

# Single-Family Rental Research

## Performance Summary Covering All Morningstar-Rated Securitizations

October 2018

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### Introduction

The rent change for single-borrower, single-family rental securitizations rated by Morningstar Credit Ratings, LLC increased by 3.3% in September, up from 3.2% in August. The average vacancy rate increased by 60 basis points to 5.0% in September, the fifth consecutive month of flat or increasing vacancy rates, from a revised 4.4% in August. The increase in vacancy was likely due to a corresponding increase in lease expirations, following a seasonal trend of higher lease expirations and vacancies in the spring and summer months. The average retention rate for expiring leases declined 60 basis points to 77.8% in August, the latest month available, from a revised 78.4% in July, but has remained over 75% for the last year. Among the top 20 metropolitan statistical areas, the Denver-Aurora MSA had the highest vacancy rate at 7.4%, up from a revised 5.2% in August, followed by Houston at 6.8%, Fort Worth-Arlington at 6.2%, and Dallas-Plano-Irving at 6.0%. The Phoenix MSA experienced the highest blended rent growth at 4.9%. The Dallas-Plano-Irving MSA experienced the second-highest level of blended rent growth at 4.8% despite it having the fourth-highest vacancy rate. The Denver-Aurora MSA experienced the lowest rent growth at 0.2%, which corresponds with its 7.4% vacancy rate, and the Riverside-San Bernardino MSA is the only other MSA with rent growth less than 1.0%. Rent growth for properties included in single-family rental securitizations continue to exceed the RentRange rents for three- and four-bedroom properties in the same MSAs. The October Single-Family Rental Performance Summary includes 24 single-borrower deals with close to 83,300 properties.

Morningstar publishes its 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 September. Page 6 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](http://www.morningstarcreditratings.com).

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## Single-Borrower Performance

Lease expirations increased to 6.4% in September, down from 7.7% in August, following a seasonal trend of expirations starting to decline in the fall months. We expect the decrease in lease expirations to lead to a decline in the vacancy rate in the coming months. One securitization had a lease expiration rate over 10.0%, PRD 2018-SFR1 at 11.8%. The average retention rate on full-term leases declined to 77.8% in August, the latest month for which data is available, from a revised 78.4% in July. Six securitizations had retention rates below 75%, while seven transactions had a retention rate higher than 80.0%. The overall turnover rate decreased to 3.5% in August, the latest month for which data is available, from 3.8% in July. Excluding the PRD transactions, the average delinquency rate increased 10 basis points to 0.7% in September, with four transactions reporting delinquency rates of 1.0% or more. AMSR 2016-SFR1 reported the highest delinquency rate, at 1.9% in September, up from 1.5% in August. PRD is providing revised information and the September delinquency rate will be updated in next month's SFR Performance Summary to reflect that data. Please note that any review of delinquency should be viewed within the context of the delinquency definitions in Table 7.

Rents rose 3.3% in September, compared with a 3.2% increase in August. Chart 1 shows that the rent gains for securitized properties increased above their RentRange benchmarks for the eight-consecutive month. 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 August, the latest month for which data is available, the rent change for renewal properties increased 3.9%, up from a revised 3.4% increase in July, and for vacant-to-occupied properties increased by 3.0%. Chart 3 shows that the average contractual rents by MSA have been largely in line with, or exceed, their property-level RentRange estimates with the exceptions of Fort Lauderdale and Las Vegas. Chart 4 shows the MSA-level blended rent change. MSAs with rent changes above the 3.3% average are in blue, while those below are in red. The size of the circle indicates the percentage of properties by count from a given MSA in Morningstar's database. Table 3 shows the MSA-level blended rent change for the past 12 months.

Table 11b shows the percentage of loans rented out under a month-to-month lease. AMSR 2016-SFR1 MTM leases declined for the fourth consecutive month to 11.7% of its portfolio, but they still rank the highest.

## Multiborrower Performance

As of the most recent remittance report, 856 total loans secured nine multiborrower transactions. The number of loans 30-59 days delinquent increased to 17, while the number of loans 60-89 days delinquent rose to four, and the loans over 90 days delinquent dropped to 17. Loans in foreclosure remained unchanged at five, and loans in special servicing dipped to 32.

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

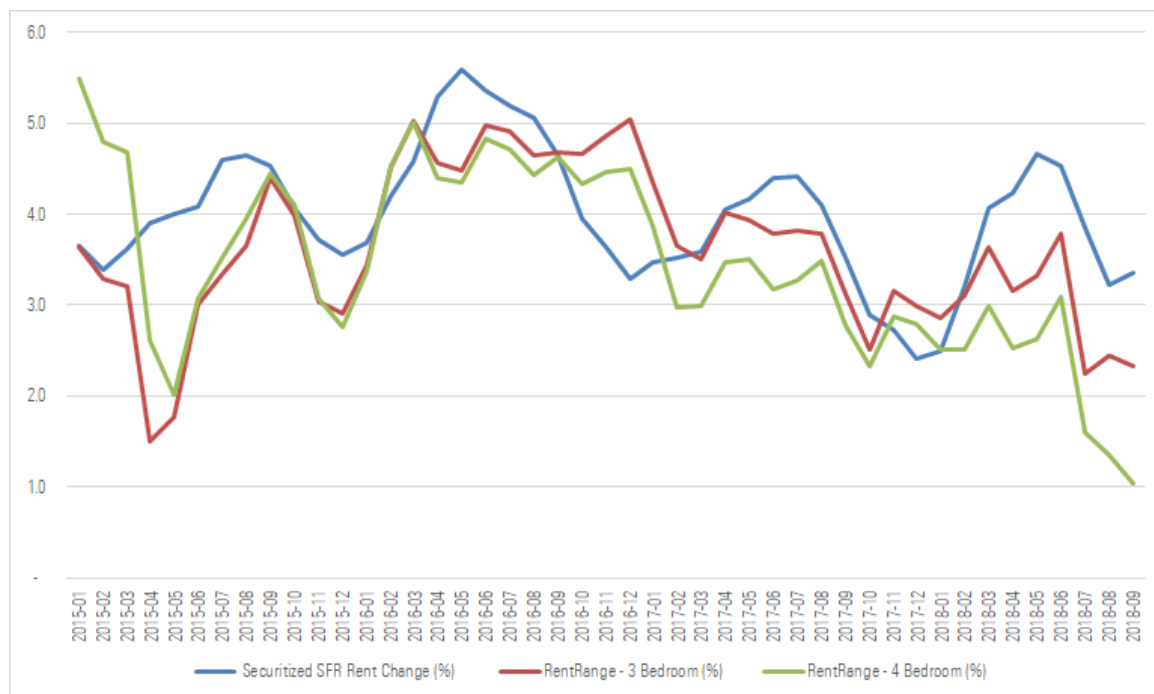
	30-59 Delinquent	60-89 Delinquent	90+ Delinquent	Foreclosure	Real Estate Owned	Special Servicing
B2R 2015-1	6.83	0.15	0.30	0.11	0.00	0.47
FKL 2015-SFR1	0.00	0.00	0.00	0.00	0.00	0.00
CAF 2015-1	2.76	0.00	0.00	0.00	0.00	6.53
B2R 2015-2	0.65	0.00	1.44	0.24	0.00	1.79
CAF 2016-1	0.74	0.00	1.44	0.00	0.00	1.44
B2R 2016-1	1.90	0.90	1.98	0.25	0.00	2.75
CAF 2016-2	0.00	0.00	1.26	2.55	0.00	4.06
CAF 2017-1	1.02	0.00	0.75	0.00	0.00	1.50
CAF 2018-1	0.61	0.00	0.31	0.00	0.00	0.31

**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	121	1	1	1	1	0	3
FKL 2015-SFR1	6	0	0	0	0	0	0
CAF 2015-1	54	3	0	0	0	0	3
B2R 2015-2	183	3	0	6	1	0	8
CAF 2016-1	71	1	0	1	0	0	1
B2R 2016-1	152	6	3	4	1	0	8
CAF 2016-2	68	0	0	2	2	0	5
CAF 2017-1	84	2	0	2	0	0	3
CAF 2018-1	117	1	0	1	0	0	1
Overall	856	17	4	17	5	0	32

