

Single-Family Rental Research

Performance Summary Covering All Morningstar-Rated Securitizations

February 2019

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Introduction

The blended rent change for single borrower, single-family rental securitizations rated by Morningstar Credit Ratings, LLC increased to 3.9% in January from a revised 3.6% in December. The average vacancy rate was unchanged at 4.6% in January, remaining under 5.0% for the past 12 months. The average retention rate for expiring leases rose to 79.5% in December, the latest month available, its highest rate in the past nine months, from a revised 77.8% in November. Among the top 20 metropolitan statistical areas, the Houston MSA continued to have the highest vacancy rate at 6.4%, improving from a revised 6.5% in December, followed by the Fort Lauderdale MSA at 6.1%. The Sacramento MSA experienced the highest blended rent growth of 7.7%, followed by the Phoenix MSA at 7.0%. The Chicago MSA experienced the lowest rent growth at -1.8% followed by Indianapolis at 1.5% and Houston at 1.8%, which correspond with their higher vacancy levels in December 2018. With the exception of the Houston MSA, 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 January 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 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 increased to 5.8% in January, up from 4.8% in December. PRD 2018-SFR2 experienced an increase in lease expirations to 16.3% from 13.2% in December; for the three months prior to December, PRD 2018-SFR2 had lease expirations less than 0.5%. Such an increase in lease expirations could lead to a rise in the vacancy rate in the coming months.

The average retention rate on full-term leases remained strong at 79.5% in December, the latest month for which data is available, from a revised 77.8% in November, and is the highest level in the past nine months. The overall turnover rate further declined to 2.3% in December, the lowest percentage in the past 10 months, from 2.5% in November. The average delinquency rate dipped by 20 basis points to 0.7% in January, with HPA 2017-1 transaction reporting a delinquency rate of 1.5%. 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 in January by 3.9%, compared with a revised 3.6% increase in December. Chart 1 shows that the rent gains for securitized properties trailed rent gains for three-bedroom and four-bedroom properties, but remained at a solid 3.9%. 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 December, the latest month for which data is available, the rent change for renewal properties increased 4.6%, up from a 4.5% increase in November, which represents three consecutive months of increasing renewal rent growth. Rent growth and for vacant-to-occupied properties increased by 1.9%. Chart 3 shows that with the exception of the Houston MSA, 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 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 December, down from 2.5% in November. TAH 2016-SFR1 had the highest percentage of MTM leases, at 5.7% of its portfolio.

Multiborrower Performance

In February, the number of loans dropped to 932 with 10 multiborrower transactions. The number of loans 30-59 days delinquent decreased to 15 from 16 in January, while the number of loans 60-89 days delinquent increased by two to nine, and the loans over 90 days delinquent increased to 25. Loans in foreclosure increased by one to four, and loans in special servicing rose to 33.

Table 1 – Multiborrower Loan Performance by Percentage of Balance

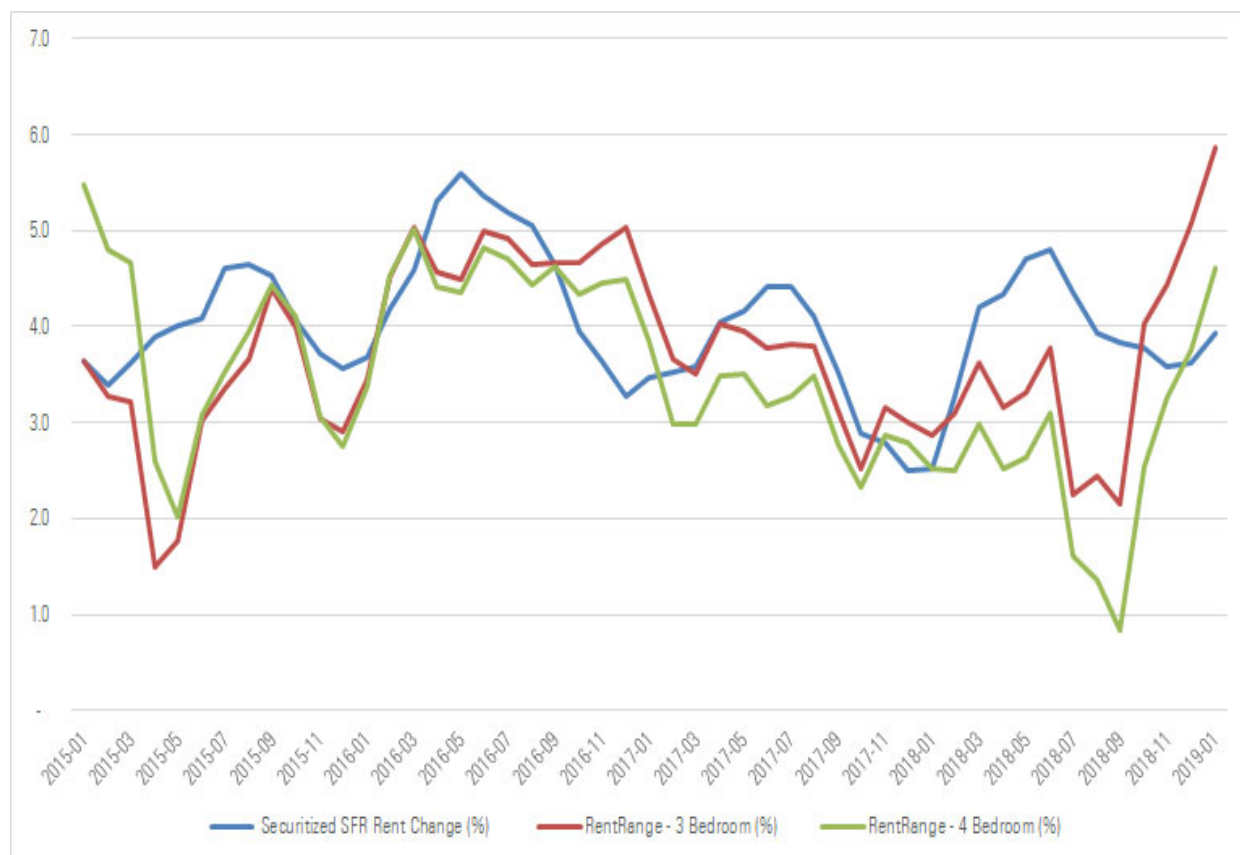
	30-59 Delinquent	60-89 Delinquent	90+ Delinquent	Foreclosure	Real Estate Owned	Special Servicing
B2R 2015-1	0.00	0.00	0.00	0.00	0.00	0.00
FKL 2015-SFR1	0.00	0.00	0.00	0.00	0.00	0.00
CAF 2015-1	0.00	0.00	2.27	0.00	0.00	8.73
B2R 2015-2	0.59	0.31	1.47	0.25	0.00	1.68
CAF 2016-1	0.00	0.00	1.66	0.00	0.00	1.68
B2R 2016-1	1.32	1.16	2.28	0.21	0.00	2.59
CAF 2016-2	0.33	0.00	4.00	2.68	0.00	4.21
CAF 2017-1	2.33	0.00	1.51	0.00	0.00	1.52
CAF 2018-1	0.57	0.00	0.92	0.00	0.31	0.93
CAF 2018-2	0.67	0.35	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	2	3	1	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	4	1	7	1	0	8
CAF 2016-1	65	0	0	1	0	0	1
B2R 2016-1	152	4	4	6	1	0	8
CAF 2016-2	64	1	0	3	1	0	4
CAF 2017-1	80	1	0	3	0	0	3
CAF 2018-1	116	1	0	2	0	1	2
CAF 2018-2	115	2	1	0	0	0	1
Overall	932	15	9	25	4	2	33

