Single-Family Rental Research

Performance Summary Covering All Morningstar-Rated Securitizations

November 2018

Authors:

Monte Bays | Vice President | monte.bays@morningstar.com | +1 646 560-4536
Arindam Vatsa | Analyst | arindam.vatsa@morningstar.com | +91 22 61217213
Bhumika Lamba | Senior Data Analyst | bhumika.lamba@morningstar.com | +91 22 61217213

Analytical Manager:
Kevin Dwyer | Managing Director | kevin.dwyer@morningstar.com | +1 646 560-4525

Introduction

The rent change for single borrower, single-family rental securitizations rated by Morningstar Credit Ratings, LLC increased by 3.8%, in October, remaining consistent with the revised August and September rent changes. The average vacancy rate remained the same at 4.8% after five consecutive months of increases. The leveling out was likely due to a corresponding 150 basis points decrease in lease expirations from August to September, following a seasonal trend of higher lease expirations and vacancies in the spring and summer months. The average retention rate for expiring leases improved 50 basis points to 78.7% in September, the latest month for which data is available, from 78.2% in August, and has remained over 75% for the last year. Among the top 20 metropolitan statistical areas, the Houston MSA had the highest vacancy rate at 6.6%, down from 6.8% in September, followed by Denver-Aurora MSA at 6.5%, and Chicago MSA at 6.0%. The Sarasota-Bradenton-Venice, FL MSA experienced the highest blended rent growth at 7.3%, followed by the Los Angeles MSA at 6.1% and Phoenix MSA at 5.9%. Five single-family rental securitizations rated by Morningstar experienced blended rent growth over 5.0%. The Houston MSA experienced the lowest blended rent growth at 1.4%, corresponding with it having the highest vacancy rate, followed by the Fort Worth-Arlington MSA at 2.2% and Chicago MSA at 2.3%. Rent growth 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. Morningstar added the IH 2018-SFR3 and PRD 2018-SFR2 securitizations, and the CAH 2015-1 and CSH 2016-1 transactions paid off, bringing the November Single-Family Rental Performance Summary total to 24 single-borrower deals with over 84,700 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 October. 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.

Table of Contents

MORNINGSTAR®

MORNINGSTAR®

Single-Borrower Performance

Lease expirations increased slightly to 6.4% in October, up 30 basis points from 6.1% in September, but down from 7.6% in August. PRD 2018-SFR1 had a lease expiration rate of 20.0%, followed by PRD 2017-SFR1 at 11.4% and HPA 2017-1 at 10.8%. The average retention rate on full-term leases increased to 78.7% in September, the latest month for which data is available, from a revised 78.2% in August. Two securitizations have retention rates below 75%, while 10 transactions had a retention rate higher than 80.0%. The overall turnover rate decreased to 2.7% in September, the latest month for which data is available, from 3.3% in August. The average delinquency rate in October increased slight to 0.7% from 0.6% in September, with six transactions reporting delinquency rates of 1.0% or more. AMSR 2016-SFR1 reported the highest delinquency rate, at 1.8% in October, down from 1.9% in September. Please note that any review of delinquency should be viewed within the context of the delinquency definitions in Table 7.

Rents rose 3.8% in October, staying consistent with the September rent growth. 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 September, the latest month for which data is available, the rent change for renewal properties increased 4.2%, down from a revised 4.3% increase in August, and for vacant-to-occupied properties increased by 1.7%. Chart 3 shows that the average contractual rents by MSA have been largely in line with, or exceeded, their property-level RentRange estimates. Chart 4 shows the MSA-level blended rent change. MSAs with rent changes above the 3.8% 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 fifth consecutive month to 10.8% of its portfolio, but still rank the highest.

Multiborrower Performance

As of the most recent remittance report, 833 total loans secured nine multiborrower transactions. The number of loans 30-59 days delinquent declined to 11 from 17, while the number of loans 60-89 days delinquent decreased to three from four, and the loans over 90 days delinquent increased to 20 from 17. Loans in foreclosure declined to four, one loan went from foreclosure to real estate owned, and loans in special servicing declined to 31 from 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	0.00	0.00	0.30	0.02	0.30	0.45
FKL 2015-SFR1	0.00	0.00	0.00	0.00	0.00	0.00
CAF 2015-1	0.00	2.18	0.00	0.00	0.00	8.37
B2R 2015-2	1.35	0.00	1.32	0.25	0.00	1.67
CAF 2016-1	0.00	0.00	1.64	0.00	0.00	1.65
B2R 2016-1	2.42	0.00	2.38	0.25	0.00	2.74
CAF 2016-2	0.00	0.00	3.81	2.55	0.00	4.07
CAF 2017-1	0.00	0.00	0.80	0.00	0.00	1.60
CAF 2018-1	0.00	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	117	0	0	1	1	1	3
FKL 2015-SFR1	4	0	0	0	0	0	0
CAF 2015-1	54	0	2	0	0	0	3
B2R 2015-2	179	3	0	6	1	0	8
CAF 2016-1	67	0	0	1	0	0	1
B2R 2016-1	152	8	0	6	1	0	8
CAF 2016-2	65	0	0	3	1	0	4
CAF 2017-1	78	0	1	2	0	0	3
CAF 2018-1	117	0	0	1	0	0	1
Overall	833	11	3	20	4	1	31

Single-Borrower Charts and Tables

Chart 1 – Single-Family Rental Rent Change Versus RentRange Year-Over-Year Rent Change
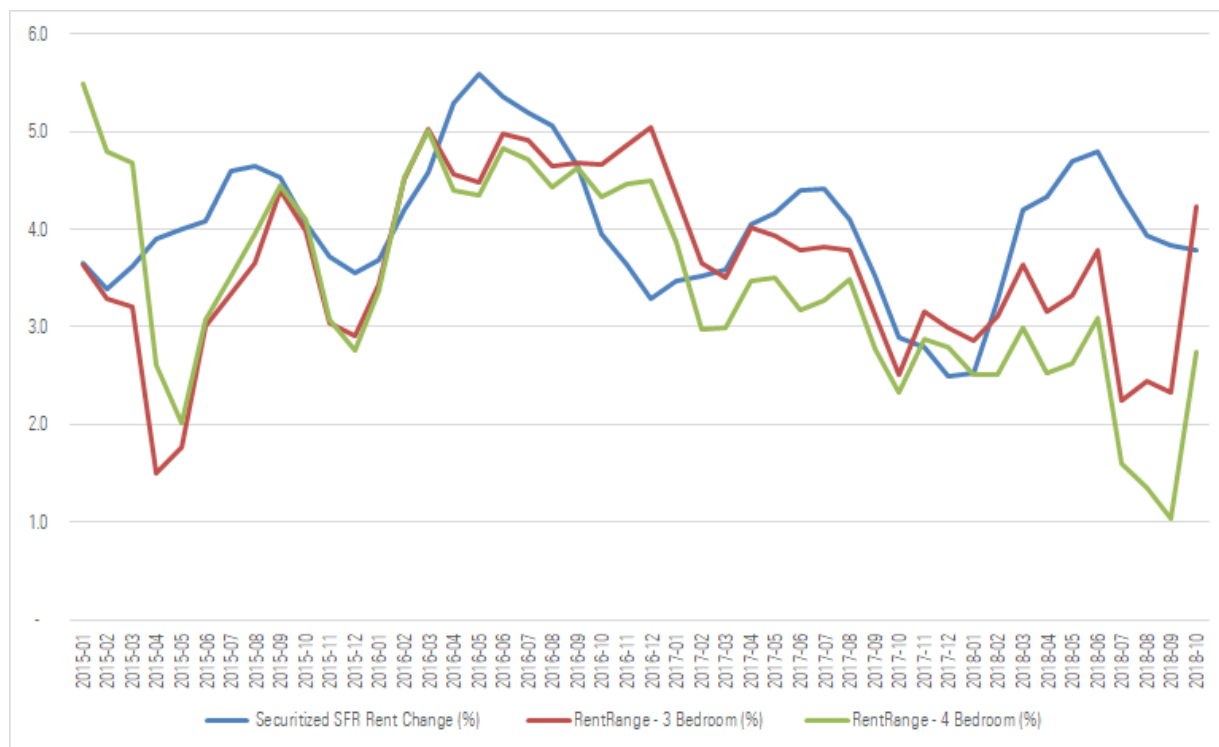
Sources: Morningstar Credit Ratings, LLC; RentRange