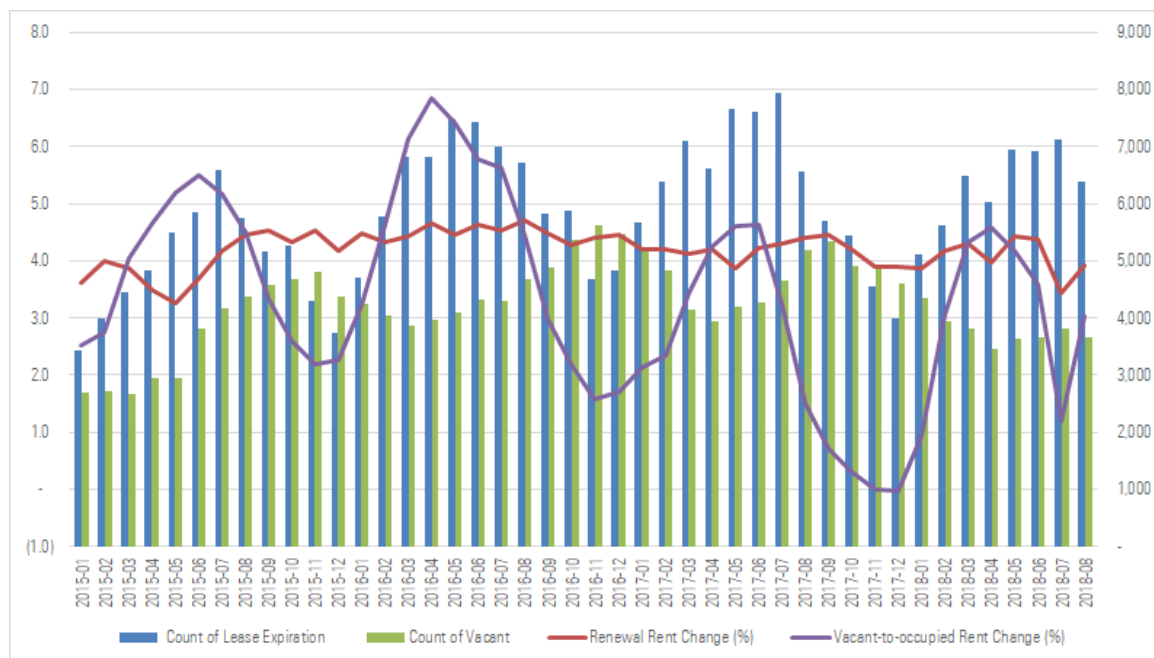
## Single-Borrower Charts and Tables

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



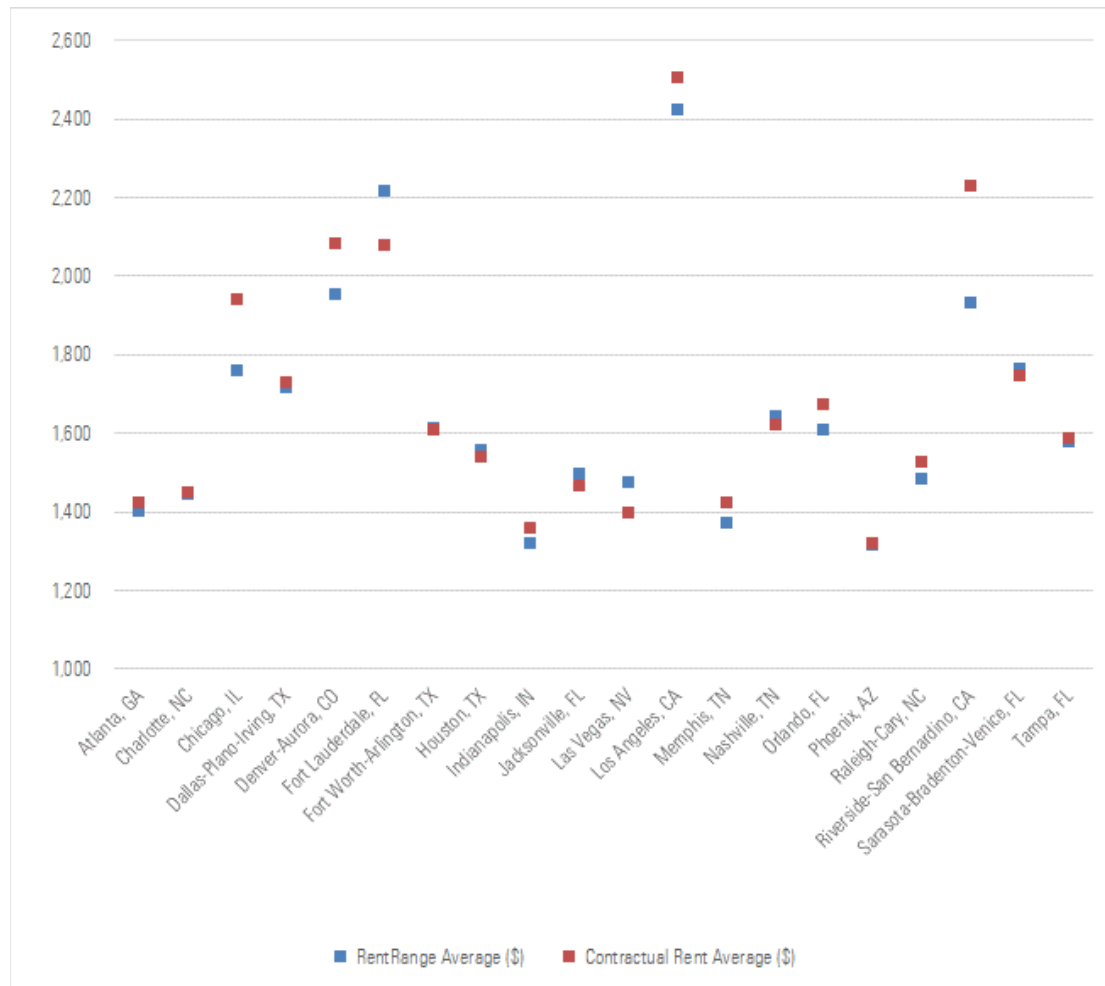
Sources: Morningstar Credit Ratings, LLC; RentRange

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



Source: Morningstar Credit Ratings, LLC

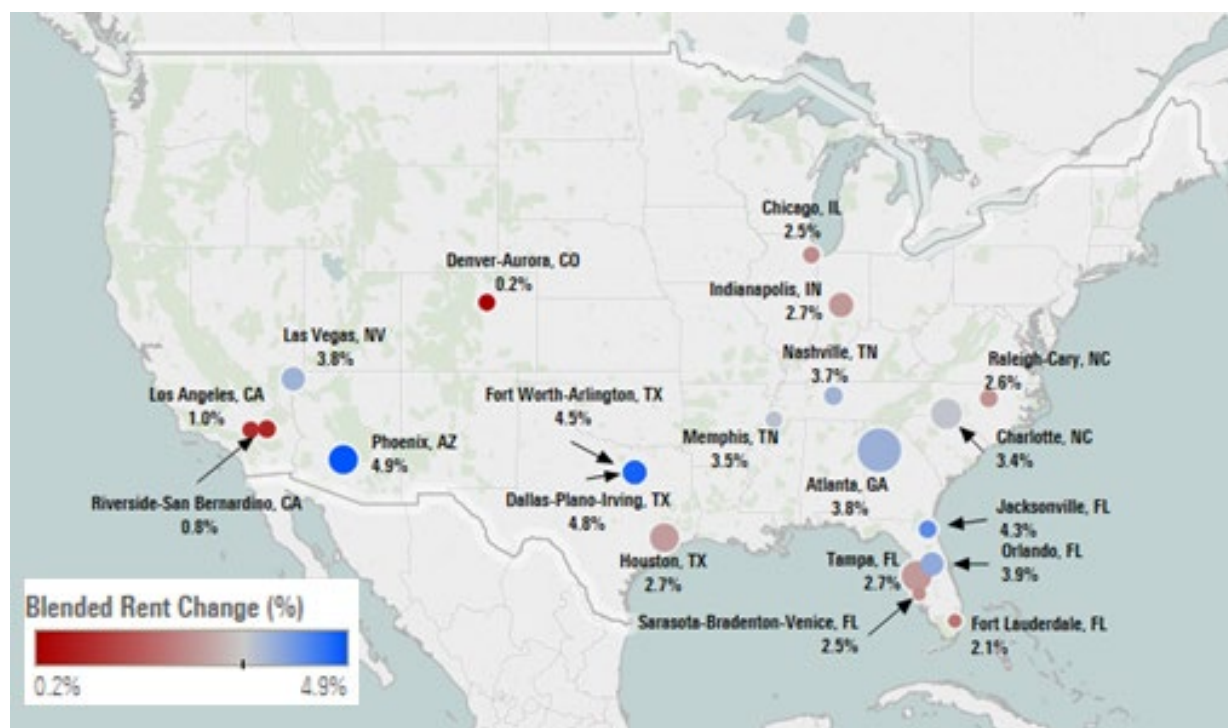
**Chart 3 – August Average Contractual Rent Versus Property-Level RentRange Estimate by MSA**



