.7 | 7.9 | 7.9 | 8.1 | 7.7 | 6.3 | 6.5 | 5.3 | 4.8 |

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## Table 5c – Lease Expiration (by Percentage) – Top MSAs

| | Year 2018 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Atlanta, GA | | 5.8 | 6.3 | 6.6 | 7.5 | 8.2 | 8.1 | 7.7 | 7.3 | 6.2 | 6.4 | 5.0 | 4.8 |
| Charlotte, NC | | 5.2 | 6.1 | 7.3 | 6.6 | 7.1 | 7.9 | 7.9 | 8.3 | 6.2 | 6.2 | 4.7 | 4.0 |
| Chicago, IL | | 6.6 | 8.8 | 8.2 | 7.8 | 9.3 | 8.2 | 10.0 | 7.9 | 7.6 | 3.7 | 3.1 | 3.9 |
| Dallas-Plano-Irving, TX | | 5.8 | 6.5 | 7.9 | 6.5 | 7.2 | 9.0 | 8.3 | 8.1 | 5.7 | 6.8 | 5.4 | 5.0 |
| Denver-Aurora, CO | | 5.1 | 7.3 | 8.0 | 9.8 | 10.3 | 9.6 | 9.5 | 7.5 | 7.3 | 6.3 | 4.8 | 4.5 |
| Fort Lauderdale, FL | | 7.8 | 6.3 | 7.8 | 7.1 | 8.0 | 7.0 | 6.0 | 7.3 | 5.1 | 6.5 | 5.1 | 5.5 |
| Fort Worth-Arlington, TX | | 4.8 | 6.4 | 8.1 | 7.5 | 7.8 | 8.9 | 7.4 | 7.9 | 6.3 | 5.8 | 5.3 | 5.5 |
| Houston, TX | | 5.2 | 6.2 | 7.2 | 6.3 | 6.5 | 6.9 | 7.9 | 6.3 | 6.2 | 5.7 | 5.8 | 5.0 |
| Indianapolis, IN | | 6.9 | 7.3 | 7.1 | 7.3 | 9.4 | 8.4 | 8.8 | 8.0 | 6.0 | 6.3 | 4.6 | 3.9 |
| Jacksonville, FL | | 6.9 | 6.9 | 6.3 | 5.2 | 8.5 | 6.4 | 6.0 | 6.1 | 5.6 | 6.6 | 6.0 | 5.3 |
| Las Vegas, NV | | 5.4 | 5.8 | 6.5 | 7.5 | 6.9 | 7.2 | 8.3 | 8.5 | 7.1 | 7.9 | 5.0 | 5.0 |
| Los Angeles, CA | | 6.2 | 4.7 | 7.3 | 7.2 | 6.7 | 8.0 | 7.2 | 7.2 | 6.7 | 6.2 | 5.0 | 3.5 |
| Memphis, TN | | 5.2 | 5.2 | 8.1 | 8.3 | 8.5 | 7.0 | 6.8 | 7.8 | 7.3 | 6.3 | 6.3 | 6.6 |
| Nashville, TN | | 5.3 | 5.4 | 6.4 | 7.7 | 7.5 | 8.5 | 8.7 | 7.2 | 4.8 | 6.5 | 4.1 | 5.2 |
| Orlando, FL | | 6.1 | 5.7 | 5.9 | 5.8 | 8.9 | 8.6 | 8.7 | 9.3 | 6.0 | 6.6 | 5.6 | 4.9 |
| Phoenix, AZ | | 6.7 | 7.3 | 7.2 | 7.0 | 6.8 | 6.9 | 7.3 | 7.5 | 5.9 | 6.2 | 5.9 | 5.5 |
| Raleigh-Cary, NC | | 4.3 | 6.6 | 7.1 | 6.2 | 8.1 | 8.4 | 10.2 | 9.3 | 6.3 | 6.6 | 7.3 | 5.1 |
| Riverside-San Bernardino, CA | | 5.8 | 7.0 | 8.2 | 7.9 | 8.1 | 7.2 | 8.6 | 7.1 | 8.2 | 6.5 | 6.1 | 3.9 |
| Sacramento, CA | | 4.5 | 4.6 | 8.0 | 7.1 | 6.4 | 8.8 | 7.2 | 9.8 | 6.9 | 5.0 | 4.7 | 3.4 |
| Tampa, FL | | 5.7 | 6.4 | 6.6 | 6.8 | 7.5 | 8.0 | 7.8 | 8.6 | 6.4 | 7.4 | 5.5 | 5.2 |

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## Table 6a – Historical Months of Vacancy for December Vacancies (by Count)

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12+ | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 17 | 25 | 28 | 35 | 25 | 18 | 13 | 9 | 7 | 2 | 2 | 3 | 184 |
| AH4R 2014-SFR3 | | 15 | 52 | 33 | 35 | 34 | 20 | 14 | 11 | 4 | 2 | 1 | 18 | 239 |
| AH4R 2015-SFR1 | | 40 | 32 | 45 | 35 | 29 | 15 | 15 | 8 | 4 | 1 | 0 | 12 | 236 |
| AH4R 2015-SFR2 | | 22 | 40 | 28 | 36 | 24 | 13 | 8 | 2 | 4 | 2 | 0 | 8 | 187 |
| CSH 2016-2 | | 40 | 45 | 37 | 16 | 23 | 8 | 4 | 3 | 2 | 3 | 1 | 1 | 183 |
| HPA 2016-2 | | 14 | 16 | 9 | 10 | 7 | 8 | 2 | 2 | 0 | 0 | 1 | 0 | 69 |
| HPA 2017-1 | | 21 | 24 | 20 | 16 | 6 | 3 | 1 | 0 | 1 | 0 | 0 | 0 | 92 |
| HPA 2018-1 | | 25 | 32 | 29 | 16 | 17 | 7 | 0 | | | | | | 126 |
| IH 2017-SFR2 | | 61 | 47 | 20 | 16 | 14 | 7 | 2 | 2 | 0 | 2 | 1 | 0 | 172 |
| IH 2018-SFR1 | | 56 | 65 | 28 | 14 | 16 | 7 | 2 | 4 | 0 | 0 | 0 | | 192 |
| IH 2018-SFR2 | | 89 | 75 | 33 | 19 | 10 | 5 | 8 | 1 | | | | | 240 |
| IH 2018-SFR3 | | 117 | 72 | 87 | 5 | | | | | | | | | 281 |
| IH 2018-SFR4 | | 233 | 23 | | | | | | | | | | | 256 |
| PRD 2015-SFR2 | | 23 | 24 | 31 | 19 | 15 | 8 | 7 | 4 | 3 | 0 | 2 | 1 | 137 |
| PRD 2015-SFR3 | | 18 | 30 | 30 | 21 | 14 | 11 | 4 | 2 | 4 | 1 | 1 | 5 | 141 |
| PRD 2016-SFR2 | | 32 | 40 | 19 | 25 | 13 | 5 | 4 | 2 | 1 | 0 | 0 | 3 | 144 |
| PRD 2017-SFR1 | | 41 | 45 | 27 | 13 | 3 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 131 |
| PRD 2018-SFR1 | | 60 | 40 | 10 | 1 | 3 | 0 | 0 | 1 | 0 | 0 | | | 115 |
| PRD 2018-SFR2 | | 75 | 13 | 11 | 0 | 0 | | | | | | | | 99 |
| SWH 2017-1 | | 43 | 66 | 33 | 12 | 11 | 4 | 3 | 0 | 0 | 1 | 0 | 1 | 174 |
| TAH 2016-SFR1 | | 31 | 38 | 45 | 19 | 19 | 15 | 9 | 1 | 0 | 0 | 1 | 2 | 180 |
| TAH 2017-SFR1 | | 60 | 45 | 31 | 14 | 7 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 160 |
| TAH 2017-SFR2 | | 49 | 26 | 20 | 8 | 5 | 2 | 1 | 0 | 2 | 0 | 0 | 1 | 114 |
| TAH 2018-SFR1 | | 41 | 34 | 23 | 2 | 3 | 4 | 0 | 2 | 0 | | | | 109 |
| Overall SFR | | 1,223 | 949 | 677 | 387 | 298 | 163 | 98 | 55 | 32 | 14 | 10 | 55 | 3,961 |