Chart 2 – Rental Changes for Renewals Versus Vacant-to-Occupied Properties
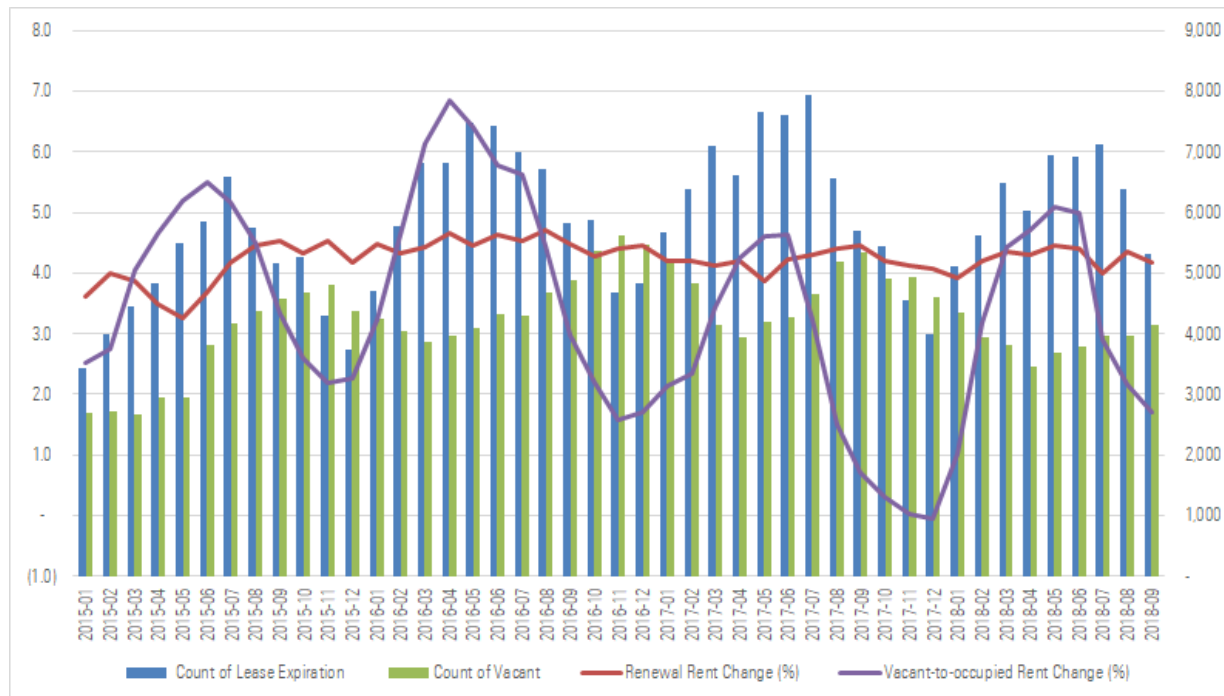
Source: Morningstar Credit Ratings, LLC

Chart 3 – September Average Contractual Rent Versus Property-Level RentRange Estimate by MSA
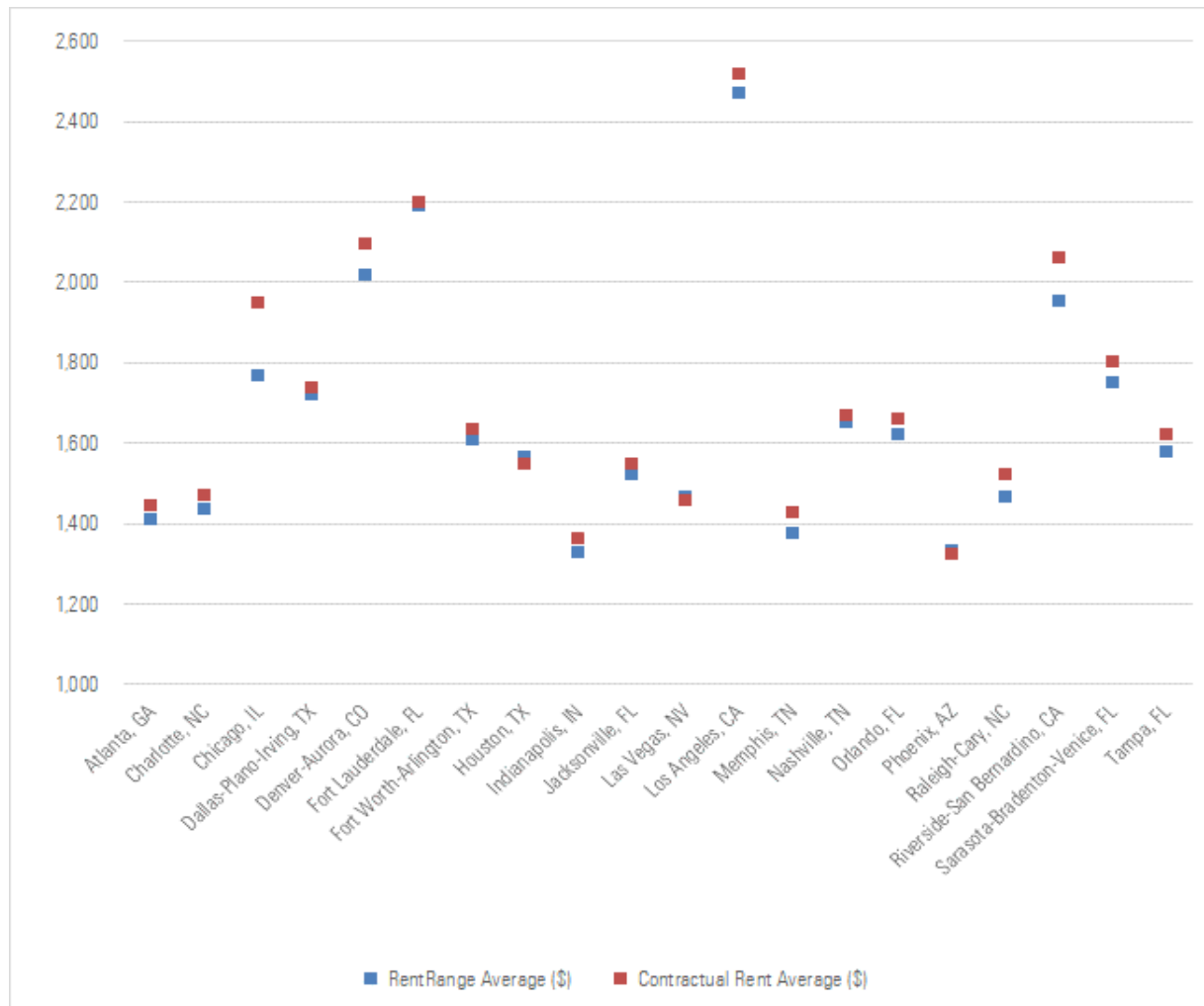
Sources: Morningstar Credit Ratings, LLC; RentRange

Chart 4 – MSA-Level Blended Rent Change*
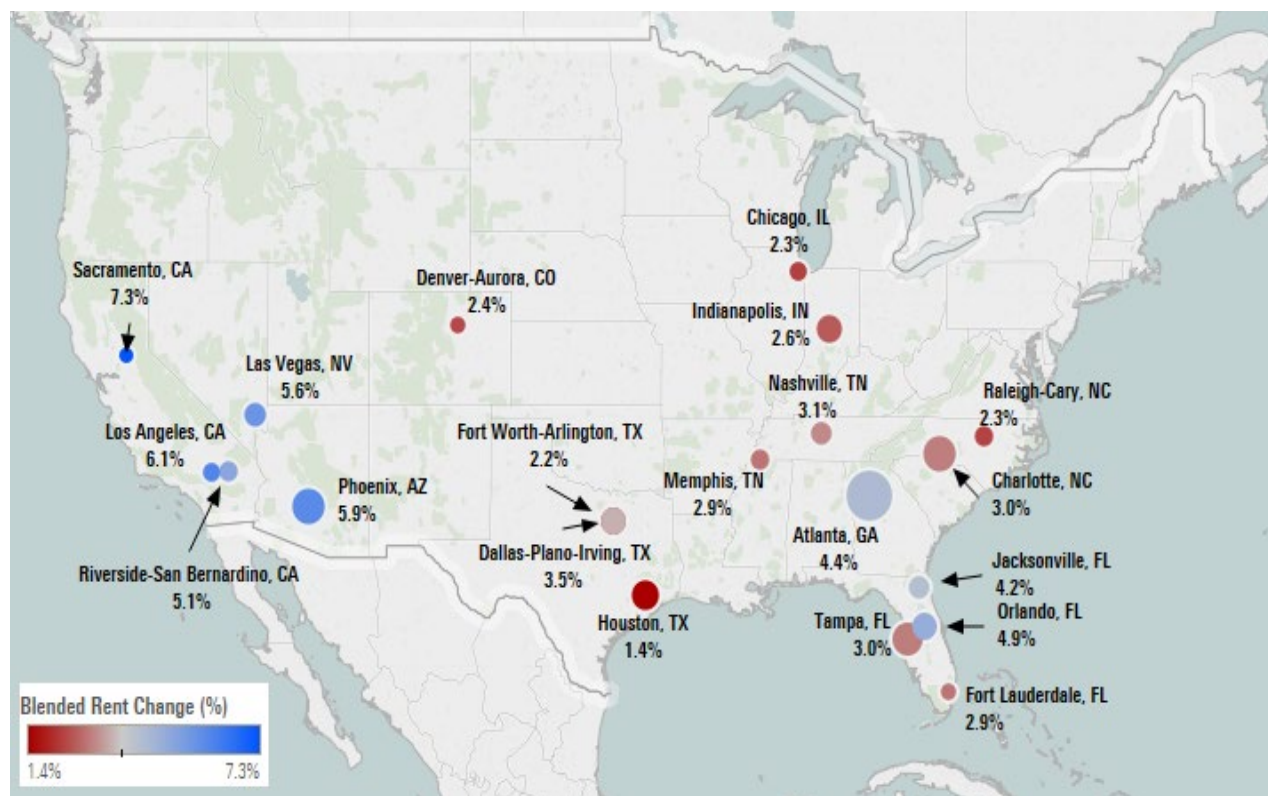
Sources: Morningstar Credit Ratings, LLC; Tableau Software
*The size of the circles represents the total percentage (by count) of properties in each MSA, ranging from 1.34% to 14.03%. Because of their proximity, the Fort Worth-Arlington, Texas, MSA is hidden behind the Dallas-Plano-Irving, Texas, MSA.