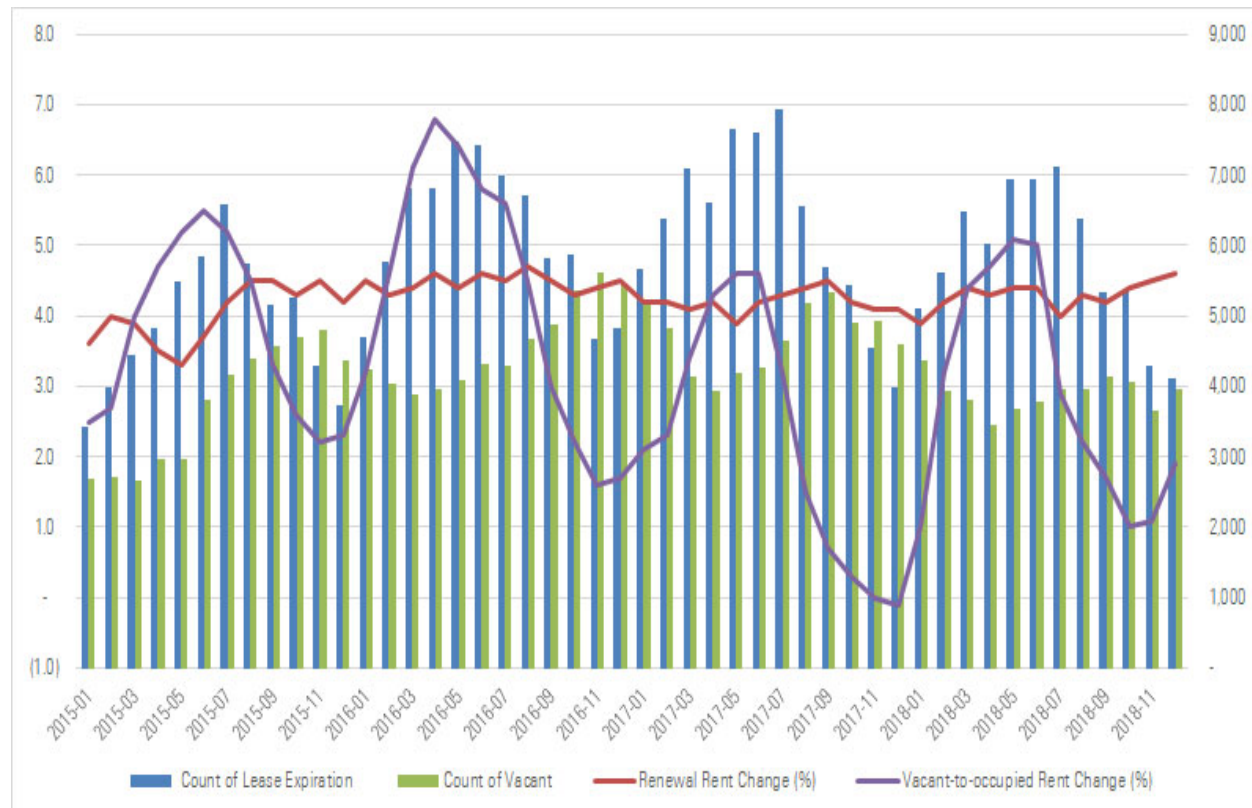
Single-Borrower Charts and Tables

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



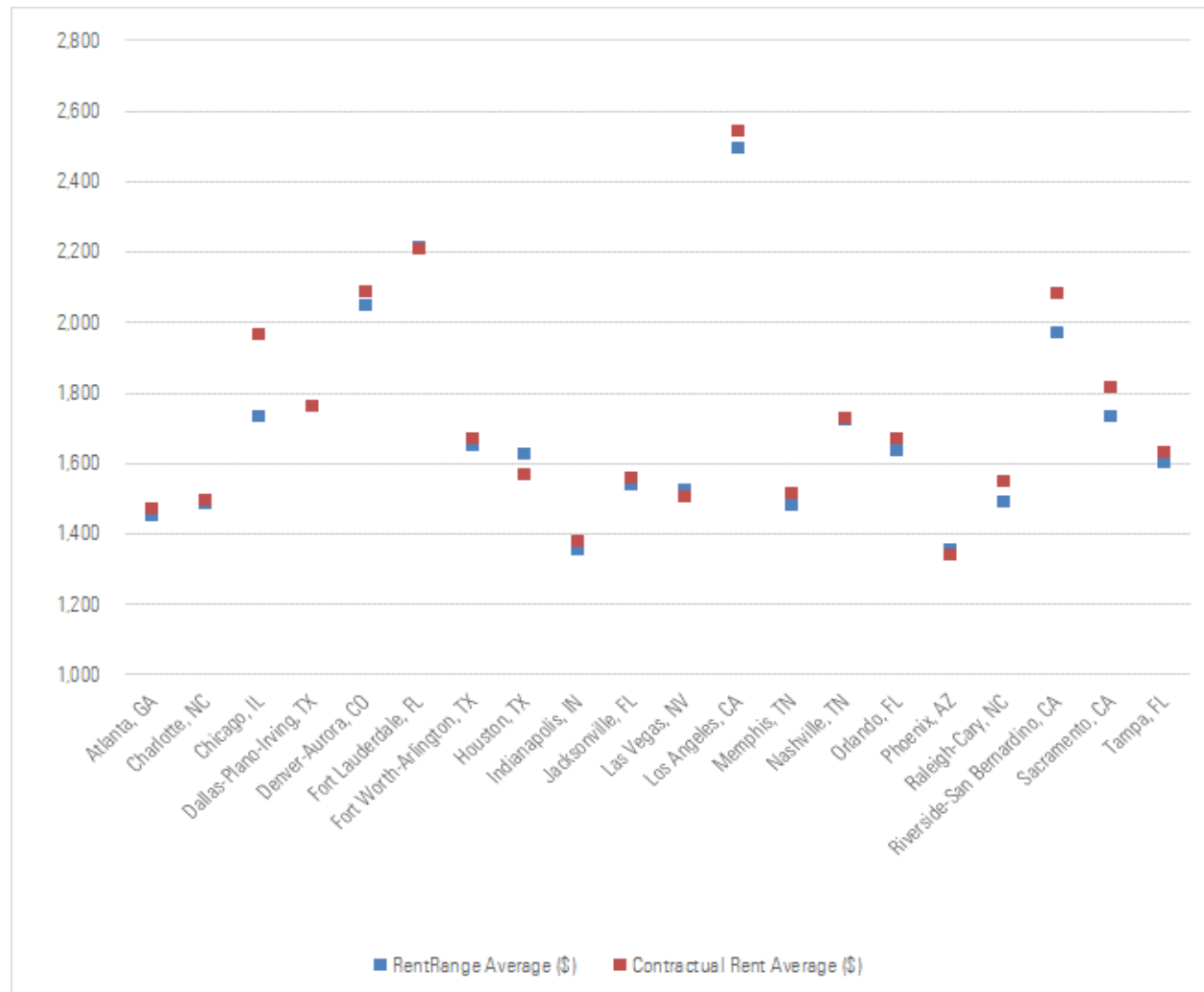
Sources: Morningstar Credit Ratings, LLC; RentRange

