

Single-Family Rental Research

Performance Summary Covering All Morningstar-Rated Securitizations

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Introduction

The blended rent change for single borrower, single-family rental securitizations rated by Morningstar Credit Ratings, LLC increased to 4.2% in February from 3.9% in January and was over 4.0% for the first time since July 2018. The average vacancy rate declined 20 basis points to 4.4% in February from 4.6% in January, remaining under 5.0% for the past 12 months. The average retention rate for expiring leases increased to 80.1% in January, the latest month available, crossing 80% for the first time in over a year. Among the top 20 metropolitan statistical areas, the Denver-Aurora and Houston MSAs had the highest vacancy rate at 5.9% each, followed by the Fort Lauderdale MSA at 5.3%. The Sacramento MSA experienced the highest blended rent growth for the 12th consecutive month at 10.0%, recording double-digit growth for the first time in more than a year, followed by the Phoenix MSA at 7.2%. The Chicago MSA again experienced the lowest rent growth at 0.7%, followed by Houston at 1.8%, and the Fort Lauderdale and Memphis MSAs at 2.5% each. Interestingly, while Chicago had the lowest growth in rent, it also had one of the lowest month-end vacancy rates at 3.7%. Rents for properties included in single-family rental securitizations continue to exceed, or be in line with, the RentRange rents for three- and four-bedroom properties located in the same MSAs. The February Single-Family Rental Performance Summary has 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 February. 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 increased to 6.0% in February, up from a revised 5.7% in January. PRD 2018-SFR2 continued to have the highest lease expirations at 12.2%, which was down from 16.3% in January. PRD 2018-SFR1 had the lowest percentage of lease expirations at 1.4% followed by HPA 2016-2 at 2.7%.

The average retention rate on full-term leases remained strong at 80.1% in January, the latest month for which data is available, from 79.5% in December, and reached the highest level in the past year. The overall turnover rate remained at 2.3% in January, unchanged from December. The average delinquency rate dipped 10 basis points to 0.6% in February, with PRD 2016-SFR2 transaction reporting a delinquency rate of 1.4% and HPA 2018-1 reporting a rate of 1.3%. Please note that any review of delinquency should be viewed within the context of the delinquency definitions in Table 7.

Rents for properties included in single-family rental securitizations rated by Morningstar Credit Ratings increased by 4.2% in February, compared with a 3.9% increase in January. Chart 1 shows that the rent gains for securitized properties in February trailed rent gains for three- and four-bedroom properties; the RentRange rent change for three-bedroom properties was 6.0%, the highest level since Morningstar started tracking this data in January 2015, and the RentRange rent change for four-bedroom properties was 5.2%, the second-highest increase over the same period of time. 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 January, the latest month for which data is available, the rent change for renewal properties increased 4.5%, down from a 4.6% increase in December. Rent growth for vacant-to-occupied properties increased to 2.6%. 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 4.2% 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 exhibits 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, with properties in single-family rental securitizations rated by Morningstar Credit Ratings having 2.3% month-to-month leases in February, up from 2.1% in January. TAH 2016-SFR1 had the highest percentage of MTM leases, at 5.2% of its portfolio.

Multiborrower Performance

In March, the number of loans dropped to 930 with 10 multiborrower transactions. The number of loans 30-59 days delinquent further decreased to 10 from 15 in February, while the number of loans 60-89 days delinquent decreased by two to seven, and the loans at least 90 days delinquent increased to 28 from 25. Loans in foreclosure remained at four, and loans in special servicing remained at 33.

Table 1 – Multiborrower Loan Performance by Percentage of Balance

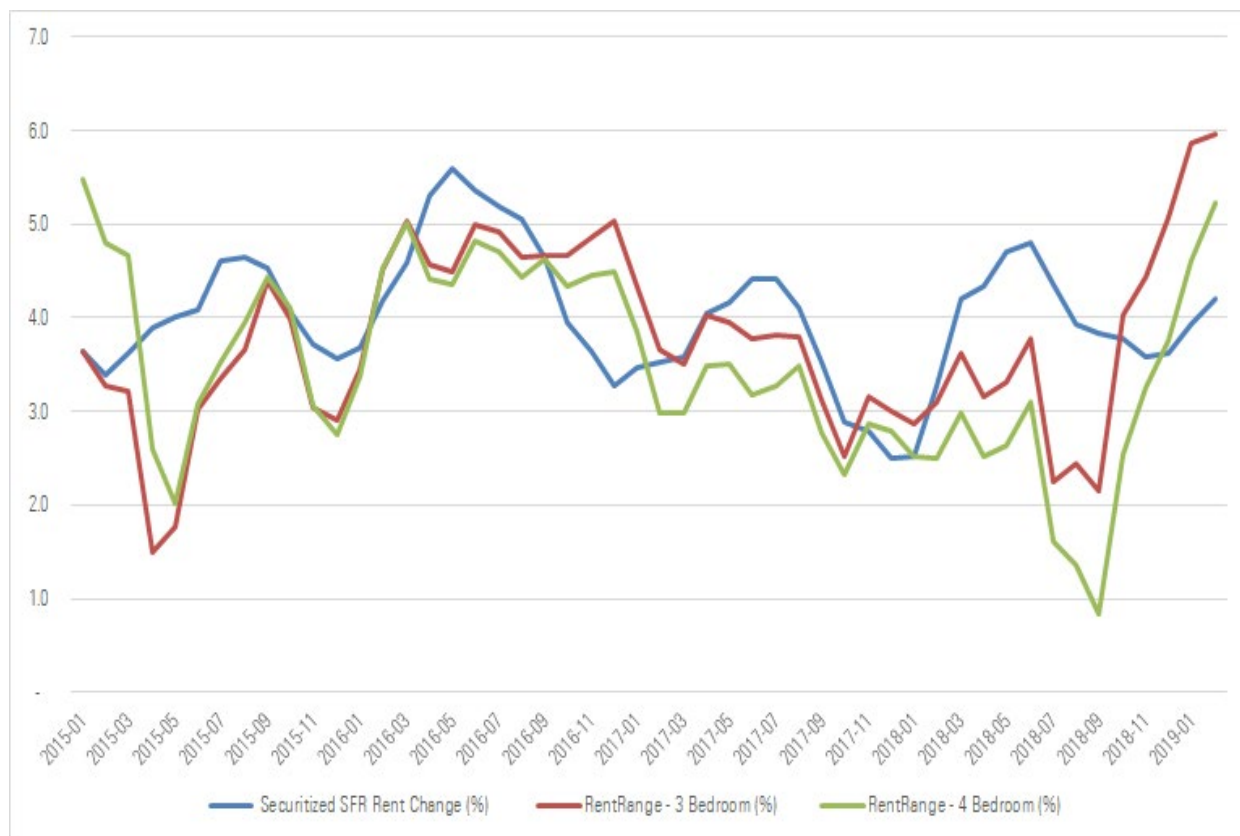
	30-59 Delinquent	60-89 Delinquent	90+ Delinquent	Foreclosure	Real Estate Owned	Special Servicing
B2R 2015-1	0.54	0.00	0.50	0.02	0.00	0.50
FKL 2015-SFR1	0.00	0.00	0.00	0.00	0.00	0.00
CAF 2015-1	0.00	0.00	2.28	0.00	0.00	8.78
B2R 2015-2	0.53	0.32	1.47	0.25	0.00	1.69
CAF 2016-1	0.00	0.00	1.69	0.00	0.00	1.71
B2R 2016-1	0.84	1.27	1.70	0.21	0.00	2.01
CAF 2016-2	0.00	0.33	4.02	2.69	0.00	4.18
CAF 2017-1	0.00	0.00	1.56	0.00	0.00	1.46
CAF 2018-1	0.00	0.00	0.92	0.00	0.31	0.93
CAF 2018-2	1.67	0.00	0.35	0.00	0.00	0.35

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	114	1	0	3	1	1	3
FKL 2015-SFR1	2	0	0	0	0	0	0
CAF 2015-1	48	0	0	2	0	0	3
B2R 2015-2	175	2	2	7	1	0	8
CAF 2016-1	65	0	0	1	0	0	1
B2R 2016-1	152	3	4	6	1	0	8
CAF 2016-2	64	0	1	3	1	0	4
CAF 2017-1	79	0	0	3	0	0	3
CAF 2018-1	116	0	0	2	0	1	2
CAF 2018-2	115	4	0	1	0	0	1
Overall	930	10	7	28	4	2	33

