

Data Visualization and Dashboard with Excel

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Outline



Introduction

Data Source Car Sales Data from Kaggle. [Full Dataset](#), Initial Subset

Software Excel in Microsoft 365

Basic Charts

Line chart, bar chart, area chart, column chart

Advanced Charts

Histogram, scatter chart, sunburst chart, grouped bar chart

Dashboard

Grouped bar chart, column chart, pie chart, sunburst chart

Findings and Insights

Introduction

This project is to demonstrate the use of Excel features of "charts" and "pivot charts" to create basic and advanced charts as well as dashboards of a car sales dataset. The potential audiences of this project include executives and managers of car dealerships and/or car manufacturers as well as marketing researchers of automobile industry. The data used to create the charts are either coming from the initial subset or a pivot table generated from it. The initial subset was obtained from the full car sales dataset by excluding data irrelevant to the making of the charts. Wherever a chart is created from a pivot table, the pivot table is shown alongside the chart. Basic charts include line chart, bar chart, area chart, and column chart. Advanced charts are histogram, scatter plot, sunburst chart, and grouped bar chart. The dashboard presented here is an example of how to generate a dashboard with Excel. The findings derived from these visualizations are summarized at the end.

Initial Subset

File: Car_Sales_Initial Subset.xlsx

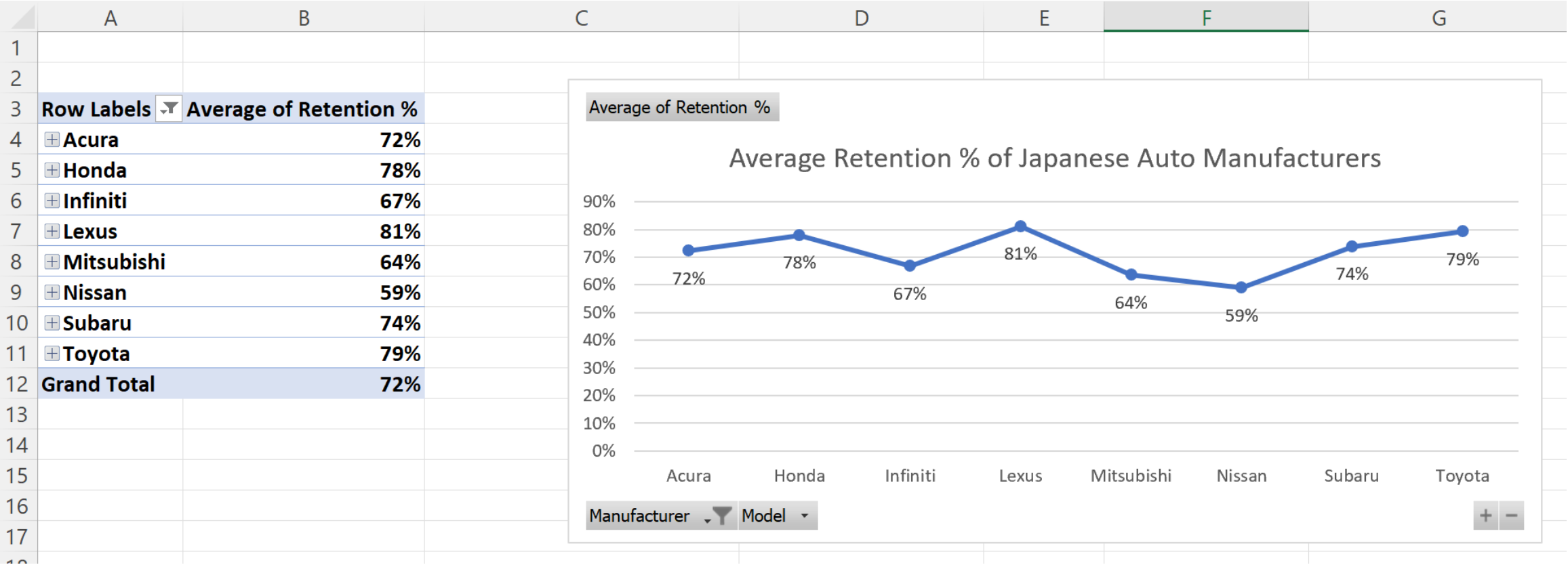
	A	B	C		D	E		F	G	H	I	J	K	L	M	N	O	P
1	Manufacturer	Model	Unit Sales	Price	Year Resale Value	Retention %	Retention Value	Engine Size	Horsepower	HP Level	Vehicle_type	Fuel Efficiency	Power Perf Factor	Wheelbas	Widt	Length	Curb We	
2	Acura	Integra	16919	\$21,500	\$16,360	76%	GOOD	1.8	140	Medium HP	Passenger	28	58.28014952	101.2	67.3	172.4		
3	Acura	TL	39384	\$28,400	\$19,875	70%	GOOD	3.2	225	Medium HP	Passenger	25	91.37077766	108.1	70.3	192.9		
4	Acura	RL	8588	\$42,000	\$29,725	71%	GOOD	3.5	210	Medium HP	Passenger	22	91.38977933	114.6	71.4	196.6		
5	Audi	A4	20397	\$23,990	\$22,255	93%	GOOD	1.8	150	Medium HP	Passenger	27	62.7776392	102.6	68.2	178		
6	Audi	A6	18780	\$33,950	\$23,555	69%	GOOD	2.8	200	Medium HP	Passenger	22	84.56510502	108.7	76.1	192		
7	Audi	A8	1380	\$62,000	\$39,000	63%	POOR	4.2	310	High HP	Passenger	21	134.6568582	113	74	198.2		
8	BMW	323i	19747	\$26,990	\$24,500	91%	GOOD	2.5	170	Medium HP	Passenger	26	71.19120671	107.3	68.4	176		
9	BMW	328i	9231	\$33,400	\$28,675	86%	GOOD	2.8	193	Medium HP	Passenger	24	81.87706856	107.3	68.5	176		
10	BMW	528i	17527	\$38,900	\$36,125	93%	GOOD	2.8	193	Medium HP	Passenger	25	83.9987238	111.4	70.9	188		
11	Buick	Century	91561	\$21,975	\$12,475	57%	POOR	3.1	175	Medium HP	Passenger	25	71.18145132	109	72.7	194.6		
12	Buick	Regal	39350	\$25,300	\$13,740	54%	POOR	3.8	240	Medium HP	Passenger	23	95.63670253	109	72.7	196.2		
13	Buick	Park Avenue	27851	\$31,965	\$20,190	63%	POOR	3.8	205	Medium HP	Passenger	24	85.82840825	113.8	74.7	206.8		
14	Buick	LeSabre	83257	\$27,885	\$13,360	48%	POOR	3.8	205	Medium HP	Passenger	25	84.25452581	112.2	73.5	200		
15	Cadillac	DeVille	63729	\$39,895	\$22,525	56%	POOR	4.6	275	Medium HP	Passenger	22	113.8545976	115.3	74.5	207.2		
16	Cadillac	Seville	15943	\$44,475	\$27,100	61%	POOR	4.6	275	Medium HP	Passenger	22	115.6213578	112.2	75	201		
17	Cadillac	Eldorado	6536	\$39,665	\$25,725	65%	POOR	4.6	275	Medium HP	Passenger	22	113.7658739	108	75.5	200.6		
