

Project: Analyzing the Impact of Car Features on Price and Profitability

Problem Statement:

The automotive industry has been rapidly evolving over the past few decades, with a growing focus on fuel efficiency, environmental sustainability, and technological innovation. With increasing competition among manufacturers and a changing consumer landscape, it has become more important than ever to understand the factors that drive consumer demand for cars.

In recent years, there has been a growing trend towards electric and hybrid vehicles and increased interest in alternative fuel sources such as hydrogen and natural gas. At the same time, traditional gasoline-powered cars remain dominant in the market, with varying fuel types and grades available to consumers.

For the given dataset, as a Data Analyst, the client has asked How can a car manufacturer optimize pricing and product development decisions to maximize profitability while meeting consumer demand?

This problem could be approached by analyzing the relationship between a car's features, market category, and pricing, and identifying which features and categories are most popular among consumers and most profitable for the manufacturer. By using data analysis techniques such as regression analysis and market segmentation, the manufacturer could develop a pricing strategy that balances consumer demand with profitability, and identify which product features to focus on in future product development efforts. This could help the manufacturer improve its competitiveness in the market and increase its profitability over time.

Approach:

In this project we performed various tasks on dataset are as follows:

1. Analysed data
2. Performed data cleaning
3. Handled missing values
4. Removed duplicates

Tech Task Used:

Pivot Tables:

- **Purpose:** Summarize, analyze, explore, and present data.
- **How to Use:**
 1. Select your data range.
 2. Go to the "**Insert**" tab.
 3. Click on "**PivotTable**".

4. Choose the data range and the location for the PivotTable.
5. Drag and drop fields into the **Rows, Columns, Values, and Filters** areas to create your report.

Charts:

- **Purpose:** Visualize data trends and patterns.
- **How to Use:**
 1. Select the data you want to chart.
 2. Go to the **"Insert"** tab.
 3. Choose the type of chart you need from options like **Column, Line, Pie, Bar, Scatter**, and more.
 4. Customize the chart using the **Chart Tools** that appear on the Ribbon.

Tasks: Analysis

Before diving into the analysis of the given dataset, it is important to perform thorough data cleaning to ensure accurate and reliable results. You need to build an interactive dashboard in Excel from the tasks given below:

Task 1.A: Create a pivot table that shows the number of car models in each market category and their corresponding popularity scores.

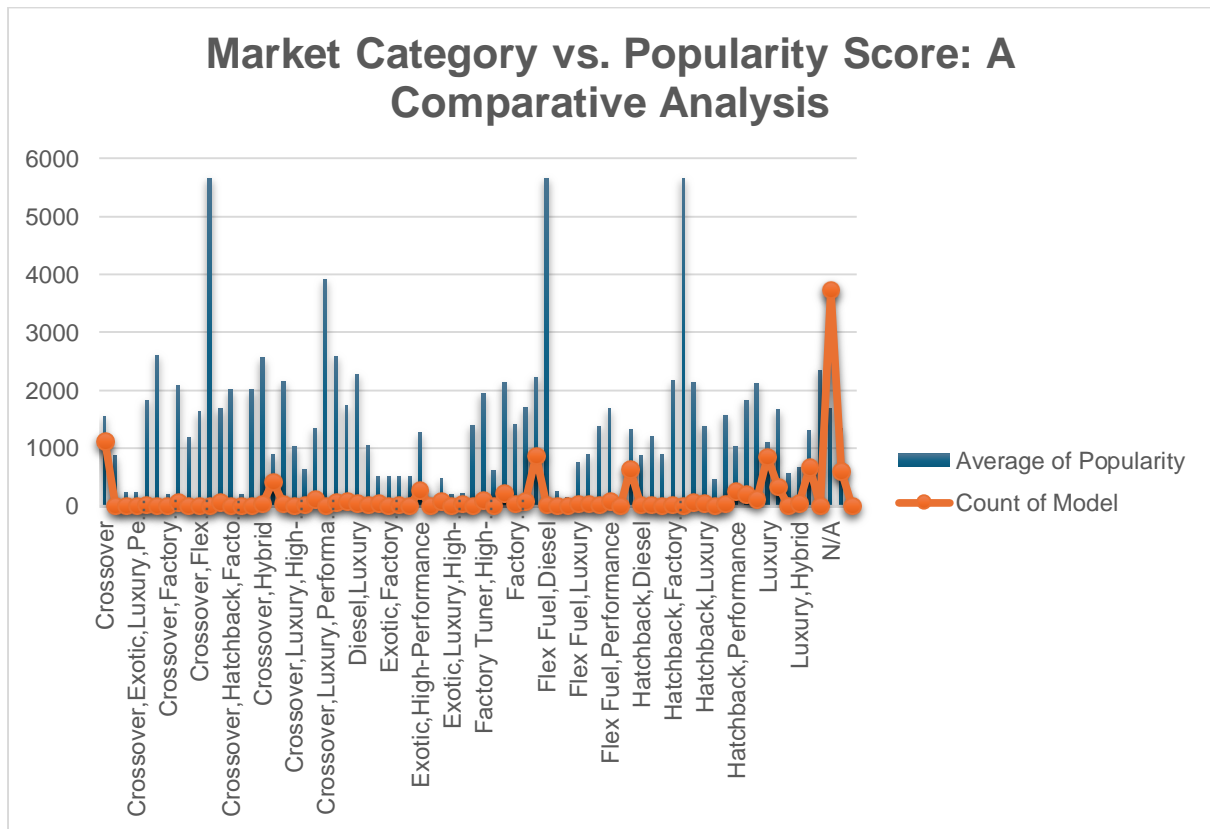
Result:

Row Labels	Average of Popularity	Count of Model
Crossover	1545.263063	1110
Crossover,Diesel	873	7
Crossover,Exotic,Luxury,High-Performance	238	1
Crossover,Exotic,Luxury,Performance	238	1
Crossover,Factory Tuner,Luxury,High-Performance	1823.461538	26
Crossover,Factory Tuner,Luxury,Performance	2607.4	5
Crossover,Factory Tuner,Performance	210	4
Crossover,Flex Fuel	2073.75	64
Crossover,Flex Fuel,Luxury	1173.2	10
Crossover,Flex Fuel,Luxury,Performance	1624	6
Crossover,Flex Fuel,Performance	5657	6
Crossover,Hatchback	1675.694444	72
Crossover,Hatchback,Factory Tuner,Performance	2009	6
Crossover,Hatchback,Luxury	204	7
Crossover,Hatchback,Performance	2009	6
Crossover,Hybrid	2563.380952	42
Crossover,Luxury	884.5487805	410
Crossover,Luxury,Diesel	2149.411765	34
Crossover,Luxury,High-Performance	1037.222222	9
Crossover,Luxury,Hybrid	630.9166667	24
Crossover,Luxury,Performance	1344.849558	113
Crossover,Luxury,Performance,Hybrid	3916	2

Crossover,Performance	2585.956522	69
Diesel	1730.904762	84
Diesel,Luxury	2275	51
Exotic,Factory Tuner,High-Performance	1046.380952	21
Exotic,Factory Tuner,Luxury,High-Performance	517.5384615	52
Exotic,Factory Tuner,Luxury,Performance	520	3
Exotic,Flex Fuel,Factory Tuner,Luxury,High-Performance	520	13
Exotic,Flex Fuel,Luxury,High-Performance	520	11
Exotic,High-Performance	1271.333333	261
Exotic,Luxury	112.6666667	12
Exotic,Luxury,High-Performance	467.0759494	79
Exotic,Luxury,High-Performance,Hybrid	204	1
Exotic,Luxury,Performance	217.0277778	36
Exotic,Performance	1391	10
Factory Tuner,High-Performance	1941.415094	106
Factory Tuner,Luxury	617	2
Factory Tuner,Luxury,High-Performance	2133.367442	215
Factory Tuner,Luxury,Performance	1413.419355	31
Factory Tuner,Performance	1695.695652	92
Flex Fuel	2217.302752	872
Flex Fuel,Diesel	5657	16
Flex Fuel,Factory Tuner,Luxury,High-Performance	258	1
Flex Fuel,Hybrid	155	2
Flex Fuel,Luxury	746.5384615	39
Flex Fuel,Luxury,High-Performance	878.9090909	33
Flex Fuel,Luxury,Performance	1380.071429	28
Flex Fuel,Performance	1680.471264	87
Flex Fuel,Performance,Hybrid	155	2
Hatchback	1318.865835	641
Hatchback,Diesel	873	14
Hatchback,Factory Tuner,High-Performance	1205.153846	13
Hatchback,Factory Tuner,Luxury,Performance	886.8888889	9
Hatchback,Factory Tuner,Performance	2159.045455	22
Hatchback,Flex Fuel	5657	7
Hatchback,Hybrid	2121.25	72
Hatchback,Luxury	1379.5	46
Hatchback,Luxury,Hybrid	454	3
Hatchback,Luxury,Performance	1566.131579	38
Hatchback,Performance	1039.646825	252
High-Performance	1821.447236	199
Hybrid	2105.569106	123
Luxury	1102.65731	855
Luxury,High-Performance	1668.017964	334
Luxury,High-Performance,Hybrid	568.8333333	12
Luxury,Hybrid	673.6346154	52
Luxury,Performance	1292.615156	673
Luxury,Performance,Hybrid	2333.181818	11
N/A	1676.889364	3742
Performance	1348.873544	601
Performance,Hybrid	155	1
Grand Total	1554.911197	11914

Task 1.B: Create a combo chart that visualizes the relationship between market category and popularity.

