AIRBNB UNSTRUCTURED DATA ANALYSIS

Based on public Airbnb data on MongoDB

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Contents

Executive Summary

This report shows key business insights through sentiment and word pattern analysis done on Airbnb data. Description maintains a positive but neutral tone, with little focus on safety, local experiences, or luxury. Apartments mostly related to emotion, houses highlight trust and comfort, and condominiums emphasize luxury. Word patterns show that apartments focus on city convenience, houses on family appeal, and condos on vacation experiences. To attract more customers, Airbnb should encourage hosts to highlight safety, emotions, and local culture.

Most and Least Repeated Words

To identify the underrepresented words on description, the analysis looks at the frequency of each word. As expected, words such as "apartment," "bedroom," "kitchen," "walk," and "minutes" were the most common words that was reflecting an emphasis on property type, amenities, and location accessibility. However, several unexpected patterns emerge. /Please go to dashboard on figure 19 and filter out specific word on "word" filter to see the frequency. /

1. Safety and Security Mentions Are Minimal: Despite safety being a top concern for travelers, words like "safe" (374 mentions) and "security" (192 mentions) appear infrequently. This suggests an opportunity for Airbnb to encourage hosts to highlight safety measures, reassuring potential guests and improving booking confidence.

2. Luxury Words Are Not a Major Focus: Luxury-related terms such as "luxury" (216), "stunning" (149), "gorgeous" (143), "tropical" (161), and "resort" (210) are less frequent, which illustrates that Airbnb mainly serves mid-range and budget travelers. However, leveraging benefits and illustrating them through words that gives luxury feeling could derive feeling for the customers that they are making a great deal.

3. Local Experiences Are Underrepresented: When it comes to travelers, they often seek authentic, local experiences. Unfortunately, local experience terms are less frequent. Mentions of "local" (627), "historic" (244), "cuisine" (149), and "neighborhood" (249) suggest that while some hosts highlight cultural experiences, they are not a dominant theme.

Sentiment analysis

Sentiment Analysis Tools AFINN, Bing, and NRC show how Airbnb hosts describe their properties emotionally. As shown in figure 1, AFINN indicates mostly positive descriptions using adjectives like "amazing" and "beautiful." Bing, which classifies words without intensity, scores lower than AFINN, indicating a more neutral tone. Low NRC score shows that the description contains too many details rather than strong expressive words. When it comes to property types of Apartments got the greatest emotion scores among the top three property categories /Figure 2/, commonly having phrases related to joy and expectation, making them appealing to short-term travelers. On figure 3, houses had a balanced sentiment, emphasizing trust, security, and comfort, making them ideal for families and long-term renters. Condominiums got lower sentiment scores, with descriptions related to modern conveniences rather than emotional words /Figure 4/.

Pattern and Joint words Analysis

Figures 7 to 10 highlight key differences in unique words across property types using TF-IDF analysis. Apartments are closely associated with words such as "ramblas," "sheung," "doble," "gothic," and "pedestrian," suggesting a strong emphasis on walkability, historic areas, and cultural experiences, making them ideal for travelers seeking vibrant urban locations, efficient lodging, and access to public spaces. Unlike houses, apartments focus less on privacy, nature, or seclusion, reinforcing their appeal to city visitors rather than those looking for tranquil retreats. Houses

emphasize space, comfort, and privacy, with high-ranking words like "cottage," "fenced," "detached," "granny," and "leafy," suggesting an appeal to families and long-term renters looking for standalone homes with outdoor spaces. On the other hand, condominiums are marketed as luxury and resort-style accommodations, with words including "wailea," "kamaole," "ka'anapali," "napili," and "humpback," all related to popular beach destinations, indicating a focus on high-end leisure experiences. Unlike apartments, which emphasize city accessibility, or houses, which highlight space and privacy, condominiums prioritize premium resort and exclusive stays.