18	Cadillac	Catera	11185	\$31,010	\$18,225	59%	POOR	3	200	Medium HP	Passenger	22	83.48309358	107.4	70.3	194.8		
19	Cadillac	Escalade	14785	\$46,225	\$31,245	68%	POOR	5.7	255	Medium HP	Car	15	109.5091165	117.5	77	201.2		
20	Chevrolet	Cavalier	145519	\$13,260	\$9,250	70%	GOOD	2.2	115	Medium HP	Passenger	27	46.36334747	104.1	67.9	180.9		
21	Chevrolet	Malibu	135126	\$16,535	\$11,225	68%	POOR	3.1	170	Medium HP	Passenger	25	67.31446216	107	69.4	190.4		
22	Chevrolet	Lumina	24629	\$18,890	\$10,310	55%	POOR	3.1	175	Medium HP	Passenger	25	69.9913956	107.5	72.5	200.9		
23	Chevrolet	Monte Carlo	42593	\$19,390	\$11,525	59%	POOR	3.4	180	Medium HP	Passenger	27	72.03091719	110.5	72.7	197.9		
24	Chevrolet	Camaro	26402	\$24,340	\$13,025	54%	POOR	3.8	200	Medium HP	Passenger	25	81.11854333	101.1	74.1	193.2		
25	Chevrolet	Corvette	17947	\$55,705	\$36,225	65%	POOR	5.7	345	High HP	Passenger	22	141.14115	104.5	73.6	179.7		
26	Chevrolet	Prizm	32299	\$13,960	\$9,125	65%	POOR	1.8	120	Medium HP	Passenger	33	48.2976361	97.1	66.7	174.3		
27	Chevrolet	Metro	21855	\$9,235	\$5,160	56%	POOR	1	55	Low HP	Passenger	45	23.27627233	93.1	62.6	149.4		
28	Chevrolet	Impala	107995	\$18,890	\$11,550	61%	POOR	3.4	180	Medium HP	Passenger	27	71.83803944	110.5	73	200		
29	Chrysler	Sebring Coupe	7854	\$19,840	\$12,360	62%	POOR	2.5	163	Medium HP	Passenger	24	65.95718396	103.7	69.7	190.9		
30	Chrysler	Sebring Conv.	32775	\$24,495	\$14,180	58%	POOR	2.5	168	Medium HP	Passenger	24	69.52135505	106	69.2	193		
31	Chrysler	Concorde	31148	\$22,245	\$13,725	62%	POOR	2.7	200	Medium HP	Passenger	26	80.02378204	113	74.4	209.1		
32	Chrysler	Cirrus	32306	\$16,480	\$12,640	77%	GOOD	2	132	Medium HP	Passenger	27	53.56619987	108	71	186		
33	Chrysler	LHS	13462	\$28,340	\$17,325	61%	POOR	3.5	253	Medium HP	Passenger	23	101.3292807	113	74.4	207.7		
34	Chrysler	300M	30696	\$29,185	\$18,425	63%	POOR	3.5	253	Medium HP	Passenger	23	101.6552441	113	74.4	197.8		
35	Dodge	Neon	76034	\$12,640	\$7,750	61%	POOR	2	132	Medium HP	Passenger	29	52.08489875	105	74.4	174.4		
36	Dodge	Avenger	4734	\$19,045	\$12,545	66%	POOR	2.5	163	Medium HP	Passenger	24	65.65050834	103.7	69.1	190.2		
37	Dodge	Stratus	71186	\$20,230	\$10,185	50%	POOR	2.5	168	Medium HP	Passenger	24	67.87610784	108	71	186		
38	Dodge	Intrepid	88028	\$22,505	\$12,275	55%	POOR	2.7	202	Medium HP	Passenger	22	80.83147017	113	74.7	203.7		
39	Dodge	Viper	916	\$69,725	\$58,470	84%	GOOD	8	450	High HP	Passenger	16	188.144323	96.2	75.7	176.7		
40	Dodge	Ram Pickup	227061	\$19,460	\$15,060	77%	GOOD	5.2	230	Medium HP	Car	17	90.21170005	138.7	79.3	224.2		
41	Dodge	Ram Wagon	16767	\$21,315	\$15,510	73%	GOOD	3.9	175	Medium HP	Car	15	71.13529161	109.6	78.8	192.6		
42	Dodge	Ram Van	31038	\$18,575	\$13,425	72%	GOOD	3.9	175	Medium HP	Car	16	70.07832154	127.2	78.8	208.5		
43	Dodge	Dakota	111313	\$16,980	\$11,260	66%	POOR	2.5	120	Medium HP	Car	19	49.64500177	131	71.5	215		
44	Dodge	Durango	101323	\$26,310	\$21,436	81%	GOOD	5.2	230	Medium HP	Car	17	92.85412522	115.7	71.7	193.5		
45	Dodge	Caravan	181749	\$19,565	\$12,025	61%	POOR	2.4	150	Medium HP	Car	24	61.22700031	113.3	76.8	186.3		
46	Ford	Escort	70227	\$12,070	\$7,425	62%	POOR	2	110	Medium HP	Passenger	30	44.08370946	98.4	67	174.7		
47	Ford	Mustang	113369	\$21,560	\$12,760	59%	POOR	3.8	190	Medium HP	Passenger	24	76.50918456	101.3	73.1	183.2		
48	Ford	Contour	35068	\$17,035	\$8,835	52%	POOR	2.5	170	Medium HP	Passenger	25	67.35101072	106.5	69.1	184.6		
49	Ford	Taurus	245815	\$17,895	\$10,055	56%	POOR	3	155	Medium HP	Passenger	24	63.5037395	108.5	73	197.6		
Line Chart Bar Chart Area Chart Column Chart Car sales																		