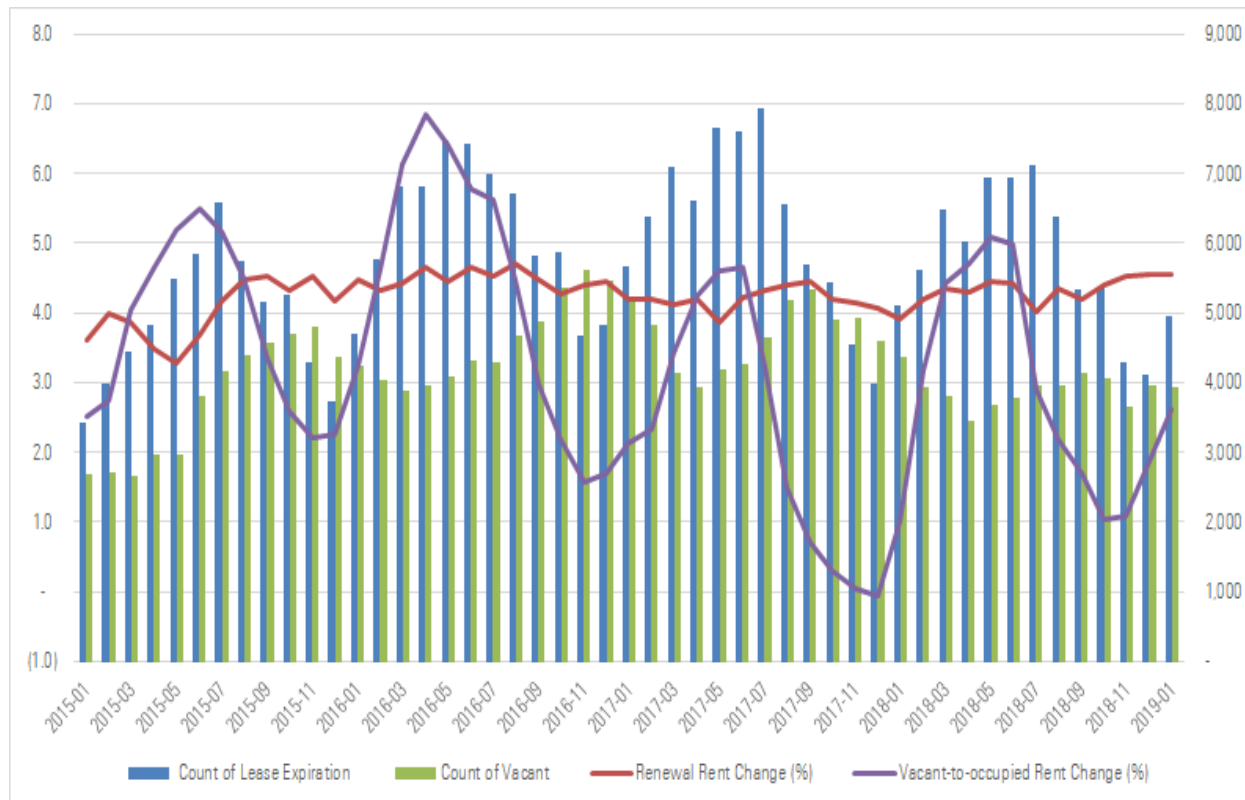
Single-Borrower Charts and Tables

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



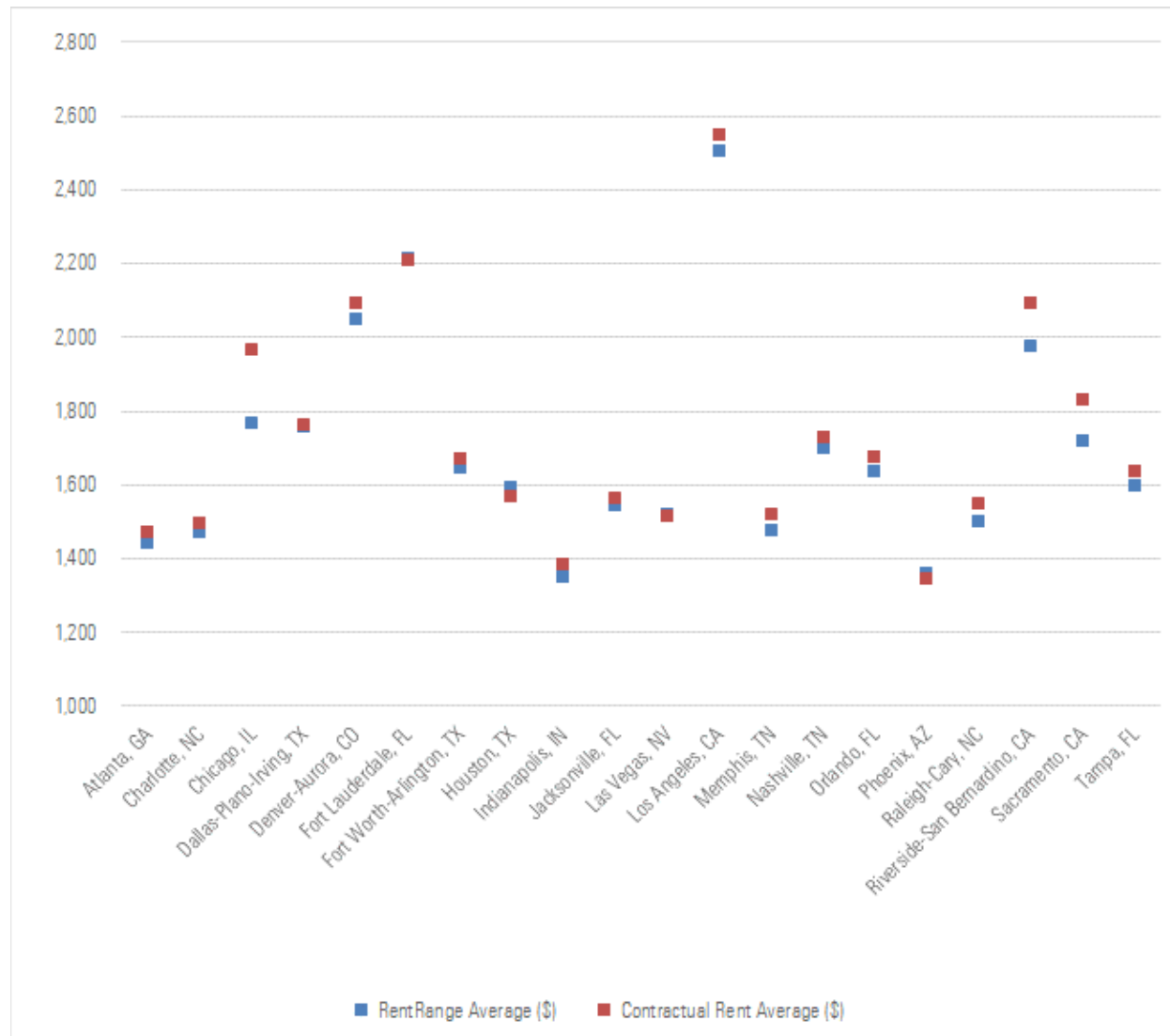
Sources: Morningstar Credit Ratings, LLC; RentRange