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

		Year 2017		Year 2018										
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Atlanta, GA		3.6	3.5	3.1	3.8	5.1	4.8	5.3	5.1	4.4	4.8	4.1	4.4
Charlotte, NC		1.8	1.4	1.4	2.5	3.4	3.0	4.0	3.8	4.4	3.4	3.3	3.0
Chicago, IL		-0.2	-0.6	0.7	1.3	1.6	2.9	4.3	4.4	3.0	3.2	2.5	2.3
Dallas-Plano-Irving, TX		2.8	2.4	2.5	3.1	3.8	4.0	4.0	4.2	4.1	3.7	4.7	3.5
Denver-Aurora, CO		2.4	3.8	1.6	4.3	5.8	5.3	4.6	5.1	2.4	2.3	2.5	2.4
Fort Lauderdale, FL		1.2	1.7	1.7	2.5	2.9	2.9	3.8	3.3	3.6	3.2	2.6	2.9
Fort Worth-Arlington, TX		3.3	2.7	2.1	3.1	4.1	4.1	4.1	5.1	5.3	4.1	3.9	2.2
Houston, TX		-0.5	0.1	1.3	1.4	3.1	3.6	3.3	3.3	3.0	2.9	2.5	1.4
Indianapolis, IN		0.4	0.2	-0.1	2.9	3.4	3.3	4.2	4.6	3.8	3.0	2.7	2.6
Jacksonville, FL		2.6	2.3	2.9	3.3	4.1	5.2	5.4	5.3	5.6	5.3	4.6	4.2
Las Vegas, NV		4.5	4.0	4.1	5.1	5.6	5.3	6.2	6.1	5.1	5.2	6.4	5.6
Los Angeles, CA		5.8	6.6	6.2	4.4	5.7	5.7	5.8	6.2	5.1	4.5	5.1	6.1
Memphis, TN		0.2	-0.1	0.9	1.5	3.4	4.0	4.4	4.2	5.4	5.1	3.6	2.9
Nashville, TN		2.3	1.0	1.5	1.6	2.8	3.0	4.6	4.2	4.5	4.2	3.5	3.1
Orlando, FL		4.1	4.1	3.3	5.0	5.0	5.2	5.3	6.0	6.2	5.2	4.7	4.9
Phoenix, AZ		5.0	4.5	4.2	5.3	6.5	6.4	6.3	6.7	6.1	5.4	6.0	5.9
Raleigh-Cary, NC		2.1	0.5	1.3	1.6	2.4	3.0	3.9	3.2	3.2	2.9	2.6	2.3
Riverside-San Bernardino, CA		5.0	5.0	4.5	4.9	5.2	5.5	5.5	6.7	4.4	3.6	4.6	5.1
Sarasota-Bradenton-Venice, FL		7.0	7.4	4.9	5.7	6.9	7.4	8.0	8.0	6.9	5.8	7.4	7.3
Tampa, FL		2.4	2.2	1.9	3.0	3.6	4.2	4.3	4.4	3.8	3.5	2.7	3.0

MORNINGSTAR®

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

		Year 2017		Year 2018										Count
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
AH4R 2014-SFR2		235	215	233	217	186	166	128	135	152	168	195	184	4,481
AH4R 2014-SFR3		299	284	266	265	243	227	200	208	189	199	247	249	4,499
AH4R 2015-SFR1		331	304	309	294	253	256	198	159	171	173	211	238	4,634
AH4R 2015-SFR2		252	238	235	217	229	248	234	202	182	180	190	214	4,123
AMSR 2016-SFR1		366	375	397	328	280	244	215	248	263	278	278	258	4,262
CSH 2016-2		254	257	256	229	214	217	223	232	205	207	228	227	3,941
HPA 2016-2		42	46	52	45	41	53	75	86	98	86	76	78	1,291
HPA 2017-1		64	57	53	34	39	46	49	42	38	61	84	93	1,335
HPA 2018-1										94	113	141	149	1,763
IH 2017-SFR2				177	158	136	124	141	179	204	204	189	183	4,378
IH 2018-SFR1						131	131	193	230	233	219	210	190	4,284
IH 2018-SFR2									248	236	198	231	237	5,485
IH 2018-SFR3													284	6,653
PRD 2015-SFR2		148	113	93	95	102	95	126	117	108	151	157	157	3,287
PRD 2015-SFR3		206	160	114	83	80	87	107	140	149	172	182	158	3,149
PRD 2016-SFR2		162	122	104	104	105	98	109	134	160	203	211	181	3,742
PRD 2017-SFR1		183	150	94	67	60	60	71	90	74	88	102	121	2,708
PRD 2018-SFR1							36	30	44	56	84	107	123	2,113
PRD 2018-SFR2												24	50	2,116
SWH 2017-1		184	209	219	238	239	231	233	265	269	192	237	218	4,421
TAH 2016-SFR1		178	156	161	150	162	136	167	156	186	230	186	181	3,433
TAH 2017-SFR1		164	146	152	145	124	84	109	76	120	136	100	96	3,480
TAH 2017-SFR2				109	93	94	109	96	79	99	120	95	110	2,620
TAH 2018-SFR1								104	80	98	112	72	98	2,509
Overall SFR		3,068	2,832	3,024	2,762	2,718	2,648	2,808	3,150	3,384	3,574	3,753	4,077	84,707

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

		Year 2017		Year 2018									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AH4R 2014-SFR2		5.2	4.8	5.2	4.8	4.2	3.7	2.9	3.0	3.4	3.7	4.4	4.1
AH4R 2014-SFR3		6.6	6.3	5.9	5.9	5.4	5.0	4.4	4.6	4.2	4.4	5.5	5.5
AH4R 2015-SFR1		7.1	6.5	6.6	6.3	5.4	5.5	4.3	3.4	3.7	3.7	4.6	5.1
AH4R 2015-SFR2		6.1	5.8	5.7	5.3	5.6	6.0	5.7	4.9	4.4	4.4	4.6	5.2
AMSR 2016-SFR1		8.6	8.8	9.3	7.7	6.6	5.7	5.0	5.8	6.2	6.5	6.5	6.1
CSH 2016-2		6.4	6.4	6.4	5.7	5.4	5.5	5.6	5.9	5.2	5.2	5.8	5.8
HPA 2016-2		3.1	3.4	3.9	3.4	3.1	4.0	5.7	6.6	7.6	6.6	5.9	6.0
HPA 2017-1		4.7	4.2	3.9	2.5	2.9	3.4	3.6	3.1	2.8	4.5	6.3	7.0
HPA 2018-1										5.3	6.4	8.0	8.5
IH 2017-SFR2				4.0	3.6	3.1	2.8	3.2	4.1	4.6	4.6	4.3	4.2
IH 2018-SFR1						3.1	3.1	4.5	5.4	5.4	5.1	4.9	4.4
IH 2018-SFR2									4.4	4.2	3.5	4.1	4.3
IH 2018-SFR3													4.3
PRD 2015-SFR2		4.5	3.4	2.8	2.9	3.1	2.9	3.8	3.6	3.3	4.6	4.8	4.8
PRD 2015-SFR3		6.5	5.1	3.6	2.6	2.5	2.8	3.4	4.4	4.7	5.5	5.8	5.0
PRD 2016-SFR2		4.3	3.3	2.8	2.8	2.8	2.6	2.9	3.6	4.3	5.4	5.6	4.8
PRD 2017-SFR1		6.8	5.5	3.5	2.5	2.2	2.2	2.6	3.3	2.7	3.2	3.8	4.5
PRD 2018-SFR1								1.7	1.4	2.1	2.7	4.0	5.1	5.8
PRD 2018-SFR2												1.1	2.4
SWH 2017-1		4.2	4.7	4.9	5.4	5.4	5.2	5.3	6.0	6.1	4.3	5.4	4.9
TAH 2016-SFR1		5.2	4.5	4.7	4.4	4.7	4.0	4.9	4.5	5.4	6.7	5.4	5.3
TAH 2017-SFR1		4.7	4.2	4.4	4.2	3.6	2.4	3.1	2.2	3.4	3.9	2.9	2.8
TAH 2017-SFR2				4.2	3.5	3.6	4.2	3.7	3.0	3.8	4.6	3.6	4.2
TAH 2018-SFR1								4.1	3.2	3.9	4.5	2.9	3.9
Overall SFR		5.8	5.3	5.0	4.6	4.2	4.0	4.1	4.2	4.4	4.7	4.8	4.8