Basic Charts

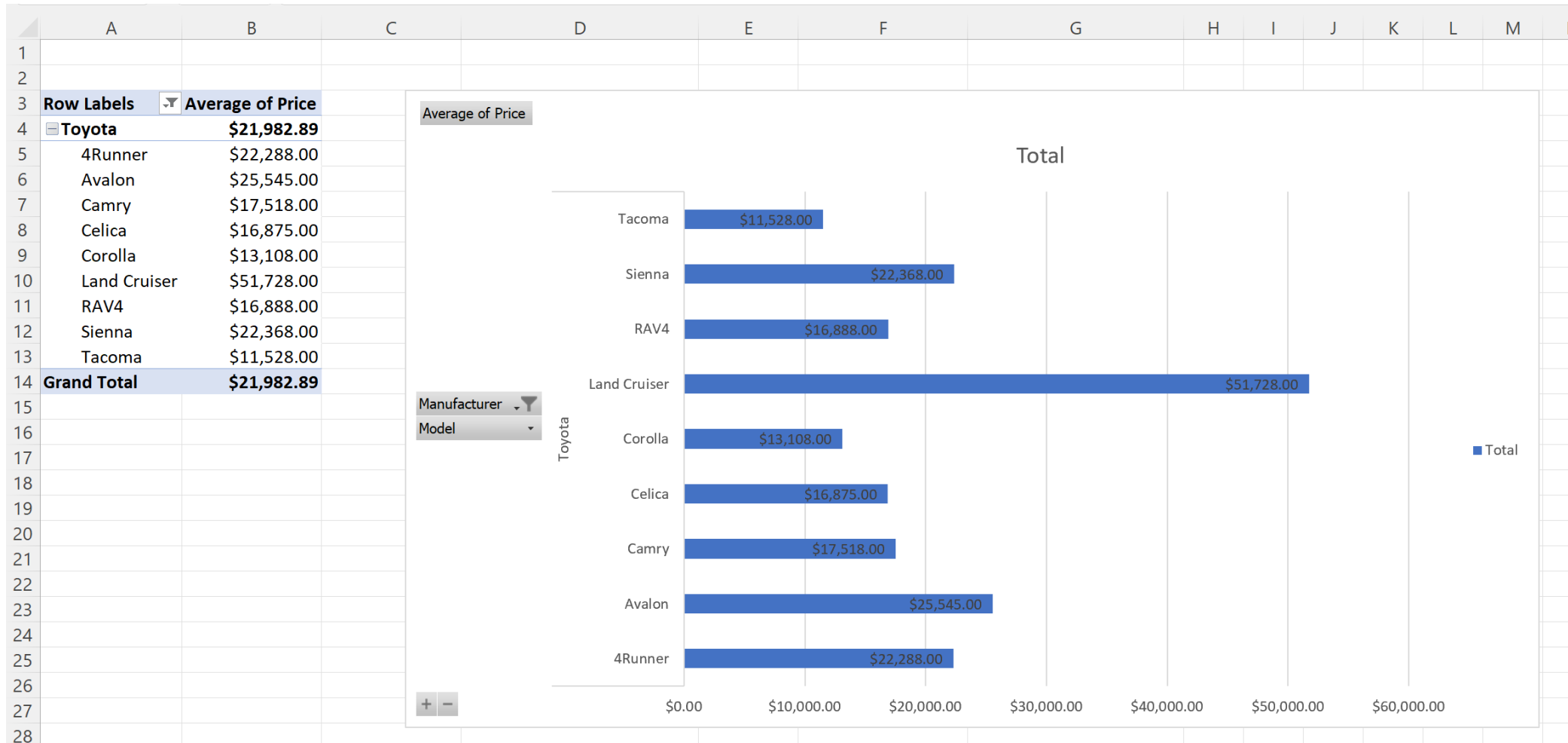
Line Chart

File: Car_Sales_1.xlsx



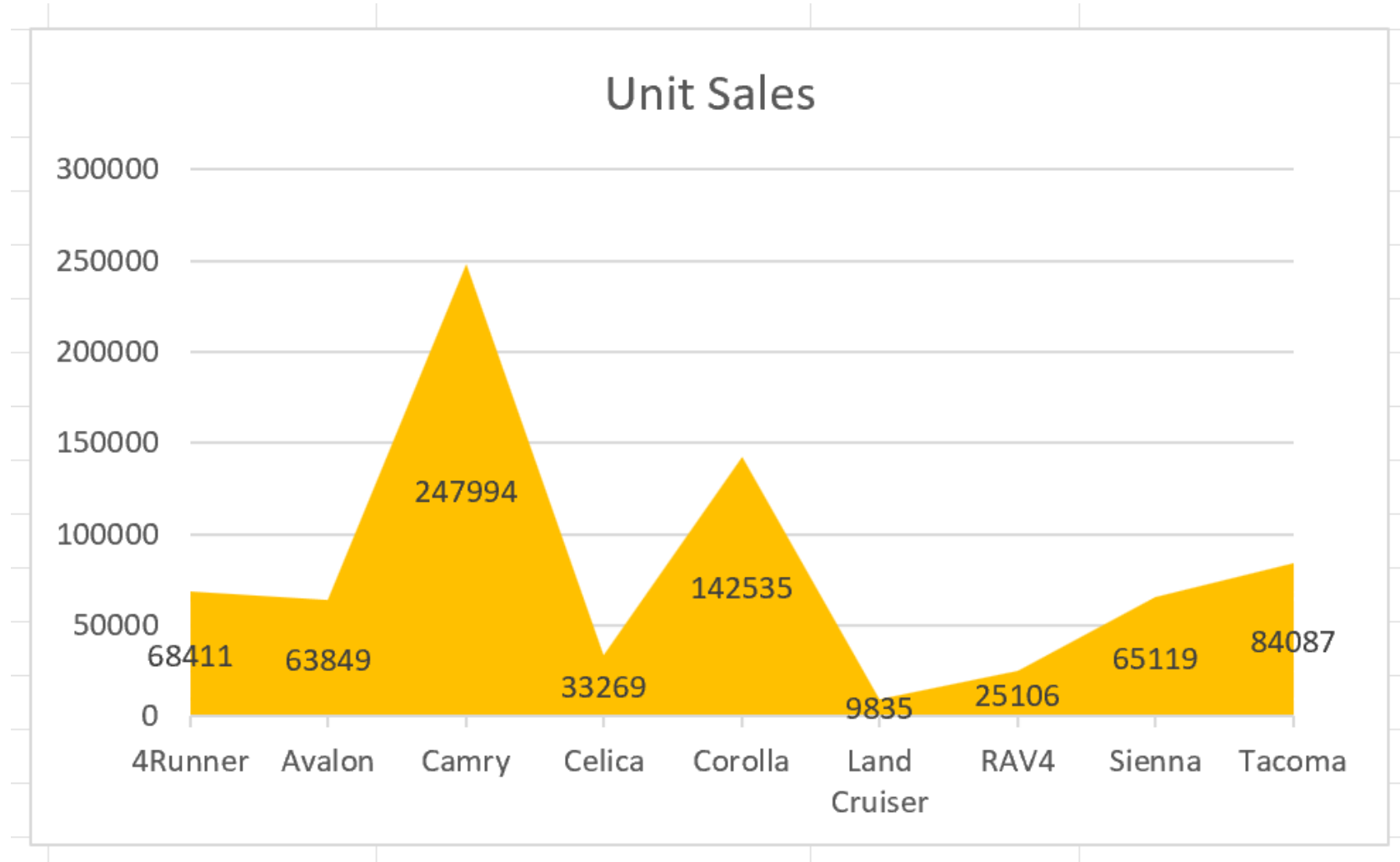
Bar Chart