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



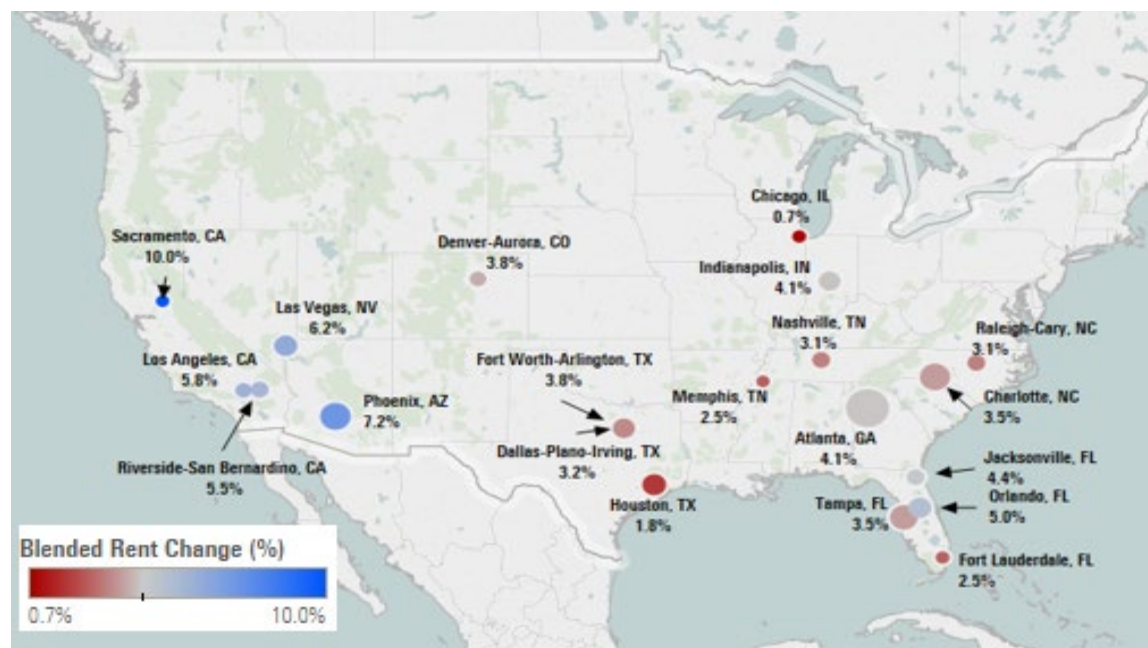
Source: Morningstar Credit Ratings, LLC

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



Sources: Morningstar Credit Ratings, LLC; RentRange

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 14.85%. 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										Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Atlanta, GA		5.1	4.8	5.3	5.1	4.4	4.8	4.1	4.4	4.5	4.6	4.1	4.1
Charlotte, NC		3.4	3.0	4.0	3.8	4.4	3.4	3.3	3.0	2.5	2.8	3.2	3.5
Chicago, IL		1.6	2.9	4.3	4.4	3.0	3.2	2.5	2.3	2.0	1.1	-1.8	0.7
Dallas-Plano-Irving, TX		3.8	4.0	4.0	4.2	4.1	3.7	4.7	3.5	1.8	2.0	2.5	3.2
Denver-Aurora, CO		5.8	5.3	4.6	5.1	2.4	2.3	2.5	2.4	2.2	2.8	3.6	3.8
Fort Lauderdale, FL		2.9	2.9	3.8	3.3	3.6	3.2	2.6	2.9	2.4	3.5	4.0	2.5
Fort Worth-Arlington, TX		4.1	4.1	4.1	5.1	5.3	4.1	3.9	2.2	2.4	2.7	3.3	3.8
Houston, TX		3.1	3.6	3.3	3.3	3.0	2.9	2.5	1.4	1.7	1.4	1.8	1.8
Indianapolis, IN		3.4	3.3	4.2	4.6	3.8	3.0	2.7	2.6	2.5	0.7	1.5	4.1
Jacksonville, FL		4.1	5.2	5.4	5.3	5.6	5.3	4.6	4.2	3.2	3.0	3.8	4.4
Las Vegas, NV		5.6	5.3	6.2	6.1	5.1	5.2	6.4	5.6	5.5	5.6	6.8	6.2
Los Angeles, CA		5.7	5.7	5.8	6.2	5.1	4.5	5.1	6.1	5.3	4.9	6.2	5.8
Memphis, TN		3.4	4.0	4.4	4.2	5.4	5.1	3.6	2.9	3.6	3.2	3.8	2.5
Nashville, TN		2.8	3.0	4.6	4.2	4.5	4.2	3.5	3.1	1.7	2.4	3.4	3.1
Orlando, FL		5.0	5.2	5.3	6.0	6.2	5.2	4.7	4.9	5.0	4.6	4.8	5.0
Phoenix, AZ		6.5	6.4	6.3	6.7	6.1	5.4	6.0	5.9	5.4	5.9	7.0	7.2
Raleigh-Cary, NC		2.4	3.0	3.9	3.2	3.2	2.9	2.6	2.3	2.4	3.4	3.6	3.1
Riverside-San Bernardino, CA		5.2	5.5	5.5	6.7	4.4	3.6	4.6	5.1	5.5	4.5	5.7	5.5
Sacramento, CA		6.9	7.4	8.0	8.0	6.9	5.8	7.4	7.3	6.0	6.2	7.7	10.0
Tampa, FL		3.6	4.2	4.3	4.4	3.8	3.5	2.7	3.0	3.1	4.0	3.3	3.5

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

		Year 2018											Year 2019		Count
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		186	166	128	135	152	168	195	185	172	184	197	184	4,546	
AH4R 2014-SFR3		243	227	200	208	189	199	247	249	252	239	230	202	4,588	
AH4R 2015-SFR1		253	256	198	159	171	173	211	240	236	236	228	221	4,697	
AH4R 2015-SFR2		229	248	234	202	182	180	190	214	191	187	173	147	4,178	
CSH 2016-2		214	217	223	232	205	207	228	227	191	184	186	226	3,888	
HPA 2016-2		41	53	75	86	98	86	76	78	74	69	73	67	1,282	
HPA 2017-1		39	46	49	42	38	61	84	93	94	92	95	88	1,326	
HPA 2018-1						94	113	141	149	145	126	106	84	1,756	
IH 2017-SFR2		136	124	141	179	204	204	189	183	171	164	161	167	4,357	
IH 2018-SFR1		131	131	193	230	233	219	210	188	187	192	196	202	4,269	
IH 2018-SFR2					248	236	198	231	233	269	241	233	217	5,460	
IH 2018-SFR3									279	284	281	291	296	6,628	
IH 2018-SFR4											253	271	288	5,385	
PRD 2015-SFR2		102	95	126	117	108	151	157	157	140	137	162	156	3,286	
PRD 2015-SFR3		80	87	107	140	149	172	182	158	132	141	134	118	3,149	
PRD 2016-SFR2		105	98	109	134	160	203	211	181	160	144	152	144	3,742	
PRD 2017-SFR1		60	60	71	90	74	88	102	121	130	131	129	117	2,708	
PRD 2018-SFR1			36	30	44	56	84	107	123	132	115	85	53	2,113	
PRD 2018-SFR2								24	50	56	99	116	110	2,116	
SWH 2017-1		239	231	233	265	269	192	237	206	179	171	195	243	4,388	
TAH 2016-SFR1		162	136	167	156	186	230	186	181	163	180	156	148	3,428	
TAH 2017-SFR1		124	84	109	76	120	136	100	96	110	160	162	150	3,480	
TAH 2017-SFR2		94	109	96	79	99	120	95	110	98	114	87	91	2,619	
TAH 2018-SFR1				104	80	98	112	72	98	99	109	125	89	2,509	
Overall SFR		2,438	2,404	2,593	2,902	3,121	3,296	3,475	3,799	3,665	3,949	3,943	3,808	85,898	

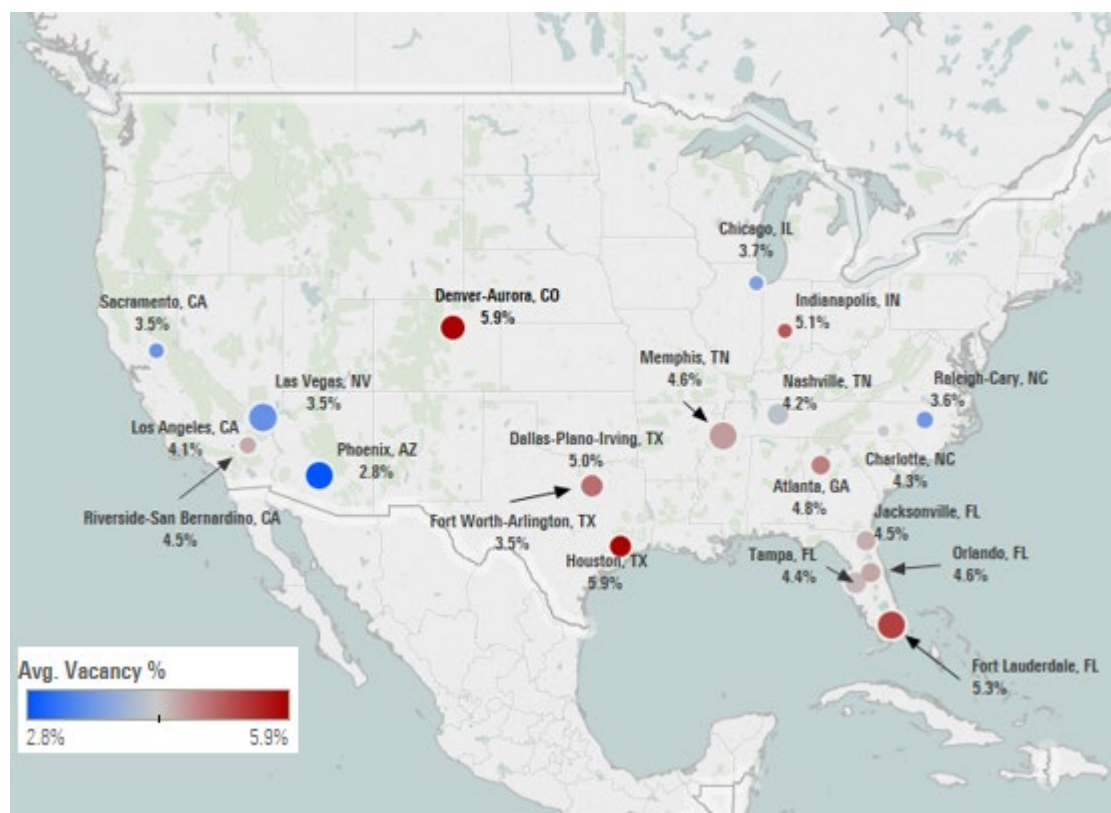
Table 4b – Month-End Vacancy (by Percentage)

		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		4.2	3.7	2.9	3.0	3.4	3.7	4.4	4.1	3.8	4.0	4.3	4.0		
AH4R 2014-SFR3		5.4	5.0	4.4	4.6	4.2	4.4	5.5	5.5	5.5	5.2	5.0	4.4		
AH4R 2015-SFR1		5.4	5.5	4.3	3.4	3.7	3.7	4.6	5.2	5.0	5.0	4.9	4.7		
AH4R 2015-SFR2		5.6	6.0	5.7	4.9	4.4	4.4	4.6	5.2	4.6	4.5	4.1	3.5		
CSH 2016-2		5.4	5.5	5.6	5.9	5.2	5.2	5.8	5.8	4.9	4.7	4.8	5.8		
HPA 2016-2		3.1	4.0	5.7	6.6	7.6	6.6	5.9	6.0	5.7	5.4	5.7	5.2		
HPA 2017-1		2.9	3.4	3.6	3.1	2.8	4.5	6.3	7.0	7.1	6.9	7.2	6.6		
HPA 2018-1						5.3	6.4	8.0	8.5	8.2	7.2	6.0	4.8		
IH 2017-SFR2		3.1	2.8	3.2	4.1	4.6	4.6	4.3	4.2	3.9	3.8	3.7	3.8		
IH 2018-SFR1		3.1	3.1	4.5	5.4	5.4	5.1	4.9	4.4	4.4	4.5	4.6	4.7		
IH 2018-SFR2					4.4	4.2	3.5	4.1	4.2	4.9	4.4	4.3	4.0		
IH 2018-SFR3									4.2	4.3	4.2	4.4	4.5		
IH 2018-SFR4											4.7	5.0	5.3		
PRD 2015-SFR2		3.1	2.9	3.8	3.6	3.3	4.6	4.8	4.8	4.3	4.2	4.9	4.7		
PRD 2015-SFR3		2.5	2.8	3.4	4.4	4.7	5.5	5.8	5.0	4.2	4.5	4.3	3.7		
PRD 2016-SFR2		2.8	2.6	2.9	3.6	4.3	5.4	5.6	4.8	4.3	3.8	4.1	3.8		
PRD 2017-SFR1		2.2	2.2	2.6	3.3	2.7	3.2	3.8	4.5	4.8	4.8	4.8	4.3		
PRD 2018-SFR1			1.7	1.4	2.1	2.7	4.0	5.1	5.8	6.2	5.4	4.0	2.5		
PRD 2018-SFR2								1.1	2.4	2.6	4.7	5.5	5.2		
SWH 2017-1		5.4	5.2	5.3	6.0	6.1	4.3	5.4	4.7	4.1	3.9	4.4	5.5		
TAH 2016-SFR1		4.7	4.0	4.9	4.5	5.4	6.7	5.4	5.3	4.7	5.2	4.5	4.3		
TAH 2017-SFR1		3.6	2.4	3.1	2.2	3.4	3.9	2.9	2.8	3.2	4.6	4.7	4.3		
TAH 2017-SFR2		3.6	4.2	3.7	3.0	3.8	4.6	3.6	4.2	3.7	4.4	3.3	3.5		
TAH 2018-SFR1				4.1	3.2	3.9	4.5	2.9	3.9	3.9	4.3	5.0	3.5		
Overall SFR		4.1	3.9	4.0	4.1	4.3	4.6	4.7	4.7	4.5	4.6	4.6	4.4		