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## Table 6b – Historical Months of Vacancy for December Vacancies (by Percentage)

| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12+ | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 9.2 | 13.6 | 15.2 | 19.0 | 13.6 | 9.8 | 7.1 | 4.9 | 3.8 | 1.1 | 1.1 | 1.6 | 100.0 |
| AH4R 2014-SFR3 | | 6.3 | 21.8 | 13.8 | 14.6 | 14.2 | 8.4 | 5.9 | 4.6 | 1.7 | 0.8 | 0.4 | 7.5 | 100.0 |
| AH4R 2015-SFR1 | | 16.9 | 13.6 | 19.1 | 14.8 | 12.3 | 6.4 | 6.4 | 3.4 | 1.7 | 0.4 | 0.0 | 5.1 | 100.0 |
| AH4R 2015-SFR2 | | 11.8 | 21.4 | 15.0 | 19.3 | 12.8 | 7.0 | 4.3 | 1.1 | 2.1 | 1.1 | 0.0 | 4.3 | 100.0 |
| CSH 2016-2 | | 21.9 | 24.6 | 20.2 | 8.7 | 12.6 | 4.4 | 2.2 | 1.6 | 1.1 | 1.6 | 0.5 | 0.5 | 100.0 |
| HPA 2016-2 | | 20.3 | 23.2 | 13.0 | 14.5 | 10.1 | 11.6 | 2.9 | 2.9 | 0.0 | 0.0 | 1.4 | 0.0 | 100.0 |
| HPA 2017-1 | | 22.8 | 26.1 | 21.7 | 17.4 | 6.5 | 3.3 | 1.1 | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 | 100.0 |
| HPA 2018-1 | | 19.8 | 25.4 | 23.0 | 12.7 | 13.5 | 5.6 | 0.0 | | | | | | 100.0 |
| IH 2017-SFR2 | | 35.5 | 27.3 | 11.6 | 9.3 | 8.1 | 4.1 | 1.2 | 1.2 | 0.0 | 1.2 | 0.6 | 0.0 | 100.0 |
| IH 2018-SFR1 | | 29.2 | 33.9 | 14.6 | 7.3 | 8.3 | 3.6 | 1.0 | 2.1 | 0.0 | 0.0 | 0.0 | | 100.0 |
| IH 2018-SFR2 | | 37.1 | 31.3 | 13.8 | 7.9 | 4.2 | 2.1 | 3.3 | 0.4 | | | | | 100.0 |
| IH 2018-SFR3 | | 41.6 | 25.6 | 31.0 | 1.8 | | | | | | | | | 100.0 |
| IH 2018-SFR4 | | 91.0 | 9.0 | | | | | | | | | | | 100.0 |
| PRD 2015-SFR2 | | 16.8 | 17.5 | 22.6 | 13.9 | 10.9 | 5.8 | 5.1 | 2.9 | 2.2 | 0.0 | 1.5 | 0.7 | 100.0 |
| PRD 2015-SFR3 | | 12.8 | 21.3 | 21.3 | 14.9 | 9.9 | 7.8 | 2.8 | 1.4 | 2.8 | 0.7 | 0.7 | 3.5 | 100.0 |
| PRD 2016-SFR2 | | 22.2 | 27.8 | 13.2 | 17.4 | 9.0 | 3.5 | 2.8 | 1.4 | 0.7 | 0.0 | 0.0 | 2.1 | 100.0 |
| PRD 2017-SFR1 | | 31.3 | 34.4 | 20.6 | 9.9 | 2.3 | 1.5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| PRD 2018-SFR1 | | 52.2 | 34.8 | 8.7 | 0.9 | 2.6 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | | | 100.0 |
| PRD 2018-SFR2 | | 75.8 | 13.1 | 11.1 | 0.0 | 0.0 | | | | | | | | 100.0 |
| SWH 2017-1 | | 24.7 | 37.9 | 19.0 | 6.9 | 6.3 | 2.3 | 1.7 | 0.0 | 0.0 | 0.6 | 0.0 | 0.6 | 100.0 |
| TAH 2016-SFR1 | | 17.2 | 21.1 | 25.0 | 10.6 | 10.6 | 8.3 | 5.0 | 0.6 | 0.0 | 0.0 | 0.6 | 1.1 | 100.0 |
| TAH 2017-SFR1 | | 37.5 | 28.1 | 19.4 | 8.8 | 4.4 | 0.6 | 0.6 | 0.6 | 0.0 | 0.0 | 0.0 | 0.0 | 100.0 |
| TAH 2017-SFR2 | | 43.0 | 22.8 | 17.5 | 7.0 | 4.4 | 1.8 | 0.9 | 0.0 | 1.8 | 0.0 | 0.0 | 0.9 | 100.0 |
| TAH 2018-SFR1 | | 37.6 | 31.2 | 21.1 | 1.8 | 2.8 | 3.7 | 0.0 | 1.8 | 0.0 | | | | 100.0 |
| Overall SFR | | 30.9 | 24.0 | 17.1 | 9.8 | 7.5 | 4.1 | 2.5 | 1.4 | 0.8 | 0.4 | 0.3 | 1.4 | 100.0 |

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## Table 7 – Delinquency Definition

| Issuer | Definition |
|---|---|
| American Homes 4 Rent | Past due one calendar month or more (not dependent on day count) and owing $200 or more |
| Invitation Homes/Colony Starwood Homes/Starwood | Past due 30 days or more (not dependent on calendar month) and owing 25% of one month's rent or more |
| Waypoint Homes | |
| Home Partners of America | Past due 30 days or more (not dependent on calendar month) and owing $500 or more |
| Progress Residential | Past due 30 days or more (not dependent on calendar month) and owing $200 or more[1] |
| Tricon American Homes | Past due 30 days or more (not dependent on calendar month) and owing $500 or more[2] |

[1] Includes Section 8 rent, pet fees, and MTM fees, but excludes late fees and damage fees.
[2] Based on total receivables.

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## Table 8a – Month-End Delinquency (by Count)