Conclusion & Recommendations

Airbnb hosts primarily focus on property features rather than guest experiences, emotional appeal, or unique selling points. While descriptions are generally positive, they lack storytelling elements that could attract more guests. Additionally, Ziph's law analysis confirms that there are overuse of common description words that making them less engaging and too informative. Airbnb should actively support hosts by providing tailored guidance and collaboration opportunities to enhance listing descriptions.

Key Recommendations:

- Emphasize Safety & Security: Highlight security features to build guest trust.

- Enhance Expressive Language: Use more engaging descriptions, especially for apartments and condominiums.

- Showcase Local & Cultural Experiences: Incorporate regional attractions and unique cultural elements to differentiate listings.

- Diversify Word Usage: Apply Zipf's Law and TF-IDF analysis to identify word patterns and help hosts balance common and compelling guest experience.

Appendix
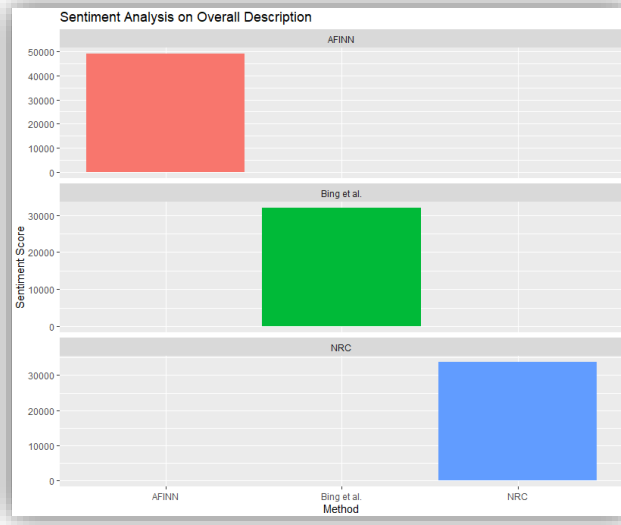
Figure 1 Sentimental analysis on Overall Description
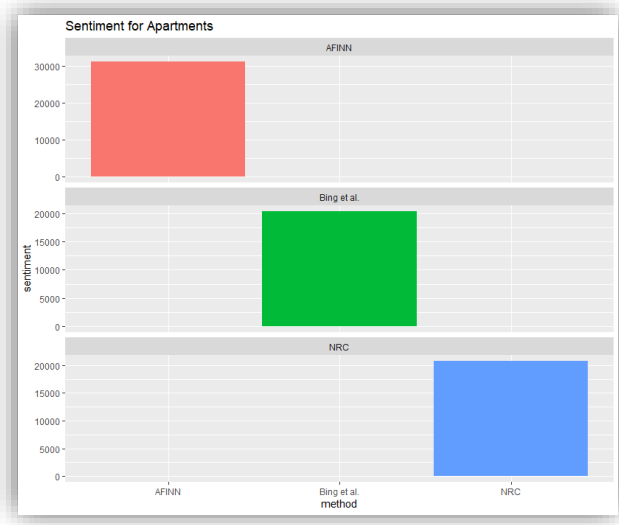
Figure 2 Sentimental analysis on Apartment description