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

		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
Atlanta, GA		4.0	4.2	4.2	4.3	4.7	5.2	4.5	5.0	4.8	4.7	4.8	4.8		
Charlotte, NC		5.4	4.5	4.5	4.4	3.8	4.6	4.9	5.1	4.2	4.5	4.3	4.3		
Chicago, IL		4.3	4.9	4.8	3.4	3.4	4.2	5.3	6.0	5.7	5.6	4.1	3.7		
Dallas-Plano-Irving, TX		4.5	4.3	4.1	4.5	4.9	5.8	5.9	5.6	5.8	5.5	5.3	5.0		
Denver-Aurora, CO		4.0	4.0	5.6	7.0	6.1	5.2	7.0	6.5	6.0	5.7	5.8	5.9		
Fort Lauderdale, FL		4.8	4.9	6.0	6.0	5.2	6.0	4.4	4.5	3.9	4.9	6.1	5.3		
Fort Worth-Arlington, TX		4.0	4.0	4.2	4.8	5.0	5.4	6.1	5.1	4.9	4.6	4.0	3.5		
Houston, TX		6.4	6.3	5.8	5.8	6.0	6.7	6.8	6.6	6.8	6.5	6.4	5.9		
Indianapolis, IN		4.4	4.1	3.2	3.8	4.3	5.5	5.9	5.4	6.0	5.8	5.0	5.1		
Jacksonville, FL		3.3	2.6	3.5	3.6	4.0	4.5	4.4	4.7	4.7	4.5	4.4	4.5		
Las Vegas, NV		2.8	2.2	2.9	3.1	3.5	3.2	3.6	3.5	3.2	2.8	3.4	3.5		
Los Angeles, CA		3.2	3.9	4.0	5.5	5.4	5.5	5.0	4.9	4.7	4.5	4.0	4.1		
Memphis, TN		4.4	4.0	3.6	3.9	3.8	5.0	5.3	5.4	4.9	4.9	5.8	4.6		
Nashville, TN		4.7	4.2	3.7	4.0	4.7	5.5	5.2	5.4	4.6	4.5	5.0	4.2		
Orlando, FL		3.6	2.6	2.9	3.6	3.5	3.4	3.5	3.4	3.9	4.1	4.4	4.6		
Phoenix, AZ		2.7	2.2	2.7	3.0	3.3	3.3	3.5	2.7	2.9	3.1	2.9	2.8		
Raleigh-Cary, NC		5.4	4.8	4.2	3.9	4.0	4.0	5.1	5.1	4.8	4.7	4.5	3.6		
Riverside-San Bernardino, CA		3.7	3.5	3.7	4.1	4.0	3.4	4.3	4.3	3.8	2.8	3.9	4.5		
Sacramento, CA		3.0	2.9	2.9	2.7	3.1	3.5	3.8	4.0	2.9	3.2	3.7	3.5		
Tampa, FL		4.0	4.1	4.5	4.8	5.2	5.2	5.0	4.9	4.3	4.6	4.7	4.4		

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 13.27% to 19.60%. Because of their proximity, the Fort Worth-Arlington, Texas, MSA is hidden behind the Dallas-Plano-Irving, Texas, MSA.

Table 5a – Lease Expiration (by Count)

		Year 2018										Year 2019		Total Count
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
AH4R 2014-SFR2		368	329	423	411	378	354	265	215	200	172	245	306	4,546
AH4R 2014-SFR3		311	280	361	410	439	382	280	240	198	161	263	275	4,588
AH4R 2015-SFR1		291	247	278	347	405	364	279	276	252	231	341	359	4,697
AH4R 2015-SFR2		397	315	438	425	376	271	181	155	173	153	198	250	4,178
CSH 2016-2		306	325	392	354	302	332	275	251	187	168	211	244	3,888
HPA 2016-2		105	155	235	281	191	49	27	24	24	20	26	34	1,282
HPA 2017-1		110	114	73	17	74	119	98	144	139	99	101	79	1,326
HPA 2018-1						229	179	172	122	73	71	69	72	1,756
IH 2017-SFR2		292	294	330	391	373	314	235	243	197	183	218	256	4,357
IH 2018-SFR1		311	346	323	363	380	347	375	324	251	206	260	285	4,269
IH 2018-SFR2					331	378	345	330	346	306	276	320	353	5,460
IH 2018-SFR3									416	401	324	428	410	6,628
IH 2018-SFR4											250	292	363	5,385
PRD 2015-SFR2		260	307	324	216	200	179	161	221	229	195	191	206	3,286
PRD 2015-SFR3		108	187	292	287	341	342	224	223	140	149	126	142	3,149
PRD 2016-SFR2		148	165	271	333	364	465	323	270	193	172	170	154	3,742
PRD 2017-SFR1		127	89	136	145	183	188	203	310	232	231	179	152	2,708
PRD 2018-SFR1			54	52	97	151	208	249	423	379	85	21	29	2,113
PRD 2018-SFR2								6	7	8	279	345	258	2,116
SWH 2017-1		418	475	442	381	342	318	268	217	195	164	285	307	4,388
TAH 2016-SFR1		197	235	225	260	263	250	181	203	135	137	122	154	3,428
TAH 2017-SFR1		241	119	159	176	188	221	209	244	168	162	225	229	3,480
TAH 2017-SFR2		197	124	154	157	155	166	145	156	111	113	155	153	2,619
TAH 2018-SFR1				160	137	133	166	150	172	112	119	151	125	2,509
Overall SFR		4,187	4,160	5,068	5,519	5,845	5,559	4,636	5,202	4,303	4,120	4,942	5,195	85,898

Table 5b – Lease Expiration (by Percentage)

		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		8.2	7.3	9.4	9.2	8.4	7.9	5.9	4.8	4.4	3.8	5.4	6.7		
AH4R 2014-SFR3		6.9	6.2	8.0	9.1	9.8	8.5	6.2	5.3	4.3	3.5	5.7	6.0		
AH4R 2015-SFR1		6.2	5.3	6.0	7.5	8.7	7.9	6.0	6.0	5.4	4.9	7.3	7.6		
AH4R 2015-SFR2		9.6	7.6	10.6	10.3	9.1	6.6	4.4	3.8	4.1	3.7	4.7	6.0		
CSH 2016-2		7.7	8.2	9.9	9.0	7.6	8.4	7.0	6.4	4.8	4.3	5.4	6.3		
HPA 2016-2		7.9	11.8	17.9	21.6	14.7	3.8	2.1	1.9	1.9	1.6	2.0	2.7		
HPA 2017-1		8.1	8.4	5.4	1.3	5.5	8.9	7.3	10.8	10.4	7.4	7.6	6.0		
HPA 2018-1						12.9	10.1	9.7	6.9	4.1	4.0	3.9	4.1		
IH 2017-SFR2		6.6	6.7	7.5	8.9	8.5	7.1	5.3	5.6	4.5	4.2	5.0	5.9		
IH 2018-SFR1		7.3	8.1	7.5	8.5	8.9	8.1	8.7	7.6	5.9	4.8	6.1	6.7		
IH 2018-SFR2					5.9	6.7	6.2	5.9	6.3	5.6	5.0	5.9	6.5		
IH 2018-SFR3									6.3	6.0	4.9	6.5	6.2		
IH 2018-SFR4											4.6	5.4	6.7		
PRD 2015-SFR2		7.9	9.3	9.9	6.6	6.1	5.4	4.9	6.7	7.0	5.9	5.8	6.3		
PRD 2015-SFR3		3.4	5.9	9.3	9.1	10.8	10.9	7.1	7.1	4.4	4.7	4.0	4.5		
PRD 2016-SFR2		4.0	4.4	7.2	8.9	9.7	12.4	8.6	7.2	5.2	4.6	4.5	4.1		
PRD 2017-SFR1		4.7	3.3	5.0	5.4	6.8	6.9	7.5	11.4	8.6	8.5	6.6	5.6		
PRD 2018-SFR1			2.6	2.5	4.6	7.1	9.8	11.8	20.0	17.9	4.0	1.0	1.4		
PRD 2018-SFR2								0.3	0.3	0.4	13.2	16.3	12.2		
SWH 2017-1		9.4	10.7	10.0	8.6	7.7	7.2	6.1	4.9	4.4	3.7	6.5	7.0		
TAH 2016-SFR1		5.7	6.8	6.5	7.6	7.7	7.3	5.3	5.9	3.9	4.0	3.6	4.5		
TAH 2017-SFR1		6.9	3.4	4.6	5.1	5.4	6.4	6.0	7.0	4.8	4.7	6.5	6.6		
TAH 2017-SFR2		7.5	4.7	5.9	6.0	5.9	6.3	5.5	6.0	4.2	4.3	5.9	5.8		
TAH 2018-SFR1				6.4	5.5	5.3	6.6	6.0	6.9	4.5	4.7	6.0	5.0		
Overall SFR		7.0	6.7	7.9	7.9	8.1	7.7	6.3	6.5	5.3	4.8	5.7	6.0		

