

STATISTICAL DATA ANALYSIS FOR OPTIMIZED REAL ESTATE MARKETING STRATEGIES IN CALIFORNIA: DESCRIPTIVE STATISTICAL ANALYSIS

Leveraging Statistical Insights to Enhance
Targeted Marketing Campaigns and
Maximize Sales Efficiency



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PROJECT OVERVIEW

- Problem Statement
- Understanding the Data
- Statistical Data Analysis and Visualization
- Statistical Calculations
- Insights
- Recommendations

PROBLEM STATEMENT

A real estate company operating in California aims to **improve its marketing results** by targeting the right audience based on **data-driven decisions**.

The goal is to **enhance marketing efficiency** without increasing the budget through a **descriptive statistical analysis** of the customer and sales data.

UNDERSTANDING THE DATA

Dataset

The data for this analysis comes from the company's California real estate transactions database, containing various attributes related to sales, properties, and customer demographics.



Statistical Frequency Distribution

Generation of frequency distribution tables for categorical variables. It helps visualize the data more efficiently and accurately.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	U	V	W	X	Y	Z	AA	AB
1	Real Estate California Database																									
2																										
3																										
4	Product													Customer												
5	ID	Building	Year of sale	Month of sale	Type of property	Property #	Area (ft.)	Price	Status	Customer ID	Entity	Name	Surname	Age at time of purchase	Interval	Y	Gender	Country	State	Purpose	Deal satisfaction	Mortgage	Source			
6	1030	1	2005	11	Apartment	30	743.09	\$ 246,172.68	Sold	C0028	Individual	Madalyn	Mercer	19	18-25	1986	F	USA	California	Home	5	No	Website			
7	1029	1	2005	10	Apartment	29	756.21	\$ 246,331.90	Sold	C0027	Individual	Lara	Carrillo	22	18-25	1983	F	USA	California	Home	5	No	Website			
8	2002	2	2007	7	Apartment	2	587.28	\$ 209,280.91	Sold	C0112	Individual	Donavan	Flowers	22	18-25	1985	M	USA	California	Home	1	Yes	Client			
9	2031	2	2007	12	Apartment	31	1604.75	\$ 452,667.01	Sold	C0160	Individual	Darien	Dorsey	22	18-25	1985	M	USA	California	Investment	3	Yes	Website			
10	1049	1	2004	11	Apartment	49	1375.45	\$ 467,083.31	Sold	C0014	Individual	Alessandra	Perry	25	18-25	1979	F	USA	California	Home	4	No	Agency			
11	3011	3	2007	9	Apartment	11	675.19	\$ 203,491.85	Sold	C0125	Individual	Kaitlin	Owen	26	26-35	1981	F	USA	Virginia	Investment	5	No	Client			
12	3026	3	2007	9	Apartment	26	670.89	\$ 212,520.83	Sold	C0125	Individual	Kaitlin	Owen	26	26-35	1981	F	USA	Virginia	Investment	5	No	Agency			
13	3023	3	2008	1	Apartment	23	720.81	\$ 198,591.85	Sold	C0166	Individual	Terry	Forbes	26	26-35	1982	M	USA	California	Home	5	No	Client			
14	1031	1	2006	6	Apartment	31	782.25	\$ 265,467.68	Sold	C0034	Individual	Kole	Shannon	27	26-35	1979	M	USA	Arizona	Home	2	Yes	Website			
15	4023	4	2006	3	Apartment	23	794.52	\$ 235,633.26	Sold	C0170	Individual	Emmy	Singh	27	26-35	1979	F	USA	Virginia	Investment	3	Yes	Agency			
16	1036	1	2004	10	Apartment	36	1160.36	\$ 317,473.86	Sold	C0009	Individual	Arabella	Ferrell	28	26-35	1976	F	USA	Oregon	Home	1	No	Agency			
17	1046	1	2006	8	Apartment	46	1942.50	\$ 503,790.23	Sold	C0041	Individual	Christian	Costa	26	26-35	1980	M	USA	California	Home	5	No	Website			
18	4035	4	2007	10	Apartment	35	794.52	\$ 217,786.38	Sold	C0057	Individual	Michelle	Cameron	29	26-35	1978	F	USA	Nevada	Home	3	Yes	Website			
19	2036	2	2006	11	Apartment	36	1109.25	\$ 460,001.26	Sold	C0061	Individual	Enrique	Cardenas	29	26-35	1977	M	USA	California	Home	2	No	Website			
20	2056	2	2007	4	Apartment	56	1400.95	\$ 460,001.26	Sold	C0089	Individual	Amanda	Simon	29	26-35	1978	F	USA	California	Home	5	No	Agency			
21	1047	1	2007	12	Apartment	47	1479.72	\$ 448,134.27	Sold	C0159	Individual	Kamden	Stewart	29	26-35	1978	M	USA	California	Home	5	No	Website			
22	5051	5	2006	3	Apartment	51	790.54	\$ 249,591.99	Sold	C0171	Individual	Skylar	Buchanan	29	26-35	1977	M	USA	Nevada	Home	4	Yes	Website			
23	2007	2	2006	8	Apartment	7	723.93	\$ 196,142.19	Sold	C0042	Individual	Michael	Juarez	30	26-35	1976	M	USA	Colorado	Home	4	Yes	Agency			
24	3020	3	2007	4	Apartment	20	781.07	\$ 258,572.48	Sold	C0093	Individual	Antonio	Porter	30	26-35	1977	M	USA	Arizona	Home	5	No	Client			