File: Car_Sales_1.xlsx



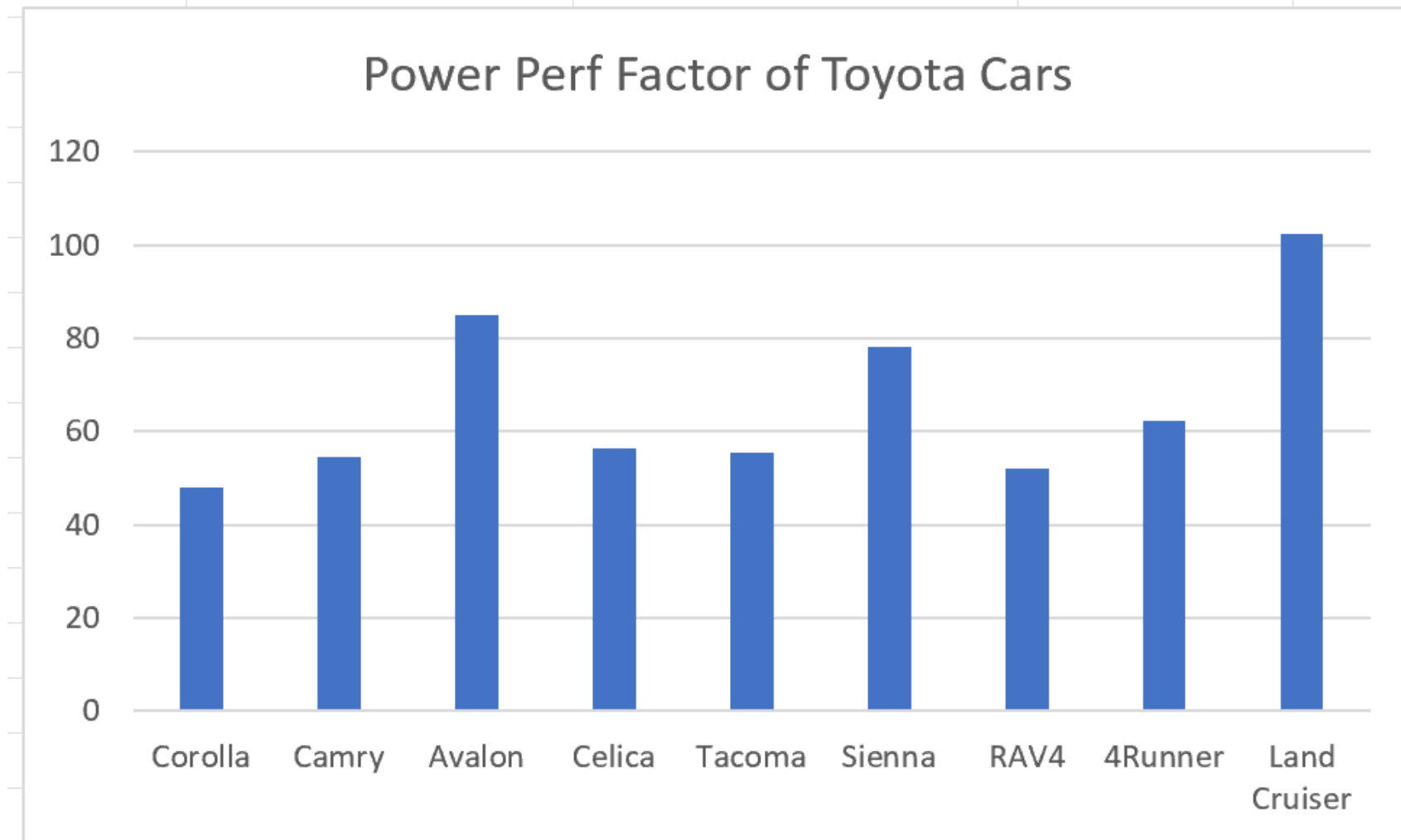
Area Chart

File: Car_Sales_1.xlsx



Column Chart

File: Car_Sales_1.xlsx

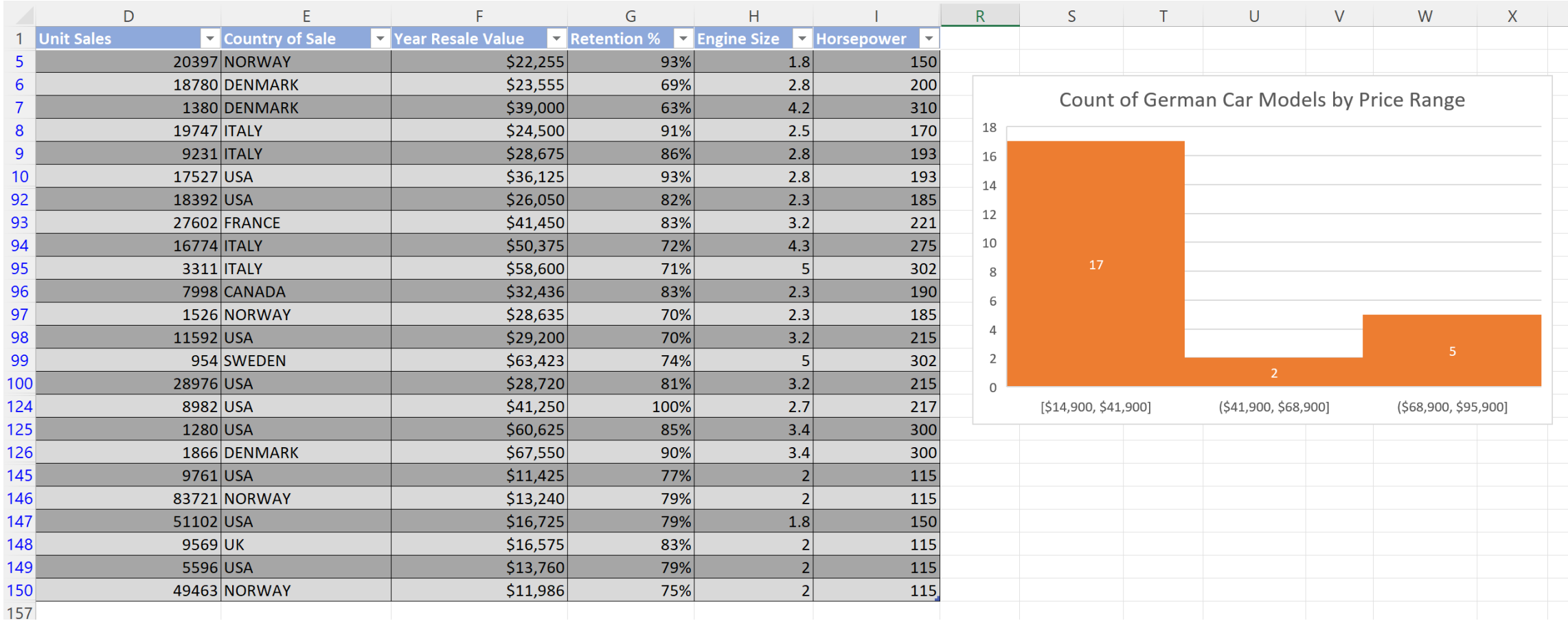