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 1.38% to 13.96%. 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											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Atlanta, GA		4.3	3.6	3.5	3.1	3.9	5.1	4.8	5.3	4.8	3.9	3.8	3.8
Charlotte, NC		2.7	1.7	1.0	1.4	2.5	3.4	3.1	4.0	3.4	3.9	3.3	3.4
Chicago, IL		0.8	-0.2	-0.6	0.7	1.3	1.6	3.0	4.3	4.4	3.0	3.2	2.5
Dallas-Plano-Irving, TX		2.8	2.8	2.4	2.5	3.2	3.6	3.9	4.0	3.9	3.8	3.5	4.8
Denver-Aurora, CO		1.7	2.4	3.8	1.6	4.3	5.7	4.9	4.6	5.1	1.4	0.7	0.2
Fort Lauderdale, FL		2.2	1.2	1.7	1.8	2.5	2.8	2.9	3.8	3.3	3.5	2.6	2.1
Fort Worth-Arlington, TX		3.3	3.2	2.7	2.3	3.2	4.2	4.1	4.1	5.0	4.6	3.9	4.5
Houston, TX		-0.4	-0.6	0.0	1.4	1.4	3.1	3.6	3.3	3.2	3.0	3.0	2.7
Indianapolis, IN		1.8	0.4	0.2	-0.1	2.9	3.3	3.3	4.2	4.5	3.8	3.0	2.7
Jacksonville, FL		3.3	2.6	2.3	3.0	3.3	4.1	5.2	5.5	4.6	5.4	4.9	4.3
Las Vegas, NV		3.1	4.5	4.0	4.2	5.1	5.6	5.2	6.2	5.8	5.0	3.6	3.8
Los Angeles, CA		6.5	6.0	6.4	6.3	4.6	5.7	6.0	6.3	6.2	4.2	1.5	1.0
Memphis, TN		1.0	0.2	-0.1	0.9	1.5	3.2	3.9	4.4	3.3	4.9	5.1	3.5
Nashville, TN		3.3	2.2	1.1	1.7	1.9	2.8	3.1	4.6	3.7	4.4	4.2	3.7
Orlando, FL		3.2	4.0	4.0	3.2	4.9	4.9	5.1	5.3	5.5	4.8	3.7	3.9
Phoenix, AZ		4.8	5.0	4.1	4.1	5.0	6.3	6.4	6.2	6.3	5.4	4.3	4.9
Raleigh-Cary, NC		2.6	2.1	0.5	1.3	1.6	2.4	3.0	3.9	2.7	3.1	2.8	2.6
Riverside-San Bernardino, CA		5.1	5.0	4.9	4.5	4.6	4.9	5.2	5.3	6.9	2.6	0.7	0.8
Sarasota-Bradenton-Venice, FL		0.4	1.0	0.4	0.8	2.0	2.9	2.9	3.4	2.3	2.5	2.0	2.5
Tampa, FL		1.7	2.4	2.1	2.1	2.9	3.7	4.3	4.3	4.2	3.1	3.0	2.7

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

		Year 2017			Year 2018									Count
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
AH4R 2014-SFR2		248	235	215	233	217	186	166	128	135	152	168	194	4,481
AH4R 2014-SFR3		317	299	284	266	265	243	227	200	208	189	199	247	4,499
AH4R 2015-SFR1		312	331	304	309	294	253	256	198	159	171	173	211	4,634
AH4R 2015-SFR2		276	252	238	235	217	229	248	234	202	182	180	190	4,123
AMSR 2016-SFR1		339	366	375	397	328	280	244	215	248	263	278	275	4,262
CAH 2015-1		214	226	230	176	165	171	153	146	223	217	180	186	3,709
CSH 2016-1		214	207	207	202	180	189	180	196	206	186	214	212	3,491
CSH 2016-2		230	254	257	256	229	214	217	223	232	205	207	236	3,942
HPA 2016-2		36	42	46	52	45	41	53	75	86	98	86	76	1,293
HPA 2017-1		50	64	57	53	34	39	46	49	42	38	61	84	1,336
HPA 2018-1											94	113	141	1,769
IH 2017-SFR2					177	158	136	124	141	179	204	204	189	4,404
IH 2018-SFR1							131	131	193	230	233	219	212	4,288
IH 2018-SFR2										248	236	198	248	5,588
PRD 2015-SFR2		197	148	113	93	95	95	95	95	94	94	94	157	3,287
PRD 2015-SFR3		245	206	160	114	83	80	87	107	107	107	106	182	3,149
PRD 2016-SFR2		238	162	122	104	104	105	98	109	109	109	109	211	3,742
PRD 2017-SFR1		203	183	150	94	67	60	60	71	71	71	71	102	2,708
PRD 2018-SFR1								19	18	18	18	18	107	2,113
SWH 2017-1			184	209	219	238	239	231	233	265	269	191	275	4,421
TAH 2016-SFR1		186	178	156	161	150	162	136	167	156	186	230	186	3,433
TAH 2017-SFR1		162	164	146	152	145	124	84	109	76	120	136	100	3,480
TAH 2017-SFR2					109	93	94	109	96	79	99	120	95	2,621
TAH 2018-SFR1									104	80	98	112	72	2,509
Overall SFR		3,467	3,501	3,269	3,402	3,107	3,071	2,964	3,107	3,453	3,639	3,667	4,188	83,282

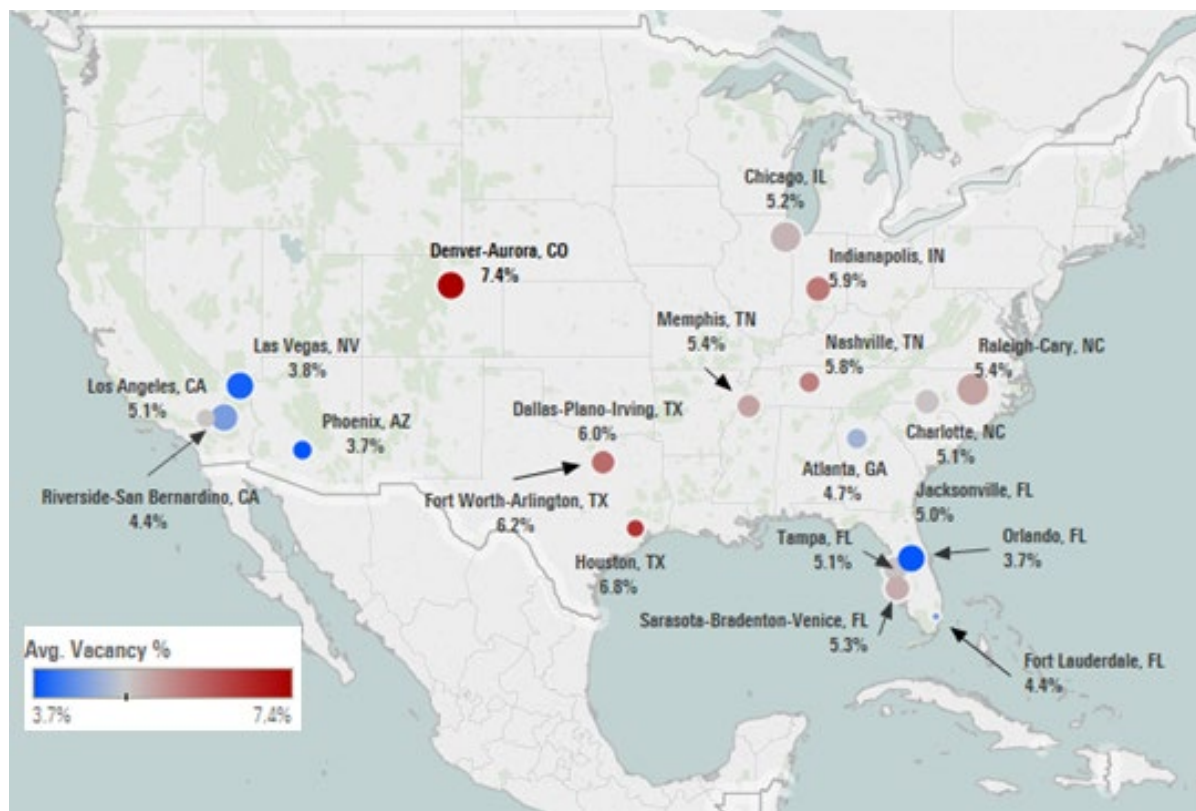
**Table 4b – Month-End Vacancy (by Percentage)**

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		5.5	5.2	4.8	5.2	4.8	4.2	3.7	2.9	3.0	3.4	3.7	4.3
AH4R 2014-SFR3		7.0	6.6	6.3	5.9	5.9	5.4	5.0	4.4	4.6	4.2	4.4	5.5
AH4R 2015-SFR1		6.7	7.1	6.5	6.6	6.3	5.4	5.5	4.3	3.4	3.7	3.7	4.6
AH4R 2015-SFR2		6.7	6.1	5.8	5.7	5.3	5.6	6.0	5.7	4.9	4.4	4.4	4.6
AMSR 2016-SFR1		8.0	8.6	8.8	9.3	7.7	6.6	5.7	5.0	5.8	6.2	6.5	6.5
CAH 2015-1		5.6	6.0	6.1	4.6	4.4	4.5	4.1	3.9	5.9	5.8	4.8	5.0
CSH 2016-1		6.0	5.8	5.8	5.7	5.1	5.3	5.1	5.6	5.9	5.3	6.1	6.1
CSH 2016-2		5.8	6.4	6.4	6.4	5.7	5.4	5.5	5.6	5.9	5.2	5.2	6.0
HPA 2016-2		2.7	3.1	3.4	3.9	3.4	3.1	4.0	5.7	6.6	7.6	6.6	5.9
HPA 2017-1		3.6	4.7	4.2	3.9	2.5	2.9	3.4	3.6	3.1	2.8	4.5	6.3
HPA 2018-1											5.3	6.4	8.0
IH 2017-SFR2					4.0	3.6	3.1	2.8	3.2	4.1	4.6	4.6	4.3
IH 2018-SFR1							3.1	3.1	4.5	5.4	5.4	5.1	4.9
IH 2018-SFR2										4.4	4.2	3.5	4.4
PRD 2015-SFR2		6.0	4.5	3.4	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	4.8
PRD 2015-SFR3		7.8	6.5	5.1	3.6	2.6	2.5	2.8	3.4	3.4	3.4	3.4	5.8
PRD 2016-SFR2		6.4	4.3	3.3	2.8	2.8	2.8	2.6	2.9	2.9	2.9	2.9	5.6
PRD 2017-SFR1		7.5	6.8	5.5	3.5	2.5	2.2	2.2	2.6	2.6	2.6	2.6	3.8
PRD 2018-SFR1								0.9	0.9	0.9	0.9	0.9	5.1
SWH 2017-1			4.2	4.7	4.9	5.4	5.4	5.2	5.3	6.0	6.1	4.3	6.2
TAH 2016-SFR1		5.4	5.2	4.5	4.7	4.4	4.7	4.0	4.9	4.5	5.4	6.7	5.4
TAH 2017-SFR1		4.7	4.7	4.2	4.4	4.2	3.6	2.4	3.1	2.2	3.4	3.9	2.9
TAH 2017-SFR2					4.2	3.5	3.6	4.2	3.7	3.0	3.8	4.6	3.6
TAH 2018-SFR1									4.1	3.2	3.9	4.5	2.9
Overall SFR		6.2	5.8	5.4	5.1	4.6	4.3	4.0	4.1	4.2	4.4	4.4	5.0