Figure 3 Sentimental analysis on House Description
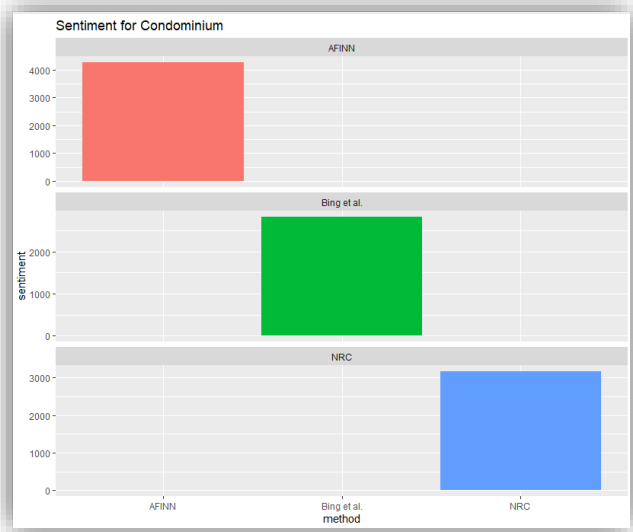
Figure 4 Sentimental analysis on Condominium Description
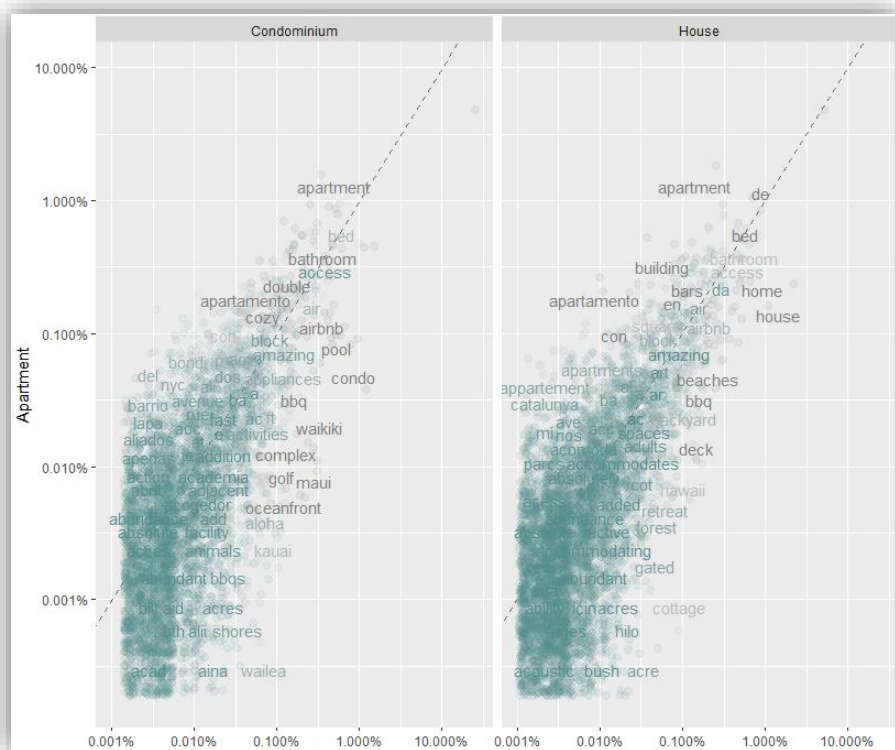
Figure 1 Comparison of Word Frequency Distributions Across Property Types: Apartments vs. Condominiums and Houses
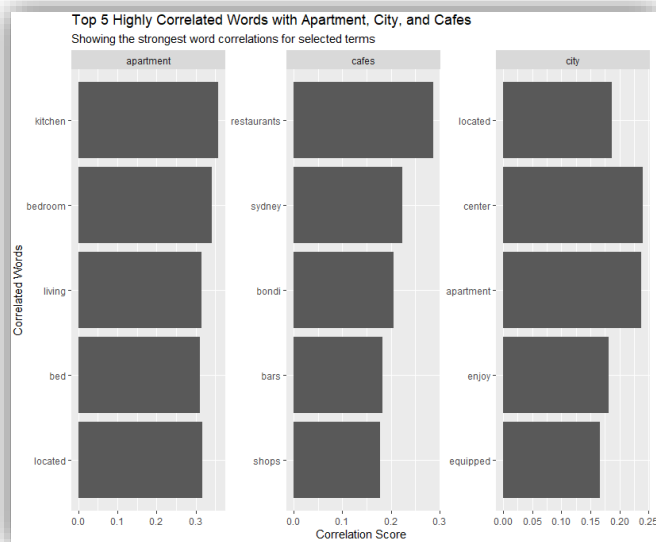
Figure 3 Top Highly Correlated Words with Unique Apartment-Related Terms
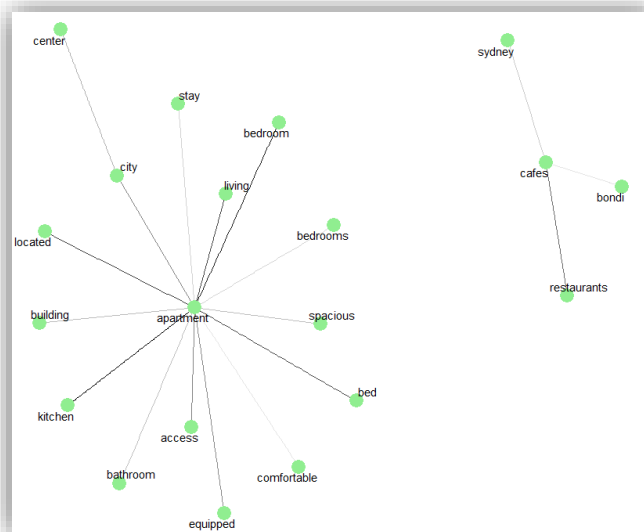
Figure 2 Top Highly Correlated Words with Unique Apartment-Related Terms network diagram