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

		Year 2018										Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Atlanta, GA		6.6	7.5	8.2	8.1	7.7	7.3	6.2	6.4	5.0	4.8	5.5	5.9
Charlotte, NC		7.3	6.6	7.1	7.9	7.9	8.3	6.2	6.2	4.7	4.0	5.2	5.2
Chicago, IL		8.2	7.8	9.3	8.2	10.0	7.9	7.6	3.7	3.1	3.9	5.3	5.5
Dallas-Plano-Irving, TX		7.9	6.5	7.2	9.0	8.3	8.1	5.7	6.8	5.4	5.0	5.3	6.8
Denver-Aurora, CO		8.0	9.8	10.3	9.6	9.5	7.5	7.3	6.3	4.8	4.5	7.9	5.6
Fort Lauderdale, FL		7.8	7.1	8.0	7.0	6.0	7.3	5.1	6.5	5.1	5.5	8.0	5.8
Fort Worth-Arlington, TX		8.1	7.5	7.8	8.9	7.4	7.9	6.3	5.8	5.3	5.5	5.6	5.8
Houston, TX		7.2	6.3	6.5	6.9	7.9	6.3	6.2	5.7	5.8	5.0	5.4	6.7
Indianapolis, IN		7.1	7.3	9.4	8.4	8.8	8.0	6.0	6.3	4.6	3.9	5.6	5.5
Jacksonville, FL		6.3	5.2	8.5	6.4	6.0	6.1	5.6	6.6	6.0	5.3	5.8	5.7
Las Vegas, NV		6.5	7.5	6.9	7.2	8.3	8.5	7.1	7.9	5.0	5.0	5.8	8.8
Los Angeles, CA		7.3	7.2	6.7	8.0	7.2	7.2	6.7	6.2	5.0	3.5	4.6	5.2
Memphis, TN		8.1	8.3	8.5	7.0	6.8	7.8	7.3	6.3	6.3	6.6	7.0	5.3
Nashville, TN		6.4	7.7	7.5	8.5	8.7	7.2	4.8	6.5	4.1	5.2	6.1	5.6
Orlando, FL		5.9	5.8	8.9	8.6	8.7	9.3	6.0	6.6	5.6	4.9	5.9	5.6
Phoenix, AZ		7.2	7.0	6.8	6.9	7.3	7.5	5.9	6.2	5.9	5.5	6.6	7.2
Raleigh-Cary, NC		7.1	6.2	8.1	8.4	10.2	9.3	6.3	6.6	7.3	5.1	4.9	5.5
Riverside-San Bernardino, CA		8.2	7.9	8.1	7.2	8.6	7.1	8.2	6.5	6.1	3.9	6.4	5.3
Sacramento, CA		8.0	7.1	6.4	8.8	7.2	9.8	6.9	5.0	4.7	3.4	5.0	6.6
Tampa, FL		6.6	6.8	7.5	8.0	7.8	8.6	6.4	7.4	5.5	5.2	6.0	5.7

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		20	24	32	26	29	21	13	9	2	3	2	3	184
AH4R 2014-SFR3		18	33	25	32	21	20	22	3	7	4	1	16	202
AH4R 2015-SFR1		29	43	32	35	22	11	15	10	7	3	3	11	221
AH4R 2015-SFR2		23	25	34	17	14	16	5	3	2	0	0	8	147
CSH 2016-2		32	49	62	32	16	8	17	3	1	2	1	3	226
HPA 2016-2		8	15	11	15	5	7	3	2	0	1	0	0	67
HPA 2017-1		23	22	17	14	7	4	1	0	0	0	0	0	88
HPA 2018-1		19	16	15	14	7	3	8	2	0				84
IH 2017-SFR2		56	57	20	9	9	3	3	4	1	2	0	3	167
IH 2018-SFR1		53	64	32	21	9	3	11	6	1	2	0	0	202
IH 2018-SFR2		86	58	25	16	12	7	3	4	6	0			217
IH 2018-SFR3		131	77	37	21	28	2							296
IH 2018-SFR4		111	71	94	12									288
PRD 2015-SFR2		26	23	27	17	25	16	2	12	3	1	2	2	156
PRD 2015-SFR3		14	15	20	27	10	12	8	5	1	2	1	3	118
PRD 2016-SFR2		21	33	37	23	6	8	5	3	3	2	1	2	144
PRD 2017-SFR1		34	31	24	15	8	3	0	2	0	0	0	0	117
PRD 2018-SFR1		18	12	8	10	1	1	2	0	0	1	0	0	53
PRD 2018-SFR2		70	24	9	4	3	0	0						110
SWH 2017-1		78	65	38	34	12	7	4	2	2	0	0	1	243
TAH 2016-SFR1		36	29	20	26	12	9	3	8	4	1	0	0	148
TAH 2017-SFR1		51	40	32	11	8	5	2	0	1	0	0	0	150
TAH 2017-SFR2		34	26	13	9	7	1	0	0	0	0	1	0	91
TAH 2018-SFR1		35	29	10	5	4	2	1	2	0	1	0		89
Overall SFR		1,026	881	674	445	275	169	128	80	41	25	12	52	3,808

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		10.9	13.0	17.4	14.1	15.8	11.4	7.1	4.9	1.1	1.6	1.1	1.6	100.0
AH4R 2014-SFR3		8.9	16.3	12.4	15.8	10.4	9.9	10.9	1.5	3.5	2.0	0.5	7.9	100.0
AH4R 2015-SFR1		13.1	19.5	14.5	15.8	10.0	5.0	6.8	4.5	3.2	1.4	1.4	5.0	100.0
AH4R 2015-SFR2		15.6	17.0	23.1	11.6	9.5	10.9	3.4	2.0	1.4	0.0	0.0	5.4	100.0
CSH 2016-2		14.2	21.7	27.4	14.2	7.1	3.5	7.5	1.3	0.4	0.9	0.4	1.3	100.0
HPA 2016-2		11.9	22.4	16.4	22.4	7.5	10.4	4.5	3.0	0.0	1.5	0.0	0.0	100.0
HPA 2017-1		26.1	25.0	19.3	15.9	8.0	4.5	1.1	0.0	0.0	0.0	0.0	0.0	100.0
HPA 2018-1		22.6	19.0	17.9	16.7	8.3	3.6	9.5	2.4	0.0				100.0
IH 2017-SFR2		33.5	34.1	12.0	5.4	5.4	1.8	1.8	2.4	0.6	1.2	0.0	1.8	100.0
IH 2018-SFR1		26.2	31.7	15.8	10.4	4.5	1.5	5.4	3.0	0.5	1.0	0.0	0.0	100.0
IH 2018-SFR2		39.6	26.7	11.5	7.4	5.5	3.2	1.4	1.8	2.8	0.0			100.0
IH 2018-SFR3		44.3	26.0	12.5	7.1	9.5	0.7							100.0
IH 2018-SFR4		38.5	24.7	32.6	4.2									100.0
PRD 2015-SFR2		16.7	14.7	17.3	10.9	16.0	10.3	1.3	7.7	1.9	0.6	1.3	1.3	100.0
PRD 2015-SFR3		11.9	12.7	16.9	22.9	8.5	10.2	6.8	4.2	0.8	1.7	0.8	2.5	100.0
PRD 2016-SFR2		14.6	22.9	25.7	16.0	4.2	5.6	3.5	2.1	2.1	1.4	0.7	1.4	100.0
PRD 2017-SFR1		29.1	26.5	20.5	12.8	6.8	2.6	0.0	1.7	0.0	0.0	0.0	0.0	100.0
PRD 2018-SFR1		34.0	22.6	15.1	18.9	1.9	1.9	3.8	0.0	0.0	1.9	0.0	0.0	100.0
PRD 2018-SFR2		63.6	21.8	8.2	3.6	2.7	0.0	0.0						100.0
SWH 2017-1		32.1	26.7	15.6	14.0	4.9	2.9	1.6	0.8	0.8	0.0	0.0	0.4	100.0
TAH 2016-SFR1		24.3	19.6	13.5	17.6	8.1	6.1	2.0	5.4	2.7	0.7	0.0	0.0	100.0
TAH 2017-SFR1		34.0	26.7	21.3	7.3	5.3	3.3	1.3	0.0	0.7	0.0	0.0	0.0	100.0
TAH 2017-SFR2		37.4	28.6	14.3	9.9	7.7	1.1	0.0	0.0	0.0	0.0	1.1	0.0	100.0
TAH 2018-SFR1		39.3	32.6	11.2	5.6	4.5	2.2	1.1	2.2	0.0	1.1	0.0		100.0
Overall SFR		26.9	23.1	17.7	11.7	7.2	4.4	3.4	2.1	1.1	0.7	0.3	1.4	100.0

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 Waypoint Homes	Past due 30 days or more (not dependent on calendar month) and owing 25% of one month's rent or more
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.