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

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Atlanta, GA		5.0	4.7	4.4	4.6	4.6	4.0	4.2	4.1	4.1	4.4	4.7	4.7
Charlotte, NC		6.6	6.1	5.8	5.8	5.5	5.4	4.4	4.4	4.4	4.1	4.5	5.1
Chicago, IL		5.7	5.2	4.5	4.5	4.6	4.3	4.9	4.8	3.4	3.4	4.2	5.2
Dallas-Plano-Irving, TX		5.5	4.9	5.3	5.0	4.5	4.6	4.3	4.1	4.6	5.1	5.7	6.0
Denver-Aurora, CO		4.9	4.7	5.4	4.8	5.0	4.0	4.0	5.6	7.0	6.1	5.2	7.4
Fort Lauderdale, FL		6.8	6.1	5.8	5.1	4.2	5.0	4.9	6.1	5.7	5.0	5.4	4.4
Fort Worth-Arlington, TX		4.9	5.9	5.2	5.0	4.3	4.0	4.0	4.0	4.5	4.6	4.8	6.2
Houston, TX		10.0	9.4	8.8	8.8	7.3	6.4	6.3	5.9	5.6	5.6	6.2	6.8
Indianapolis, IN		6.2	5.6	5.3	4.4	5.1	4.3	4.1	3.0	3.4	3.9	4.5	5.9
Jacksonville, FL		5.8	5.2	4.5	4.6	4.0	3.2	2.6	3.4	3.3	3.7	4.1	5.0
Las Vegas, NV		3.8	3.5	3.6	2.6	2.5	2.8	2.2	3.0	3.3	3.5	3.1	3.8
Los Angeles, CA		4.9	5.2	4.3	5.0	3.7	3.2	3.9	4.0	5.5	5.4	5.5	5.1
Memphis, TN		7.3	6.2	5.3	5.2	4.3	4.0	3.9	3.5	3.8	3.6	3.5	5.4
Nashville, TN		7.6	8.0	7.5	7.3	5.9	4.7	4.1	3.6	3.5	4.2	4.2	5.8
Orlando, FL		4.5	3.8	3.5	3.3	3.1	3.6	2.6	2.9	3.3	3.3	3.2	3.7
Phoenix, AZ		4.8	4.8	4.0	3.2	3.2	2.7	2.2	2.7	3.0	3.1	3.1	3.7
Raleigh-Cary, NC		7.1	6.8	5.6	5.8	5.1	5.2	4.7	3.9	3.4	3.3	3.2	5.4
Riverside-San Bernardino, CA		3.8	3.7	4.3	3.8	4.1	3.7	3.5	3.7	4.1	4.0	3.4	4.4
Sarasota-Bradenton-Venice, FL		7.0	7.3	5.9	4.5	4.6	4.8	5.3	6.3	6.3	5.7	6.1	5.3
Tampa, FL		6.3	5.9	5.0	4.5	4.0	4.0	4.1	4.4	4.5	4.8	4.5	5.1

**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 18.075% to 26.397%. 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												Total Count
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
AH4R 2014-SFR2		201	189	161	310	346	368	329	423	411	378	354	265	4,481
AH4R 2014-SFR3		241	160	171	348	332	311	280	361	410	439	382	280	4,499
AH4R 2015-SFR1		313	251	235	360	354	291	247	278	347	405	364	279	4,634
AH4R 2015-SFR2		132	133	151	238	310	397	315	438	425	376	271	181	4,123
AMSR 2016-SFR1		193	178	167	178	271	300	320	361	323	250	196	164	4,262
CAH 2015-1		287	266	175	215	207	219	251	319	374	363	340	298	3,709
CSH 2016-1		234	191	170	197	220	276	303	308	346	331	291	226	3,491
CSH 2016-2		243	237	167	232	257	306	325	392	354	302	332	275	3,942
HPA 2016-2		6	10	16	14	12	105	155	235	281	191	49	27	1,293
HPA 2017-1		186	149	114	91	74	110	114	73	17	74	119	99	1,336
HPA 2018-1											229	179	173	1,769
IH 2017-SFR2					242	247	292	294	330	391	373	314	237	4,404
IH 2018-SFR1							311	346	323	363	380	347	375	4,288
IH 2018-SFR2										331	378	345	333	5,588
PRD 2015-SFR2		221	185	142	189	234	260	307	324	216	200	179	162	3,287
PRD 2015-SFR3		157	93	76	81	120	108	187	292	287	341	342	225	3,149
PRD 2016-SFR2		209	127	113	150	145	148	165	271	333	364	465	324	3,742
PRD 2017-SFR1		381	229	197	162	133	127	89	136	145	183	189	203	2,708
PRD 2018-SFR1								54	52	97	151	208	249	2,113
SWH 2017-1			210	204	284	385	418	475	442	381	342	318	268	4,421
TAH 2016-SFR1		221	107	92	124	159	197	235	225	260	263	250	181	3,433
TAH 2017-SFR1		261	206	171	241	229	241	119	159	176	188	221	209	3,480
TAH 2017-SFR2					141	161	197	124	154	157	155	166	145	2,621
TAH 2018-SFR1									160	137	133	166	150	2,509
Overall SFR		3,486	2,921	2,522	3,797	4,196	4,982	5,034	6,056	6,562	6,789	6,387	5,328	83,282

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

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		4.5	4.2	3.6	6.9	7.7	8.2	7.3	9.4	9.2	8.4	7.9	5.9
AH4R 2014-SFR3		5.4	3.6	3.8	7.7	7.4	6.9	6.2	8.0	9.1	9.8	8.5	6.2
AH4R 2015-SFR1		6.7	5.4	5.0	7.7	7.6	6.2	5.3	6.0	7.5	8.7	7.9	6.0
AH4R 2015-SFR2		3.2	3.2	3.7	5.8	7.5	9.6	7.6	10.6	10.3	9.1	6.6	4.4
AMSR 2016-SFR1		4.5	4.2	3.9	4.2	6.4	7.0	7.5	8.5	7.6	5.9	4.6	3.8
CAH 2015-1		7.5	7.0	4.6	5.7	5.5	5.8	6.7	8.5	10.0	9.7	9.1	8.0
CSH 2016-1		6.6	5.4	4.8	5.6	6.2	7.8	8.6	8.7	9.8	9.4	8.3	6.5
CSH 2016-2		6.1	5.9	4.2	5.8	6.4	7.7	8.2	9.9	9.0	7.6	8.4	7.0
HPA 2016-2		0.4	0.7	1.2	1.1	0.9	7.9	11.8	17.9	21.6	14.7	3.8	2.1
HPA 2017-1		13.6	10.9	8.4	6.7	5.4	8.1	8.4	5.4	1.3	5.5	8.9	7.4
HPA 2018-1											12.9	10.1	9.8
IH 2017-SFR2					5.5	5.6	6.6	6.7	7.5	8.9	8.5	7.1	5.4
IH 2018-SFR1							7.3	8.1	7.5	8.5	8.9	8.1	8.7
IH 2018-SFR2										5.9	6.7	6.2	6.0
PRD 2015-SFR2		6.7	5.6	4.3	5.7	7.1	7.9	9.3	9.9	6.6	6.1	5.4	4.9
PRD 2015-SFR3		5.0	3.0	2.4	2.6	3.8	3.4	5.9	9.3	9.1	10.8	10.9	7.1
PRD 2016-SFR2		5.6	3.4	3.0	4.0	3.9	4.0	4.4	7.2	8.9	9.7	12.4	8.7
PRD 2017-SFR1		14.1	8.5	7.3	6.0	4.9	4.7	3.3	5.0	5.4	6.8	7.0	7.5
PRD 2018-SFR1								2.6	2.5	4.6	7.1	9.8	11.8
SWH 2017-1			4.7	4.6	6.4	8.7	9.4	10.7	10.0	8.6	7.7	7.2	6.1
TAH 2016-SFR1		6.4	3.1	2.7	3.6	4.6	5.7	6.8	6.5	7.6	7.7	7.3	5.3
TAH 2017-SFR1		7.5	5.9	4.9	6.9	6.6	6.9	3.4	4.6	5.1	5.4	6.4	6.0
TAH 2017-SFR2					5.4	6.1	7.5	4.7	5.9	6.0	5.9	6.3	5.5
TAH 2018-SFR1									6.4	5.5	5.3	6.6	6.0
Overall SFR		6.2	4.8	4.2	5.6	6.2	7.0	6.8	8.0	8.0	8.1	7.7	6.4