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



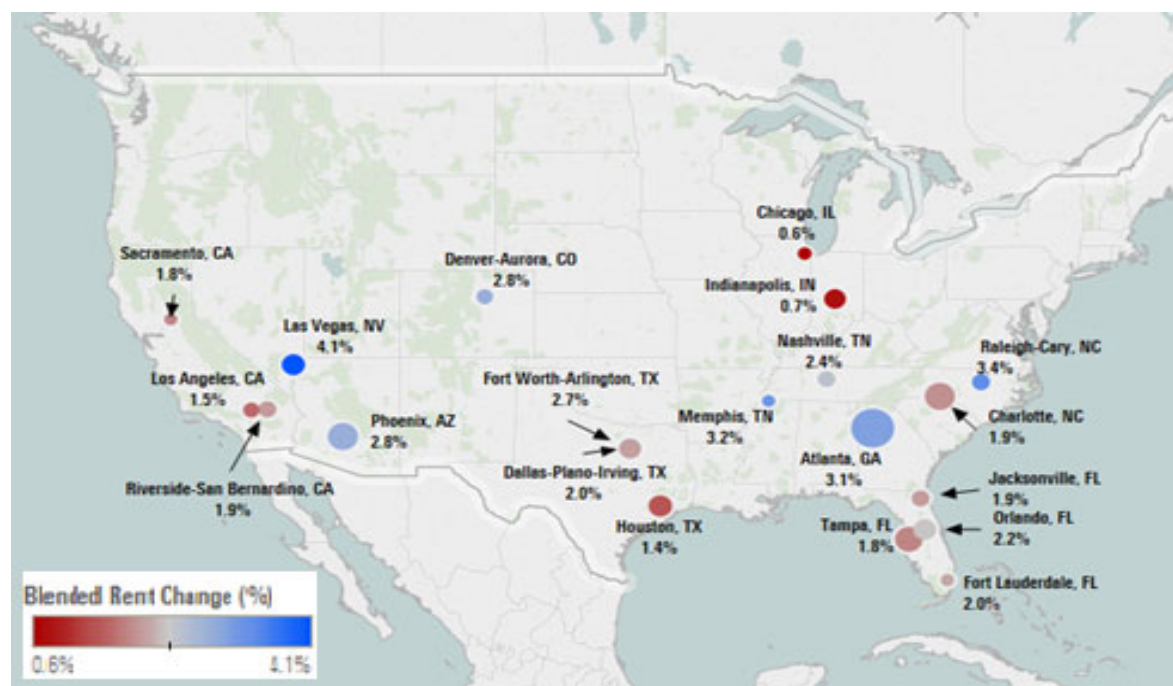
Source: Morningstar Credit Ratings, LLC

Chart 3 – December 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 14.84%. 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												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
Atlanta, GA		3.8	5.1	4.8	5.3	5.1	4.4	4.8	4.1	4.4	4.5	4.6	4.1		
Charlotte, NC		2.5	3.4	3.0	4.0	3.8	4.4	3.4	3.3	3.0	2.5	2.8	3.2		
Chicago, IL		1.3	1.6	2.9	4.3	4.4	3.0	3.2	2.5	2.3	2.0	1.1	-1.8		
Dallas-Plano-Irving, TX		3.1	3.8	4.0	4.0	4.2	4.1	3.7	4.7	3.5	1.8	2.0	2.5		
Denver-Aurora, CO		4.3	5.8	5.3	4.6	5.1	2.4	2.3	2.5	2.4	2.2	2.8	3.6		
Fort Lauderdale, FL		2.5	2.9	2.9	3.8	3.3	3.6	3.2	2.6	2.9	2.4	3.5	4.0		
Fort Worth-Arlington, TX		3.1	4.1	4.1	4.1	5.1	5.3	4.1	3.9	2.2	2.4	2.7	3.3		
Houston, TX		1.4	3.1	3.6	3.3	3.3	3.0	2.9	2.5	1.4	1.7	1.4	1.8		
Indianapolis, IN		2.9	3.4	3.3	4.2	4.6	3.8	3.0	2.7	2.6	2.5	0.7	1.5		
Jacksonville, FL		3.3	4.1	5.2	5.4	5.3	5.6	5.3	4.6	4.2	3.2	3.0	3.8		
Las Vegas, NV		5.1	5.6	5.3	6.2	6.1	5.1	5.2	6.4	5.6	5.5	5.6	6.8		
Los Angeles, CA		4.4	5.7	5.7	5.8	6.2	5.1	4.5	5.1	6.1	5.3	4.9	6.2		
Memphis, TN		1.5	3.4	4.0	4.4	4.2	5.4	5.1	3.6	2.9	3.6	3.2	3.8		
Nashville, TN		1.6	2.8	3.0	4.6	4.2	4.5	4.2	3.5	3.1	1.7	2.4	3.4		
Orlando, FL		5.0	5.0	5.2	5.3	6.0	6.2	5.2	4.7	4.9	5.0	4.6	4.8		
Phoenix, AZ		5.3	6.5	6.4	6.3	6.7	6.1	5.4	6.0	5.9	5.4	5.9	7.0		
Raleigh-Cary, NC		1.6	2.4	3.0	3.9	3.2	3.2	2.9	2.6	2.3	2.4	3.4	3.6		
Riverside-San Bernardino, CA		4.9	5.2	5.5	5.5	6.7	4.4	3.6	4.6	5.1	5.5	4.5	5.7		
Sacramento, CA		5.7	6.9	7.4	8.0	8.0	6.9	5.8	7.4	7.3	6.0	6.2	7.7		
Tampa, FL		3.0	3.6	4.2	4.3	4.4	3.8	3.5	2.7	3.0	3.1	4.0	3.3		

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

		Year 2018												Year 2019		Count
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan			
AH4R 2014-SFR2		217	186	166	128	135	152	168	195	185	172	184	197	4,546		
AH4R 2014-SFR3		265	243	227	200	208	189	199	247	249	252	239	230	4,588		
AH4R 2015-SFR1		294	253	256	198	159	171	173	211	240	236	236	228	4,697		
AH4R 2015-SFR2		217	229	248	234	202	182	180	190	214	191	187	173	4,178		
CSH 2016-2		229	214	217	223	232	205	207	228	227	191	184	186	3,896		
HPA 2016-2		45	41	53	75	86	98	86	76	78	74	69	73	1,285		
HPA 2017-1		34	39	46	49	42	38	61	84	93	94	92	95	1,328		
HPA 2018-1							94	113	141	149	145	126	106	1,758		
IH 2017-SFR2		158	136	124	141	179	204	204	189	183	171	164	161	4,365		
IH 2018-SFR1			131	131	193	230	233	219	210	188	187	192	212	4,274		
IH 2018-SFR2						248	236	198	231	233	269	241	234	5,470		
IH 2018-SFR3										279	284	281	291	6,634		
IH 2018-SFR4												253	271	5,387		
PRD 2015-SFR2		95	102	95	126	117	108	151	157	157	140	137	162	3,287		
PRD 2015-SFR3		83	80	87	107	140	149	172	182	158	132	141	134	3,149		
PRD 2016-SFR2		104	105	98	109	134	160	203	211	181	160	144	152	3,742		
PRD 2017-SFR1		67	60	60	71	90	74	88	102	121	130	131	129	2,708		
PRD 2018-SFR1				36	30	44	56	84	107	123	132	115	85	2,113		
PRD 2018-SFR2									24	50	56	99	116	2,116		
SWH 2017-1		238	239	231	233	265	269	192	237	206	179	171	195	4,393		
TAH 2016-SFR1		150	162	136	167	156	186	230	186	181	163	180	156	3,429		
TAH 2017-SFR1		145	124	84	109	76	120	136	100	96	110	160	162	3,480		
TAH 2017-SFR2		93	94	109	96	79	99	120	95	110	98	114	87	2,619		
TAH 2018-SFR1					104	80	98	112	72	98	99	109	125	2,509		
Overall SFR		2,434	2,438	2,404	2,593	2,902	3,121	3,296	3,475	3,799	3,665	3,949	3,960	85,951		

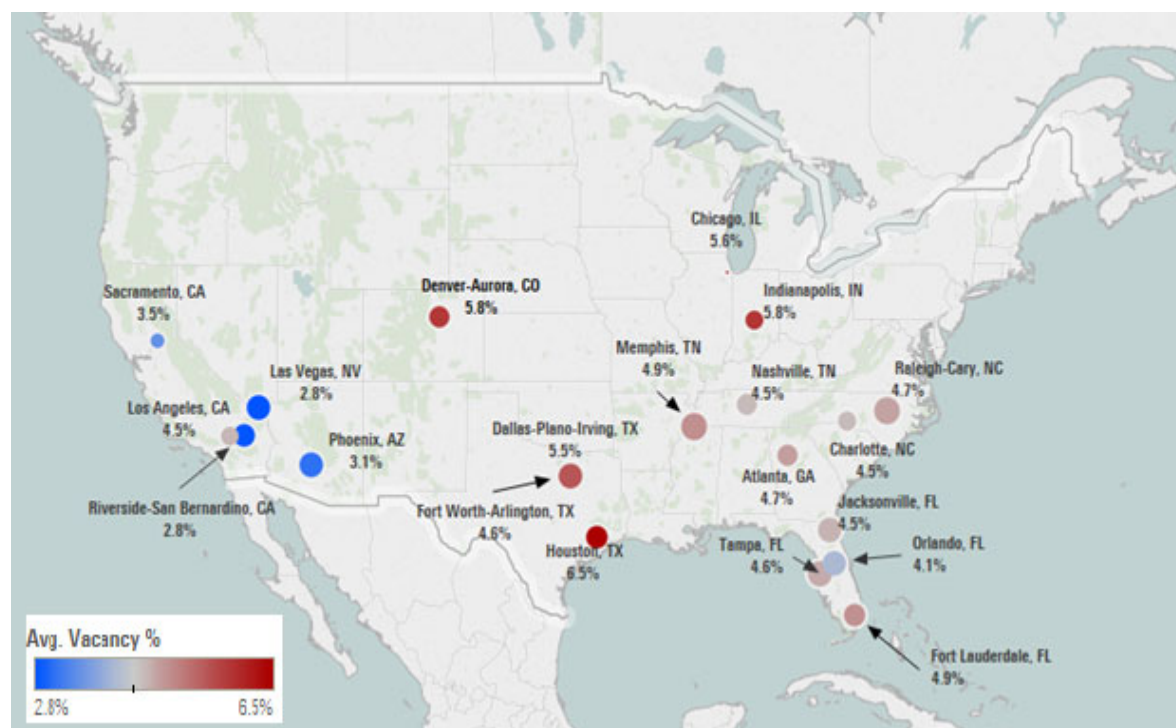
Table 4b – Month-End Vacancy (by Percentage)