Result:

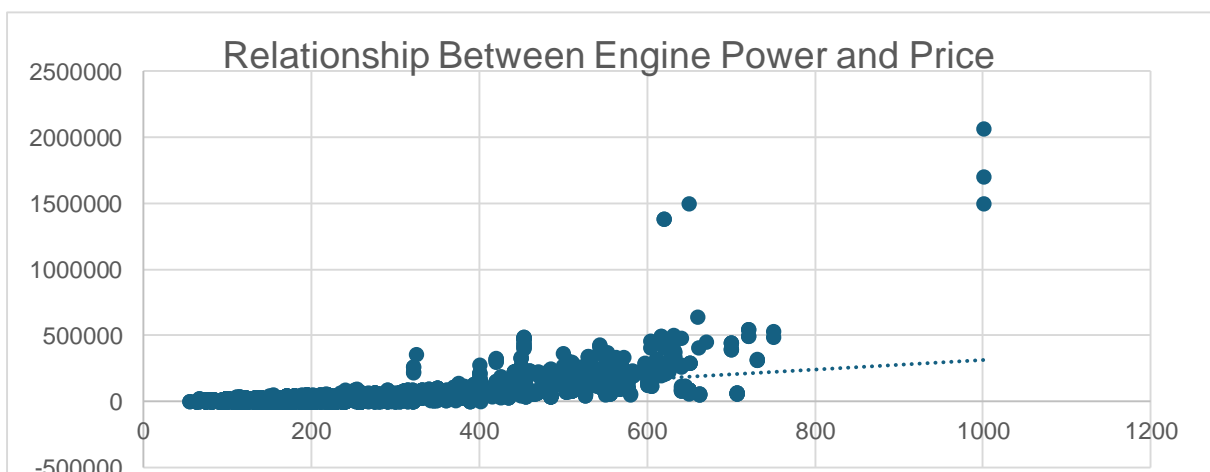


Insight Required: The maximum average of popularity is of flex fuel, diesel and maximum count of model is of N/A.

Insight Required: What is the relationship between a car's engine power and its price?

Task 2: Create a scatter chart that plots engine power on the x-axis and price on the y-axis. Add a trendline to the chart to visualize the relationship between these variables.

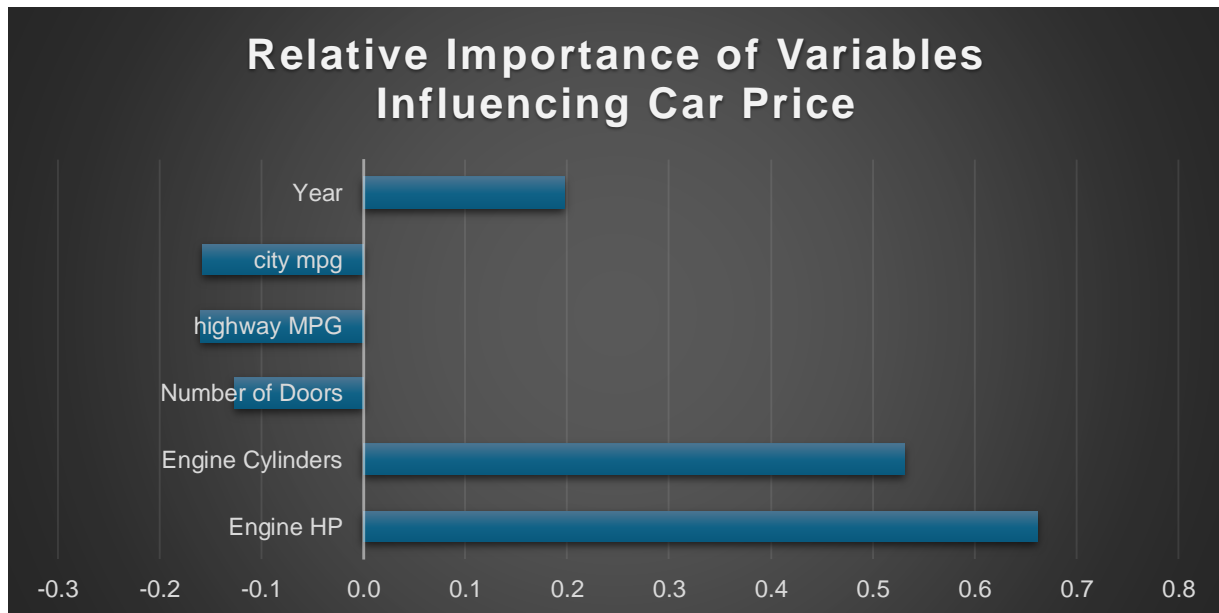
Result:



Insight Required: As the car's engine power is increases the price also will be increases.