| | Year 2018 | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total Count |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 20 | 22 | 8 | 7 | 7 | 12 | 13 | 11 | 16 | 16 | 21 | 22 | 4,546 |
| AH4R 2014-SFR3 | | 19 | 20 | 7 | 12 | 9 | 5 | 14 | 14 | 12 | 13 | 7 | 15 | 4,588 |
| AH4R 2015-SFR1 | | 22 | 29 | 13 | 15 | 8 | 12 | 18 | 11 | 17 | 14 | 17 | 26 | 4,697 |
| AH4R 2015-SFR2 | | 21 | 18 | 6 | 7 | 10 | 7 | 11 | 10 | 9 | 11 | 13 | 12 | 4,178 |
| CSH 2016-2 | | 37 | 36 | 24 | 13 | 36 | 32 | 36 | 30 | 35 | 34 | 30 | 44 | 3,902 |
| HPA 2016-2 | | 9 | 10 | 9 | 6 | 11 | 12 | 14 | 16 | 22 | 22 | 16 | 18 | 1,285 |
| HPA 2017-1 | | 10 | 10 | 5 | 8 | 7 | 9 | 19 | 23 | 22 | 22 | 21 | 20 | 1,330 |
| HPA 2018-1 | | | | | | | | 24 | 23 | 25 | 28 | 17 | 24 | 1,758 |
| IH 2017-SFR2 | | 33 | 30 | 19 | 15 | 27 | 33 | 24 | 30 | 35 | 30 | 40 | 65 | 4,369 |
| IH 2018-SFR1 | | | | 15 | 29 | 30 | 38 | 21 | 16 | 20 | 20 | 41 | 65 | 4,277 |
| IH 2018-SFR2 | | | | | | | 43 | 54 | 49 | 50 | 53 | 48 | 92 | 5,474 |
| IH 2018-SFR3 | | | | | | | | | | | 67 | 87 | 134 | 6,640 |
| IH 2018-SFR4 | | | | | | | | | | | | | 65 | 5,388 |
| PRD 2015-SFR2 | | 28 | 21 | 18 | 12 | 24 | 18 | 25 | 10 | 21 | 20 | 24 | 22 | 3,287 |
| PRD 2015-SFR3 | | 29 | 25 | 20 | 17 | 19 | 20 | 23 | 16 | 21 | 25 | 25 | 19 | 3,149 |
| PRD 2016-SFR2 | | 41 | 0 | 26 | 18 | 17 | 22 | 29 | 16 | 25 | 23 | 26 | 20 | 3,742 |
| PRD 2017-SFR1 | | 17 | 22 | 16 | 17 | 14 | 12 | 25 | 12 | 12 | 17 | 22 | 18 | 2,708 |
| PRD 2018-SFR1 | | | | | 15 | 16 | 39 | 16 | 6 | 9 | 9 | 7 | 4 | 2,113 |
| PRD 2018-SFR2 | | | | | | | | | | 1 | 17 | 15 | 7 | 2,116 |
| SWH 2017-1 | | 45 | 45 | 31 | 19 | 45 | 45 | 27 | 29 | 36 | 34 | 29 | 87 | 4,396 |
| TAH 2016-SFR1 | | 18 | 23 | 10 | 10 | 21 | 9 | 14 | 8 | 15 | 6 | 7 | 1 | 3,432 |
| TAH 2017-SFR1 | | 10 | 12 | 2 | 3 | 26 | 0 | 10 | 7 | 11 | 8 | 9 | 0 | 3,480 |
| TAH 2017-SFR2 | | 7 | 9 | 4 | 6 | 13 | 4 | 3 | 2 | 4 | 2 | 5 | 2 | 2,620 |
| TAH 2018-SFR1 | | | | | | 0 | 2 | 4 | 2 | 6 | 1 | 7 | 0 | 2,509 |
| Overall SFR | | 366 | 332 | 233 | 229 | 340 | 374 | 424 | 341 | 424 | 492 | 534 | 782 | 85,984 |

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## Table 8b – Month-End Delinquency (by Percentage)

| | | Year 2018 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| AH4R 2014-SFR2 | | 0.4 | 0.5 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 | 0.2 | 0.4 | 0.4 | 0.5 | 0.5 |
| AH4R 2014-SFR3 | | 0.4 | 0.4 | 0.2 | 0.3 | 0.2 | 0.1 | 0.3 | 0.3 | 0.3 | 0.3 | 0.2 | 0.3 |
| AH4R 2015-SFR1 | | 0.5 | 0.6 | 0.3 | 0.3 | 0.2 | 0.3 | 0.4 | 0.2 | 0.4 | 0.3 | 0.4 | 0.6 |
| AH4R 2015-SFR2 | | 0.5 | 0.4 | 0.1 | 0.2 | 0.2 | 0.2 | 0.3 | 0.2 | 0.2 | 0.3 | 0.3 | 0.3 |
| CSH 2016-2 | | 0.9 | 0.9 | 0.6 | 0.3 | 0.9 | 0.8 | 0.9 | 0.8 | 0.9 | 0.9 | 0.8 | 1.1 |
| HPA 2016-2 | | 0.7 | 0.8 | 0.7 | 0.5 | 0.8 | 0.9 | 1.1 | 1.2 | 1.7 | 1.7 | 1.2 | 1.4 |
| HPA 2017-1 | | 0.7 | 0.7 | 0.4 | 0.6 | 0.5 | 0.7 | 1.4 | 1.7 | 1.6 | 1.6 | 1.6 | 1.5 |
| HPA 2018-1 | | | | | | | | 1.3 | 1.3 | 1.4 | 1.6 | 1.0 | 1.4 |
| IH 2017-SFR2 | | 0.7 | 0.7 | 0.4 | 0.3 | 0.6 | 0.7 | 0.5 | 0.7 | 0.8 | 0.7 | 0.9 | 1.5 |
| IH 2018-SFR1 | | | | 0.3 | 0.7 | 0.7 | 0.9 | 0.5 | 0.4 | 0.5 | 0.5 | 1.0 | 1.5 |
| IH 2018-SFR2 | | | | | | | 0.8 | 1.0 | 0.9 | 0.9 | 1.0 | 0.9 | 1.7 |
| IH 2018-SFR3 | | | | | | | | | | | 1.0 | 1.3 | 2.0 |
| IH 2018-SFR4 | | | | | | | | | | | | | 1.2 |
| PRD 2015-SFR2 | | 0.9 | 0.6 | 0.5 | 0.4 | 0.7 | 0.5 | 0.8 | 0.3 | 0.6 | 0.6 | 0.7 | 0.7 |
| PRD 2015-SFR3 | | 0.9 | 0.8 | 0.6 | 0.5 | 0.6 | 0.6 | 0.7 | 0.5 | 0.7 | 0.8 | 0.8 | 0.6 |
| PRD 2016-SFR2 | | 1.1 | 0.0 | 0.7 | 0.5 | 0.5 | 0.6 | 0.8 | 0.4 | 0.7 | 0.6 | 0.7 | 0.5 |
| PRD 2017-SFR1 | | 0.6 | 0.8 | 0.6 | 0.6 | 0.5 | 0.4 | 0.9 | 0.4 | 0.4 | 0.6 | 0.8 | 0.7 |
| PRD 2018-SFR1 | | | | | 0.7 | 0.8 | 1.8 | 0.8 | 0.3 | 0.4 | 0.4 | 0.3 | 0.2 |
| PRD 2018-SFR2 | | | | | | | | | | 0.0 | 0.8 | 0.7 | 0.3 |
| SWH 2017-1 | | 1.0 | 1.0 | 0.7 | 0.4 | 1.0 | 1.0 | 0.6 | 0.7 | 0.8 | 0.8 | 0.7 | 2.0 |
| TAH 2016-SFR1 | | 0.5 | 0.7 | 0.3 | 0.3 | 0.6 | 0.3 | 0.4 | 0.2 | 0.4 | 0.2 | 0.2 | 0.0 |
| TAH 2017-SFR1 | | 0.3 | 0.3 | 0.1 | 0.1 | 0.7 | 0.0 | 0.3 | 0.2 | 0.3 | 0.2 | 0.3 | 0.0 |
| TAH 2017-SFR2 | | 0.3 | 0.3 | 0.2 | 0.2 | 0.5 | 0.2 | 0.1 | 0.1 | 0.2 | 0.1 | 0.2 | 0.1 |
| TAH 2018-SFR1 | | | | | | | 0.0 | 0.1 | 0.2 | 0.1 | 0.2 | 0.0 | 0.3 | 0.0 |
| Overall SFR | | 0.7 | 0.6 | 0.4 | 0.4 | 0.5 | 0.5 | 0.6 | 0.5 | 0.6 | 0.6 | 0.7 | 0.9 |