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

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

		Year 2018												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
Atlanta, GA		4.6	4.0	4.2	4.2	4.3	4.7	5.2	4.5	5.0	4.8	4.7	4.9		
Charlotte, NC		5.5	5.4	4.5	4.5	4.4	3.8	4.6	4.9	5.1	4.2	4.5	4.3		
Chicago, IL		4.6	4.3	4.9	4.8	3.4	3.4	4.2	5.3	6.0	5.7	5.6	4.1		
Dallas-Plano-Irving, TX		4.5	4.5	4.3	4.1	4.5	4.9	5.8	5.9	5.6	5.8	5.5	5.3		
Denver-Aurora, CO		5.0	4.0	4.0	5.6	7.0	6.1	5.2	7.0	6.5	6.0	5.7	5.8		
Fort Lauderdale, FL		4.2	4.8	4.9	6.0	6.0	5.2	6.0	4.4	4.5	3.9	4.9	6.1		
Fort Worth-Arlington, TX		4.3	4.0	4.0	4.2	4.8	5.0	5.4	6.1	5.1	4.9	4.6	4.0		
Houston, TX		7.3	6.4	6.3	5.8	5.8	6.0	6.7	6.8	6.6	6.8	6.5	6.4		
Indianapolis, IN		5.1	4.4	4.1	3.2	3.8	4.3	5.5	5.9	5.4	6.0	5.8	5.0		
Jacksonville, FL		4.0	3.3	2.6	3.5	3.6	4.0	4.5	4.4	4.7	4.7	4.5	4.4		
Las Vegas, NV		2.5	2.8	2.2	2.9	3.1	3.5	3.2	3.6	3.5	3.2	2.8	3.4		
Los Angeles, CA		3.7	3.2	3.9	4.0	5.5	5.4	5.5	5.0	4.9	4.7	4.5	4.0		
Memphis, TN		4.3	4.4	4.0	3.6	3.9	3.8	5.0	5.3	5.4	4.9	4.9	5.8		
Nashville, TN		5.9	4.7	4.2	3.7	4.0	4.7	5.5	5.2	5.4	4.6	4.5	5.0		
Orlando, FL		3.1	3.6	2.6	2.9	3.6	3.5	3.4	3.5	3.4	3.9	4.1	4.4		
Phoenix, AZ		3.2	2.7	2.2	2.7	3.0	3.3	3.3	3.5	2.7	2.9	3.1	2.9		
Raleigh-Cary, NC		5.1	5.4	4.8	4.2	3.9	4.0	4.0	5.1	5.1	4.8	4.7	4.5		
Riverside-San Bernardino, CA		4.1	3.7	3.5	3.7	4.1	4.0	3.4	4.3	4.3	3.8	2.8	3.9		
Sacramento, CA		2.6	3.0	2.9	2.9	2.7	3.1	3.5	3.8	4.0	2.9	3.2	3.7		
Tampa, FL		4.0	4.0	4.1	4.5	4.8	5.2	5.2	5.0	4.9	4.3	4.6	4.7		

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 12.354% to 19.853%. 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
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan			
AH4R 2014-SFR2		346	368	329	423	411	378	354	265	215	200	172	245	4,546		
AH4R 2014-SFR3		332	311	280	361	410	439	382	280	240	198	161	263	4,588		
AH4R 2015-SFR1		354	291	247	278	347	405	364	279	276	252	231	341	4,697		
AH4R 2015-SFR2		310	397	315	438	425	376	271	181	155	173	153	198	4,178		
CSH 2016-2		257	306	325	392	354	302	332	275	251	187	168	211	3,896		
HPA 2016-2		12	105	155	235	281	191	49	27	24	24	20	26	1,285		
HPA 2017-1		74	110	114	73	17	74	119	98	144	139	99	101	1,328		
HPA 2018-1							229	179	172	122	73	71	69	1,758		
IH 2017-SFR2		247	292	294	330	391	373	314	235	243	197	183	218	4,365		
IH 2018-SFR1			311	346	323	363	380	347	375	324	251	206	261	4,274		
IH 2018-SFR2						331	378	345	330	346	306	276	320	5,470		
IH 2018-SFR3										416	401	324	428	6,634		
IH 2018-SFR4												250	292	5,387		
PRD 2015-SFR2		234	260	307	324	216	200	179	161	221	229	195	191	3,287		
PRD 2015-SFR3		120	108	187	292	287	341	342	224	223	140	149	126	3,149		
PRD 2016-SFR2		145	148	165	271	333	364	465	323	270	193	172	170	3,742		
PRD 2017-SFR1		133	127	89	136	145	183	188	203	310	232	231	179	2,708		
PRD 2018-SFR1				54	52	97	151	208	249	423	379	85	21	2,113		
PRD 2018-SFR2									6	7	8	279	345	2,116		
SWH 2017-1		385	418	475	442	381	342	318	268	217	195	164	285	4,393		
TAH 2016-SFR1		159	197	235	225	260	263	250	181	203	135	137	122	3,429		
TAH 2017-SFR1		229	241	119	159	176	188	221	209	244	168	162	225	3,480		
TAH 2017-SFR2		161	197	124	154	157	155	166	145	156	111	113	155	2,619		
TAH 2018-SFR1					160	137	133	166	150	172	112	119	151	2,509		

Table 5b – Lease Expiration (by Percentage)