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

		Year 2018											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Atlanta, GA		6.0	5.2	4.6	5.8	6.3	6.6	7.5	8.2	8.1	7.7	7.3	6.3
Charlotte, NC		7.2	5.0	4.4	5.2	6.1	7.3	6.6	7.1	7.9	7.9	8.3	6.4
Chicago, IL		5.0	3.0	3.0	6.6	8.8	8.2	7.8	9.3	8.2	10.0	7.9	7.6
Dallas-Plano-Irving, TX		6.7	4.9	4.7	5.8	6.5	7.9	6.5	7.2	9.0	8.3	8.1	5.8
Denver-Aurora, CO		6.2	4.8	5.2	5.1	7.3	8.0	9.8	10.3	9.6	9.5	7.5	7.3
Fort Lauderdale, FL		7.9	6.6	5.4	7.8	6.3	7.8	7.1	8.0	7.0	6.0	7.3	5.1
Fort Worth-Arlington, TX		6.4	5.2	4.5	4.8	6.4	8.1	7.5	7.8	8.9	7.4	7.9	6.5
Houston, TX		5.2	5.0	4.4	5.2	6.2	7.2	6.3	6.5	6.9	7.9	6.3	6.2
Indianapolis, IN		5.0	2.3	1.9	6.9	7.3	7.1	7.3	9.4	8.4	8.8	8.0	6.1
Jacksonville, FL		8.6	6.5	5.5	6.9	6.9	6.3	5.2	8.5	6.4	6.0	6.1	6.0
Las Vegas, NV		6.8	5.2	4.4	5.4	5.8	6.5	7.5	6.9	7.2	8.3	8.5	7.5
Los Angeles, CA		7.0	6.9	6.0	6.2	4.7	7.3	7.2	6.7	8.0	7.2	7.2	6.7
Memphis, TN		6.0	3.3	3.1	5.2	5.2	8.1	8.3	8.5	7.0	6.8	7.8	7.7
Nashville, TN		7.4	4.6	4.1	5.3	5.4	6.4	7.7	7.5	8.5	8.7	7.2	5.5
Orlando, FL		7.1	5.6	5.1	6.1	5.7	5.9	5.8	8.9	8.6	8.7	9.3	6.2
Phoenix, AZ		8.0	5.6	5.2	6.7	7.3	7.2	7.0	6.8	6.9	7.3	7.5	6.1
Raleigh-Cary, NC		7.6	5.2	4.0	4.3	6.6	7.1	6.2	8.1	8.4	10.2	9.3	6.9
Riverside-San Bernardino, CA		8.2	7.0	4.1	5.8	7.0	8.2	7.9	8.1	7.2	8.6	7.1	8.2
Sarasota-Bradenton-Venice, FL		8.0	6.1	5.4	4.7	6.9	7.4	5.6	7.5	7.4	7.6	8.3	6.7
Tampa, FL		6.1	5.4	4.8	5.7	6.4	6.6	6.8	7.5	8.0	7.8	8.6	6.5

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		19	37	30	38	25	22	7	5	4	4	2	1	194
AH4R 2014-SFR3		36	41	45	25	26	19	11	11	7	2	4	20	247
AH4R 2015-SFR1		31	53	38	28	17	16	10	2	1	0	0	15	211
AH4R 2015-SFR2		37	33	41	22	18	12	12	1	1	1	1	11	190
AMSR 2016-SFR1		54	58	52	44	28	16	8	4	5	2	0	4	275
CAH 2015-1		41	41	47	20	9	13	8	1	3	0	1	2	186
CSH 2016-1		45	63	42	23	13	9	7	0	3	1	2	4	212
CSH 2016-2		58	73	60	21	5	8	5	3	0	1	1	1	236
HPA 2016-2		9	13	36	11	2	2	1	1	1	0	0	0	76
HPA 2017-1		38	25	15	5	0	1	0	0	0	0	0	0	84
HPA 2018-1		60	40	41	0									141
IH 2017-SFR2		61	72	35	13	3	1	3	1	0	0			189
IH 2018-SFR1		82	79	26	9	12	0	3	1					212
IH 2018-SFR2		132	68	28	17	3								248
PRD 2015-SFR2		50	30	30	12	10	10	3	6	1	2	0	3	157
PRD 2015-SFR3		72	37	28	19	13	4	2	1	1	2	0	3	182
PRD 2016-SFR2		136	29	23	8	7	1	2	0	0	1	0	4	211
PRD 2017-SFR1		84	14	1	2	0	0	0	0	0	1	0	0	102
PRD 2018-SFR1		107	0	0	0	0	0	0						107
SWH 2017-1		101	75	58	23	7	4	5	0	0	1	1	0	275
TAH 2016-SFR1		24	56	41	31	17	7	4	4	0	0	0	2	186
TAH 2017-SFR1		30	44	15	7	3	1	0	0	0	0	0	0	100
TAH 2017-SFR2		27	41	17	4	2	2	0	1	1	0			95
TAH 2018-SFR1		15	31	21	2	3	0							72
Overall SFR		1,349	1,053	770	384	223	148	91	42	28	18	12	70	4,188

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		9.8	19.1	15.5	19.6	12.9	11.3	3.6	2.6	2.1	2.1	1.0	0.5	100.0
AH4R 2014-SFR3		14.6	16.6	18.2	10.1	10.5	7.7	4.5	4.5	2.8	0.8	1.6	8.1	100.0
AH4R 2015-SFR1		14.7	25.1	18.0	13.3	8.1	7.6	4.7	0.9	0.5	0.0	0.0	7.1	100.0
AH4R 2015-SFR2		19.5	17.4	21.6	11.6	9.5	6.3	6.3	0.5	0.5	0.5	0.5	5.8	100.0
AMSR 2016-SFR1		19.6	21.1	18.9	16.0	10.2	5.8	2.9	1.5	1.8	0.7	0.0	1.5	100.0
CAH 2015-1		22.0	22.0	25.3	10.8	4.8	7.0	4.3	0.5	1.6	0.0	0.5	1.1	100.0
CSH 2016-1		21.2	29.7	19.8	10.8	6.1	4.2	3.3	0.0	1.4	0.5	0.9	1.9	100.0
CSH 2016-2		24.6	30.9	25.4	8.9	2.1	3.4	2.1	1.3	0.0	0.4	0.4	0.4	100.0
HPA 2016-2		11.8	17.1	47.4	14.5	2.6	2.6	1.3	1.3	1.3	0.0	0.0	0.0	100.0
HPA 2017-1		45.2	29.8	17.9	6.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	100.0
HPA 2018-1		42.6	28.4	29.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
IH 2017-SFR2		32.3	38.1	18.5	6.9	1.6	0.5	1.6	0.5	0.0	0.0	0.0	0.0	100.0
IH 2018-SFR1		38.7	37.3	12.3	4.2	5.7	0.0	1.4	0.5	0.0	0.0	0.0	0.0	100.0
IH 2018-SFR2		53.2	27.4	11.3	6.9	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
PRD 2015-SFR2		31.8	19.1	19.1	7.6	6.4	6.4	1.9	3.8	0.6	1.3	0.0	1.9	100.0
PRD 2015-SFR3		39.6	20.3	15.4	10.4	7.1	2.2	1.1	0.5	0.5	1.1	0.0	1.6	100.0
PRD 2016-SFR2		64.5	13.7	10.9	3.8	3.3	0.5	0.9	0.0	0.0	0.5	0.0	1.9	100.0
PRD 2017-SFR1		82.4	13.7	1.0	2.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	100.0
PRD 2018-SFR1		100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
SWH 2017-1		36.7	27.3	21.1	8.4	2.5	1.5	1.8	0.0	0.0	0.4	0.4	0.0	100.0
TAH 2016-SFR1		12.9	30.1	22.0	16.7	9.1	3.8	2.2	2.2	0.0	0.0	0.0	1.1	100.0
TAH 2017-SFR1		30.0	44.0	15.0	7.0	3.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
TAH 2017-SFR2		28.4	43.2	17.9	4.2	2.1	2.1	0.0	1.1	1.1	0.0	0.0	0.0	100.0
TAH 2018-SFR1		20.8	43.1	29.2	2.8	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0
Overall SFR		32.2	25.1	18.4	9.2	5.3	3.5	2.2	1.0	0.7	0.4	0.3	1.7	100.0

**Table 7 – Delinquency Definition**



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

<sup>1</sup> Includes Section 8 rent, pet fees, and MTM fees, but excludes late fees and damage fees.

<sup>2</sup> Based on total receivables.