Figure 5 Top Highly Correlated Words with Unique Condo-Related Terms

Figure 4 Top Highly Correlated Words with Unique Condo-Related Terms network diagram

Figure 7 Top Highly Correlated Words with Unique House-Related Terms

Figure 6 Top Highly Correlated Words with Unique House-Related Terms Netwrok diagram

	word1	word2	n
1	walking	distance	540
2	double	bed	376
3	minutes	walk	352
4	bedroom	apartment	330
5	minute	walk	322
6	metro	station	312
7	wi	fi	310
8	5	minutes	302
9	equipped	kitchen	302
10	hong	kong	302
11	size	bed	287
12	air	conditioning	275
13	de	la	268
14	min	walk	260
15	sofa	bed	259
16	washing	machine	254
17	10	minutes	248
18	queen	size	232
19	1	bedroom	192
20	10	min	172
21	minutes	walking	171
22	5	min	164
23	free	wifi	161
24	mont	royal	152
25	sagrada	familia	152
26	restaurants	bars	149
27	bus	stop	147
28	newly	renovated	147
29	15	minutes	146
30	cable	tv	146
31	easy	access	145
32	public	transport	145
33	city	center	144
34	2	minutes	143
35	private	bathroom	142
36	apartment	located	138
37	mtr	station	137
38	2	bedroom	136
39	de	janeiro	132
40	rio	de	132
41	train	station	131
42	2	bedrooms	129
43	queen	bed	122
44	single	bed	122
45	mins	walk	121
46	da	cidade	119
47	bars	restaurants	118
48	entire	apartment	115
49	5	minute	108
50	dining	table	107
51	4	people	106