		Year 2018												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
AH4R 2014-SFR2		7.7	8.2	7.3	9.4	9.2	8.4	7.9	5.9	4.8	4.4	3.8	5.4		
AH4R 2014-SFR3		7.4	6.9	6.2	8.0	9.1	9.8	8.5	6.2	5.3	4.3	3.5	5.7		
AH4R 2015-SFR1		7.6	6.2	5.3	6.0	7.5	8.7	7.9	6.0	6.0	5.4	4.9	7.3		
AH4R 2015-SFR2		7.5	9.6	7.6	10.6	10.3	9.1	6.6	4.4	3.8	4.1	3.7	4.7		
CSH 2016-2		6.4	7.7	8.2	9.9	9.0	7.6	8.4	7.0	6.4	4.8	4.3	5.4		
HPA 2016-2		0.9	7.9	11.8	17.9	21.6	14.7	3.8	2.1	1.9	1.9	1.6	2.0		
HPA 2017-1		5.4	8.1	8.4	5.4	1.3	5.5	8.9	7.3	10.8	10.4	7.4	7.6		
HPA 2018-1							12.9	10.1	9.7	6.9	4.1	4.0	3.9		
IH 2017-SFR2		5.6	6.6	6.7	7.5	8.9	8.5	7.1	5.3	5.6	4.5	4.2	5.0		
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		
IH 2018-SFR2						5.9	6.7	6.2	5.9	6.3	5.6	5.0	5.9		
IH 2018-SFR3										6.3	6.0	4.9	6.5		
IH 2018-SFR4												4.6	5.4		
PRD 2015-SFR2		7.1	7.9	9.3	9.9	6.6	6.1	5.4	4.9	6.7	7.0	5.9	5.8		
PRD 2015-SFR3		3.8	3.4	5.9	9.3	9.1	10.8	10.9	7.1	7.1	4.4	4.7	4.0		
PRD 2016-SFR2		3.9	4.0	4.4	7.2	8.9	9.7	12.4	8.6	7.2	5.2	4.6	4.5		
PRD 2017-SFR1		4.9	4.7	3.3	5.0	5.4	6.8	6.9	7.5	11.4	8.6	8.5	6.6		
PRD 2018-SFR1				2.6	2.5	4.6	7.1	9.8	11.8	20.0	17.9	4.0	1.0		
PRD 2018-SFR2									0.3	0.3	0.4	13.2	16.3		
SWH 2017-1		8.7	9.4	10.7	10.0	8.6	7.7	7.2	6.1	4.9	4.4	3.7	6.5		
TAH 2016-SFR1		4.6	5.7	6.8	6.5	7.6	7.7	7.3	5.3	5.9	3.9	4.0	3.6		
TAH 2017-SFR1		6.6	6.9	3.4	4.6	5.1	5.4	6.4	6.0	7.0	4.8	4.7	6.5		
TAH 2017-SFR2		6.1	7.5	4.7	5.9	6.0	5.9	6.3	5.5	6.0	4.2	4.3	5.9		
TAH 2018-SFR1					6.4	5.5	5.3	6.6	6.0	6.9	4.5	4.7	6.0		
Overall SFR		6.3	7.0	6.7	7.9	7.9	8.1	7.7	6.3	6.5	5.3	4.8	5.8		

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

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

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		20	28	34	30	23	24	14	5	11	3	2	3	197
AH4R 2014-SFR3		24	21	45	30	31	28	15	11	4	4	0	17	230
AH4R 2015-SFR1		36	32	37	34	24	27	9	10	4	4	0	11	228
AH4R 2015-SFR2		23	30	32	24	27	14	9	3	1	2	1	7	173
CSH 2016-2		35	47	37	25	10	19	5	2	2	1	1	2	186
HPA 2016-2		16	13	16	8	10	5	2	1	1	0	0	1	73
HPA 2017-1		29	19	20	12	9	4	1	0	0	1	0	0	95
HPA 2018-1		20	23	26	12	10	13	2	0					106
IH 2017-SFR2		63	41	22	12	5	6	5	2	2	0	2	1	161
IH 2018-SFR1		74	50	36	18	9	13	7	2	3	0	0	0	212
IH 2018-SFR2		99	52	33	17	13	7	5	7	1				234
IH 2018-SFR3		137	72	33	46	3								291
IH 2018-SFR4		109	147	15										271
PRD 2015-SFR2		27	28	22	29	21	11	13	3	3	4	0	1	162
PRD 2015-SFR3		15	13	34	23	19	11	10	2	3	0	0	4	134
PRD 2016-SFR2		30	37	30	15	18	10	5	2	2	1	0	2	152
PRD 2017-SFR1		39	33	32	14	5	3	3	0	0	0	0	0	129
PRD 2018-SFR1		24	24	28	5	1	2	0	0	1	0	0		85
PRD 2018-SFR2		78	28	7	3	0	0							116
SWH 2017-1		67	44	45	18	8	5	3	3	0	0	1	1	195
TAH 2016-SFR1		35	30	27	23	16	7	10	7	1	0	0	0	156
TAH 2017-SFR1		59	41	31	15	10	3	1	1	1	0	0	0	162
TAH 2017-SFR2		40	22	12	8	3	1	0	0	0	1	0	0	87
TAH 2018-SFR1		68	25	13	11	1	2	4	0	1	0			125
Overall SFR		1,167	900	667	432	276	215	123	61	41	21	7	50	3,960

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		10.2	14.2	17.3	15.2	11.7	12.2	7.1	2.5	5.6	1.5	1.0	1.5	100.0
AH4R 2014-SFR3		10.4	9.1	19.6	13.0	13.5	12.2	6.5	4.8	1.7	1.7	0.0	7.4	100.0
AH4R 2015-SFR1		15.8	14.0	16.2	14.9	10.5	11.8	3.9	4.4	1.8	1.8	0.0	4.8	100.0
AH4R 2015-SFR2		13.3	17.3	18.5	13.9	15.6	8.1	5.2	1.7	0.6	1.2	0.6	4.0	100.0
CSH 2016-2		18.8	25.3	19.9	13.4	5.4	10.2	2.7	1.1	1.1	0.5	0.5	1.1	100.0
HPA 2016-2		21.9	17.8	21.9	11.0	13.7	6.8	2.7	1.4	1.4	0.0	0.0	1.4	100.0
HPA 2017-1		30.5	20.0	21.1	12.6	9.5	4.2	1.1	0.0	0.0	1.1	0.0	0.0	100.0
HPA 2018-1		18.9	21.7	24.5	11.3	9.4	12.3	1.9	0.0					100.0
IH 2017-SFR2		39.1	25.5	13.7	7.5	3.1	3.7	3.1	1.2	1.2	0.0	1.2	0.6	100.0
IH 2018-SFR1		34.9	23.6	17.0	8.5	4.2	6.1	3.3	0.9	1.4	0.0	0.0	0.0	100.0
IH 2018-SFR2		42.3	22.2	14.1	7.3	5.6	3.0	2.1	3.0	0.4				100.0
IH 2018-SFR3		47.1	24.7	11.3	15.8	1.0								100.0
IH 2018-SFR4		40.2	54.2	5.5										100.0
PRD 2015-SFR2		16.7	17.3	13.6	17.9	13.0	6.8	8.0	1.9	1.9	2.5	0.0	0.6	100.0
PRD 2015-SFR3		11.2	9.7	25.4	17.2	14.2	8.2	7.5	1.5	2.2	0.0	0.0	3.0	100.0
PRD 2016-SFR2		19.7	24.3	19.7	9.9	11.8	6.6	3.3	1.3	1.3	0.7	0.0	1.3	100.0
PRD 2017-SFR1		30.2	25.6	24.8	10.9	3.9	2.3	2.3	0.0	0.0	0.0	0.0	0.0	100.0
PRD 2018-SFR1		28.2	28.2	32.9	5.9	1.2	2.4	0.0	0.0	1.2	0.0	0.0		100.0
PRD 2018-SFR2		67.2	24.1	6.0	2.6	0.0	0.0							100.0
SWH 2017-1		34.4	22.6	23.1	9.2	4.1	2.6	1.5	1.5	0.0	0.0	0.5	0.5	100.0
TAH 2016-SFR1		22.4	19.2	17.3	14.7	10.3	4.5	6.4	4.5	0.6	0.0	0.0	0.0	100.0
TAH 2017-SFR1		36.4	25.3	19.1	9.3	6.2	1.9	0.6	0.6	0.6	0.0	0.0	0.0	100.0
TAH 2017-SFR2		46.0	25.3	13.8	9.2	3.4	1.1	0.0	0.0	0.0	1.1	0.0	0.0	100.0
TAH 2018-SFR1		54.4	20.0	10.4	8.8	0.8	1.6	3.2	0.0	0.8	0.0			100.0
Overall SFR		29.5	22.7	16.8	10.9	7.0	5.4	3.1	1.5	1.0	0.5	0.2	1.3	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
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan			
AH4R 2014-SFR2		22	8	7	7	12	13	11	16	16	21	22	18	4,546		
AH4R 2014-SFR3		20	7	12	9	5	14	14	12	13	7	15	13	4,588		
AH4R 2015-SFR1		29	13	15	8	12	18	11	17	14	17	26	21	4,697		
AH4R 2015-SFR2		18	6	7	10	7	11	10	9	11	13	12	15	4,178		
CSH 2016-2		36	24	13	36	32	36	30	35	34	30	44	31	3,896		
HPA 2016-2		10	9	6	11	12	14	16	22	22	16	18	15	1,285		
HPA 2017-1		10	5	8	7	9	19	23	22	22	21	20	20	1,328		
HPA 2018-1							24	23	25	28	17	24	23	1,758		
IH 2017-SFR2		30	19	15	27	33	24	30	35	30	40	65	52	4,365		
IH 2018-SFR1			15	29	30	38	21	16	20	20	41	65	21	4,274		
IH 2018-SFR2						43	54	49	50	53	48	92	58	5,470		
IH 2018-SFR3										67	87	134	70	6,634		
IH 2018-SFR4												65	42	5,387		
PRD 2015-SFR2		21	18	12	24	18	25	10	21	20	24	22	21	3,287		
PRD 2015-SFR3		25	20	17	19	20	23	16	21	25	25	19	16	3,149		
PRD 2016-SFR2		0	26	18	17	22	29	16	25	23	26	20	26	3,742		
PRD 2017-SFR1		22	16	17	14	12	25	12	12	17	22	18	23	2,708		
PRD 2018-SFR1				15	16	39	16	6	9	9	7	4	10	2,113		
PRD 2018-SFR2									1	17	15	7	10	2,116		
SWH 2017-1		45	31	19	45	45	27	29	36	34	29	87	29	4,393		
TAH 2016-SFR1		23	10	10	21	9	14	8	15	6	7	1	18	3,429		
TAH 2017-SFR1		12	2	3	26	0	10	7	11	8	9	0	9	3,480		
TAH 2017-SFR2		9	4	6	13	4	3	2	4	2	5	2	11	2,619		
TAH 2018-SFR1					0	2	4	2	6	1	7	0	8	2,509		
Overall SFR		332	233	229	340	374	424	341	424	492	534	782	580	85,951		