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

		Year 2018												Total Count
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
AH4R 2014-SFR2		21	19	20	20	22	8	7	7	12	13	11	16	4,481
AH4R 2014-SFR3		21	12	14	19	20	7	12	9	5	14	14	12	4,499
AH4R 2015-SFR1		26	28	26	22	29	13	15	8	12	18	11	17	4,634
AH4R 2015-SFR2		17	24	10	21	18	6	7	10	7	11	10	9	4,123
AMSR 2016-SFR1		97	111	114	98	95	80	60	75	73	67	66	81	4,262
CAH 2015-1		28	31	32	20	23	26	17	42	35	27	19	27	3,709
CSH 2016-1		28	26	29	33	26	21	7	29	37	29	31	13	3,491
CSH 2016-2		34	40	48	37	36	24	13	36	32	36	30	35	3,942
HPA 2016-2		17	12	16	9	10	9	6	11	12	14	16	22	1,293
HPA 2017-1		12	11	7	10	10	5	8	7	9	19	23	22	1,336
HPA 2018-1											24	23	25	1,769
IH 2017-SFR2					33	30	19	15	27	33	24	30	35	4,404
IH 2018-SFR1							15	29	30	38	21	16	20	4,288
IH 2018-SFR2										43	54	49	50	5,588
PRD 2015-SFR2		25	23	24	28	21	18	10	24	18	24	18	N/A	3,287
PRD 2015-SFR3		23	17	22	29	25	20	17	19	0	22	18	N/A	3,149
PRD 2016-SFR2		23	19	39	41	0	26	18	17	0	29	21	N/A	3,742
PRD 2017-SFR1		19	16	17	17	22	16	17	14	0	24	19	N/A	2,708
PRD 2018-SFR1								15	16	0	16	11	N/A	2,113
SWH 2017-1			34	36	45	45	31	19	45	45	27	29	36	4,421
TAH 2016-SFR1		2	15	15	18	23	10	10	21	9	14	8	15	3,433
TAH 2017-SFR1		19	14	12	10	12	2	3	26	0	10	7	11	3,480
TAH 2017-SFR2					7	9	4	6	13	4	3	2	4	2,621
TAH 2018-SFR1									0	2	4	2	6	2,509
Overall SFR		412	452	481	517	476	360	311	486	426	544	484	456	83,282

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

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		0.5	0.4	0.4	0.4	0.5	0.2	0.2	0.2	0.3	0.3	0.2	0.4
AH4R 2014-SFR3		0.5	0.3	0.3	0.4	0.4	0.2	0.3	0.2	0.1	0.3	0.3	0.3
AH4R 2015-SFR1		0.6	0.6	0.6	0.5	0.6	0.3	0.3	0.2	0.3	0.4	0.2	0.4
AH4R 2015-SFR2		0.4	0.6	0.2	0.5	0.4	0.1	0.2	0.2	0.2	0.3	0.2	0.2
AMSR 2016-SFR1		2.3	2.6	2.7	2.3	2.2	1.9	1.4	1.8	1.7	1.6	1.5	1.9
CAH 2015-1		0.7	0.8	0.8	0.5	0.6	0.7	0.5	1.1	0.9	0.7	0.5	0.7
CSH 2016-1		0.8	0.7	0.8	0.9	0.7	0.6	0.2	0.8	1.1	0.8	0.9	0.4
CSH 2016-2		0.9	1.0	1.2	0.9	0.9	0.6	0.3	0.9	0.8	0.9	0.8	0.9
HPA 2016-2		1.3	0.9	1.2	0.7	0.8	0.7	0.5	0.8	0.9	1.1	1.2	1.7
HPA 2017-1		0.9	0.8	0.5	0.7	0.7	0.4	0.6	0.5	0.7	1.4	1.7	1.6
HPA 2018-1											1.3	1.3	1.4
IH 2017-SFR2					0.7	0.7	0.4	0.3	0.6	0.7	0.5	0.7	0.8
IH 2018-SFR1							0.3	0.7	0.7	0.9	0.5	0.4	0.5
IH 2018-SFR2										0.8	1.0	0.9	0.9
PRD 2015-SFR2		0.8	0.7	0.7	0.9	0.6	0.5	0.3	0.7	0.5	0.7	0.5	N/A
PRD 2015-SFR3		0.7	0.5	0.7	0.9	0.8	0.6	0.5	0.6	0.0	0.7	0.6	N/A
PRD 2016-SFR2		0.6	0.5	1.0	1.1	0.0	0.7	0.5	0.5	0.0	0.8	0.6	N/A
PRD 2017-SFR1		0.7	0.6	0.6	0.6	0.8	0.6	0.6	0.5	0.0	0.9	0.7	N/A
PRD 2018-SFR1								0.7	0.8	0.0	0.8	0.5	N/A
SWH 2017-1			0.8	0.8	1.0	1.0	0.7	0.4	1.0	1.0	0.6	0.7	0.8
TAH 2016-SFR1		0.1	0.4	0.4	0.5	0.7	0.3	0.3	0.6	0.3	0.4	0.2	0.4
TAH 2017-SFR1		0.5	0.4	0.3	0.3	0.3	0.1	0.1	0.7	0.0	0.3	0.2	0.3
TAH 2017-SFR2					0.3	0.3	0.2	0.2	0.5	0.2	0.1	0.1	0.2
TAH 2018-SFR1									0.0	0.1	0.2	0.1	0.2
Overall SFR		0.7	0.7	0.8	0.8	0.7	0.5	0.4	0.6	0.5	0.7	0.6	0.7

**Table 9 – Monthly Retention Rate of Expiring Leases**

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		78.6	75.1	75.2	77.4	78.9	80.4	79.3	76.8	77.1	74.9	74.0	TBD
AH4R 2014-SFR3		71.0	78.1	78.9	76.7	81.9	74.3	80.0	73.1	71.7	77.2	79.1	TBD
AH4R 2015-SFR1		75.7	77.3	76.2	75.3	74.9	77.7	72.5	72.3	72.9	71.9	77.5	TBD
AH4R 2015-SFR2		78.0	68.4	76.2	76.1	80.3	75.3	75.2	72.1	71.8	74.2	74.9	TBD
AMSR 2016-SFR1		86.0	87.1	85.6	88.8	83.0	80.3	80.9	80.6	78.3	74.0	80.1	TBD
CAH 2015-1		81.5	74.4	77.1	83.3	75.8	79.9	84.9	86.2	76.7	80.4	76.8	TBD
CSH 2016-1		83.3	73.8	79.4	76.6	82.7	76.1	79.5	78.2	76.6	79.8	75.6	TBD
CSH 2016-2		78.6	67.5	73.1	78.9	80.9	80.7	79.7	73.2	76.3	78.8	73.2	TBD
HPA 2016-2		66.7	90.0	81.3	78.6	75.0	77.1	77.4	75.7	79.0	70.7	77.6	TBD
HPA 2017-1		82.3	89.3	83.3	87.9	79.7	80.9	75.4	78.1	52.9	73.0	73.9	TBD
HPA 2018-1											72.5	76.0	TBD
IH 2017-SFR2					78.1	80.6	83.2	81.0	79.7	77.7	79.4	79.0	TBD
IH 2018-SFR1							84.6	78.9	80.2	76.6	78.9	74.6	TBD
IH 2018-SFR2										77.3	81.5	80.9	TBD
PRD 2015-SFR2		78.7	80.0	83.1	79.9	77.4	81.9	85.3	80.6	80.1	84.0	70.4	TBD
PRD 2015-SFR3		73.9	77.4	73.7	72.8	75.8	75.9	80.2	80.8	80.8	85.6	77.5	TBD
PRD 2016-SFR2		79.4	80.3	80.5	87.3	81.4	82.4	78.8	80.1	80.2	82.7	77.8	TBD
PRD 2017-SFR1		79.8	76.0	76.1	82.1	81.2	91.3	83.1	73.5	78.6	81.4	82.0	TBD
PRD 2018-SFR1								85.2	78.8	80.4	84.1	76.9	TBD
SWH 2017-1			74.8	84.8	81.3	75.8	78.5	78.5	85.7	72.4	79.5	79.2	TBD
TAH 2016-SFR1		82.8	78.5	84.8	81.5	83.6	81.2	85.5	81.3	78.1	78.3	82.0	TBD
TAH 2017-SFR1		82.8	84.0	88.3	79.3	82.5	79.7	84.0	78.0	85.8	74.5	82.8	TBD
TAH 2017-SFR2					76.6	81.4	80.7	78.2	78.6	81.5	82.6	84.9	TBD
TAH 2018-SFR1									77.5	83.9	82.7	87.3	TBD
Overall SFR		79.5	77.3	79.7	79.4	79.6	79.7	79.9	78.3	77.0	78.4	77.8	TBD