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## Table 9 – Monthly Retention Rate of Expiring Leases (by Percentage)

| | | Year 2018 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| AH4R 2014-SFR2 | | 77.4 | 78.9 | 80.4 | 79.3 | 76.8 | 77.1 | 74.9 | 74.0 | 77.7 | 74.9 | 79.0 | TBD |
| AH4R 2014-SFR3 | | 76.7 | 81.9 | 74.3 | 80.0 | 73.1 | 71.7 | 77.2 | 79.1 | 75.4 | 72.1 | 71.7 | TBD |
| AH4R 2015-SFR1 | | 75.3 | 74.9 | 77.7 | 72.5 | 72.3 | 72.9 | 71.9 | 77.5 | 78.9 | 71.0 | 81.3 | TBD |
| AH4R 2015-SFR2 | | 76.1 | 80.3 | 75.3 | 75.2 | 72.1 | 71.8 | 74.2 | 74.9 | 68.5 | 79.4 | 76.3 | TBD |
| CSH 2016-2 | | 78.9 | 80.9 | 80.7 | 79.7 | 73.2 | 76.3 | 78.8 | 73.8 | 74.2 | 77.7 | 76.5 | TBD |
| HPA 2016-2 | | 78.6 | 75.0 | 77.1 | 77.4 | 75.7 | 79.0 | 70.7 | 77.6 | 77.8 | 66.7 | 75.0 | TBD |
| HPA 2017-1 | | 87.9 | 79.7 | 80.9 | 75.4 | 78.1 | 52.9 | 73.0 | 73.9 | 89.8 | 84.7 | 79.1 | TBD |
| HPA 2018-1 | | | | | | | | 72.5 | 76.0 | 75.0 | 82.0 | 79.5 | TBD |
| IH 2017-SFR2 | | 78.1 | 80.6 | 83.2 | 81.0 | 79.7 | 77.7 | 79.4 | 79.0 | 81.7 | 76.5 | 81.7 | TBD |
| IH 2018-SFR1 | | | | 84.6 | 78.9 | 80.2 | 76.6 | 78.9 | 74.6 | 82.1 | 84.6 | 78.9 | TBD |
| IH 2018-SFR2 | | | | | | | 77.3 | 81.5 | 81.7 | 79.4 | 80.1 | 77.5 | TBD |
| IH 2018-SFR3 | | | | | | | | | | | 78.6 | 81.5 | TBD |
| IH 2018-SFR4 | | | | | | | | | | | | | TBD |
| PRD 2015-SFR2 | | 79.9 | 76.5 | 81.9 | 82.1 | 78.1 | 75.0 | 79.5 | 70.4 | 77.0 | 76.5 | 74.7 | TBD |
| PRD 2015-SFR3 | | 72.8 | 75.8 | 75.9 | 80.2 | 79.8 | 77.0 | 77.4 | 77.5 | 75.4 | 76.7 | 71.4 | TBD |
| PRD 2016-SFR2 | | 87.3 | 81.4 | 82.4 | 78.8 | 79.7 | 76.3 | 78.3 | 77.8 | 81.4 | 80.0 | 72.5 | TBD |
| PRD 2017-SFR1 | | 82.1 | 81.2 | 91.3 | 83.1 | 72.1 | 75.2 | 79.2 | 81.9 | 74.9 | 74.8 | 78.4 | TBD |
| PRD 2018-SFR1 | | | | | 85.2 | 75.0 | 80.4 | 81.5 | 76.9 | 80.7 | 78.5 | 74.4 | TBD |
| PRD 2018-SFR2 | | | | | | | | | | 83.3 | 100.0 | 50.0 | TBD |
| SWH 2017-1 | | 81.3 | 75.8 | 78.5 | 78.5 | 85.7 | 72.4 | 79.5 | 81.4 | 79.1 | 80.2 | 76.4 | TBD |
| TAH 2016-SFR1 | | 81.5 | 83.6 | 81.2 | 85.5 | 81.3 | 78.1 | 78.3 | 82.0 | 85.1 | 83.7 | 78.5 | TBD |
| TAH 2017-SFR1 | | 79.3 | 82.5 | 79.7 | 84.0 | 78.0 | 85.8 | 74.5 | 82.8 | 82.3 | 82.8 | 82.1 | TBD |
| TAH 2017-SFR2 | | 76.6 | 81.4 | 80.7 | 78.2 | 78.6 | 81.5 | 82.6 | 84.9 | 80.7 | 85.9 | 81.1 | TBD |
| TAH 2018-SFR1 | | | | | | 77.5 | 83.9 | 82.7 | 87.3 | 78.0 | 82.6 | 83.9 | TBD |
| Overall SFR | | 78.8 | 79.3 | 79.9 | 79.3 | 77.3 | 76.2 | 77.3 | 78.2 | 78.8 | 78.8 | 77.7 | TBD |

TBD – To Be Determined

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## Table 10 – Monthly Retention Rate of MTM Leases (by Percentage)

| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 89.7 | 87.3 | 86.9 | 87.5 | 85.4 | 82.0 | 86.3 | 84.4 | 82.6 | 85.8 | 85.6 | TBD |
| AH4R 2014-SFR3 | | 90.0 | 85.8 | 83.6 | 86.4 | 76.0 | 82.4 | 82.8 | 85.3 | 82.5 | 82.7 | 88.1 | TBD |
| AH4R 2015-SFR1 | | 86.5 | 82.3 | 88.6 | 86.1 | 78.7 | 84.1 | 80.3 | 79.4 | 80.1 | 85.6 | 80.9 | TBD |
| AH4R 2015-SFR2 | | 86.4 | 85.5 | 82.9 | 82.6 | 72.6 | 83.9 | 80.9 | 79.7 | 81.5 | 81.7 | 78.9 | TBD |
| CSH 2016-2 | | 75.0 | 75.8 | 78.1 | 77.8 | 83.9 | 75.6 | 72.3 | 75.4 | 80.8 | 86.5 | 85.2 | TBD |
| HPA 2016-2 | | | | | | | | | | | | | TBD |
| HPA 2017-1 | | | | | | | | | | | | | TBD |
| HPA 2018-1 | | | | | | | | | | | | | TBD |
| IH 2017-SFR2 | | 91.0 | 78.4 | 89.1 | 82.9 | 80.6 | 84.7 | 90.0 | 88.6 | 74.7 | 88.2 | 76.8 | TBD |
| IH 2018-SFR1 | | | | 77.2 | 87.5 | 77.6 | 79.7 | 83.3 | 90.2 | 86.2 | 86.4 | 83.6 | TBD |
| IH 2018-SFR2 | | | | | | 78.8 | 88.2 | 91.4 | 90.7 | 84.3 | 94.0 | | TBD |
| IH 2018-SFR3 | | | | | | | | | | 86.8 | 87.3 | | TBD |
| IH 2018-SFR4 | | | | | | | | | | | | | TBD |
| PRD 2015-SFR2 | | 80.6 | 89.2 | 88.4 | 64.0 | 82.5 | 79.5 | 85.3 | 79.1 | 76.5 | 85.7 | 63.6 | TBD |
| PRD 2015-SFR3 | | 83.3 | 80.6 | 84.4 | 70.0 | 72.4 | 69.7 | 85.7 | 71.8 | 70.5 | 80.6 | 67.6 | TBD |
| PRD 2016-SFR2 | | 100.0 | 65.8 | 91.1 | 96.0 | 72.2 | 73.6 | 76.6 | 72.7 | 75.5 | 77.8 | 70.0 | TBD |
| PRD 2017-SFR1 | | 82.1 | 91.2 | 100.0 | 68.1 | 61.3 | 87.5 | 83.3 | 75.7 | 88.6 | 72.7 | 92.1 | TBD |
| PRD 2018-SFR1 | | | | | 75.0 | 60.0 | 83.3 | 66.7 | 62.5 | 56.3 | 76.0 | 66.7 | TBD |
| PRD 2018-SFR2 | | | | | | | | | | 100.0 | 100.0 | 88.9 | TBD |
| SWH 2017-1 | | 75.0 | 71.4 | 82.4 | 78.3 | 77.0 | 78.3 | 82.3 | 79.2 | 87.5 | 84.1 | 78.3 | TBD |
| TAH 2016-SFR1 | | 95.5 | 94.4 | 95.3 | 95.3 | 89.4 | 94.7 | 90.1 | 96.4 | 91.8 | 95.7 | 93.2 | TBD |
| TAH 2017-SFR1 | | 90.2 | 87.6 | 85.7 | 84.3 | 86.8 | 84.5 | 91.5 | 95.7 | 91.6 | 93.1 | 84.8 | TBD |
| TAH 2017-SFR2 | | 98.2 | 93.1 | 88.1 | 92.7 | 89.5 | 87.1 | 85.1 | 92.5 | 88.0 | 96.0 | 86.4 | TBD |
| TAH 2018-SFR1 | | | | | | 92.1 | 83.6 | 94.1 | 98.8 | 89.2 | 91.3 | 97.4 | TBD |
| Overall SFR | | 90.7 | 86.2 | 87.4 | 85.9 | 81.8 | 83.7 | 84.8 | 85.8 | 84.2 | 87.0 | 84.8 | TBD |