Figure 9 Common Word Pairs in Apartment Descriptions

	word1	word2	word3	n
1	queen	size	bed	170
2	rio	de	janeiro	131
3	5	minutes	walk	91
4	5	minute	walk	83
5	2	bedroom	apartment	75
6	flat	screen	tv	72
7	cama	de	casal	71
8	tsim	sha	tsui	71
9	queen	sized	bed	70
10	10	min	walk	66
11	free	wi	fi	63
12	king	size	bed	62
13	minutes	walking	distance	62
14	<NA>	<NA>	<NA>	62
15	10	minute	walk	61
16	meu	espaço	é	61
17	5	min	walk	58
18	couples	solo	adventurers	58
19	1	bedroom	apartment	56
20	5	minutes	walking	53
21	salle	de	bain	53
22	10	minutes	walk	50
23	double	sofa	bed	46
24	plateau	mont	royal	45
25	sai	ying	pun	45
26	barra	da	tijuca	44
27	paseo	de	gracia	44
28	2	single	beds	41
29	2	minutes	walk	38
30	3	minutes	walk	38
31	5	mins	walk	38
32	espaço	é	bom	38
33	speed	wi	fi	38
34	é	bom	para	38
35	10	minutes	walking	35
36	minutes	à	pied	34
37	bom	para	casais	33
38	de	la	ciudad	32
39	casa	da	música	31
40	comfortable	double	bed	29
41	máquina	de	lavar	29
42	sala	de	estar	29
43	viajantes	de	negócios	29
44	1	double	bed	28
45	15	minute	walk	28
46	centro	da	cidade	28
47	la	sagrada	familia	28
48	bedroom	apartment	located	27
49	casa	de	banho	27
50	marché	jean	talon	27
51	2	minutes	walking	26
52	du	centre	ville	26

Figure 8 Common Three-Word Phrases in Apartment Descriptions

	word1	word2	n
1	walking	distance	62
2	ocean	views	51
3	size	bed	50
4	air	conditioning	47
5	flat	screen	46
6	ocean	view	46
7	master	bedroom	43
8	washer	dryer	41
9	swimming	pool	39
10	queen	size	38
11	free	wifi	35
12	wi	fi	35
13	bedroom	2	34
14	sofa	bed	33
15	1	bedroom	32
16	2	bedroom	32
17	screen	tv	31
18	hot	tub	29
19	king	bed	29
20	cable	tv	28
21	sq	ft	28
22	easy	access	27
23	ground	floor	27
24	waikiki	beach	27
25	private	lanai	26
26	minute	walk	25
27	2	bath	23
28	equipped	kitchen	23
29	king	size	23
30	queen	bed	23
31	short	walk	23
32	beach	chairs	22
33	living	space	22
34	ocean	front	22
35	newly	renovated	21
36	centrally	located	20
37	free	parking	20
38	vacation	rental	20
39	3	bedroom	19
40	hong	kong	19
41	旺	角	19
42	bath	condo	18
43	bedroom	apartment	18
44	shops	restaurants	18
45	top	floor	18
46	bedroom	condo	17
47	coffee	maker	17
48	5	min	16

Figure 10 Common Word Pairs in Condo Descriptions

	word1	word2	word3	n
1	flat	screen	tv	30
2	queen	size	bed	21
3	king	size	bed	18
4	2	bedroom	2	16
5	bedroom	2	bath	16
6	pool	hot	tub	14
7	2	bath	condo	12
8	couples	solo	adventurers	11
9	famous	waikiki	beach	11
10	barra	da	tijuca	10
11	bedroom	2	bathroom	10
12	stainless	steel	appliances	9
13	white	sand	beach	9
14	<NA>	<NA>	<NA>	9
15	1	bedroom	2	8
16	hot	tub	bbq	8
17	microwave	coffee	maker	8
18	plateau	mont	royal	8
19	2	bathroom	condo	7
20	5	minute	walk	7
21	free	wi	fi	7
22	kitchen	washer	dryer	7
23	minutes	walking	distance	7
24	queen	sized	bed	7
25	queen	sleeper	sofa	7
26	朗	豪	坊	7
27	1	bedroom	1	6
28	air	conditioning	heating	6
29	ala	moana	shopping	6
30	friday	night	fireworks	6
31	moana	shopping	center	6
32	tsim	sha	tsui	6
33	world	famous	waikiki	6
34	1	bedroom	unit	5
35	2	bed	2	5
36	2	bedroom	apartment	5
37	2	single	beds	5
38	24	hour	security	5
39	3	mins	walk	5
40	5	min	walk	5
41	bed	2	bath	5
42	central	air	conditioning	5
43	ground	floor	condo	5
44	hilton	hawaiian	village	5
45	honoapiilani	condo	120993	5
46	location	location	location	5
47	queen	sofa	bed	5
48	smart	flat	screen	5
49	transient	accommodation	tax	5
50	tv	dvd	player	5
51	分鐘	徒步	到	5
52	日本語	対応	可能	5