Advanced Charts

Histogram

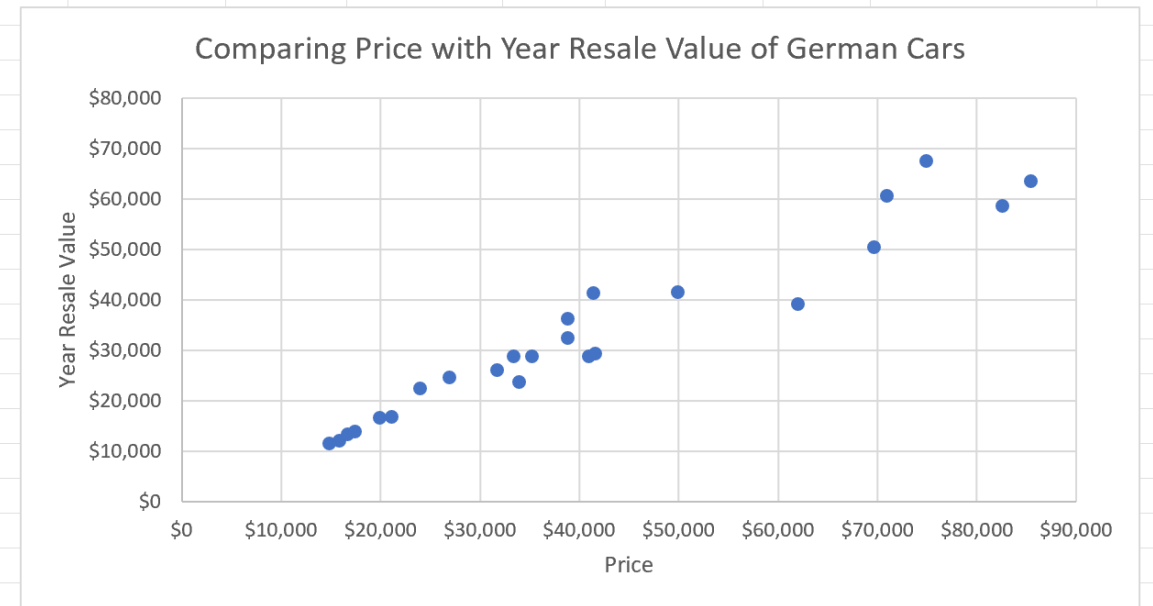
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Scatter Chart