TBD – To Be Determined

**Table 10 – Monthly Retention Rate of MTM Leases**

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		83.7	87.4	86.8	89.7	87.3	86.9	87.5	85.4	82.0	86.3	84.4	TBD
AH4R 2014-SFR3		83.2	81.4	89.2	90.0	85.8	83.6	86.4	76.0	82.4	82.8	85.3	TBD
AH4R 2015-SFR1		81.0	87.1	84.9	86.5	82.3	88.6	86.1	78.7	84.1	80.3	79.4	TBD
AH4R 2015-SFR2		87.0	80.9	88.8	86.4	85.5	82.9	82.6	72.6	83.9	80.9	79.7	TBD
AMSR 2016-SFR1		95.7	95.0	93.7	98.2	95.2	94.6	95.5	90.9	87.6	87.6	91.6	TBD
CAH 2015-1		80.0	74.4	78.0	72.5	91.7	81.0	88.6	77.8	83.3	72.5	70.7	TBD
CSH 2016-1		67.5	75.0	79.3	77.8	78.6	80.0	75.7	85.7	83.6	63.3	81.0	TBD
CSH 2016-2		62.9	70.4	74.1	75.0	75.8	78.1	77.8	83.9	75.6	72.3	77.2	TBD
HPA 2016-2													TBD
HPA 2017-1													TBD
HPA 2018-1													TBD
IH 2017-SFR2					91.0	78.4	89.1	82.9	80.6	84.7	90.0	88.6	TBD
IH 2018-SFR1							77.2	87.5	77.6	79.7	83.3	90.2	TBD
IH 2018-SFR2										78.8	88.2	88.9	TBD
PRD 2015-SFR2		81.0	78.6	79.5	80.6	91.9	88.4	82.5	82.5	84.6	91.2	70.8	TBD
PRD 2015-SFR3		75.7	75.5	76.7	83.3	80.6	84.4	70.0	75.9	75.8	92.6	59.6	TBD
PRD 2016-SFR2		78.8	76.8	81.8	100.0	65.8	91.1	96.0	81.5	79.2	85.1	61.5	TBD
PRD 2017-SFR1		76.3	66.7	91.4	82.1	91.2	100.0	68.1	67.7	91.7	83.3	73.7	TBD
PRD 2018-SFR1								75.0	60.0	83.3	83.3	47.6	TBD
SWH 2017-1			61.3	80.8	75.0	71.4	82.4	78.3	77.0	78.3	82.3	79.2	TBD
TAH 2016-SFR1		95.1	95.5	92.9	95.5	94.4	95.3	95.3	89.4	94.7	90.1	96.4	TBD
TAH 2017-SFR1		92.5	93.5	87.0	90.2	87.6	85.7	84.3	86.8	84.5	91.5	95.7	TBD
TAH 2017-SFR2					98.2	93.1	88.1	92.7	89.5	87.1	85.1	92.5	TBD
TAH 2018-SFR1									92.1	83.6	94.1	98.8	TBD
Overall SFR		88.3	88.4	89.2	92.4	88.9	89.3	89.0	84.6	85.0	85.0	85.4	TBD

TBD – To Be Determined



**Table 11a – MTM Tenants (by Count)**

		Year 2017		Year 2018										Total Count
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	
AH4R 2014-SFR2		185	178	175	170	190	206	208	232	236	219	202	185	4,481
AH4R 2014-SFR3		180	168	148	155	188	220	199	233	226	218	208	203	4,499
AH4R 2015-SFR1		198	195	187	184	204	220	219	223	205	201	200	176	4,634
AH4R 2015-SFR2		147	156	143	143	150	183	200	235	221	215	178	163	4,123
AMSR 2016-SFR1		648	684	709	696	733	747	759	761	754	608	513	497	4,262
CAH 2015-1		40	43	41	40	36	42	44	54	66	69	58	56	3,709
CSH 2016-1		40	36	29	27	28	30	37	42	55	60	63	57	3,491
CSH 2016-2		35	27	27	28	33	32	27	31	45	65	57	53	3,942
HPA 2016-2		0	0	0	0	0	0	0	0	0	0	0	0	1,293
HPA 2017-1		0	0	0	0	0	0	0	0	0	0	0	0	1,336
HPA 2018-1											0	0	0	1,769
IH 2017-SFR2					92	95	115	101	111	105	70	88	84	4,404
IH 2018-SFR1							92	104	116	125	66	61	65	4,288
IH 2018-SFR2										104	102	82	76	5,588
PRD 2015-SFR2		66	64	49	55	58	65	62	62	59	52	66	53	3,287
PRD 2015-SFR3		87	60	52	49	50	41	46	63	54	57	87	61	3,149
PRD 2016-SFR2		99	85	70	71	201	59	63	78	81	76	105	80	3,742
PRD 2017-SFR1		76	67	49	46	47	47	108	49	47	50	55	58	2,708
PRD 2018-SFR1								6	14	18	27	39	40	2,113
SVH 2017-1			31	26	24	28	34	60	87	83	79	72	72	4,421
TAH 2016-SFR1		360	377	339	257	252	261	215	278	253	202	210	232	3,433
TAH 2017-SFR1		197	217	225	195	197	184	121	127	114	103	98	0	3,480
TAH 2017-SFR2					229	195	194	176	174	152	114	111	116	2,621
TAH 2018-SFR1									118	128	85	88	95	2,509
Overall SFR		2,358	2,388	2,269	2,461	2,685	2,772	2,755	3,088	3,131	2,738	2,641	2,422	83,282

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

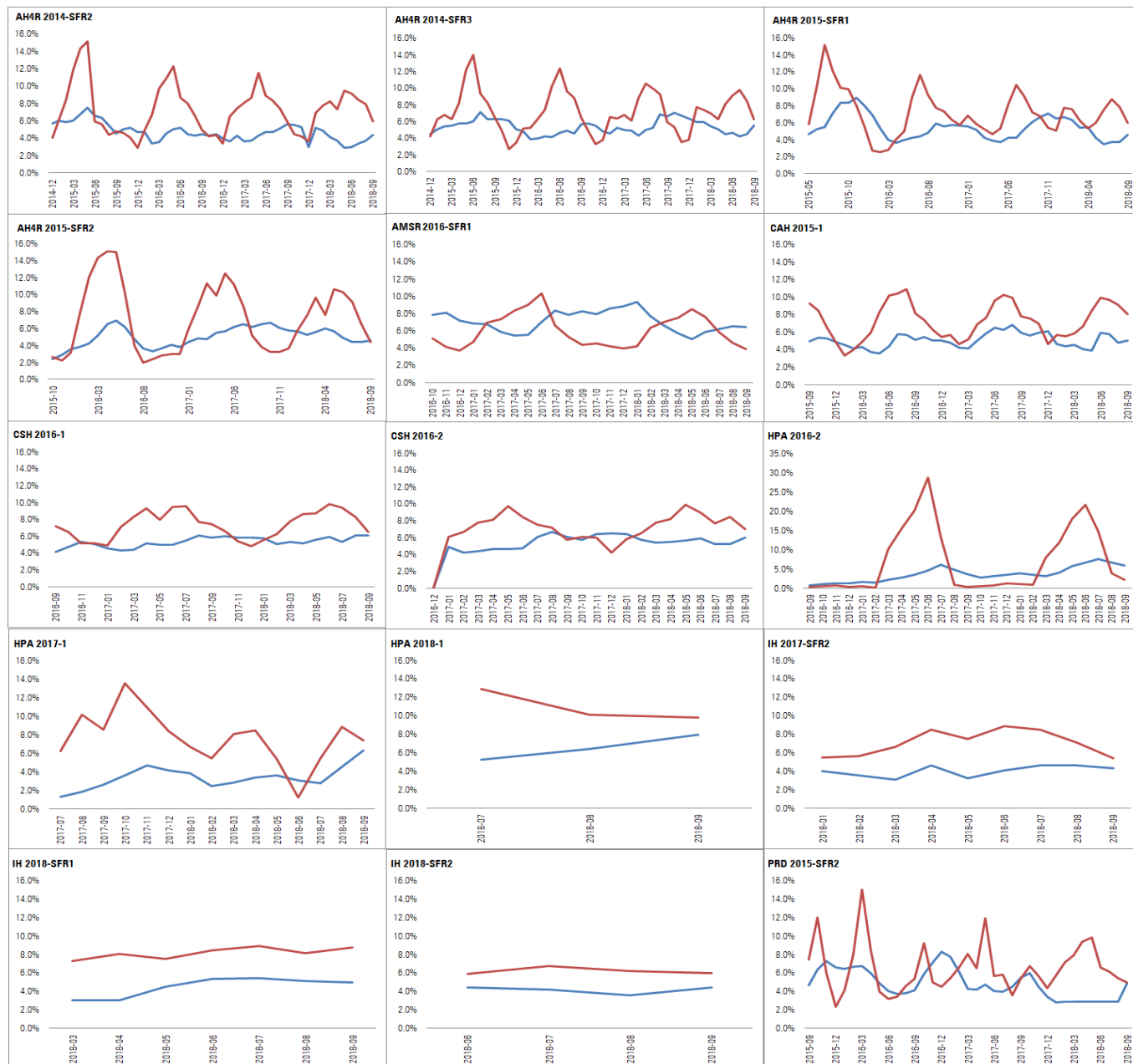
		Year 2018											
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		4.1	4.0	3.9	3.8	4.2	4.6	4.6	5.2	5.3	4.9	4.5	4.1
AH4R 2014-SFR3		4.0	3.7	3.3	3.4	4.2	4.9	4.4	5.2	5.0	4.8	4.6	4.5
AH4R 2015-SFR1		4.2	4.2	4.0	4.0	4.4	4.7	4.7	4.8	4.4	4.3	4.3	3.8
AH4R 2015-SFR2		3.6	3.8	3.5	3.5	3.6	4.4	4.9	5.7	5.4	5.2	4.3	4.0
AMSR 2016-SFR1		15.2	16.0	16.6	16.3	17.2	17.5	17.8	17.9	17.7	14.3	12.0	11.7
CAH 2015-1		1.1	1.1	1.1	1.1	1.0	1.1	1.2	1.4	1.8	1.8	1.5	1.5
CSH 2016-1		1.1	1.0	0.8	0.8	0.8	0.8	1.0	1.2	1.6	1.7	1.8	1.6
CSH 2016-2		0.9	0.7	0.7	0.7	0.8	0.8	0.7	0.8	1.1	1.6	1.4	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
IH 2017-SFR2					2.1	2.2	2.6	2.3	2.5	2.4	1.6	2.0	1.9
IH 2018-SFR1							2.1	2.4	2.7	2.9	1.5	1.4	1.5
IH 2018-SFR2										1.9	1.8	1.5	1.4
PRD 2015-SFR2		2.0	1.9	1.5	1.7	1.8	2.0	1.9	1.9	1.8	1.6	2.0	1.6
PRD 2015-SFR3		2.8	1.9	1.7	1.6	1.6	1.3	1.5	2.0	1.7	1.8	2.8	1.9
PRD 2016-SFR2		2.6	2.3	1.9	1.9	5.4	1.6	1.7	2.1	2.2	2.0	2.8	2.1
PRD 2017-SFR1		2.8	2.5	1.8	1.7	1.7	1.7	4.0	1.8	1.7	1.8	2.0	2.1
PRD 2018-SFR1								0.3	0.7	0.9	1.3	1.8	1.9
SWH 2017-1			0.7	0.6	0.5	0.6	0.8	1.4	2.0	1.9	1.8	1.6	1.6
TAH 2016-SFR1		10.5	11.0	9.9	7.5	7.3	7.6	6.3	8.1	7.4	5.9	6.1	6.8
TAH 2017-SFR1		5.7	6.2	6.5	5.6	5.7	5.3	3.5	3.6	3.3	3.0	2.8	0.0
TAH 2017-SFR2					8.7	7.4	7.4	6.7	6.6	5.8	4.3	4.2	4.4
TAH 2018-SFR1									4.7	5.1	3.4	3.5	3.8
Overall SFR		4.2	4.0	3.8	3.7	4.0	3.9	3.7	4.1	3.8	3.3	3.2	2.9