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

		Year 2017	Year 2018										
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Atlanta, GA		4.7	4.4	4.6	4.6	4.0	4.2	4.2	4.3	4.7	5.2	4.5	5.1
Charlotte, NC		6.1	5.8	5.8	5.5	5.4	4.5	4.5	4.4	3.8	4.6	4.9	5.2
Chicago, IL		5.2	4.5	4.5	4.6	4.3	4.9	4.8	3.4	3.4	4.2	5.3	6.0
Dallas-Plano-Irving, TX		4.9	5.3	5.0	4.5	4.5	4.3	4.1	4.5	4.9	5.8	5.9	5.7
Denver-Aurora, CO		4.7	5.4	4.8	5.0	4.0	4.0	5.6	7.0	6.1	5.2	7.0	6.5
Fort Lauderdale, FL		6.1	5.8	5.1	4.2	4.8	4.9	6.0	6.0	5.2	6.0	4.4	4.5
Fort Worth-Arlington, TX		5.9	5.2	5.0	4.3	4.0	4.0	4.2	4.8	5.0	5.4	6.1	5.1
Houston, TX		9.4	8.8	8.8	7.3	6.4	6.3	5.8	5.8	6.0	6.7	6.8	6.6
Indianapolis, IN		5.6	5.3	4.4	5.1	4.4	4.1	3.2	3.8	4.3	5.5	5.9	5.4
Jacksonville, FL		5.2	4.5	4.6	4.0	3.3	2.6	3.5	3.6	4.0	4.5	4.4	4.7
Las Vegas, NV		3.5	3.6	2.6	2.5	2.8	2.2	2.9	3.1	3.5	3.2	3.6	3.5
Los Angeles, CA		5.2	4.3	5.0	3.7	3.2	3.9	4.0	5.5	5.4	5.5	5.0	4.9
Memphis, TN		6.2	5.3	5.2	4.3	4.4	4.0	3.6	3.9	3.8	5.0	5.3	5.4
Nashville, TN		8.0	7.5	7.3	5.9	4.7	4.2	3.7	4.0	4.7	5.5	5.2	5.4
Orlando, FL		3.8	3.5	3.3	3.1	3.6	2.6	2.9	3.6	3.5	3.4	3.5	3.4
Phoenix, AZ		4.8	4.0	3.2	3.2	2.7	2.2	2.7	3.0	3.3	3.3	3.5	2.8
Raleigh-Cary, NC		6.8	5.6	5.8	5.1	5.4	4.8	4.2	3.9	4.0	4.0	5.1	5.1
Riverside-San Bernardino, CA		3.7	4.3	3.8	4.1	3.7	3.5	3.7	4.1	4.0	3.4	4.3	4.3
Sarasota-Bradenton-Venice, FL		5.6	4.5	3.6	2.6	3.0	2.9	2.9	2.7	3.1	3.5	3.8	4.0
Tampa, FL		5.9	5.0	4.5	4.0	4.0	4.1	4.5	4.8	5.2	5.2	5.0	4.9
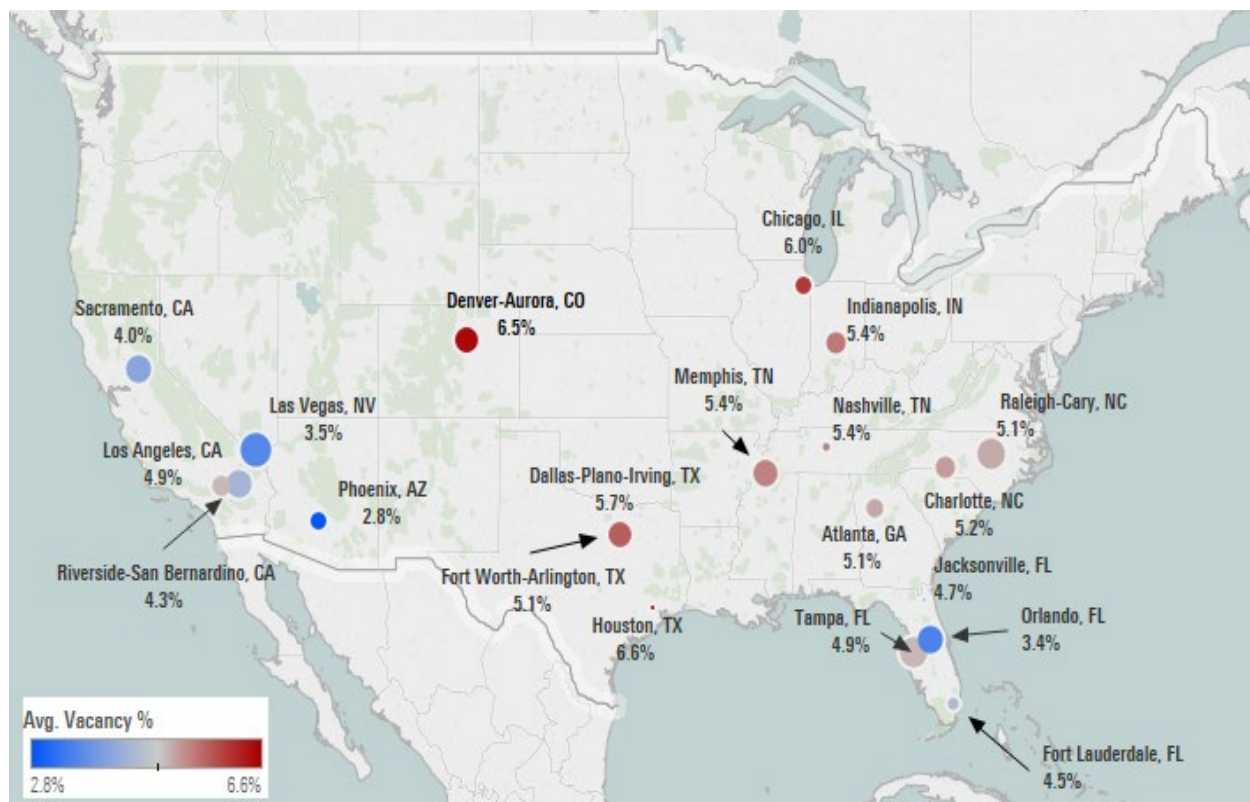
MORNINGSTAR®

**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 18.219% to 23.474%. 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 2017		Year 2018										Total Count
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
AH4R 2014-SFR2		189	161	310	346	368	329	423	411	378	354	265	235	4,481
AH4R 2014-SFR3		160	171	348	332	311	280	361	410	439	382	280	253	4,499
AH4R 2015-SFR1		251	235	360	354	291	247	278	347	405	364	279	278	4,634
AH4R 2015-SFR2		133	151	238	310	397	315	438	425	376	271	181	175	4,123
AMSR 2016-SFR1		178	167	178	271	300	320	361	323	250	196	164	153	4,262
CSH 2016-2		237	167	232	257	306	325	392	354	302	332	275	251	3,941
HPA 2016-2		10	16	14	12	105	155	235	281	191	49	27	24	1,291
HPA 2017-1		149	114	91	74	110	114	73	17	74	119	98	144	1,335
HPA 2018-1										229	179	172	122	1,763
IH 2017-SFR2				242	247	292	294	330	391	373	314	235	243	4,378
IH 2018-SFR1						311	346	323	363	380	347	375	324	4,284
IH 2018-SFR2									331	378	345	330	346	5,485
IH 2018-SFR3													417	6,653
PRD 2015-SFR2		185	142	189	234	260	307	324	216	200	179	161	221	3,287
PRD 2015-SFR3		93	76	81	120	108	187	292	287	341	342	224	223	3,149
PRD 2016-SFR2		127	113	150	145	148	165	271	333	364	465	323	270	3,742
PRD 2017-SFR1		229	197	162	133	127	89	136	145	183	188	203	310	2,708
PRD 2018-SFR1							54	52	97	151	208	249	423	2,113
PRD 2018-SFR2												6	7	2,116
SWH 2017-1		210	204	284	385	418	475	442	381	342	318	268	218	4,421
TAH 2016-SFR1		107	92	124	159	197	235	225	260	263	250	181	203	3,433
TAH 2017-SFR1		206	171	241	229	241	119	159	176	188	221	209	244	3,480
TAH 2017-SFR2				141	161	197	124	154	157	155	166	145	156	2,620
TAH 2018-SFR1								160	137	133	166	150	172	2,509
Overall SFR		2,464	2,177	3,385	3,769	4,487	4,480	5,429	5,842	6,095	5,755	4,800	5,412	84,707

MORNINGSTAR®

Table 5b – Lease Expiration (by Percentage)