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

		Year 2018										Year 2019		Total Count
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
AH4R 2014-SFR2		8	7	7	12	13	11	16	16	21	22	18	17	4,546
AH4R 2014-SFR3		7	12	9	5	14	14	12	13	7	15	13	8	4,588
AH4R 2015-SFR1		13	15	8	12	18	11	17	14	17	26	21	25	4,697
AH4R 2015-SFR2		6	7	10	7	11	10	9	11	13	12	15	23	4,178
CSH 2016-2		24	13	36	32	36	30	35	34	30	44	30	42	3,888
HPA 2016-2		9	6	11	12	14	16	22	22	16	18	15	11	1,282
HPA 2017-1		5	8	7	9	19	23	22	22	21	20	20	14	1,326
HPA 2018-1						24	23	25	28	17	24	23	22	1,756
IH 2017-SFR2		19	15	27	33	24	30	35	30	40	65	52	23	4,357
IH 2018-SFR1		15	29	30	38	21	16	20	20	41	65	21	28	4,269
IH 2018-SFR2					43	54	49	50	53	48	92	58	62	5,480
IH 2018-SFR3									67	87	134	70	48	6,628
IH 2018-SFR4											65	42	38	5,385
PRD 2015-SFR2		18	12	24	18	25	10	21	20	24	22	21	21	3,286
PRD 2015-SFR3		20	17	19	20	23	16	21	25	25	19	16	36	3,149
PRD 2016-SFR2		26	18	17	22	29	16	25	23	26	20	26	51	3,742
PRD 2017-SFR1		16	17	14	12	25	12	12	17	22	18	23	19	2,708
PRD 2018-SFR1			15	16	39	16	6	9	9	7	4	10	13	2,113
PRD 2018-SFR2								1	17	15	7	10	14	2,116
SWH 2017-1		31	19	45	45	27	29	36	34	29	87	29	20	4,388
TAH 2016-SFR1		10	10	21	9	14	8	15	6	7	1	18	1	3,428
TAH 2017-SFR1		2	3	26	0	10	7	11	8	9	0	9	1	3,480
TAH 2017-SFR2		4	6	13	4	3	2	4	2	5	2	11	1	2,619
TAH 2018-SFR1				0	2	4	2	6	1	7	0	8	0	2,509
Overall SFR		233	229	340	374	424	341	424	492	534	782	579	538	85,898

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

		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		0.2	0.2	0.2	0.3	0.3	0.2	0.4	0.4	0.5	0.5	0.4	0.4		
AH4R 2014-SFR3		0.2	0.3	0.2	0.1	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.2		
AH4R 2015-SFR1		0.3	0.3	0.2	0.3	0.4	0.2	0.4	0.3	0.4	0.6	0.4	0.5		
AH4R 2015-SFR2		0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4	0.6		
CSH 2016-2		0.6	0.3	0.9	0.8	0.9	0.8	0.9	0.9	0.8	1.1	0.8	1.1		
HPA 2016-2		0.7	0.5	0.8	0.9	1.1	1.2	1.7	1.7	1.2	1.4	1.2	0.9		
HPA 2017-1		0.4	0.6	0.5	0.7	1.4	1.7	1.6	1.6	1.6	1.5	1.5	1.1		
HPA 2018-1						1.3	1.3	1.4	1.6	1.0	1.4	1.3	1.3		
IH 2017-SFR2		0.4	0.3	0.6	0.7	0.5	0.7	0.8	0.7	0.9	1.5	1.2	0.5		
IH 2018-SFR1		0.3	0.7	0.7	0.9	0.5	0.4	0.5	0.5	1.0	1.5	0.5	0.7		
IH 2018-SFR2					0.8	1.0	0.9	0.9	1.0	0.9	1.7	1.1	1.1		
IH 2018-SFR3									1.0	1.3	2.0	1.1	0.7		
IH 2018-SFR4											1.2	0.8	0.7		
PRD 2015-SFR2		0.5	0.4	0.7	0.5	0.8	0.3	0.6	0.6	0.7	0.7	0.6	0.6		
PRD 2015-SFR3		0.6	0.5	0.6	0.6	0.7	0.5	0.7	0.8	0.8	0.6	0.5	1.1		
PRD 2016-SFR2		0.7	0.5	0.5	0.6	0.8	0.4	0.7	0.6	0.7	0.5	0.7	1.4		
PRD 2017-SFR1		0.6	0.6	0.5	0.4	0.9	0.4	0.4	0.6	0.8	0.7	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	0.5	0.6		
PRD 2018-SFR2								0.0	0.8	0.7	0.3	0.5	0.7		
SWH 2017-1		0.7	0.4	1.0	1.0	0.6	0.7	0.8	0.8	0.7	2.0	0.7	0.5		
TAH 2016-SFR1		0.3	0.3	0.6	0.3	0.4	0.2	0.4	0.2	0.2	0.0	0.5	0.0		
TAH 2017-SFR1		0.1	0.1	0.7	0.0	0.3	0.2	0.3	0.2	0.3	0.0	0.3	0.0		
TAH 2017-SFR2		0.2	0.2	0.5	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.4	0.0		
TAH 2018-SFR1				0.0	0.1	0.2	0.1	0.2	0.0	0.3	0.0	0.3	0.0		
Overall SFR		0.4	0.4	0.5	0.5	0.6	0.5	0.6	0.6	0.7	0.9	0.7	0.6		

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

		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		80.4	79.3	76.8	77.1	74.9	74.0	77.7	74.9	79.0	69.8	82.9	TBD		
AH4R 2014-SFR3		74.3	80.0	73.1	71.7	77.2	79.1	75.4	72.1	71.7	78.3	78.7	TBD		
AH4R 2015-SFR1		77.7	72.5	72.3	72.9	71.9	77.5	78.9	71.0	81.3	79.7	78.0	TBD		
AH4R 2015-SFR2		75.3	75.2	72.1	71.8	74.2	74.9	68.5	79.4	76.3	68.0	80.8	TBD		
CSH 2016-2		80.7	79.7	73.2	76.3	78.8	73.8	74.2	77.7	76.5	79.8	78.7	TBD		
HPA 2016-2		77.1	77.4	75.7	79.0	70.7	77.6	77.8	66.7	75.0	80.0	73.1	TBD		
HPA 2017-1		80.9	75.4	78.1	52.9	73.0	73.9	89.8	84.7	79.1	83.8	84.2	TBD		
HPA 2018-1						72.5	76.0	75.0	82.0	79.5	85.9	79.7	TBD		
IH 2017-SFR2		83.2	81.0	79.7	77.7	79.4	79.0	81.7	76.5	81.7	88.5	80.7	TBD		
IH 2018-SFR1		84.6	78.9	80.2	76.6	78.9	74.6	82.1	84.6	78.9	81.6	82.7	TBD		
IH 2018-SFR2					77.3	81.5	81.7	79.4	80.1	77.5	83.7	80.6	TBD		
IH 2018-SFR3									78.6	81.5	80.9	78.5	TBD		
IH 2018-SFR4											78.0	83.9	TBD		
PRD 2015-SFR2		81.9	82.1	78.1	75.0	79.5	70.4	77.0	76.5	74.7	82.1	73.3	TBD		
PRD 2015-SFR3		75.9	80.2	79.8	77.0	77.4	77.5	75.4	76.7	71.4	70.5	71.4	TBD		
PRD 2016-SFR2		82.4	78.8	79.7	76.3	78.3	77.8	81.4	80.0	72.5	82.0	77.6	TBD		
PRD 2017-SFR1		91.3	83.1	72.1	75.2	79.2	81.9	74.9	74.8	78.4	77.1	79.3	TBD		
PRD 2018-SFR1			85.2	75.0	80.4	81.5	76.9	80.7	78.5	74.4	76.5	81.0	TBD		
PRD 2018-SFR2								83.3	100.0	50.0	78.5	81.7	TBD		
SWH 2017-1		78.5	78.5	85.7	72.4	79.5	81.4	79.1	80.2	76.9	81.7	82.1	TBD		
TAH 2016-SFR1		81.2	85.5	81.3	78.1	78.3	82.0	85.1	83.7	78.5	81.8	85.2	TBD		
TAH 2017-SFR1		79.7	84.0	78.0	85.8	74.5	82.8	82.3	82.8	82.1	78.4	79.6	TBD		
TAH 2017-SFR2		80.7	78.2	78.6	81.5	82.6	84.9	80.7	85.9	81.1	81.4	83.9	TBD		
TAH 2018-SFR1				77.5	83.9	82.7	87.3	78.0	82.6	83.9	82.4	79.5	TBD		
Overall SFR		79.9	79.3	77.3	76.2	77.3	78.2	78.8	78.8	77.8	79.5	80.1	TBD		