Figure 11 Common Three-Word Phrases in Condo Descriptions

	word1	word2	n
1	minute	walk	61
2	walking	distance	53
3	10	minutes	50
4	minutes	walk	49
5	size	bed	48
6	private	bathroom	45
7	bus	stop	39
8	5	minutes	36
9	air	conditioning	36
10	double	bed	36
11	master	bedroom	35
12	queen	bed	34
13	train	station	34
14	min	walk	33
15	equipped	kitchen	32
16	3	bedroom	31
17	street	parking	31
18	swimming	pool	30
19	washer	dryer	30
20	20	minutes	29
21	kitchen	living	29
22	queen	size	29
23	wi	fi	27
24	15	minutes	26
25	4	bedroom	26
26	sofa	bed	26
27	10	minute	25
28	easy	access	25
29	free	wifi	25
30	2	bedrooms	23
31	5	minute	23
32	short	walk	23
33	10	min	22
34	5	min	22
35	city	center	22
36	family	home	22
37	public	transport	22
38	3	bedrooms	21
39	minute	drive	21
40	north	shore	21
41	washing	machine	21
42	da	cidade	20
43	flat	screen	20
44	ocean	views	20
45	bedroom	house	19
46	bondi	beach	19
47	metro	station	19
48	quiet	street	19
49	screen	tv	19
50	single	bed	19
51	sydney	cbd	19
52	website	hidden	19
53	4	bedrooms	18
54	newly	renovated	18

Figure 13 Common Word Pairs in House Descriptions

	word1	word2	word3	n
1	queen	size	bed	21
2	rio	de	janeiro	17
3	flat	screen	tv	16
4	10	minute	walk	14
5	king	size	bed	12
6	salle	de	bain	12
7	10	minutes	walk	11
8	barra	da	tijuca	11
9	cama	de	casal	11
10	casa	de	banho	11
11	5	minute	walk	10
12	5	min	walk	9
13	5	minute	drive	9
14	<NA>	<NA>	<NA>	9
15	3	bedroom	2	8
16	5	minutes	walk	8
17	free	street	parking	8
18	10	min	walk	7
19	15	minute	walk	7
20	4	bedroom	3	7
21	couples	solo	adventurers	7
22	estação	de	metro	7
23	meu	espaço	é	7
24	volcanoes	national	park	7
25	3	bedrooms	2	6
26	bedroom	2	bath	6
27	black	sand	beach	6
28	café	da	manhã	6
29	centro	da	cidade	6
30	couples	business	travellers	6
31	cul	de	sac	6
32	maria	da	feira	6
33	queen	sized	bed	6
34	sala	de	estar	6
35	1	minute	walk	5
36	10	minutes	drive	5
37	2	bath	home	5
38	3	bedroom	home	5
39	3	bedroom	house	5
40	4	bedroom	home	5
41	7	minutes	walk	5
42	bedrooms	2	bathrooms	5
43	casa	da	música	5
44	double	sofa	bed	5
45	hawaii	volcanoes	national	5
46	historic	haleiwa	town	5
47	indoor	outdoor	living	5
48	quarto	de	banho	5
49	queen	sized	beds	5
50	quiet	tree	lined	5
51	santa	maria	da	5
52	todos	os	quartos	5