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

		Year 2018												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
AH4R 2014-SFR2		0.5	0.2	0.2	0.2	0.3	0.3	0.2	0.4	0.4	0.5	0.5	0.4		
AH4R 2014-SFR3		0.4	0.2	0.3	0.2	0.1	0.3	0.3	0.3	0.3	0.2	0.3	0.3		
AH4R 2015-SFR1		0.6	0.3	0.3	0.2	0.3	0.4	0.2	0.4	0.3	0.4	0.6	0.4		
AH4R 2015-SFR2		0.4	0.1	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.3	0.3	0.4		
CSH 2016-2		0.9	0.6	0.3	0.9	0.8	0.9	0.8	0.9	0.9	0.8	1.1	0.8		
HPA 2016-2		0.8	0.7	0.5	0.8	0.9	1.1	1.2	1.7	1.7	1.2	1.4	1.2		
HPA 2017-1		0.7	0.4	0.6	0.5	0.7	1.4	1.7	1.6	1.6	1.6	1.5	1.5		
HPA 2018-1							1.3	1.3	1.4	1.6	1.0	1.4	1.3		
IH 2017-SFR2		0.7	0.4	0.3	0.6	0.7	0.5	0.7	0.8	0.7	0.9	1.5	1.2		
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		
IH 2018-SFR2						0.8	1.0	0.9	0.9	1.0	0.9	1.7	1.1		
IH 2018-SFR3										1.0	1.3	2.0	1.1		
IH 2018-SFR4												1.2	0.8		
PRD 2015-SFR2		0.6	0.5	0.4	0.7	0.5	0.8	0.3	0.6	0.6	0.7	0.7	0.6		
PRD 2015-SFR3		0.8	0.6	0.5	0.6	0.6	0.7	0.5	0.7	0.8	0.8	0.6	0.5		
PRD 2016-SFR2		0.0	0.7	0.5	0.5	0.6	0.8	0.4	0.7	0.6	0.7	0.5	0.7		
PRD 2017-SFR1		0.8	0.6	0.6	0.5	0.4	0.9	0.4	0.4	0.6	0.8	0.7	0.8		
PRD 2018-SFR1				0.7	0.8	1.8	0.8	0.3	0.4	0.4	0.3	0.2	0.5		
PRD 2018-SFR2									0.0	0.8	0.7	0.3	0.5		
SWH 2017-1		1.0	0.7	0.4	1.0	1.0	0.6	0.7	0.8	0.8	0.7	2.0	0.7		
TAH 2016-SFR1		0.7	0.3	0.3	0.6	0.3	0.4	0.2	0.4	0.2	0.2	0.0	0.5		
TAH 2017-SFR1		0.3	0.1	0.1	0.7	0.0	0.3	0.2	0.3	0.2	0.3	0.0	0.3		
TAH 2017-SFR2		0.3	0.2	0.2	0.5	0.2	0.1	0.1	0.2	0.1	0.2	0.1	0.4		
TAH 2018-SFR1					0.0	0.1	0.2	0.1	0.2	0.0	0.3	0.0	0.3		
Overall SFR		0.6	0.4	0.4	0.5	0.5	0.6	0.5	0.6	0.6	0.7	0.9	0.7		

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

		Year 2018												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
AH4R 2014-SFR2		78.9	80.4	79.3	76.8	77.1	74.9	74.0	77.7	74.9	79.0	69.8	TBD		
AH4R 2014-SFR3		81.9	74.3	80.0	73.1	71.7	77.2	79.1	75.4	72.1	71.7	78.3	TBD		
AH4R 2015-SFR1		74.9	77.7	72.5	72.3	72.9	71.9	77.5	78.9	71.0	81.3	79.7	TBD		
AH4R 2015-SFR2		80.3	75.3	75.2	72.1	71.8	74.2	74.9	68.5	79.4	76.3	68.0	TBD		
CSH 2016-2		80.9	80.7	79.7	73.2	76.3	78.8	73.8	74.2	77.7	76.5	79.8	TBD		
HPA 2016-2		75.0	77.1	77.4	75.7	79.0	70.7	77.6	77.8	66.7	75.0	80.0	TBD		
HPA 2017-1		79.7	80.9	75.4	78.1	52.9	73.0	73.9	89.8	84.7	79.1	83.8	TBD		
HPA 2018-1							72.5	76.0	75.0	82.0	79.5	85.9	TBD		
IH 2017-SFR2		80.6	83.2	81.0	79.7	77.7	79.4	79.0	81.7	76.5	81.7	88.5	TBD		
IH 2018-SFR1			84.6	78.9	80.2	76.6	78.9	74.6	82.1	84.6	78.9	80.6	TBD		
IH 2018-SFR2						77.3	81.5	81.7	79.4	80.1	77.5	83.7	TBD		
IH 2018-SFR3										78.6	81.5	80.9	TBD		
IH 2018-SFR4												78.0	TBD		
PRD 2015-SFR2		76.5	81.9	82.1	78.1	75.0	79.5	70.4	77.0	76.5	74.7	82.1	TBD		
PRD 2015-SFR3		75.8	75.9	80.2	79.8	77.0	77.4	77.5	75.4	76.7	71.4	70.5	TBD		
PRD 2016-SFR2		81.4	82.4	78.8	79.7	76.3	78.3	77.8	81.4	80.0	72.5	82.0	TBD		
PRD 2017-SFR1		81.2	91.3	83.1	72.1	75.2	79.2	81.9	74.9	74.8	78.4	77.1	TBD		
PRD 2018-SFR1				85.2	75.0	80.4	81.5	76.9	80.7	78.5	74.4	76.5	TBD		
PRD 2018-SFR2									83.3	100.0	50.0	78.5	TBD		
SWH 2017-1		75.8	78.5	78.5	85.7	72.4	79.5	81.4	79.1	80.2	76.9	81.7	TBD		
TAH 2016-SFR1		83.6	81.2	85.5	81.3	78.1	78.3	82.0	85.1	83.7	78.5	81.8	TBD		
TAH 2017-SFR1		82.5	79.7	84.0	78.0	85.8	74.5	82.8	82.3	82.8	82.1	78.4	TBD		
TAH 2017-SFR2		81.4	80.7	78.2	78.6	81.5	82.6	84.9	80.7	85.9	81.1	81.4	TBD		
TAH 2018-SFR1					77.5	83.9	82.7	87.3	78.0	82.6	83.9	82.4	TBD		
Overall SFR		79.3	79.9	79.3	77.3	76.2	77.3	78.2	78.8	78.8	77.8	79.5	TBD		