		Year 2017		Year 2018									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AH4R 2014-SFR2		4.2	3.6	6.9	7.7	8.2	7.3	9.4	9.2	8.4	7.9	5.9	5.2
AH4R 2014-SFR3		3.6	3.8	7.7	7.4	6.9	6.2	8.0	9.1	9.8	8.5	6.2	5.6
AH4R 2015-SFR1		5.4	5.0	7.7	7.6	6.2	5.3	6.0	7.5	8.7	7.9	6.0	6.0
AH4R 2015-SFR2		3.2	3.7	5.8	7.5	9.6	7.6	10.6	10.3	9.1	6.6	4.4	4.2
AMSR 2016-SFR1		4.2	3.9	4.2	6.4	7.0	7.5	8.5	7.6	5.9	4.6	3.8	3.6
CSH 2016-2		5.9	4.2	5.8	6.4	7.7	8.2	9.9	9.0	7.6	8.4	7.0	6.4
HPA 2016-2		0.7	1.2	1.1	0.9	7.9	11.8	17.9	21.6	14.7	3.8	2.1	1.9
HPA 2017-1		10.9	8.4	6.7	5.4	8.1	8.4	5.4	1.3	5.5	8.9	7.3	10.8
HPA 2018-1										12.9	10.1	9.7	6.9
IH 2017-SFR2				5.5	5.6	6.6	6.7	7.5	8.9	8.5	7.1	5.3	5.6
IH 2018-SFR1							7.3	8.1	7.5	8.5	8.9	8.1	8.7	7.6
IH 2018-SFR2										5.9	6.7	6.2	5.9	6.3
IH 2018-SFR3													6.3
PRD 2015-SFR2		5.6	4.3	5.7	7.1	7.9	9.3	9.9	6.6	6.1	5.4	4.9	6.7
PRD 2015-SFR3		3.0	2.4	2.6	3.8	3.4	5.9	9.3	9.1	10.8	10.9	7.1	7.1
PRD 2016-SFR2		3.4	3.0	4.0	3.9	4.0	4.4	7.2	8.9	9.7	12.4	8.6	7.2
PRD 2017-SFR1		8.5	7.3	6.0	4.9	4.7	3.3	5.0	5.4	6.8	6.9	7.5	11.4
PRD 2018-SFR1							2.6	2.5	4.6	7.1	9.8	11.8	20.0
PRD 2018-SFR2												0.3	0.3
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	4.9
TAH 2016-SFR1		3.1	2.7	3.6	4.6	5.7	6.8	6.5	7.6	7.7	7.3	5.3	5.9
TAH 2017-SFR1		5.9	4.9	6.9	6.6	6.9	3.4	4.6	5.1	5.4	6.4	6.0	7.0
TAH 2017-SFR2				5.4	6.1	7.5	4.7	5.9	6.0	5.9	6.3	5.5	6.0
TAH 2018-SFR1										6.4	5.5	5.3	6.6	6.0	6.9
Overall SFR		4.7	4.1	5.6	6.3	7.0	6.8	7.9	7.9	8.0	7.6	6.1	6.4

MORNINGSTAR®

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

		Year 2017		Year 2018										
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
Atlanta, GA		5.2	4.6	5.8	6.3	6.6	7.5	8.2	8.1	7.7	7.3	6.2	6.4
Charlotte, NC		5.0	4.4	5.2	6.1	7.3	6.6	7.1	7.9	7.9	8.3	6.2	6.3
Chicago, IL		3.0	3.0	6.6	8.8	8.2	7.8	9.3	8.2	10.0	7.9	7.6	3.9
Dallas-Plano-Irving, TX		4.9	4.7	5.8	6.5	7.9	6.5	7.2	9.0	8.3	8.1	5.7	7.1
Denver-Aurora, CO		4.8	5.2	5.1	7.3	8.0	9.8	10.3	9.6	9.5	7.5	7.3	6.3
Fort Lauderdale, FL		6.6	5.4	7.8	6.3	7.8	7.1	8.0	7.0	6.0	7.3	5.1	6.5
Fort Worth-Arlington, TX		5.2	4.5	4.8	6.4	8.1	7.5	7.8	8.9	7.4	7.9	6.3	6.0
Houston, TX		5.0	4.4	5.2	6.2	7.2	6.3	6.5	6.9	7.9	6.3	6.2	5.8
Indianapolis, IN		2.3	1.9	6.9	7.3	7.1	7.3	9.4	8.4	8.8	8.0	6.0	6.3
Jacksonville, FL		6.5	5.5	6.9	6.9	6.3	5.2	8.5	6.4	6.0	6.1	5.6	6.6
Las Vegas, NV		5.2	4.4	5.4	5.8	6.5	7.5	6.9	7.2	8.3	8.5	7.1	7.9
Los Angeles, CA		6.9	6.0	6.2	4.7	7.3	7.2	6.7	8.0	7.2	7.2	6.7	6.2
Memphis, TN		3.3	3.1	5.2	5.2	8.1	8.3	8.5	7.0	6.8	7.8	7.3	6.3
Nashville, TN		4.6	4.1	5.3	5.4	6.4	7.7	7.5	8.5	8.7	7.2	4.8	6.5
Orlando, FL		5.6	5.1	6.1	5.7	5.9	5.8	8.9	8.6	8.7	9.3	6.0	6.6
Phoenix, AZ		5.6	5.2	6.7	7.3	7.2	7.0	6.8	6.9	7.3	7.5	5.9	6.2
Raleigh-Cary, NC		5.2	4.0	4.3	6.6	7.1	6.2	8.1	8.4	10.2	9.3	6.3	6.7
Riverside-San Bernardino, CA		7.0	4.1	5.8	7.0	8.2	7.9	8.1	7.2	8.6	7.1	8.2	6.5
Sarasota-Bradenton-Venice, FL		7.6	4.4	4.5	4.6	8.0	7.1	6.4	8.8	7.2	9.8	6.9	5.0
Tampa, FL		5.4	4.8	5.7	6.4	6.6	6.8	7.5	8.0	7.8	8.6	6.4	7.4

MORNINGSTAR®

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		19	33	32	24	21	23	19	4	1	4	3	1	184
AH4R 2014-SFR3		27	42	44	36	20	23	13	9	7	4	1	23	249
AH4R 2015-SFR1		33	47	50	32	27	18	13	4	1	1	0	12	238
AH4R 2015-SFR2		31	48	32	39	16	13	11	11	0	2	0	11	214
AMSR 2016-SFR1		38	44	52	44	31	19	13	6	4	3	1	3	258
CSH 2016-2		67	54	49	27	10	5	5	3	4	0	1	2	227
HPA 2016-2		13	13	12	30	6	2	1	0	1	0	0	0	78
HPA 2017-1		25	32	22	11	2	0	1	0	0	0	0	0	93
HPA 2018-1		48	43	31	27	0								149
IH 2017-SFR2		80	41	35	16	5	2	0	3	1	0	0		183
IH 2018-SFR1		80	41	39	15	4	9	0	1	1				190
IH 2018-SFR2		109	70	32	13	11	2							237
IH 2018-SFR3		276	8											284
PRD 2015-SFR2		31	32	29	19	13	13	6	5	5	1	3	0	157
PRD 2015-SFR3		18	37	28	29	20	10	6	3	1	1	1	4	158
PRD 2016-SFR2		43	56	42	15	12	4	3	0	1	1	0	4	181
PRD 2017-SFR1		59	33	24	4	0	0	0	0	0	0	1	0	121
PRD 2018-SFR1		85	26	10	1	0	1	0	0					123
PRD 2018-SFR2		43	7	0										50
SWH 2017-1		86	64	33	20	7	4	0	3	0	0	1	0	218
TAH 2016-SFR1		41	25	42	33	22	11	3	1	1	0	0	2	181
TAH 2017-SFR1		41	28	19	2	4	2	0	0	0	0	0	0	96
TAH 2017-SFR2		49	27	21	7	3	0	2	0	0	1	0		110
TAH 2018-SFR1		64	9	13	9	0	3	0						98
Overall SFR		1,406	860	691	453	234	164	96	53	28	18	12	62	4,077