TBD – To Be Determined

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

		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		86.9	87.5	85.4	82.0	86.3	84.4	82.6	85.8	85.6	86.1	85.9	TBD		
AH4R 2014-SFR3		83.6	86.4	76.0	82.4	82.8	85.3	82.5	82.7	88.1	92.0	92.7	TBD		
AH4R 2015-SFR1		88.6	86.1	78.7	84.1	80.3	79.4	80.1	85.6	80.9	84.1	91.6	TBD		
AH4R 2015-SFR2		82.9	82.6	72.6	83.9	80.9	79.7	81.5	81.7	78.9	83.3	88.3	TBD		
CSH 2016-2		78.1	77.8	83.9	75.6	72.3	75.4	80.8	86.5	85.2	76.1	84.2	TBD		
HPA 2016-2													TBD		
HPA 2017-1													TBD		
HPA 2018-1													TBD		
IH 2017-SFR2		89.1	82.9	80.6	84.7	90.0	88.6	74.7	88.2	76.8	85.7	89.8	TBD		
IH 2018-SFR1		77.2	87.5	77.6	79.7	83.3	90.2	86.2	86.4	83.6	86.6	88.9	TBD		
IH 2018-SFR2					78.8	88.2	91.4	90.7	84.3	94.0	87.5	83.5	TBD		
IH 2018-SFR3									86.8	87.3	81.9	84.2	TBD		
IH 2018-SFR4											82.1	87.2	TBD		
PRD 2015-SFR2		88.4	64.0	82.5	79.5	85.3	79.1	76.5	85.7	63.6	74.2	68.6	TBD		
PRD 2015-SFR3		84.4	70.0	72.4	69.7	85.7	71.8	70.5	80.6	67.6	80.0	84.0	TBD		
PRD 2016-SFR2		91.1	96.0	72.2	73.6	76.6	72.7	75.5	77.8	70.0	80.5	81.6	TBD		
PRD 2017-SFR1		100.0	68.1	61.3	87.5	83.3	75.7	88.6	72.7	92.1	80.5	83.3	TBD		
PRD 2018-SFR1			75.0	60.0	83.3	66.7	62.5	56.3	76.0	66.7	66.7	78.9	TBD		
PRD 2018-SFR2								100.0	100.0	88.9	100.0	64.3	TBD		
SWH 2017-1		82.4	78.3	77.0	78.3	82.3	79.2	87.5	84.1	78.3	74.1	85.5	TBD		
TAH 2016-SFR1		95.3	95.3	89.4	94.7	90.1	96.4	91.8	95.7	93.2	95.3	92.8	TBD		
TAH 2017-SFR1		85.7	84.3	86.8	84.5	91.5	95.7	91.6	93.1	84.8	88.9	93.2	TBD		
TAH 2017-SFR2		88.1	92.7	89.5	87.1	85.1	92.5	88.0	96.0	86.4	87.8	94.3	TBD		
TAH 2018-SFR1				92.1	83.6	94.1	98.8	89.2	91.3	97.4	81.2	93.7	TBD		
Overall SFR		87.4	85.9	81.8	83.7	84.8	85.8	84.2	87.0	84.8	85.4	88.3	TBD		

TBD – To Be Determined

Table 11a – MTM Tenants (by Count)



		Year 2018												Year 2019		Total Count
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb			
AH4R 2014-SFR2		206	208	232	236	219	202	185	172	157	164	152	163	4,546		
AH4R 2014-SFR3		220	199	233	226	218	208	203	185	168	155	159	172	4,588		
AH4R 2015-SFR1		220	219	223	205	201	200	176	167	160	148	145	174	4,697		
AH4R 2015-SFR2		183	200	235	221	215	178	163	151	141	141	125	146	4,178		
CSH 2016-2		32	27	31	45	65	57	52	52	54	46	38	49	3,888		
HPA 2016-2		0	0	0	0	0	0	0	0	0	0	0	0	1,282		
HPA 2017-1		0	0	0	0	0	0	0	0	0	0	0	0	1,326		
HPA 2018-1						0	0	0	0	0	0	0	0	1,756		
IH 2017-SFR2		115	101	111	105	70	88	84	68	69	63	59	61	4,357		
IH 2018-SFR1		92	104	116	125	66	61	65	66	67	67	63	86	4,269		
IH 2018-SFR2					104	102	82	76	89	84	96	85	86	5,460		
IH 2018-SFR3									115	118	116	101	109	6,628		
IH 2018-SFR4											84	86	109	5,385		
PRD 2015-SFR2		65	72	61	59	52	60	53	55	60	42	47	52	3,286		
PRD 2015-SFR3		41	46	63	54	58	79	61	53	48	40	43	43	3,149		
PRD 2016-SFR2		59	63	78	81	76	95	80	73	73	53	51	56	3,742		
PRD 2017-SFR1		47	108	49	47	50	54	58	68	57	54	52	54	2,708		
PRD 2018-SFR1			6	14	18	27	34	40	59	74	38	21	18	2,113		
PRD 2018-SFR2								11	9	9	23	43	53	2,116		
SWH 2017-1		34	60	87	83	79	72	72	69	60	54	55	86	4,388		
TAH 2016-SFR1		261	215	278	253	202	210	232	233	232	205	194	179	3,428		
TAH 2017-SFR1		184	121	127	114	103	98	107	118	111	100	83	81	3,480		
TAH 2017-SFR2		194	176	174	152	114	111	116	108	112	101	95	91	2,619		
TAH 2018-SFR1				118	128	85	88	95	89	88	90	88	85	2,509		
Overall SFR		1,953	1,925	2,230	2,256	2,002	1,977	1,929	1,999	1,942	1,880	1,785	1,953	85,898		

Table 11b – MTM Tenants (by Percentage)

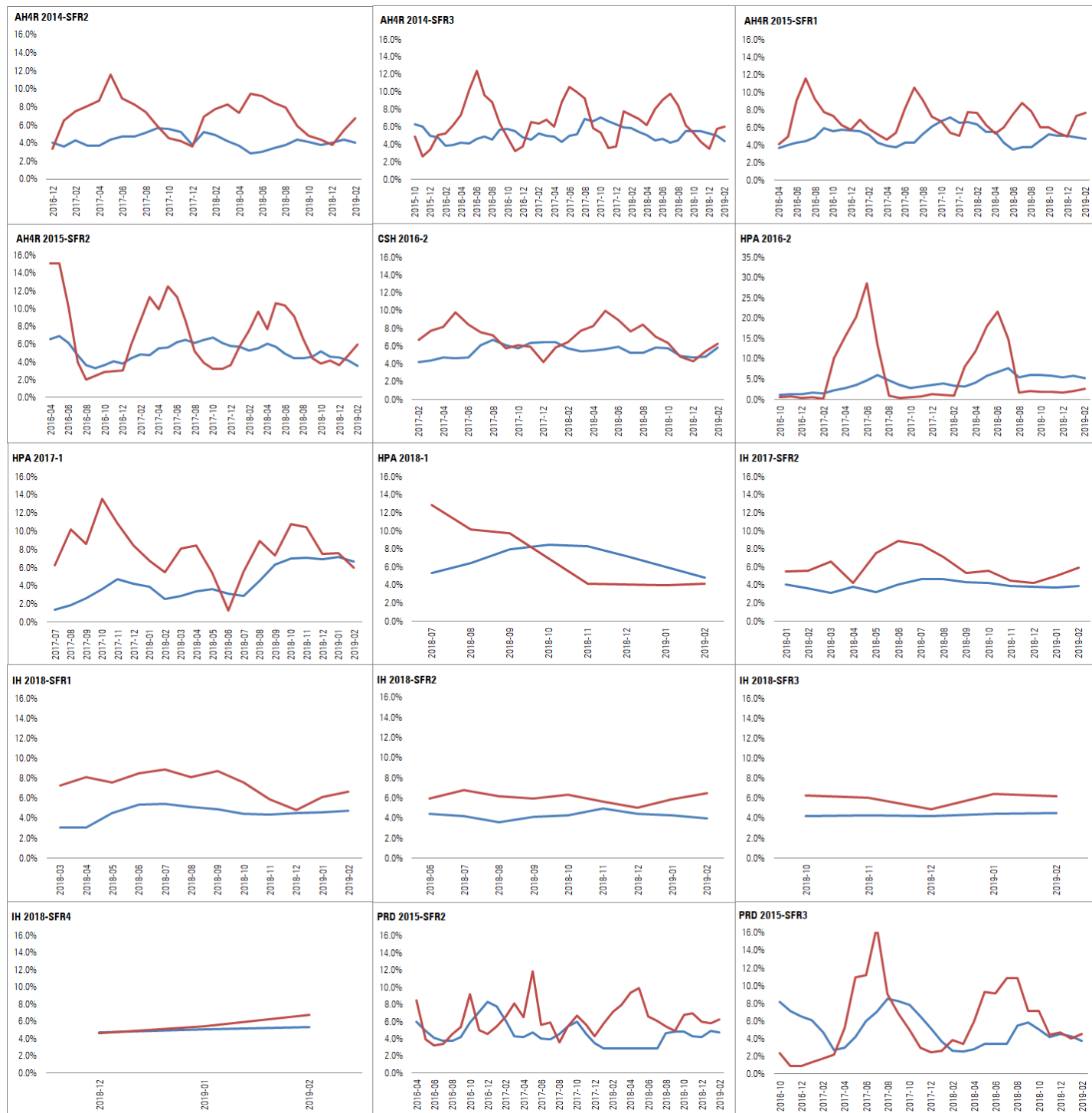
		Year 2018												Year 2019	
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb		
AH4R 2014-SFR2		4.6	4.6	5.2	5.3	4.9	4.5	4.1	3.8	3.5	3.6	3.3	3.6		
AH4R 2014-SFR3		4.9	4.4	5.2	5.0	4.8	4.6	4.5	4.1	3.7	3.4	3.5	3.7		
AH4R 2015-SFR1		4.7	4.7	4.8	4.4	4.3	4.3	3.8	3.6	3.4	3.2	3.1	3.7		
AH4R 2015-SFR2		4.4	4.9	5.7	5.4	5.2	4.3	4.0	3.7	3.4	3.4	3.0	3.5		
CSH 2016-2		0.8	0.7	0.8	1.1	1.6	1.4	1.3	1.3	1.4	1.2	1.0	1.3		
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	0.0	0.0		
IH 2017-SFR2		2.6	2.3	2.5	2.4	1.6	2.0	1.9	1.6	1.6	1.4	1.4	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	1.5	2.0		
IH 2018-SFR2					1.9	1.8	1.5	1.4	1.6	1.5	1.8	1.6	1.6		
IH 2018-SFR3									1.7	1.8	1.7	1.5	1.6		
IH 2018-SFR4											1.6	1.6	2.0		
PRD 2015-SFR2		2.0	2.2	1.9	1.8	1.6	1.8	1.6	1.7	1.8	1.3	1.4	1.6		
PRD 2015-SFR3		1.3	1.5	2.0	1.7	1.8	2.5	1.9	1.7	1.5	1.3	1.4	1.4		
PRD 2016-SFR2		1.6	1.7	2.1	2.2	2.0	2.5	2.1	2.0	2.0	1.4	1.4	1.5		
PRD 2017-SFR1		1.7	4.0	1.8	1.7	1.8	2.0	2.1	2.5	2.1	2.0	1.9	2.0		
PRD 2018-SFR1			0.3	0.7	0.9	1.3	1.6	1.9	2.8	3.5	1.8	1.0	0.9		
PRD 2018-SFR2								0.5	0.4	0.4	1.1	2.0	2.5		
SWH 2017-1		0.8	1.4	2.0	1.9	1.8	1.6	1.6	1.6	1.4	1.2	1.3	2.0		
TAH 2016-SFR1		7.6	6.3	8.1	7.4	5.9	6.1	6.8	6.8	6.8	6.0	5.7	5.2		
TAH 2017-SFR1		5.3	3.5	3.6	3.3	3.0	2.8	3.1	3.4	3.2	2.9	2.4	2.3		
TAH 2017-SFR2		7.4	6.7	6.6	5.8	4.3	4.2	4.4	4.1	4.3	3.9	3.6	3.5		
TAH 2018-SFR1				4.7	5.1	3.4	3.5	3.8	3.5	3.5	3.6	3.5	3.4		
Overall SFR		3.3	3.1	3.5	3.2	2.8	2.8	2.6	2.5	2.4	2.2	2.1	2.3		