TBD – To Be Determined

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

		Year 2018												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
AH4R 2014-SFR2		87.3	86.9	87.5	85.4	82.0	86.3	84.4	82.6	85.8	85.6	86.1	TBD		
AH4R 2014-SFR3		85.8	83.6	86.4	76.0	82.4	82.8	85.3	82.5	82.7	88.1	92.0	TBD		
AH4R 2015-SFR1		82.3	88.6	86.1	78.7	84.1	80.3	79.4	80.1	85.6	80.9	84.1	TBD		
AH4R 2015-SFR2		85.5	82.9	82.6	72.6	83.9	80.9	79.7	81.5	81.7	78.9	83.3	TBD		
CSH 2016-2		75.8	78.1	77.8	83.9	75.6	72.3	75.4	80.8	86.5	85.2	76.1	TBD		
HPA 2016-2													TBD		
HPA 2017-1													TBD		
HPA 2018-1													TBD		
IH 2017-SFR2		78.4	89.1	82.9	80.6	84.7	90.0	88.6	74.7	88.2	76.8	85.7	TBD		
IH 2018-SFR1			77.2	87.5	77.6	79.7	83.3	90.2	86.2	86.4	83.6	86.6	TBD		
IH 2018-SFR2						78.8	88.2	91.4	90.7	84.3	94.0	87.5	TBD		
IH 2018-SFR3										86.8	87.3	81.0	TBD		
IH 2018-SFR4												82.1	TBD		
PRD 2015-SFR2		89.2	88.4	64.0	82.5	79.5	85.3	79.1	76.5	85.7	63.6	74.2	TBD		
PRD 2015-SFR3		80.6	84.4	70.0	72.4	69.7	85.7	71.8	70.5	80.6	67.6	80.0	TBD		
PRD 2016-SFR2		65.8	91.1	96.0	72.2	73.6	76.6	72.7	75.5	77.8	70.0	80.5	TBD		
PRD 2017-SFR1		91.2	100.0	68.1	61.3	87.5	83.3	75.7	88.6	72.7	92.1	80.5	TBD		
PRD 2018-SFR1				75.0	60.0	83.3	66.7	62.5	56.3	76.0	66.7	66.7	TBD		
PRD 2018-SFR2									100.0	100.0	88.9	100.0	TBD		
SWH 2017-1		71.4	82.4	78.3	77.0	78.3	82.3	79.2	87.5	84.1	78.3	74.1	TBD		
TAH 2016-SFR1		94.4	95.3	95.3	89.4	94.7	90.1	96.4	91.8	95.7	93.2	95.3	TBD		
TAH 2017-SFR1		87.6	85.7	84.3	86.8	84.5	91.5	95.7	91.6	93.1	84.8	88.9	TBD		
TAH 2017-SFR2		93.1	88.1	92.7	89.5	87.1	85.1	92.5	88.0	96.0	86.4	87.8	TBD		
TAH 2018-SFR1					92.1	83.6	94.1	98.8	89.2	91.3	97.4	81.2	TBD		
Overall SFR		86.2	87.4	85.9	81.8	83.7	84.8	85.8	84.2	87.0	84.8	85.3	TBD		

TBD – To Be Determined

Table 11a – MTM Tenants (by Count)



		Year 2018												Year 2019		Total Count
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan			
AH4R 2014-SFR2		190	206	208	232	236	219	202	185	172	157	164	152	4,546		
AH4R 2014-SFR3		188	220	199	233	226	218	208	203	185	168	155	159	4,588		
AH4R 2015-SFR1		204	220	219	223	205	201	200	176	167	160	148	145	4,697		
AH4R 2015-SFR2		150	183	200	235	221	215	178	163	151	141	141	125	4,178		
CSH 2016-2		33	32	27	31	45	65	57	52	52	54	46	38	3,896		
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	1,328		
HPA 2018-1							0	0	0	0	0	0	0	1,758		
IH 2017-SFR2		95	115	101	111	105	70	88	84	68	69	63	59	4,365		
IH 2018-SFR1			92	104	116	125	66	61	65	66	67	67	63	4,274		
IH 2018-SFR2						104	102	82	76	89	84	96	85	5,470		
IH 2018-SFR3										115	118	116	101	6,634		
IH 2018-SFR4												84	86	5,387		
PRD 2015-SFR2		58	65	72	61	59	52	60	53	55	60	42	47	3,287		
PRD 2015-SFR3		50	41	46	63	54	58	79	61	53	48	40	43	3,149		
PRD 2016-SFR2		201	59	63	78	81	76	95	80	73	73	53	51	3,742		
PRD 2017-SFR1		47	47	108	49	47	50	54	58	68	57	54	52	2,708		
PRD 2018-SFR1				6	14	18	27	34	40	59	74	38	21	2,113		
PRD 2018-SFR2									11	9	9	23	43	2,116		
SWH 2017-1		28	34	60	87	83	79	72	72	69	60	54	55	4,393		
TAH 2016-SFR1		252	261	215	278	253	202	210	232	233	232	205	194	3,429		
TAH 2017-SFR1		197	184	121	127	114	103	98	107	118	111	100	83	3,480		
TAH 2017-SFR2		195	194	176	174	152	114	111	116	108	112	101	95	2,619		
TAH 2018-SFR1					118	128	85	88	95	89	88	90	88	2,509		
Overall SFR		1,888	1,953	1,925	2,230	2,256	2,002	1,977	1,929	1,999	1,942	1,880	1,785	85,951		

Table 11b – MTM Tenants (by Percentage)