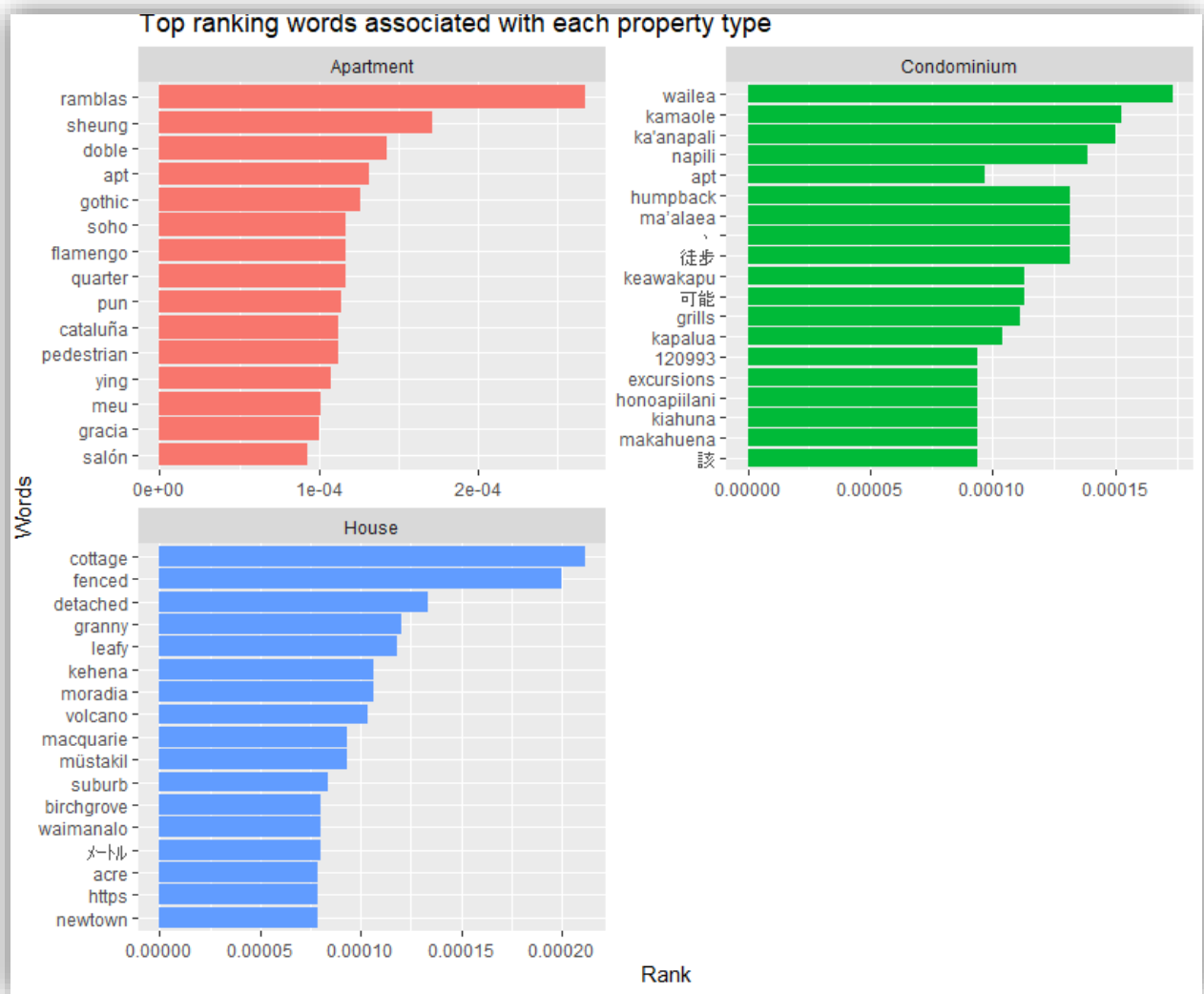*Figure 12 Common Three-Word Phrases in House Descriptions*
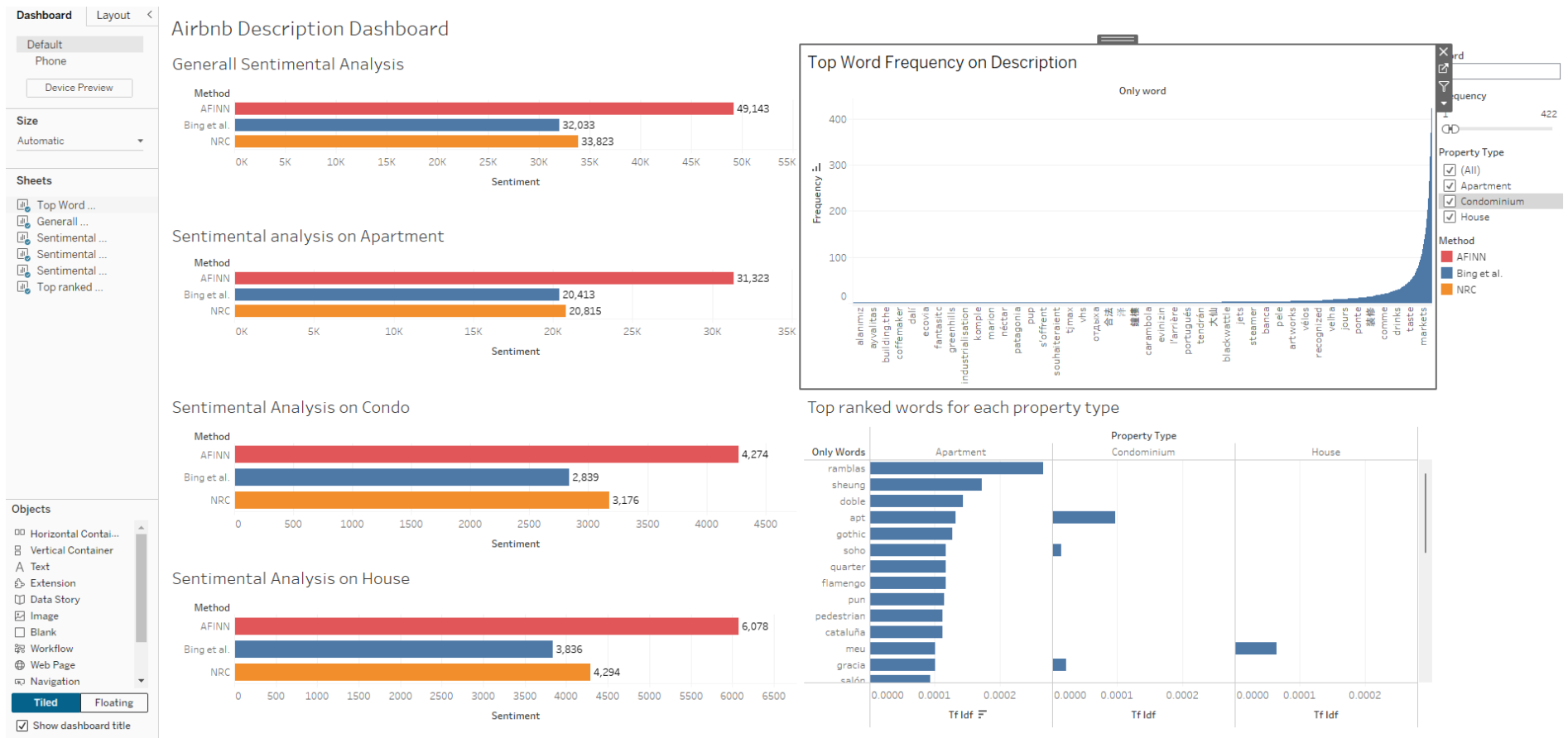
Figure 14 Top-Ranking Words for Each Property Type

Figure 15 Dashboard

https://public.tableau.com/views/AirbnbDescription_17419900846990/Dashboard1?:language=en-US&:sid=&:redirect=auth&:display_count=n&:origin=viz_share_link

To see the dashboard [Click here](#)