TBD – To Be Determined

## Table 11a – MTM Tenants (by Count)

| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total Count |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 170 | 190 | 206 | 208 | 232 | 236 | 219 | 202 | 185 | 172 | 157 | 164 | 4,546 |
| AH4R 2014-SFR3 | | 155 | 188 | 220 | 199 | 233 | 226 | 218 | 208 | 203 | 185 | 168 | 155 | 4,588 |
| AH4R 2015-SFR1 | | 184 | 204 | 220 | 219 | 223 | 205 | 201 | 200 | 176 | 167 | 160 | 148 | 4,697 |
| AH4R 2015-SFR2 | | 143 | 150 | 183 | 200 | 235 | 221 | 215 | 178 | 163 | 151 | 141 | 141 | 4,178 |
| CSH 2016-2 | | 28 | 33 | 32 | 27 | 31 | 45 | 65 | 57 | 52 | 52 | 54 | 46 | 3,902 |
| HPA 2016-2 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,285 |
| HPA 2017-1 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1,330 |
| HPA 2018-1 | | | | | | | | 0 | 0 | 0 | 0 | 0 | 0 | 1,758 |
| IH 2017-SFR2 | | 92 | 95 | 115 | 101 | 111 | 105 | 70 | 88 | 84 | 68 | 69 | 63 | 4,369 |
| IH 2018-SFR1 | | | | 92 | 104 | 116 | 125 | 66 | 61 | 65 | 66 | 67 | 67 | 4,277 |
| IH 2018-SFR2 | | | | | | | 104 | 102 | 82 | 76 | 89 | 84 | 96 | 5,474 |
| IH 2018-SFR3 | | | | | | | | | | | 115 | 118 | 116 | 6,640 |
| IH 2018-SFR4 | | | | | | | | | | | | | 84 | 5,388 |
| PRD 2015-SFR2 | | 55 | 58 | 65 | 72 | 61 | 59 | 52 | 60 | 53 | 55 | 60 | 42 | 3,287 |
| PRD 2015-SFR3 | | 49 | 50 | 41 | 46 | 63 | 54 | 58 | 79 | 61 | 53 | 48 | 40 | 3,149 |
| PRD 2016-SFR2 | | 71 | 201 | 59 | 63 | 78 | 81 | 76 | 95 | 80 | 73 | 73 | 53 | 3,742 |
| PRD 2017-SFR1 | | 46 | 47 | 47 | 108 | 49 | 47 | 50 | 54 | 58 | 68 | 57 | 54 | 2,708 |
| PRD 2018-SFR1 | | | | | 6 | 14 | 18 | 27 | 34 | 40 | 59 | 74 | 38 | 2,113 |
| PRD 2018-SFR2 | | | | | | | | | | 11 | 9 | 9 | 23 | 2,116 |
| SWH 2017-1 | | 24 | 28 | 34 | 60 | 87 | 83 | 79 | 72 | 72 | 69 | 60 | 54 | 4,396 |
| TAH 2016-SFR1 | | 257 | 252 | 261 | 215 | 278 | 253 | 202 | 210 | 232 | 233 | 232 | 205 | 3,432 |
| TAH 2017-SFR1 | | 195 | 197 | 184 | 121 | 127 | 114 | 103 | 98 | 107 | 118 | 111 | 100 | 3,480 |
| TAH 2017-SFR2 | | 229 | 195 | 194 | 176 | 174 | 152 | 114 | 111 | 116 | 108 | 112 | 101 | 2,620 |
| TAH 2018-SFR1 | | | | | | 118 | 128 | 85 | 88 | 95 | 89 | 88 | 90 | 2,509 |
| Overall SFR | | 1,698 | 1,888 | 1,953 | 1,925 | 2,230 | 2,256 | 2,002 | 1,977 | 1,929 | 1,999 | 1,942 | 1,880 | 85,984 |

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## Table 11b – MTM Tenants (by Percentage)

| | | Year 2018 Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| AH4R 2014-SFR2 | | 3.8 | 4.2 | 4.6 | 4.6 | 5.2 | 5.3 | 4.9 | 4.5 | 4.1 | 3.8 | 3.5 | 3.6 |
| AH4R 2014-SFR3 | | 3.4 | 4.2 | 4.9 | 4.4 | 5.2 | 5.0 | 4.8 | 4.6 | 4.5 | 4.1 | 3.7 | 3.4 |
| AH4R 2015-SFR1 | | 4.0 | 4.4 | 4.7 | 4.7 | 4.8 | 4.4 | 4.3 | 4.3 | 3.8 | 3.6 | 3.4 | 3.2 |
| AH4R 2015-SFR2 | | 3.5 | 3.6 | 4.4 | 4.9 | 5.7 | 5.4 | 5.2 | 4.3 | 4.0 | 3.7 | 3.4 | 3.4 |
| CSH 2016-2 | | 0.7 | 0.8 | 0.8 | 0.7 | 0.8 | 1.1 | 1.6 | 1.4 | 1.3 | 1.3 | 1.4 | 1.2 |
| HPA 2016-2 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| HPA 2017-1 | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| HPA 2018-1 | | | | | | | | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| IH 2017-SFR2 | | 2.1 | 2.2 | 2.6 | 2.3 | 2.5 | 2.4 | 1.6 | 2.0 | 1.9 | 1.6 | 1.6 | 1.4 |
| IH 2018-SFR1 | | | | 2.1 | 2.4 | 2.7 | 2.9 | 1.5 | 1.4 | 1.5 | 1.5 | 1.6 | 1.6 |
| IH 2018-SFR2 | | | | | | | 1.9 | 1.8 | 1.5 | 1.4 | 1.6 | 1.5 | 1.8 |
| IH 2018-SFR3 | | | | | | | | | | | 1.7 | 1.8 | 1.7 |
| IH 2018-SFR4 | | | | | | | | | | | | | 1.6 |
| PRD 2015-SFR2 | | 1.7 | 1.8 | 2.0 | 2.2 | 1.9 | 1.8 | 1.6 | 1.8 | 1.6 | 1.7 | 1.8 | 1.3 |
| PRD 2015-SFR3 | | 1.6 | 1.6 | 1.3 | 1.5 | 2.0 | 1.7 | 1.8 | 2.5 | 1.9 | 1.7 | 1.5 | 1.3 |
| PRD 2016-SFR2 | | 1.9 | 5.4 | 1.6 | 1.7 | 2.1 | 2.2 | 2.0 | 2.5 | 2.1 | 2.0 | 2.0 | 1.4 |
| PRD 2017-SFR1 | | 1.7 | 1.7 | 1.7 | 4.0 | 1.8 | 1.7 | 1.8 | 2.0 | 2.1 | 2.5 | 2.1 | 2.0 |
| PRD 2018-SFR1 | | | | | 0.3 | 0.7 | 0.9 | 1.3 | 1.6 | 1.9 | 2.8 | 3.5 | 1.8 |
| PRD 2018-SFR2 | | | | | | | | | | 0.5 | 0.4 | 0.4 | 1.1 |
| SWH 2017-1 | | 0.5 | 0.6 | 0.8 | 1.4 | 2.0 | 1.9 | 1.8 | 1.6 | 1.6 | 1.6 | 1.4 | 1.2 |
| TAH 2016-SFR1 | | 7.5 | 7.3 | 7.6 | 6.3 | 8.1 | 7.4 | 5.9 | 6.1 | 6.8 | 6.8 | 6.8 | 6.0 |
| TAH 2017-SFR1 | | 5.6 | 5.7 | 5.3 | 3.5 | 3.6 | 3.3 | 3.0 | 2.8 | 3.1 | 3.4 | 3.2 | 2.9 |
| TAH 2017-SFR2 | | 8.7 | 7.4 | 7.4 | 6.7 | 6.6 | 5.8 | 4.3 | 4.2 | 4.4 | 4.1 | 4.3 | 3.9 |
| TAH 2018-SFR1 | | | | | | 4.7 | 5.1 | 3.4 | 3.5 | 3.8 | 3.5 | 3.5 | 3.6 |
| Overall SFR | | 3.0 | 3.4 | 3.3 | 3.1 | 3.5 | 3.2 | 2.8 | 2.8 | 2.6 | 2.5 | 2.4 | 2.2 |