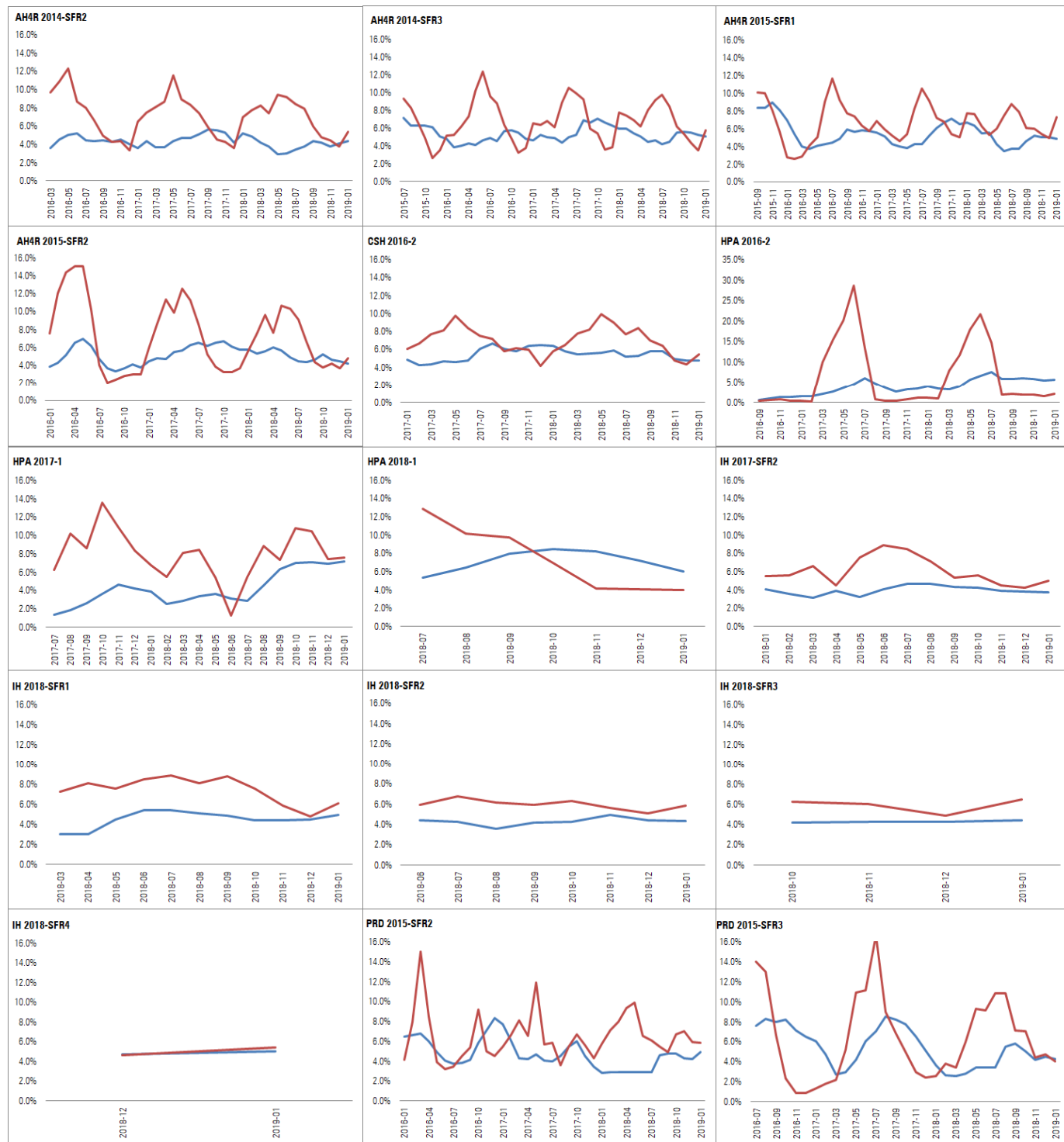
		Year 2018												Year 2019	
		Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan		
AH4R 2014-SFR2		4.2	4.6	4.6	5.2	5.3	4.9	4.5	4.1	3.8	3.5	3.6	3.3		
AH4R 2014-SFR3		4.2	4.9	4.4	5.2	5.0	4.8	4.6	4.5	4.1	3.7	3.4	3.5		
AH4R 2015-SFR1		4.4	4.7	4.7	4.8	4.4	4.3	4.3	3.8	3.6	3.4	3.2	3.1		
AH4R 2015-SFR2		3.6	4.4	4.9	5.7	5.4	5.2	4.3	4.0	3.7	3.4	3.4	3.0		
CSH 2016-2		0.8	0.8	0.7	0.8	1.1	1.6	1.4	1.3	1.3	1.4	1.2	1.0		
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		
IH 2017-SFR2		2.2	2.6	2.3	2.5	2.4	1.6	2.0	1.9	1.6	1.6	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		
IH 2018-SFR2						1.9	1.8	1.5	1.4	1.6	1.5	1.8	1.6		
IH 2018-SFR3										1.7	1.8	1.7	1.5		
IH 2018-SFR4												1.6	1.6		
PRD 2015-SFR2		1.8	2.0	2.2	1.9	1.8	1.6	1.8	1.6	1.7	1.8	1.3	1.4		
PRD 2015-SFR3		1.6	1.3	1.5	2.0	1.7	1.8	2.5	1.9	1.7	1.5	1.3	1.4		
PRD 2016-SFR2		5.4	1.6	1.7	2.1	2.2	2.0	2.5	2.1	2.0	2.0	1.4	1.4		
PRD 2017-SFR1		1.7	1.7	4.0	1.8	1.7	1.8	2.0	2.1	2.5	2.1	2.0	1.9		
PRD 2018-SFR1				0.3	0.7	0.9	1.3	1.6	1.9	2.8	3.5	1.8	1.0		
PRD 2018-SFR2									0.5	0.4	0.4	1.1	2.0		
SWH 2017-1		0.6	0.8	1.4	2.0	1.9	1.8	1.6	1.6	1.6	1.4	1.2	1.3		
TAH 2016-SFR1		7.3	7.6	6.3	8.1	7.4	5.9	6.1	6.8	6.8	6.8	6.0	5.7		
TAH 2017-SFR1		5.7	5.3	3.5	3.6	3.3	3.0	2.8	3.1	3.4	3.2	2.9	2.4		
TAH 2017-SFR2		7.4	7.4	6.7	6.6	5.8	4.3	4.2	4.4	4.1	4.3	3.9	3.6		
TAH 2018-SFR1					4.7	5.1	3.4	3.5	3.8	3.5	3.5	3.6	3.5		
Overall SFR		3.4	3.3	3.1	3.5	3.2	2.8	2.8	2.6	2.5	2.4	2.2	2.1		

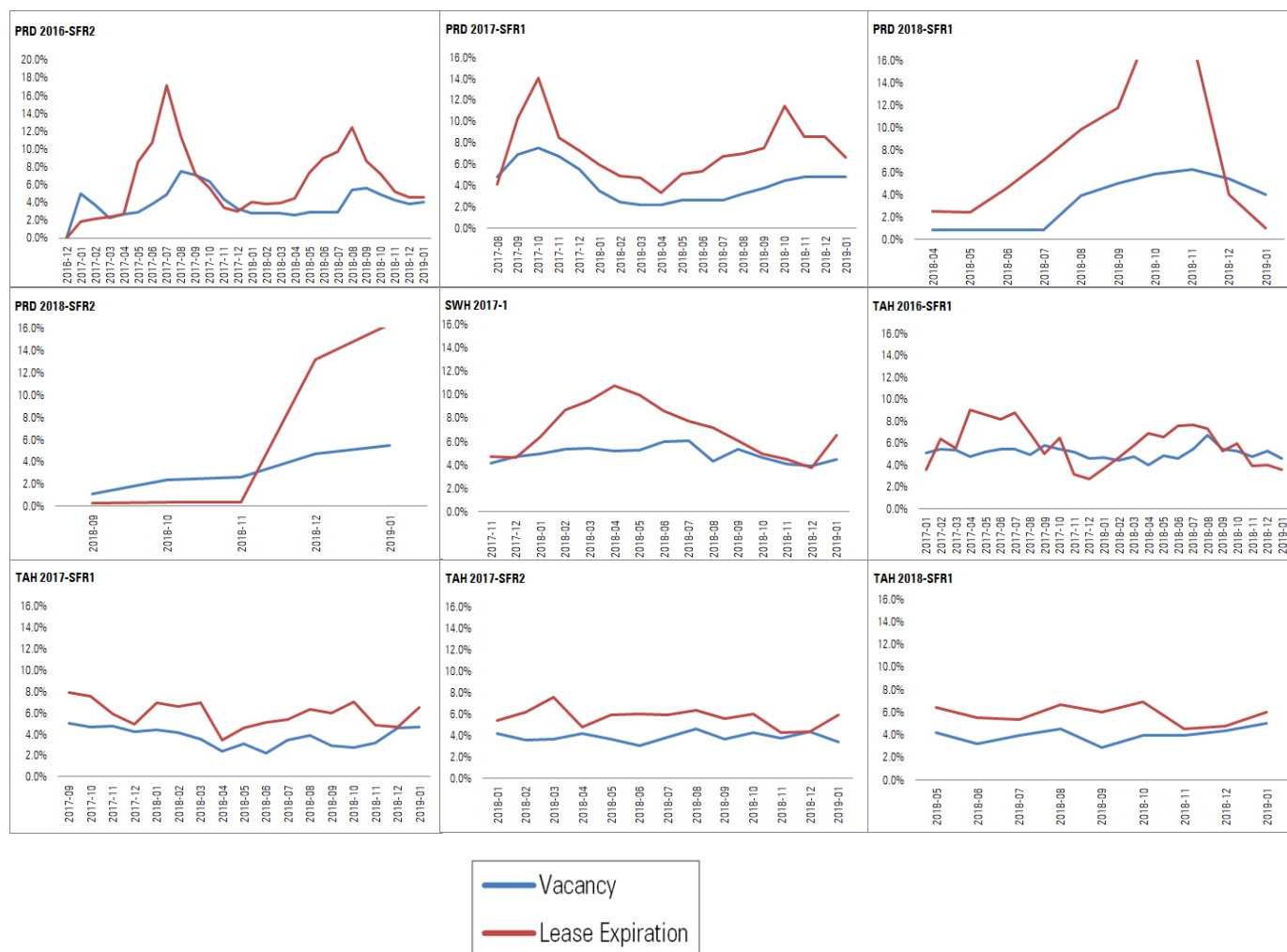
Table 12 – Monthly Turnover Rate (by Percentage)

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

Tables 6a and 6b – Historical Months of Vacancy

Tables 6a and 6b show the number of months of vacancy the January unoccupied properties have experienced. In other words, if a property is unoccupied as of the December 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 January 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 January property tape to determine the lease status for December 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 December 2018 retention rates are the January statuses of December 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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