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

		1	2	3	4	5	6	7	8	9	10	11	12+	Total
AH4R 2014-SFR2		10.3	17.9	17.4	13.0	11.4	12.5	10.3	2.2	0.5	2.2	1.6	0.5	100.0
AH4R 2014-SFR3		10.8	16.9	17.7	14.5	8.0	9.2	5.2	3.6	2.8	1.6	0.4	9.2	100.0
AH4R 2015-SFR1		13.9	19.7	21.0	13.4	11.3	7.6	5.5	1.7	0.4	0.4	0.0	5.0	100.0
AH4R 2015-SFR2		14.5	22.4	15.0	18.2	7.5	6.1	5.1	5.1	0.0	0.9	0.0	5.1	100.0
AMSR 2016-SFR1		14.7	17.1	20.2	17.1	12.0	7.4	5.0	2.3	1.6	1.2	0.4	1.2	100.0
CSH 2016-2		29.5	23.8	21.6	11.9	4.4	2.2	2.2	1.3	1.8	0.0	0.4	0.9	100.0
HPA 2016-2		16.7	16.7	15.4	38.5	7.7	2.6	1.3	0.0	1.3	0.0	0.0	0.0	100.0
HPA 2017-1		26.9	34.4	23.7	11.8	2.2	0.0	1.1	0.0	0.0	0.0	0.0	0.0	100.0
HPA 2018-1		32.2	28.9	20.8	18.1	0.0								100.0
IH 2017-SFR2		43.7	22.4	19.1	8.7	2.7	1.1	0.0	1.6	0.5	0.0	0.0		100.0
IH 2018-SFR1		42.1	21.6	20.5	7.9	2.1	4.7	0.0	0.5	0.5				100.0
IH 2018-SFR2		46.0	29.5	13.5	5.5	4.6	0.8							100.0
IH 2018-SFR3		97.2	2.8											100.0
PRD 2015-SFR2		19.7	20.4	18.5	12.1	8.3	8.3	3.8	3.2	3.2	0.6	1.9	0.0	100.0
PRD 2015-SFR3		11.4	23.4	17.7	18.4	12.7	6.3	3.8	1.9	0.6	0.6	0.6	2.5	100.0
PRD 2016-SFR2		23.8	30.9	23.2	8.3	6.6	2.2	1.7	0.0	0.6	0.6	0.0	2.2	100.0
PRD 2017-SFR1		48.8	27.3	19.8	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	100.0
PRD 2018-SFR1		69.1	21.1	8.1	0.8	0.0	0.8	0.0	0.0					100.0
PRD 2018-SFR2		86.0	14.0	0.0										100.0
SWH 2017-1		39.4	29.4	15.1	9.2	3.2	1.8	0.0	1.4	0.0	0.0	0.5	0.0	100.0
TAH 2016-SFR1		22.7	13.8	23.2	18.2	12.2	6.1	1.7	0.6	0.6	0.0	0.0	1.1	100.0
TAH 2017-SFR1		42.7	29.2	19.8	2.1	4.2	2.1	0.0	0.0	0.0	0.0	0.0	0.0	100.0
TAH 2017-SFR2		44.5	24.5	19.1	6.4	2.7	0.0	1.8	0.0	0.0	0.9	0.0		100.0
TAH 2018-SFR1		65.3	9.2	13.3	9.2	0.0	3.1	0.0						100.0
Overall SFR		34.5	21.1	16.9	11.1	5.7	4.0	2.4	1.3	0.7	0.4	0.3	1.5	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
Amherst	Past due one calendar month or more (not dependent on day count) and owing $500 or more
Colony American Homes/Colony Starwood Homes/Starwood Waypoint Homes	Past due one calendar month or more (not dependent on day count) and owing $200 or more
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[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.

MORNINGSTAR®

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

		Year 2017		Year 2018										Total Count
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
AH4R 2014-SFR2		19	20	20	22	8	7	7	12	13	11	16	16	4,481
AH4R 2014-SFR3		12	14	19	20	7	12	9	5	14	14	12	13	4,499
AH4R 2015-SFR1		28	26	22	29	13	15	8	12	18	11	17	14	4,634
AH4R 2015-SFR2		24	10	21	18	6	7	10	7	11	10	9	11	4,123
AMSR 2016-SFR1		111	114	98	95	80	60	75	73	67	66	81	75	4,262
CSH 2016-2		40	48	37	36	24	13	36	32	36	30	35	34	3,941
HPA 2016-2		12	16	9	10	9	6	11	12	14	16	22	22	1,291
HPA 2017-1		11	7	10	10	5	8	7	9	19	23	22	22	1,335
HPA 2018-1										24	23	25	28	1,763
IH 2017-SFR2				33	30	19	15	27	33	24	30	35	30	4,378
IH 2018-SFR1						15	29	30	38	21	16	20	20	4,284
IH 2018-SFR2									43	54	49	50	53	5,485
IH 2018-SFR3													67	6,653
PRD 2015-SFR2		23	24	28	21	18	12	24	18	25	10	21	20	3,287
PRD 2015-SFR3		17	22	29	25	20	17	19	20	23	16	21	25	3,149
PRD 2016-SFR2		19	39	41	0	26	18	17	22	29	16	25	23	3,742
PRD 2017-SFR1		16	17	17	22	16	17	14	12	25	12	12	17	2,708
PRD 2018-SFR1								15	16	39	16	6	9	9	2,113
PRD 2018-SFR2												1	17	2,116
SWH 2017-1		34	36	45	45	31	19	45	45	27	29	36	34	4,421
TAH 2016-SFR1		15	15	18	23	10	10	21	9	14	8	15	6	3,433
TAH 2017-SFR1		14	12	10	12	2	3	26	0	10	7	11	8	3,480
TAH 2017-SFR2				7	9	4	6	13	4	3	2	4	2	2,620
TAH 2018-SFR1								0	2	4	2	6	1	2,509
Overall SFR		395	420	464	427	313	289	415	447	491	407	505	567	84,707

MORNINGSTAR®

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

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

MORNINGSTAR®

Table 9 – Monthly Retention Rate of Expiring Leases

		Year 2017		Year 2018									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AH4R 2014-SFR2		75.1	75.2	77.4	78.9	80.4	79.3	76.8	77.1	74.9	74.0	77.7	TBD
AH4R 2014-SFR3		78.1	78.9	76.7	81.9	74.3	80.0	73.1	71.7	77.2	79.1	75.4	TBD
AH4R 2015-SFR1		77.3	76.2	75.3	74.9	77.7	72.5	72.3	72.9	71.9	77.5	78.9	TBD
AH4R 2015-SFR2		68.4	76.2	76.1	80.3	75.3	75.2	72.1	71.8	74.2	74.9	68.5	TBD
AMSR 2016-SFR1		87.1	85.6	88.8	83.0	80.3	80.9	80.6	78.3	74.0	80.1	80.5	TBD
CSH 2016-2		67.5	73.1	78.9	80.9	80.7	79.7	73.2	76.3	78.8	73.8	74.2	TBD
HPA 2016-2		90.0	81.3	78.6	75.0	77.1	77.4	75.7	79.0	70.7	77.6	77.8	TBD
HPA 2017-1		89.3	83.3	87.9	79.7	80.9	75.4	78.1	52.9	73.0	73.9	89.8	TBD
HPA 2018-1										72.5	76.0	75.0	TBD
IH 2017-SFR2				78.1	80.6	83.2	81.0	79.7	77.7	79.4	79.0	81.7	TBD
IH 2018-SFR1						84.6	78.9	80.2	76.6	78.9	74.6	82.1	TBD
IH 2018-SFR2									77.3	81.5	81.7	79.4	TBD
IH 2018-SFR3													TBD
PRD 2015-SFR2		80.0	83.1	79.9	76.5	81.9	82.1	78.1	75.0	79.5	70.4	77.0	TBD
PRD 2015-SFR3		77.4	73.7	72.8	75.8	75.9	80.2	79.8	77.0	77.4	77.5	75.4	TBD
PRD 2016-SFR2		80.3	80.5	87.3	81.4	82.4	78.8	79.7	76.3	78.3	77.8	81.4	TBD
PRD 2017-SFR1		76.0	76.1	82.1	81.2	91.3	83.1	72.1	75.2	79.2	81.9	74.9	TBD
PRD 2018-SFR1								85.2	75.0	80.4	81.5	76.9	80.7	TBD
PRD 2018-SFR2												83.3	TBD
SWH 2017-1		74.8	84.8	81.3	75.8	78.5	78.5	85.7	72.4	79.5	81.4	77.2	TBD
TAH 2016-SFR1		78.5	84.8	81.5	83.6	81.2	85.5	81.3	78.1	78.3	82.0	85.1	TBD
TAH 2017-SFR1		84.0	88.3	79.3	82.5	79.7	84.0	78.0	85.8	74.5	82.8	82.3	TBD
TAH 2017-SFR2				76.6	81.4	80.7	78.2	78.6	81.5	82.6	84.9	80.7	TBD
TAH 2018-SFR1									77.5	83.9	82.7	87.3	78.0	TBD
Overall SFR		77.9	79.9	79.3	79.6	80.0	79.4	77.6	76.3	77.2	78.2	78.7	TBD

TBD – To Be Determined

MORNINGSTAR®

Table 10 – Monthly Retention Rate of MTM Leases

		Year 2017		Year 2018									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AH4R 2014-SFR2		87.4	86.8	89.7	87.3	86.9	87.5	85.4	82.0	86.3	84.4	83.2	TBD
AH4R 2014-SFR3		81.4	89.2	90.0	85.8	83.6	86.4	76.0	82.4	82.8	85.3	82.5	TBD
AH4R 2015-SFR1		87.1	84.9	86.5	82.3	88.6	86.1	78.7	84.1	80.3	79.4	80.1	TBD
AH4R 2015-SFR2		80.9	88.8	86.4	85.5	82.9	82.6	72.6	83.9	80.9	79.7	81.5	TBD
AMSR 2016-SFR1		95.0	93.7	98.2	95.2	94.6	95.5	90.9	87.6	87.6	91.8	92.8	TBD
CSH 2016-2		70.4	74.1	75.0	75.8	78.1	77.8	83.9	75.6	72.3	75.4	80.8	TBD
HPA 2016-2													TBD
HPA 2017-1													TBD
HPA 2018-1													TBD
IH 2017-SFR2				91.0	78.4	89.1	82.9	80.6	84.7	90.0	88.6	74.7	TBD
IH 2018-SFR1						77.2	87.5	77.6	79.7	83.3	90.2	86.2	TBD
IH 2018-SFR2									78.8	88.2	91.4	90.7	TBD
IH 2018-SFR3													TBD
PRD 2015-SFR2		78.6	79.5	80.6	89.2	88.4	64.0	82.5	79.5	85.3	79.1	76.5	TBD
PRD 2015-SFR3		75.5	76.7	83.3	80.6	84.4	70.0	72.4	69.7	85.7	71.8	70.5	TBD
PRD 2016-SFR2		76.8	81.8	100.0	65.8	91.1	96.0	72.2	73.6	76.6	72.7	75.5	TBD
PRD 2017-SFR1		66.7	91.4	82.1	91.2	100.0	68.1	61.3	87.5	83.3	75.7	88.6	TBD
PRD 2018-SFR1								75.0	60.0	83.3	66.7	62.5	56.3	TBD
PRD 2018-SFR2												100.0	TBD
SWH 2017-1		61.3	80.8	75.0	71.4	82.4	78.3	77.0	78.3	82.3	79.2	87.5	TBD
TAH 2016-SFR1		95.5	92.9	95.5	94.4	95.3	95.3	89.4	94.7	90.1	96.4	91.8	TBD
TAH 2017-SFR1		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	88.0	TBD
TAH 2018-SFR1								92.1	83.6	94.1	98.8	89.2	TBD
Overall SFR		88.9	89.6	93.0	89.0	89.6	88.8	84.4	84.7	85.5	87.1	85.8	TBD