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## Table 12 – Monthly Turnover Rate (by Percentage)

| | | Year 2018 | | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| AH4R 2014-SFR2 | | 2.8 | 2.4 | 2.9 | 2.7 | 3.9 | 3.5 | 4.1 | 3.5 | 2.8 | 2.8 | 2.0 | TBD |
| AH4R 2014-SFR3 | | 2.6 | 2.4 | 3.3 | 3.0 | 3.6 | 4.4 | 4.0 | 3.6 | 3.0 | 2.9 | 2.6 | TBD |
| AH4R 2015-SFR1 | | 3.4 | 3.2 | 3.2 | 2.6 | 3.0 | 4.1 | 4.5 | 3.8 | 3.0 | 3.2 | 2.3 | TBD |
| AH4R 2015-SFR2 | | 2.5 | 2.6 | 4.0 | 3.6 | 4.4 | 4.8 | 4.6 | 3.4 | 3.0 | 2.9 | 2.3 | TBD |
| CSH 2016-2 | | 2.6 | 2.5 | 3.2 | 2.3 | 4.1 | 4.0 | 3.3 | 3.9 | 3.3 | 3.5 | 2.6 | TBD |
| HPA 2016-2 | | 1.7 | 1.5 | 3.5 | 3.8 | 5.7 | 5.8 | 5.9 | 2.1 | 1.7 | 1.9 | 2.1 | TBD |
| HPA 2017-1 | | 1.6 | 1.9 | 2.4 | 2.5 | 2.4 | 1.5 | 3.1 | 4.5 | 2.8 | 2.3 | 3.1 | TBD |
| HPA 2018-1 | | | | | | | | 6.9 | 4.8 | 4.1 | 2.4 | 2.4 | TBD |
| IH 2017-SFR2 | | 2.4 | 2.2 | 2.4 | 2.4 | 2.8 | 3.4 | 3.6 | 3.2 | 2.2 | 2.8 | 1.7 | TBD |
| IH 2018-SFR1 | | | | 1.8 | 2.8 | 2.9 | 3.5 | 3.2 | 3.6 | 2.7 | 2.6 | 2.5 | TBD |
| IH 2018-SFR2 | | | | | | | 6.3 | 3.2 | 2.5 | 2.9 | 2.5 | 2.6 | TBD |
| IH 2018-SFR3 | | | | | | | | | | | 2.4 | 2.6 | TBD |
| IH 2018-SFR4 | | | | | | | | | | | | | TBD |
| PRD 2015-SFR2 | | 2.4 | 2.5 | 3.5 | 3.1 | 5.3 | 3.1 | 3.3 | 2.1 | 3.3 | 3.6 | 3.0 | TBD |
| PRD 2015-SFR3 | | 2.0 | 2.0 | 2.2 | 2.3 | 3.5 | 4.8 | 4.4 | 3.6 | 3.6 | 3.7 | 2.6 | TBD |
| PRD 2016-SFR2 | | 2.0 | 2.2 | 2.5 | 2.2 | 3.3 | 4.0 | 4.2 | 4.3 | 3.5 | 3.3 | 2.8 | TBD |
| PRD 2017-SFR1 | | 2.4 | 1.8 | 2.1 | 1.6 | 3.4 | 3.4 | 3.1 | 2.5 | 3.4 | 4.9 | 3.9 | TBD |
| PRD 2018-SFR1 | | | | | 3.6 | 1.6 | 2.4 | 3.7 | 4.2 | 4.2 | 5.9 | 6.5 | TBD |
| PRD 2018-SFR2 | | | | | | | | | | 2.9 | 2.0 | 1.9 | TBD |
| SWH 2017-1 | | 2.4 | 3.0 | 3.7 | 2.7 | 3.6 | 4.6 | 3.8 | 2.7 | 3.1 | 2.8 | 2.0 | TBD |
| TAH 2016-SFR1 | | 2.1 | 1.7 | 2.4 | 2.3 | 2.8 | 3.4 | 4.0 | 3.5 | 1.0 | 2.7 | 2.0 | TBD |
| TAH 2017-SFR1 | | 3.1 | 2.4 | 2.7 | 2.3 | 2.3 | 2.5 | 2.0 | 3.7 | 1.0 | 2.3 | 2.2 | TBD |
| TAH 2017-SFR2 | | 6.3 | 1.3 | 2.7 | 2.7 | 2.2 | 2.9 | 2.3 | 2.7 | 1.1 | 3.4 | 2.2 | TBD |
| TAH 2018-SFR1 | | | | | | 6.5 | 1.8 | 3.7 | 2.6 | 0.8 | 3.2 | 1.9 | TBD |
| Overall SFR | | 2.7 | 2.3 | 2.9 | 2.7 | 3.5 | 3.9 | 3.8 | 3.3 | 2.7 | 3.0 | 2.5 | TBD |

TBD – To Be Determined

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## Appendix I – Vacancy Versus Lease Expiration