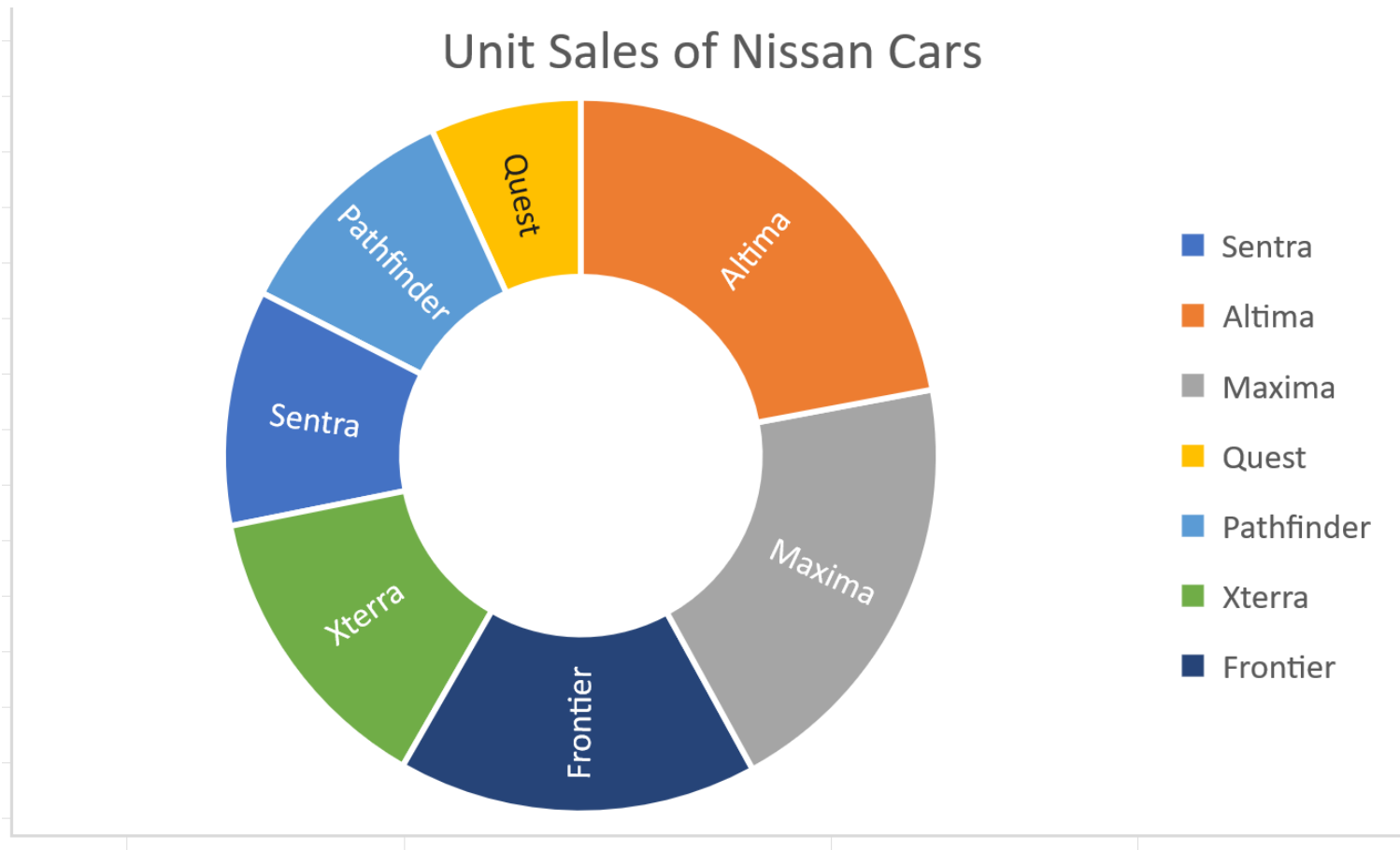
File: Car_Sales_2.xlsx

	E	F	G	H	I	R	S	T	U	V	W	X	Y	Z
1	Price	Year Resale Value	Retention %	Engine Size	Horsepower									
5	\$23,990	\$22,255	93%	1.8	150									
6	\$33,950	\$23,555	69%	2.8	200									
7	\$62,000	\$39,000	63%	4.2	310									
8	\$26,990	\$24,500	91%	2.5	170									
9	\$33,400	\$28,675	86%	2.8	193									
10	\$38,900	\$36,125	93%	2.8	193									
92	\$31,750	\$26,050	82%	2.3	185									
93	\$49,900	\$41,450	83%	3.2	221									
94	\$69,700	\$50,375	72%	4.3	275									
95	\$82,600	\$58,600	71%	5	302									
96	\$38,900	\$32,436	83%	2.3	190									
97	\$41,000	\$28,635	70%	2.3	185									
98	\$41,600	\$29,200	70%	3.2	215									
99	\$85,500	\$63,423	74%	5	302									
100	\$35,300	\$28,720	81%	3.2	215									
124	\$41,430	\$41,250	100%	2.7	217									
125	\$71,020	\$60,625	85%	3.4	300									
126	\$74,970	\$67,550	90%	3.4	300									
145	\$14,900	\$11,425	77%	2	115									
146	\$16,700	\$13,240	79%	2	115									
147	\$21,200	\$16,725	79%	1.8	150									
148	\$19,990	\$16,575	83%	2	115									
149	\$17,500	\$13,760	79%	2	115									
150	\$15,900	\$11,986	75%	2	115									



Sunburst Chart



File: Car_Sales_2.xlsx



Grouped Bar Chart

File: Car_Sales_3.xlsx

Average of Year Resale Value	Average of Price
\$21,986.67	\$30,633.33
\$28,270.00	\$39,980.00
\$29,766.67	\$33,096.67
\$14,941.25	\$26,781.25
\$23,064.23	\$32,173.46