TBD – To Be Determined

Table 11a – MTM Tenants (by Count)

		Year 2017		Year 2018										Total Count
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	
AH4R 2014-SFR2		178	175	170	190	206	208	232	236	219	202	185	173	4,481
AH4R 2014-SFR3		168	148	155	188	220	199	233	226	218	208	203	185	4,499
AH4R 2015-SFR1		195	187	184	204	220	219	223	205	201	200	176	168	4,634
AH4R 2015-SFR2		156	143	143	150	183	200	235	221	215	178	163	151	4,123
AMSR 2016-SFR1		684	709	696	733	747	759	761	754	608	513	498	460	4,262
CSH 2016-2		27	27	28	33	32	27	31	45	65	57	52	52	3,941
HPA 2016-2		0	0	0	0	0	0	0	0	0	0	0	0	1,291
HPA 2017-1		0	0	0	0	0	0	0	0	0	0	0	0	1,335
HPA 2018-1										0	0	0	0	1,763
IH 2017-SFR2				92	95	115	101	111	105	70	88	84	68	4,378
IH 2018-SFR1						92	104	116	125	66	61	65	66	4,284
IH 2018-SFR2									104	102	82	76	89	5,485
IH 2018-SFR3													115	6,653
PRD 2015-SFR2		64	49	55	58	65	72	61	59	52	60	53	55	3,287
PRD 2015-SFR3		60	52	49	50	41	46	63	54	58	79	61	53	3,149
PRD 2016-SFR2		85	70	71	201	59	63	78	81	76	95	80	73	3,742
PRD 2017-SFR1		67	49	46	47	47	108	49	47	50	54	58	68	2,708
PRD 2018-SFR1							6	14	18	27	34	40	59	2,113
PRD 2018-SFR2												11	9	2,116
SWH 2017-1		31	26	24	28	34	60	87	83	79	72	72	69	4,421
TAH 2016-SFR1		377	339	257	252	261	215	278	253	202	210	232	233	3,433
TAH 2017-SFR1		217	225	195	197	184	121	127	114	103	98	0	118	3,480
TAH 2017-SFR2				229	195	194	176	174	152	114	111	116	108	2,620
TAH 2018-SFR1								118	128	85	88	95	89	2,509
Overall SFR		2,309	2,199	2,394	2,621	2,700	2,684	2,991	3,010	2,610	2,490	2,320	2,461	84,707

M RNINGSTAR®

Table 11b – MTM Tenants (by Percentage)

		Year 2017		Year 2018									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AH4R 2014-SFR2		4.0	3.9	3.8	4.2	4.6	4.6	5.2	5.3	4.9	4.5	4.1	3.9
AH4R 2014-SFR3		3.7	3.3	3.4	4.2	4.9	4.4	5.2	5.0	4.8	4.6	4.5	4.1
AH4R 2015-SFR1		4.2	4.0	4.0	4.4	4.7	4.7	4.8	4.4	4.3	4.3	3.8	3.6
AH4R 2015-SFR2		3.8	3.5	3.5	3.6	4.4	4.9	5.7	5.4	5.2	4.3	4.0	3.7
AMSR 2016-SFR1		16.0	16.6	16.3	17.2	17.5	17.8	17.9	17.7	14.3	12.0	11.7	10.8
CSH 2016-2		0.7	0.7	0.7	0.8	0.8	0.7	0.8	1.1	1.6	1.4	1.3	1.3
HPA 2016-2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HPA 2017-1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
HPA 2018-1										0.0	0.0	0.0	0.0
IH 2017-SFR2				2.1	2.2	2.6	2.3	2.5	2.4	1.6	2.0	1.9	1.6
IH 2018-SFR1						2.1	2.4	2.7	2.9	1.5	1.4	1.5	1.5
IH 2018-SFR2										1.9	1.8	1.5	1.4	1.6
IH 2018-SFR3													1.7
PRD 2015-SFR2		1.9	1.5	1.7	1.8	2.0	2.2	1.9	1.8	1.6	1.8	1.6	1.7
PRD 2015-SFR3		1.9	1.7	1.6	1.6	1.3	1.5	2.0	1.7	1.8	2.5	1.9	1.7
PRD 2016-SFR2		2.3	1.9	1.9	5.4	1.6	1.7	2.1	2.2	2.0	2.5	2.1	2.0
PRD 2017-SFR1		2.5	1.8	1.7	1.7	1.7	4.0	1.8	1.7	1.8	2.0	2.1	2.5
PRD 2018-SFR1							0.3	0.7	0.9	1.3	1.6	1.9	2.8
PRD 2018-SFR2												0.5	0.4
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	1.6
TAH 2016-SFR1		11.0	9.9	7.5	7.3	7.6	6.3	8.1	7.4	5.9	6.1	6.8	6.8
TAH 2017-SFR1		6.2	6.5	5.6	5.7	5.3	3.5	3.6	3.3	3.0	2.8	0.0	3.4
TAH 2017-SFR2				8.7	7.4	7.4	6.7	6.6	5.8	4.3	4.2	4.4	4.1
TAH 2018-SFR1								4.7	5.1	3.4	3.5	3.8	3.5
Overall SFR		4.4	4.2	4.0	4.4	4.2	4.0	4.3	4.0	3.4	3.3	3.0	2.9

MORNINGSTAR®

Table 12 – Monthly Turnover Rate

		Year 2017		Year 2018									
		Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AH4R 2014-SFR2		2.5	2.2	2.8	2.4	2.9	2.7	3.9	3.5	4.1	3.5	2.8	TBD
AH4R 2014-SFR3		2.1	2.4	2.6	2.4	3.3	3.0	3.6	4.4	4.0	3.6	3.0	TBD
AH4R 2015-SFR1		2.8	2.8	3.4	3.2	3.2	2.6	3.0	4.1	4.5	3.8	3.0	TBD
AH4R 2015-SFR2		2.3	2.9	2.5	2.6	4.0	3.6	4.4	4.8	4.6	3.4	3.0	TBD
AMSR 2016-SFR1		2.0	2.2	2.8	1.7	2.7	2.9	2.8	3.4	3.4	3.0	2.5	TBD
CSH 2016-2		3.0	2.4	2.6	2.5	3.2	2.3	4.1	4.0	3.3	3.9	3.3	TBD
HPA 2016-2		2.2	1.2	1.7	1.5	3.5	3.8	5.7	5.8	5.9	2.1	1.7	TBD
HPA 2017-1		2.3	1.7	1.6	1.9	2.4	2.5	2.4	1.5	3.1	4.5	2.8	TBD
HPA 2018-1										6.9	4.8	4.1	TBD
IH 2017-SFR2				2.4	2.2	2.4	2.4	2.8	3.4	3.6	3.2	2.2	TBD
IH 2018-SFR1						1.8	2.8	2.9	3.5	3.2	3.6	2.7	TBD
IH 2018-SFR2										6.3	3.2	2.5	2.9
IH 2018-SFR3													TBD
PRD 2015-SFR2		2.5	2.2	2.4	2.5	3.5	3.1	5.3	3.1	3.3	2.1	3.3	TBD
PRD 2015-SFR3		2.4	2.0	2.0	2.0	2.2	2.3	3.5	4.8	4.4	3.6	3.6	TBD
PRD 2016-SFR2		1.7	1.7	2.0	2.2	2.5	2.2	3.3	4.0	4.2	4.3	3.5	TBD
PRD 2017-SFR1		3.8	3.5	2.4	1.8	2.1	1.6	3.4	3.4	3.1	2.5	3.4	TBD
PRD 2018-SFR1							3.6	1.6	2.4	3.7	4.2	4.2	TBD
PRD 2018-SFR2												2.9	TBD
SWH 2017-1		2.0	2.3	2.4	3.0	3.7	2.7	3.6	4.6	3.8	2.7	3.1	TBD
TAH 2016-SFR1		2.5	1.7	2.1	1.7	2.4	2.3	2.8	3.4	4.0	3.5	1.0	TBD
TAH 2017-SFR1		2.7	2.0	3.1	2.4	2.7	2.3	2.3	2.5	2.0	3.7	1.0	TBD
TAH 2017-SFR2				6.3	1.3	2.7	2.7	2.2	2.9	2.3	2.7	1.1	TBD
TAH 2018-SFR1								6.5	1.8	3.7	2.6	0.8	TBD
Overall SFR		2.4	2.3	2.7	2.3	2.9	2.7	3.5	3.9	3.7	3.3	2.7	TBD