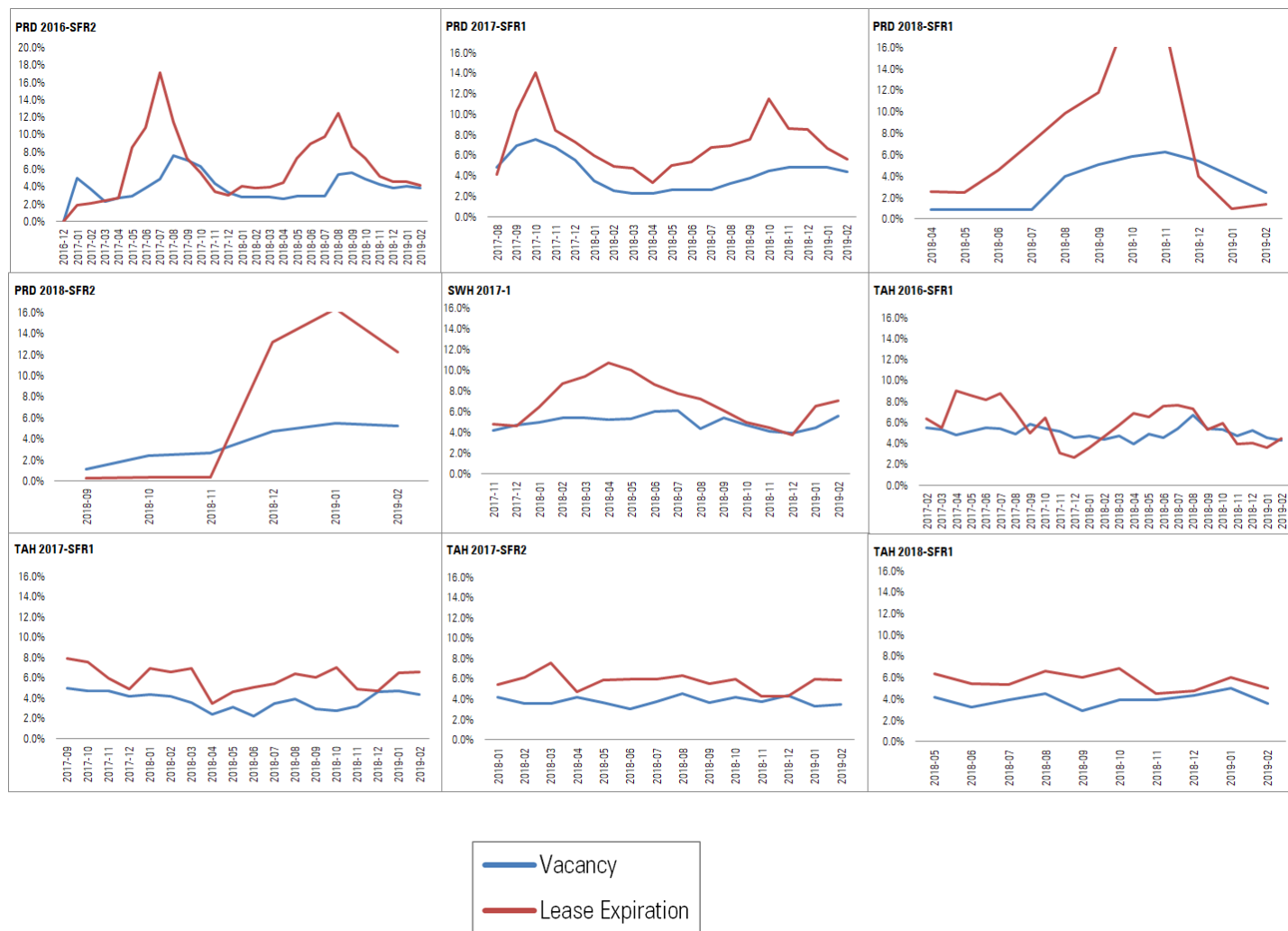
Table 12 – Monthly Turnover Rate (by Percentage)

		Year 2018						Year 2019					
		Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
AH4R 2014-SFR2		2.9	2.7	3.9	3.5	4.1	3.5	2.8	2.8	2.0	2.3	2.2	TBD
AH4R 2014-SFR3		3.3	3.0	3.6	4.4	4.0	3.6	3.0	2.9	2.6	2.1	2.2	TBD
AH4R 2015-SFR1		3.2	2.6	3.0	4.1	4.5	3.8	3.0	3.2	2.3	2.6	2.7	TBD
AH4R 2015-SFR2		4.0	3.6	4.4	4.8	4.6	3.4	3.0	2.9	2.3	2.4	1.9	TBD
CSH 2016-2		3.2	2.3	4.1	4.0	3.3	3.9	3.3	3.5	2.6	2.1	2.0	TBD
HPA 2016-2		3.5	3.8	5.7	5.8	5.9	2.1	1.7	1.9	2.1	1.6	2.3	TBD
HPA 2017-1		2.4	2.5	2.4	1.5	3.1	4.5	2.8	2.3	3.1	2.0	2.9	TBD
HPA 2018-1						6.9	4.8	4.1	2.4	2.4	1.5	1.5	TBD
IH 2017-SFR2		2.4	2.4	2.8	3.4	3.6	3.2	2.2	2.8	1.7	1.7	1.9	TBD
IH 2018-SFR1		1.8	2.8	2.9	3.5	3.2	3.6	2.7	2.6	2.5	2.0	2.5	TBD
IH 2018-SFR2					6.3	3.2	2.5	2.9	2.5	2.6	2.1	2.1	TBD
IH 2018-SFR3									2.4	2.6	2.2	2.4	TBD
IH 2018-SFR4											2.1	2.2	TBD
PRD 2015-SFR2		3.5	3.1	5.3	3.1	3.3	2.1	3.3	3.6	3.0	2.8	2.9	TBD
PRD 2015-SFR3		2.2	2.3	3.5	4.8	4.4	3.6	3.6	3.7	2.6	2.7	2.6	TBD
PRD 2016-SFR2		2.5	2.2	3.3	4.0	4.2	4.3	3.5	3.3	2.8	2.2	2.1	TBD
PRD 2017-SFR1		2.1	1.6	3.4	3.4	3.1	2.5	3.4	4.9	3.9	3.5	3.0	TBD
PRD 2018-SFR1			3.6	1.6	2.4	3.7	4.2	4.2	5.9	6.5	3.7	1.3	TBD
PRD 2018-SFR2								2.9	2.0	1.9	4.8	4.3	TBD
SWH 2017-1		3.7	2.7	3.6	4.6	3.8	2.7	3.1	2.8	2.0	1.7	2.4	TBD
TAH 2016-SFR1		2.4	2.3	2.8	3.4	4.0	3.5	1.0	2.7	2.0	1.8	1.8	TBD
TAH 2017-SFR1		2.7	2.3	2.3	2.5	2.0	3.7	1.0	2.3	2.2	3.0	2.0	TBD
TAH 2017-SFR2		2.7	2.7	2.2	2.9	2.3	2.7	1.1	3.4	2.2	2.2	1.4	TBD
TAH 2018-SFR1				6.5	1.8	3.7	2.6	0.8	3.2	1.9	2.1	2.1	TBD
Overall SFR		2.9	2.7	3.5	3.9	3.8	3.3	2.7	3.0	2.5	2.3	2.3	TBD

TBD – To Be Determined

Appendix I – Vacancy Versus Lease Expiration





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

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 – January 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.

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 January lease expirations, Morningstar looks for all January lease expirations in the November 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 December or January are removed from the February lease expiration count.

Tables 6a and 6b – Historical Months of Vacancy

Tables 6a and 6b show the number of months of vacancy the February unoccupied properties have experienced. In other words, if a property is unoccupied as of the January 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 February 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.

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 February property tape to determine the lease status for January 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 January 2019 retention rates are the February statuses of January 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.

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