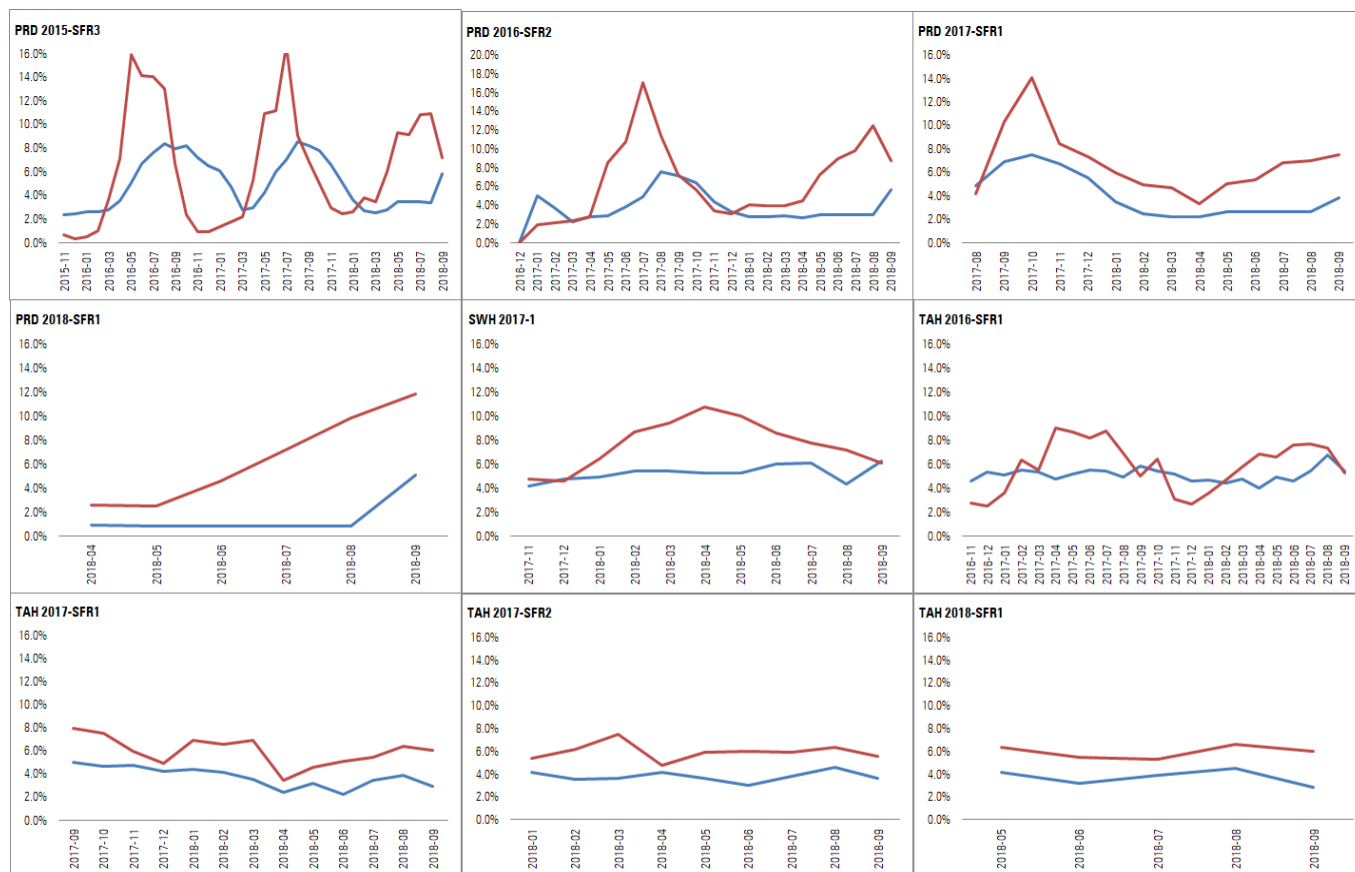
**Table 12 – Monthly Turnover Rate**

		Year 2017			Year 2018								
		Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
AH4R 2014-SFR2		2.9	2.5	2.2	2.8	2.4	2.9	2.7	3.9	3.5	4.1	3.5	TBD
AH4R 2014-SFR3		3.1	2.1	2.4	2.6	2.4	3.3	3.0	3.6	4.4	4.0	3.6	TBD
AH4R 2015-SFR1		3.4	2.8	2.8	3.4	3.2	3.2	2.6	3.0	4.1	4.5	3.8	TBD
AH4R 2015-SFR2		2.5	2.3	2.9	2.5	2.6	4.0	3.6	4.4	4.8	4.6	3.4	TBD
AMSR 2016-SFR1		2.1	2.0	2.2	2.8	1.7	2.7	2.9	2.8	3.4	3.4	3.0	TBD
CAH 2015-1		3.2	2.8	2.3	1.9	2.6	2.6	1.7	3.0	4.5	3.6	3.5	TBD
CSH 2016-1		2.9	2.6	2.1	2.2	2.3	3.2	2.5	4.0	3.6	3.4	4.1	TBD
CSH 2016-2		3.2	3.0	2.4	2.6	2.5	3.2	2.3	4.1	4.0	3.3	3.9	TBD
HPA 2016-2		1.6	2.2	1.2	1.7	1.5	3.5	3.8	5.7	5.8	5.9	2.1	TBD
HPA 2017-1		3.6	2.3	1.7	1.6	1.9	2.4	2.5	2.4	1.5	3.1	4.5	TBD
HPA 2018-1											6.9	4.8	TBD
IH 2017-SFR2					2.4	2.2	2.4	2.4	2.8	3.4	3.6	3.2	TBD
IH 2018-SFR1							1.8	2.8	2.9	3.5	3.2	3.6	TBD
IH 2018-SFR2										6.3	3.2	2.5	TBD
PRD 2015-SFR2		2.9	2.5	2.2	2.4	2.5	3.5	3.3	5.0	3.8	4.2	2.8	TBD
PRD 2015-SFR3		3.0	2.4	2.0	2.0	2.0	2.2	2.3	3.5	4.8	4.6	4.3	TBD
PRD 2016-SFR2		3.0	1.7	1.7	2.0	2.2	2.5	2.2	3.3	4.0	4.4	4.8	TBD
PRD 2017-SFR1		4.1	3.8	3.5	2.4	1.8	2.1	1.6	3.4	3.3	3.3	3.1	TBD
PRD 2018-SFR1								3.3	1.9	2.5	3.7	4.4	TBD
SWH 2017-1			2.0	2.3	2.4	3.0	3.7	2.7	3.6	4.6	3.8	2.7	TBD
TAH 2016-SFR1		2.2	2.5	1.7	2.1	1.7	2.4	2.3	2.8	3.4	4.0	3.5	TBD
TAH 2017-SFR1		3.3	2.7	2.0	3.1	2.4	2.7	2.3	2.3	2.5	2.0	3.7	TBD
TAH 2017-SFR2					6.3	1.3	2.7	2.7	2.2	2.9	2.3	2.7	TBD
TAH 2018-SFR1									6.5	1.8	3.7	2.6	TBD
Overall SFR		3.0	2.5	2.3	2.6	2.3	2.9	2.6	3.5	3.9	3.8	3.5	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 – August 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 July 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 September lease expirations, Morningstar looks for all August lease expirations in the June 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 July or August are removed from the September lease expiration count.

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

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