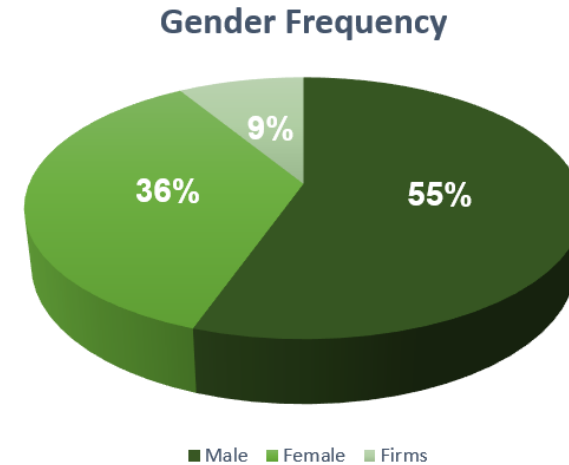
UNDERSTANDING THE DATA

	A	B	C	D
1	Column Name ▼	Category ▼	Level of Measurement ▼	
2	ID	Numerical	Quantitative	
3	Building	Numerical	Quantitative	
4	Year of sale	Numerical	Quantitative	
5	Month of sale	Numerical	Quantitative	
6	Type of property	Categorical	Qualitative	
7	Property #	Numerical	Quantitative	
8	Area (ft.)	Numerical	Quantitative	
9	Price	Numerical	Quantitative	
10	Status	Categorical	Qualitative	
11	Unnamed: 10	Numerical	Quantitative	
12	Customer ID	Categorical	Qualitative	
13	Entity	Categorical	Qualitative	
14	Name	Categorical	Qualitative	
15	Surname	Categorical	Qualitative	
16	Age at time of purchase	Categorical	Qualitative	
17	Interval	Categorical	Qualitative	
18	Y	Numerical	Quantitative	
19	M	Numerical	Quantitative	
20	D	Numerical	Quantitative	
21	Gender	Categorical	Qualitative	
22	Country	Categorical	Qualitative	
23	State	Categorical	Qualitative	
24	Purpose	Categorical	Qualitative	
25	Deal satisfaction	Numerical	Quantitative	
26	Mortgage	Categorical	Qualitative	
27	Source	Categorical	Qualitative	

GENDER STATISTICS AND INSIGHTS

E7 fx =D7/\$D\$10

	A	B	D	E	F
1		Real Estate California Database			
2		Gender			
3					
4		Frequency distribution table			
5					
6			Frequency	Relative frequency	
7		Male	108	55%	
8		Female	70	36%	
9		Firms	17	9%	
10		Total	195	100%	
11					