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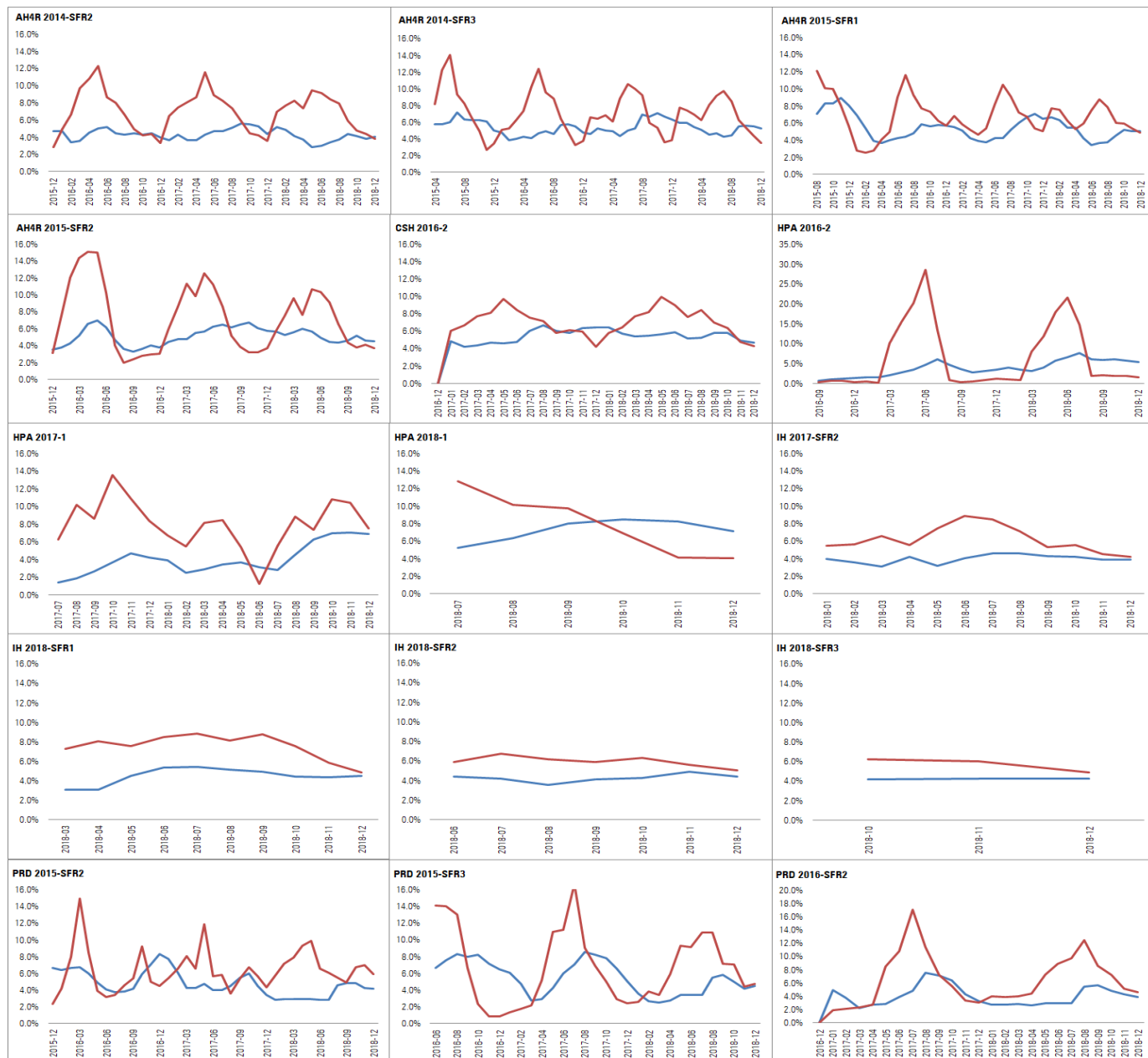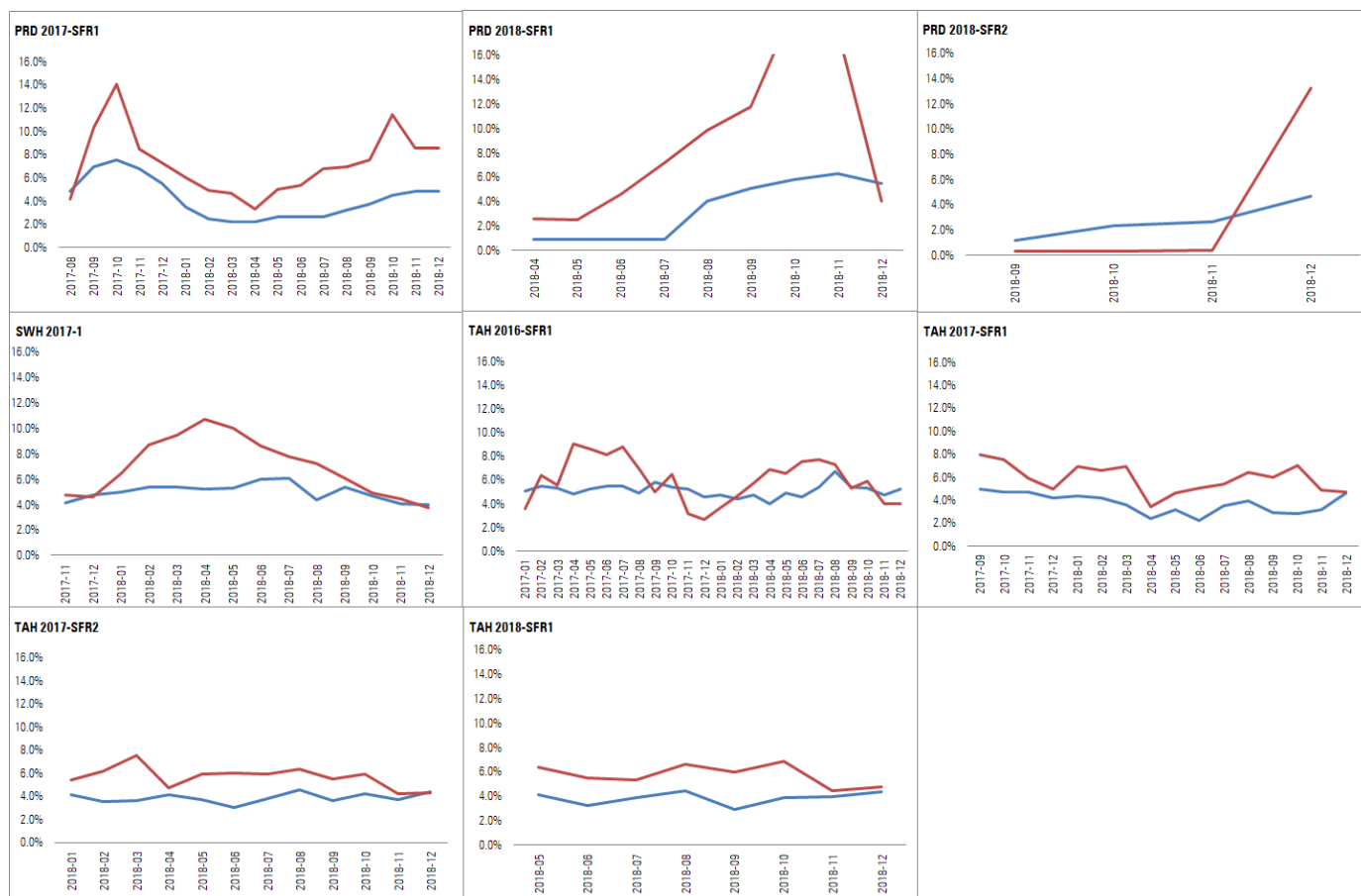
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## Appendix II – Description of Analysis

Morningstar tracks key metrics to gauge the performance of single-borrower, single-family rental transactions that Morningstar rates. There are several ways to view these metrics. For example, the vacancy rate might be calculated based on property count, by cash flow, or by days of occupancy. To account for different reporting across issuers, Morningstar seeks commonality across the single-borrower issuers' monthly reporting to derive its calculations.

Multiborrower deals are similar to single-borrower transactions in that the underlying collateral is generally single-family rental properties. They differ, though, in that single-borrower deals are backed by one loan, while multiborrower deals have many loans. As such, the monthly reporting for multiborrower deals is different from the data reported in the single-borrower sector. For example, delinquency reported in Tables 8a and 8b are tenants that are past due on rental payments at a property level. For multiborrower transactions, delinquency is measured by borrowers that are past due on payments at the loan level.

## Table 1 – Multiborrower Loan Performance by Percentage of Balance

To calculate the percentage of loans delinquent, in foreclosure, and/or in special servicing, Morningstar takes the respective balance divided by the current deal balance.

## Table 2 – Multiborrower Loan Performance by Loan Count

Morningstar shows the total loan count in a securitization and the number of loans 30-59 days delinquent, 60-89 days delinquent, over 90 days delinquent, in foreclosure, real estate owned, and in special servicing.

## Chart 1 – Single-Family Rental Rent Change Versus RentRange Year-Over-Year Rent Change

To calculate the rent change across single-borrower, single-family rental transactions, Morningstar isolated the leases starting in a given period and compared the contractual rent in that period with the prior occupied contractual rent. Morningstar then compared this rent change with the year-over-year change in three- and four-bedroom median rents from RentRange. Morningstar weighted the RentRange median rents by geography to match the MSA concentration of the Morningstar single-family rental database.