Manufacturer  

Acura

Audi

BMW

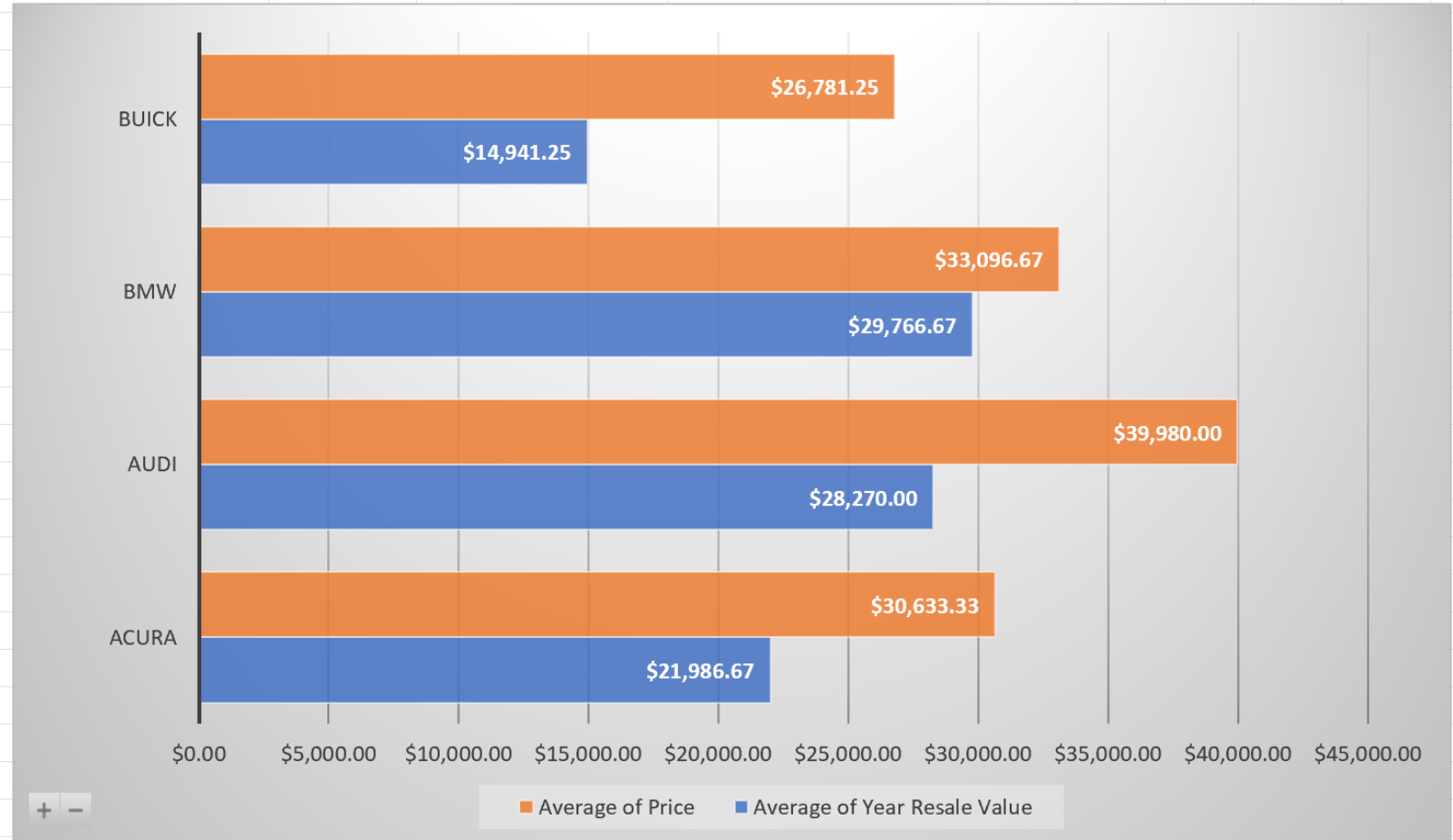
Buick

Cadillac

Chevrolet

Chrysler

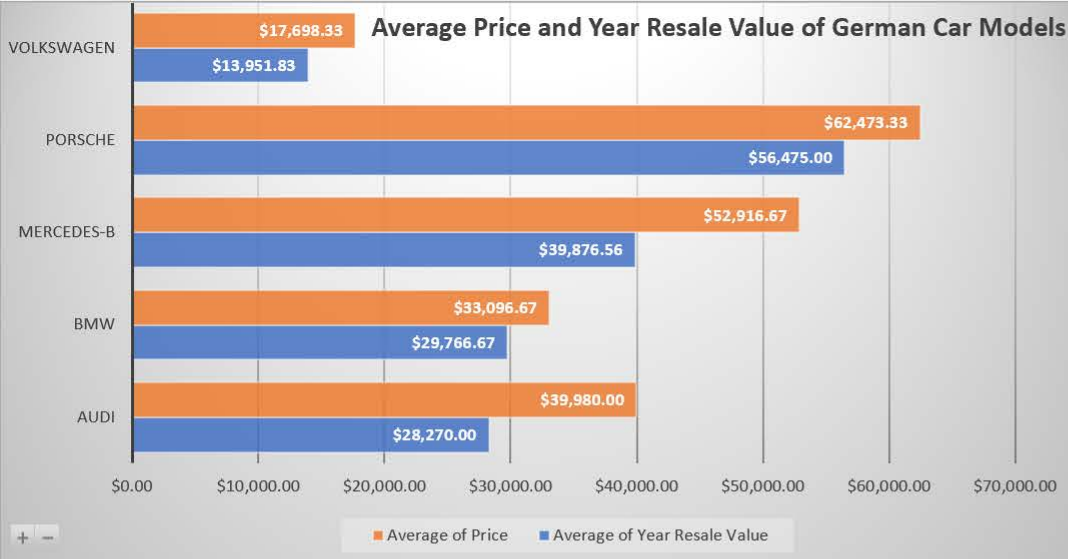
Dodge





Dashboard

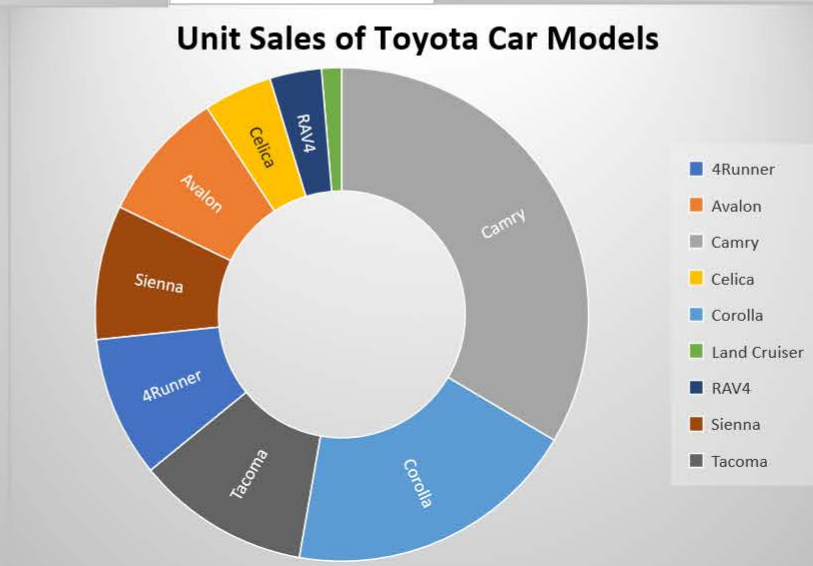
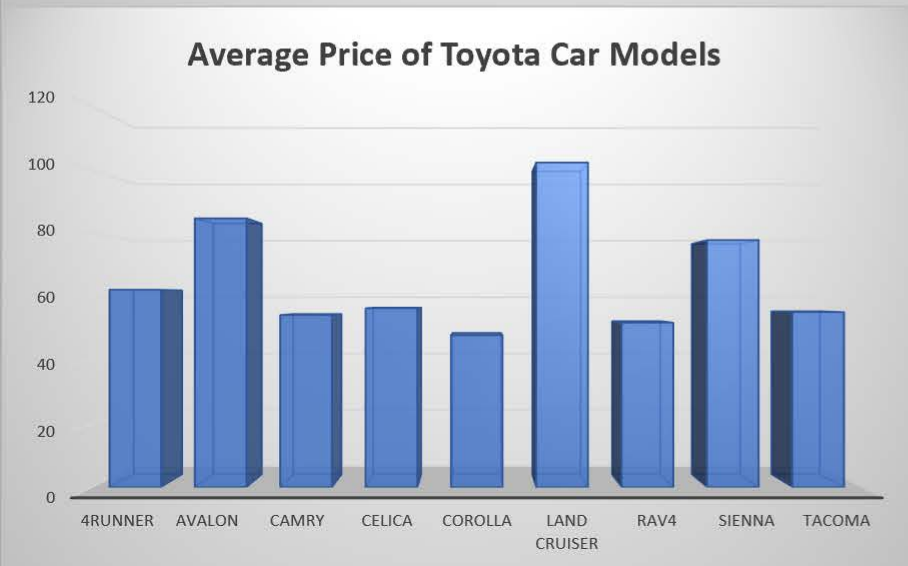
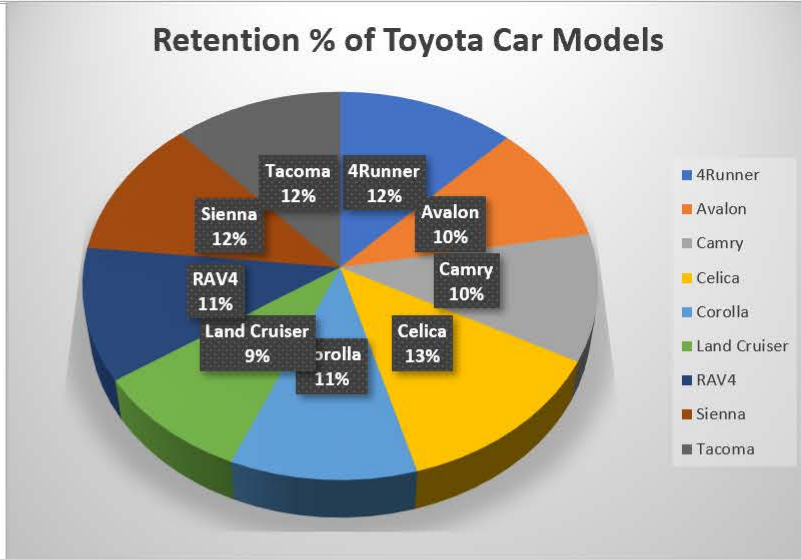
File: Car_Sales_3.xlsx



Manufacturer

Search and select a manufacturer from the list below:

- Nissan
- Oldsmobile
- Plymouth
- Pontiac
- Porsche
- Saab
- Saturn
- Subaru
- Toyota
- Volkswagen
- Volvo



Model

Search and select a specific model from the list below:

- 4Runner
- Avalon
- Camry
- Celica
- Corolla
- Land Cruiser
- RAV4
- Sienna
- Tacoma
- 3000GT
- 300M
- 323i

Findings and Insights

- The line chart shows that of all Japanese makers, Lexus and Nissan have the highest and lowest retention rates, respectively. This could be due to the facts that Lexus is a premium brand with high quality while Nissan is a mass market brand with more customer complaints.
- The simple bar chart indicates that Land Cruiser is the most expensive model. Several reasons such as being built like tanks, durability, having high resale values, and being in the class of luxury vehicles could be behind the exceptionally high price of this model.
- The area chart reflects that Camry and Land Cruiser have the highest and lowest unit sales, respectively. This makes sense because comfort, reliability, and longevity of Camry might explain its popularity while the sky-high price could have hindered the sales of Land Cruiser.
- In the column chart, Land Cruiser takes the crown as having the best power performance factor, making its high price worthwhile.
- The histogram of German cars tells that those in the lowest price range are the best sellers.
- The sunburst chart identifies Altima as the best seller of Nissan cars. Because Altima has a reputation of being a luxury sedan for drivers on a budget, customers embrace these cars for their sleek body style, comfortable interior, and safety features.

Findings and Insights

cont'd

- The scatter chart of all German cars included indicates that the resale value is approximately proportional to the price across the price range examined.
- The grouped bar chart of selected cars with different country origins shows that BMW best retains its value after a year while Buick loses nearly half of its value after a year. Since all cars shown in this chart are luxury brands, one take home lesson for car buyers is that not all the luxury cars retain their values well. Therefore, it is important to do some research before making a decision to buy a luxury car.
- In the dashboard, the charts of Toyota cars mostly display similar information found in the individual charts. The only new information is that the retention rate of Toyota cars is about 10%.
- In the dashboard, the chart about selected German cars reveals that the most expensive Porsche and the medium-priced BMW have the best resale values while Mercedes-Benz, a high-end brand, loses much of its value after a year. Thus, for those buyers who have the appetite for German luxury cars might want to consider both resale value and brand name together when making their purchase decision. Note that this observation might seem different from that of the scatter chart. This difference is because the scatter chart includes all German cars whereas this chart only contains data of a few German cars.