TBD – To Be Determined

MORNINGSTAR ®

Appendix I – Vacancy Versus Lease Expiration

PRD 2017-SFR1

PRD 2018-SFR1

PRD 2018-SFR2

SWH 2017-1

TAH 2016-SFR1

TAH 2017-SFR1

TAH 2017-SFR2

TAH 2018-SFR1

Vacancy
Lease Expiration
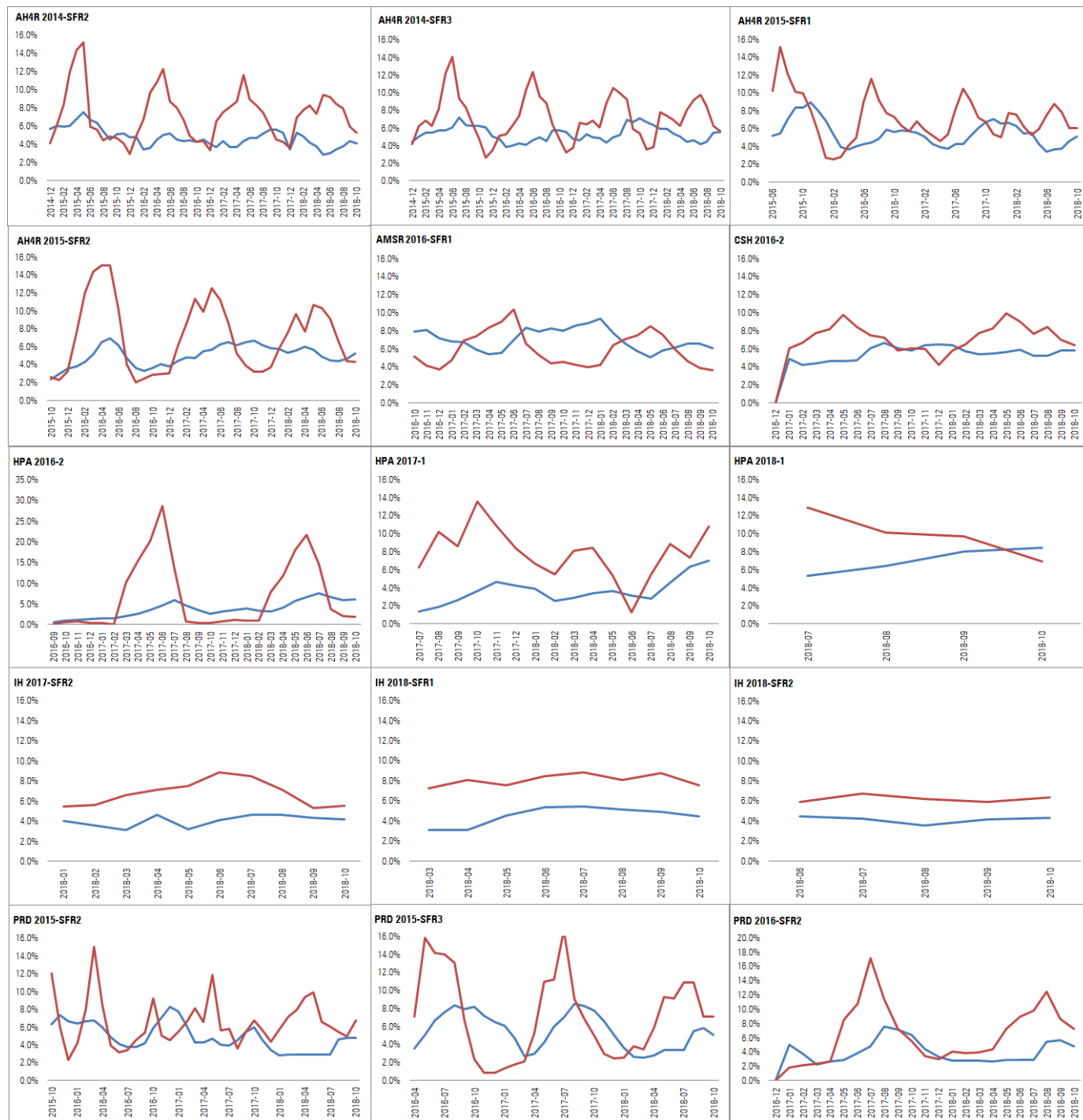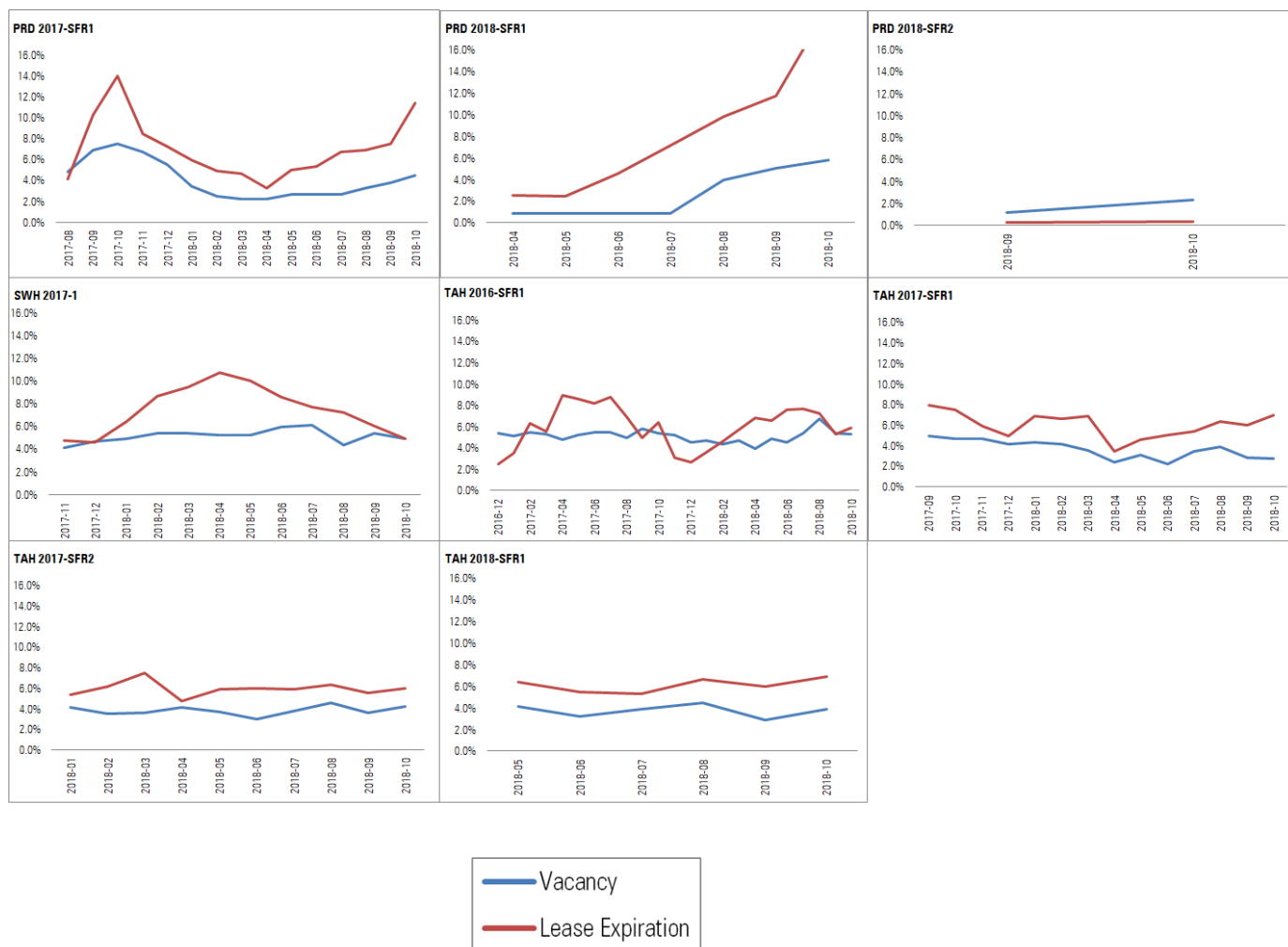
MORNINGSTAR®

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

MORNINGSTAR®

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 – September 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 August 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.

MORNINGSTAR®

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 October lease expirations, Morningstar looks for all September lease expirations in the July 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 August or September are removed from the October lease expiration count.

Tables 6a and 6b – Historical Months of Vacancy

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

MORNINGSTAR®

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 October property tape to determine the lease status for September 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 September 2018 retention rates are the October statuses of September 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.

MORNINGSTAR®

Table 12 – Monthly Turnover Rate

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

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

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

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

Disclaimer

MORNINGSTAR®