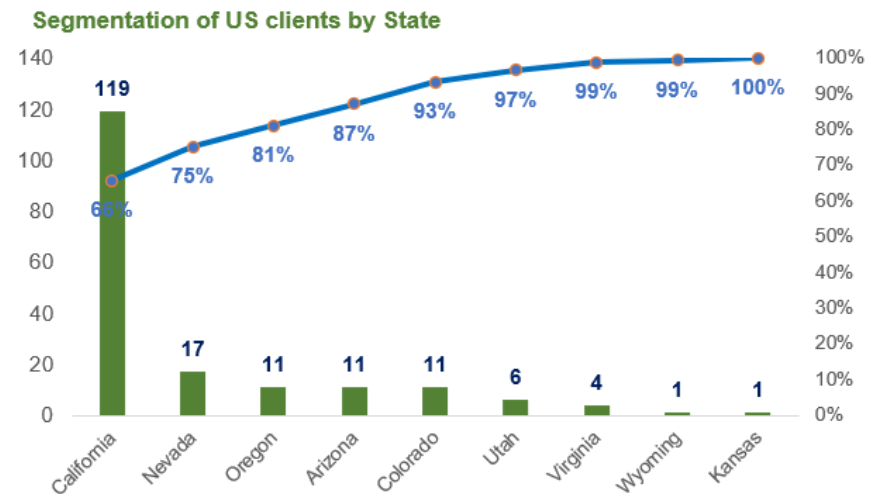


- **Males** are more likely to sign the contract and are potentially a better audience to target for our ads.
- Approximately **10%** of the sales came from the firms or the **corporate clients**

LOCATION STATISTICS AND INSIGHTS

F7 $=C7/(\$C\$17-\$C\$16)$

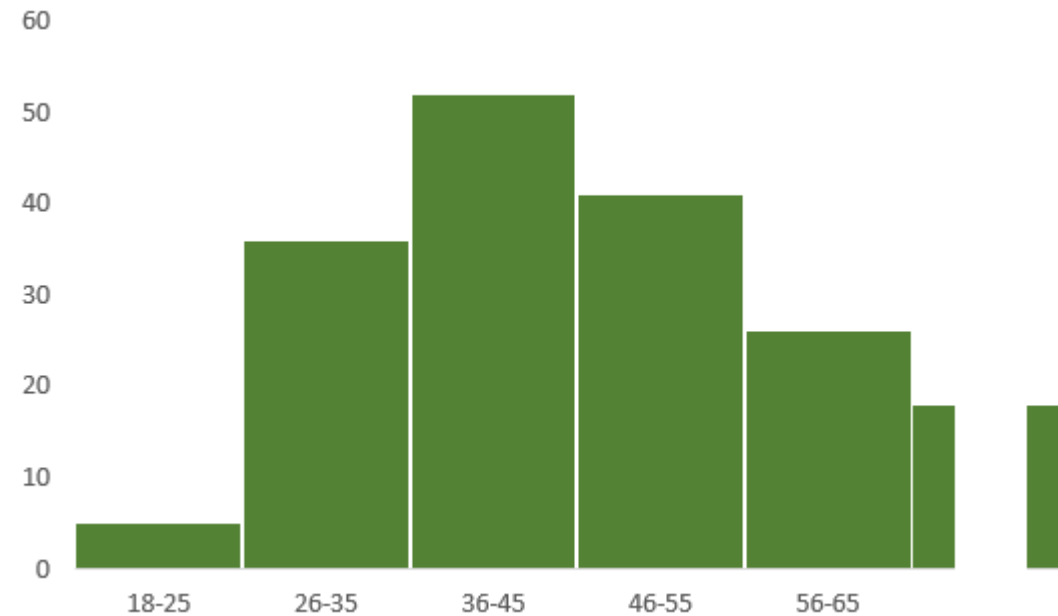
	A	B	C	D	E	F	G
1		Real Estate California Database					
2		Location					
3							
4		Frequency distribution table					
5							
6			Frequency	Relative frequency	Cumulative frequency	Cumulative US only	
7		California	119	45%	45%	66%	
8		Nevada	17	6%	51%	75%	
9		Oregon	11	4%	55%	81%	
10		Arizona	11	4%	59%	87%	
11		Colorado	11	4%	63%	93%	
12		Utah	6	2%	66%	97%	
13		Virginia	4	1%	67%	99%	
14		Wyoming	1	0%	67%	99%	
15		Kansas	1	0%	68%	100%	
16		None (abroad)	86	32%	100%		
17		Total	267	100%			