## Chart 2 – Rental Changes for Renewals Versus Vacant-to-Occupied Properties

Morningstar calculated the rent change using the contractual rent for the corresponding period versus the prior occupied contractual rent. To determine the lease expiration sample, Morningstar used the logic outlined in the Tables 5a, 5b, and 5c – Lease Expiration section. Morningstar then looked at the property tape to determine the renewed properties and compared that contractual rent with

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the prior contractual rent. For vacant properties subsequently occupied by new tenants, Morningstar isolated those properties that were vacant in a given month and occupied in the next month and again compared the current contractual rent with the prior contractual rent.

### Chart 3 – November Average Contractual Rent Versus Property-Level RentRange Estimate by MSA

Chart 3, which shows some of the MSAs most frequently found in single-family rental securitizations, takes a snapshot of the contractual rents in the Morningstar single-family rental database and compares these rents with their property-specific rent estimates from RentRange.

### Chart 4 – MSA-Level Blended Rent Change

Chart 4 shows the blended rent change of some of the MSAs frequently found in single-family rental securitizations. The size of each circle represents the percentage of properties by count in each MSA from Morningstar's database. MSAs in red are below the overall average rent change for the month, while those in blue are above.

### Table 3 – Blended Rent Change (by Percentage) – Top MSAs

Table 3 shows the MSA-level blended rent change for the past 12 months using the same rent change calculation used in Chart 1 and Chart 4.

### Tables 4a, 4b, and 4c – Month-End Vacancy

Table 4a displays deal-level vacancy by the month-end count of empty properties. Table 4b shows the deal-level vacancy as a percentage of the total properties in each pool. Table 4c shows the MSA-level vacancy percentage for some of the MSAs frequently found in single-family rental securitizations. The vacancy rate is heavily influenced by the number of lease expirations in each month. Generally, the more leases expiring in a given month, the higher the vacancy rate will be. Because each transaction or MSA has a distinct lease expiration schedule, the vacancy rate should not be viewed at one point in time, but rather in the context of its lease expiration cycle, as reported in Tables 5a, 5b, and 5c and as seen in the charts in Appendix I.

### Chart 5 – MSA-Level Vacancy and Lease Expiration Percentage (by Count)

Chart 5 shows the vacancy rate of some of the MSAs frequently found in single-family rental securitizations. The size of each circle represents the percentage of leases expiring in the past three months. MSAs in red are above the overall average vacancy percentage for the month, while those in blue are below. Typically, the more leases expiring, the higher the vacancy rate.

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**Tables 5a, 5b, and 5c – Lease Expiration**

Because lease expiration profiles change over time as tenants renew or new tenants occupy vacant properties, Morningstar seeks to rely on more recently published reporting of lease expirations, rather than solely using the lease expiration schedule from the cutoff date. To determine December lease expirations, Morningstar looks for all November lease expirations in the September property tape. Morningstar looks three months back to set a lease expiration sample that more accurately captures tenants who renew their leases in months before their scheduled lease expiration. Certain issuers have indicated that they proactively work to renew tenants a few months before the lease expiration date. Because Morningstar is looking three months back to determine its sample, there are instances when tenants vacate properties between the time Morningstar determines its sample and the month in which the tenant must make a decision to stay in the property. Morningstar excludes those vacated properties from its lease expiration sample and its retention rate calculation in Table 9. In the current example, properties that become vacant or that have move out dates in either October or November are removed from the December lease expiration count.

**Tables 6a and 6b – Historical Months of Vacancy**

Tables 6a and 6b show the number of months of vacancy the December unoccupied properties have experienced. In other words, if a property is unoccupied as of the November property tape, these tables summarize the number of total months the property has been vacant since the transaction cutoff date. Depending on the length of performance history, the overall vacancy may be in line with the number of consecutive vacant months, but this might not always be the case for those properties that have gone through multiple leasing cycles. Table 6a shows historical months of vacancy by count, and Table 6b is as a percentage of the December vacancies.

**Table 7 – Delinquency Definition**

Morningstar's calculation of delinquency is based on the number of properties flagged as delinquent in the monthly property-level data. Each issuer uses its own criteria for classifying a tenant as delinquent. Table 7 summarizes the delinquency definition for each issuer and contains details on the length of time that must pass from a tenant's due date to be considered delinquent. The length of time is either based on a count of 30 days or is based on the calendar month. The slight distinction, for example, either results in a property with payment due on May 1 considered as delinquent after 30 days or as delinquent on June 1. None of the issuers factor a grace period into their delinquency definition, meaning their respective measures of past due begin if payment has not been received by the stated due date. In addition to timing, these conditions can also differ by the total dollar threshold an issuer uses to classify a tenant as delinquent and by the types of overdue payments that the issuer uses to count toward that threshold. For example, most issuers use only base rent to determine the dollar amount of delinquency. However, Tricon American Homes counts total receivables to determine the past due amount. Progress Residential includes certain fees above base rent but not total receivables.

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## Tables 8a and 8b – Month-End Delinquency

Table 8a shows the month-end count of delinquencies based on the definition in Table 7, and Table 8b shows delinquency as a percentage of the total number of properties in each pool. Any review of delinquency should be viewed within the context of the delinquency definitions in Table 7.

## Table 9 – Monthly Retention Rate of Expiring Leases

When evaluating an issuer's ability to keep tenants in a property, Morningstar considers a retention rate. Once again, differences in monthly reporting affect the calculation that Morningstar uses. Typically, a renewal rate would review those tenants who signed a full-term lease. Considering the different methods issuers use to designate tenants with either a renewal or an MTM status, Morningstar opted to report the retention rate instead of the renewal rate. The retention rate is defined as those properties that retained previous tenants, whether on full-term or MTM leases, divided by the total number of leases due to expire in that period, as reported in Table 5a and explained in Appendix II. If there is not enough seasoning in the deal to look three months back to determine the lease expiration sample, Morningstar relies on the cutoff tape lease expiration profile. As a result, the first three months of retention rate reported in Table 9 will use the cutoff tape to find the sample of lease expirations. After isolating the applicable lease expiration sample, Morningstar looks at the most recent property tape to determine the lease status of the properties. In this report, Morningstar uses the December property tape to determine the lease status for November expirations. Morningstar relies on the issuer's labeling of vacant, renewal, new lease, or MTM, to the extent that these notations are available in each tape.

## Table 10 – Monthly Retention Rate of MTM Leases

In Table 10, Morningstar reviews the retention rate of those properties in an MTM status. This table looks at previous tenants who went to an MTM status and either renewed or remained in the property on an MTM basis. For the MTM retention rate, Morningstar looks for MTM tenants in the previous month's property tape, and then looks to the current month for their occupancy status. For example, the November 2018 retention rates are the December statuses of November MTM tenants.

## Tables 11a and 11b – MTM Tenants

In Tables 11a and 11b, Morningstar shows the count and percentage of properties with MTM tenants. Securitizations with higher concentrations of MTM tenants typically report higher retention rates of their MTM leases. MTM tenants are usually subject to a monthly fee, which may encourage them to eventually sign full-term leases.

**Table 12 – Monthly Turnover Rate**

In evaluating how effective an issuer is at retaining tenants, Morningstar considers the monthly turnover rate. For this metric, Morningstar strives to apply a consistent calculation given the differences in issuers' reporting. Morningstar considers a property turned over if it meets one of three criteria:

- The property is vacant but was occupied in the previous month and the move-out date, if available, is on or after the first day of the current month;

- The move-out date is on or after the first day of the current month, including the last day of the current month; or

- The property was occupied in the prior month and a tenant has signed a new lease that starts on or after the second day of the current month.

## Disclaimer

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