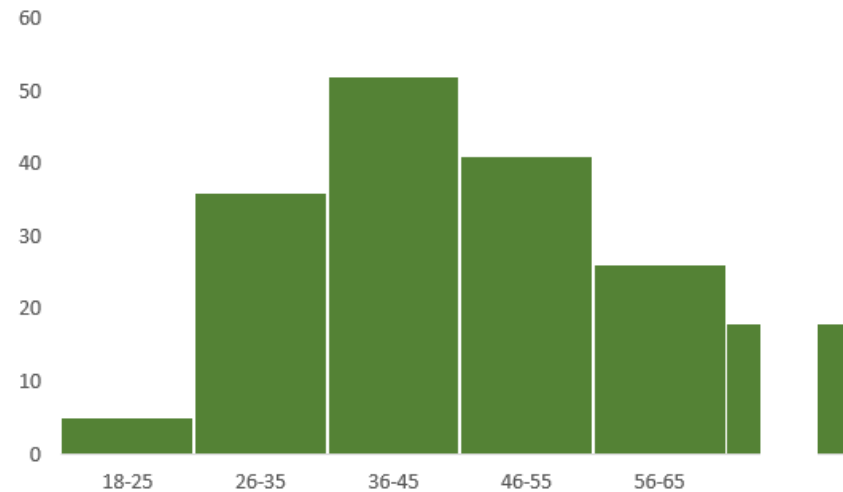
- **68%** of the sales came from California with Nevada, Oregon, Arizona, and Colorado forming **93%** of the US customer base.

AGE STATISTICS AND INSIGHTS

	A	B	C	D	E
1		Real Estate California Database			
2		Age			
3					
4		Frequency distribution table			
5					
6		Frequency Relative frequency			
7		18-25	5	3%	
8		26-35	36	20%	
9		36-45	52	29%	
10		46-55	41	23%	
11		56-65	26	15%	
12		65+	18	10%	
13		Total	178	100%	
14					
15		Mean	46.15		
16		Median	45.00		
17		Mode	48.00		
18		Skew	0.24		
19		Variance	164.91		
20		St. dev.	12.84		
21					
22					



AGE STATISTICS AND INSIGHTS



- **71%** of sales were made with customers aged between **26 and 55 years** old, with a mean of **46 years** and a standard deviation of **13 years**.
- **Younger people** buying more properties than older people

AGE AND PRICE STATISTICS

The screenshot shows an Excel spreadsheet with the following content:

- Formula Bar:** Displays the formula `=COVARIANCE.S(Data!I6:I272,Data!P6:P272)`.
- Worksheet Header:**
 - Row 1: **Real Estate California Database**
 - Row 2: **Relationship between age and price**
 - Row 4: **Age and price**
- Data Table:**

	Age	Price
6	Covariance	-176361.87
7	Correlation coefficient	-0.17

AGE AND PRICE STATISTICS



- There is **no relationship** between the customer's age and the price they are willing to pay.

RECOMMENDATIONS

- **Demographics:** Focus on males and age groups that have shown higher purchasing rates (26 to 55 years).
- **Corporate Clients:** Consider targeting firms or corporate clients as they make up approximately 10% of the sales.
- **Geographical Focus:** Concentrate marketing efforts in California, Nevada, Oregon, Arizona, and Colorado to cover 93% of the US customer base.
- **Property Type:** Highlight apartments in the campaign, as they are the most sold property type.
- **Timing:** Increase marketing efforts towards the end of the year to leverage seasonal buying trends.
- **Price Range:** Emphasize mid-range properties, which align with the majority of sales.