Task 3: Use regression analysis to identify the variables that have the strongest relationship with a car's price. Then create a bar chart that shows the coefficient values for each variable to visualize their relative importance.

Result:



	Engine HP	Engine Cylinders	Number of Doors	highway MPG	city mpg	Year
MSRP	0.7	0.5	-0.1	-0.2	-0.2	0.2

Insight Required: From the above graph it is clearly shown that the most important feature in determining a car's price are Engine HP followed by Engine Cylinders and Year.

Task 4.A: Create a pivot table that shows the average price of cars for each manufacturer.

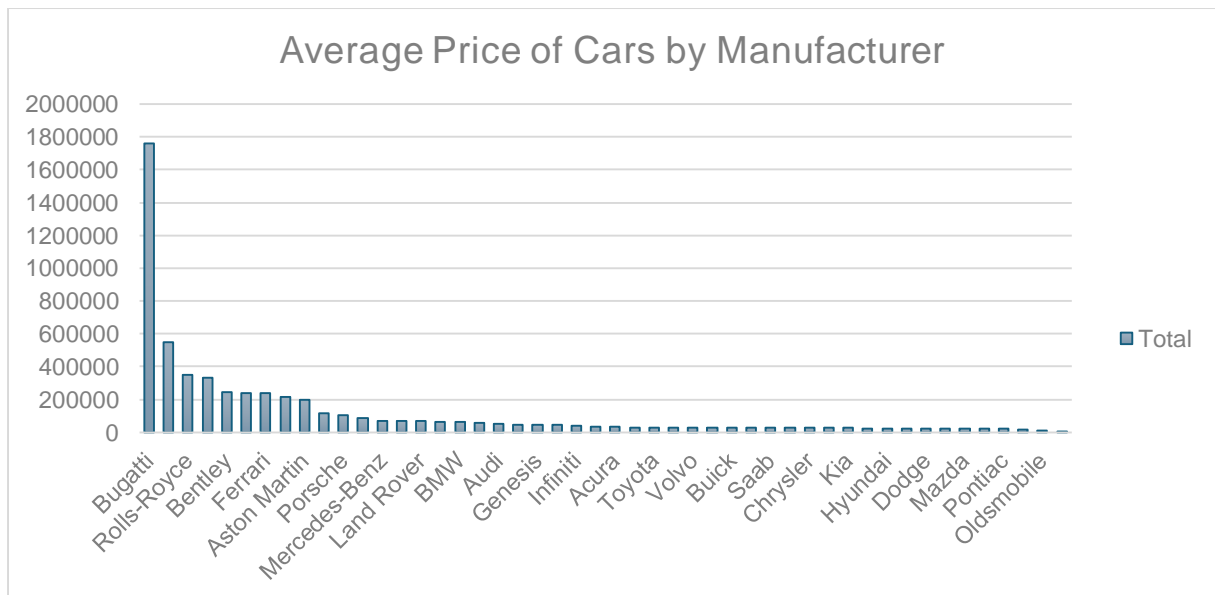
Result:

Row Labels	Average of MSRP
Bugatti	1757223.667
Maybach	546221.875
Rolls-Royce	351130.6452
Lamborghini	331567.3077
Bentley	247169.3243
McLaren	239805
Ferrari	238218.8406
Spyker	213323.3333
Aston Martin	197910.3763
Maserati	114207.7069

Porsche	101622.3971
Tesla	85255.55556
Mercedes-Benz	71476.22946
Lotus	69188.27586
Land Rover	67823.21678
Alfa Romeo	61600
BMW	61546.76347
Cadillac	56231.31738
Audi	53452.1128
Lexus	47549.06931
Genesis	46616.66667
Lincoln	42839.82927
Infiniti	42394.21212
HUMMER	36464.41176
Acura	34887.5873
GMC	30493.29903
Toyota	29030.01609
Nissan	28583.4319
Volvo	28541.16014
Chevrolet	28350.38557
Buick	28206.61224
Volkswagen	28102.38072
Saab	27413.5045
Ford	27399.26674
Chrysler	26722.96257
Honda	26674.34076
Kia	25310.17316
Subaru	24827.50391
Hyundai	24597.0363
FIAT	22670.24194
Dodge	22390.05911
Mitsubishi	21240.53521
Mazda	20039.38298
Scion	19932.5
Pontiac	19321.54839
Suzuki	17907.20798
Oldsmobile	11542.54
Plymouth	3122.902439
Grand Total	40594.73703

Task 4.B: Create a bar chart or a horizontal stacked bar chart that visualizes the relationship between manufacturer and average price.

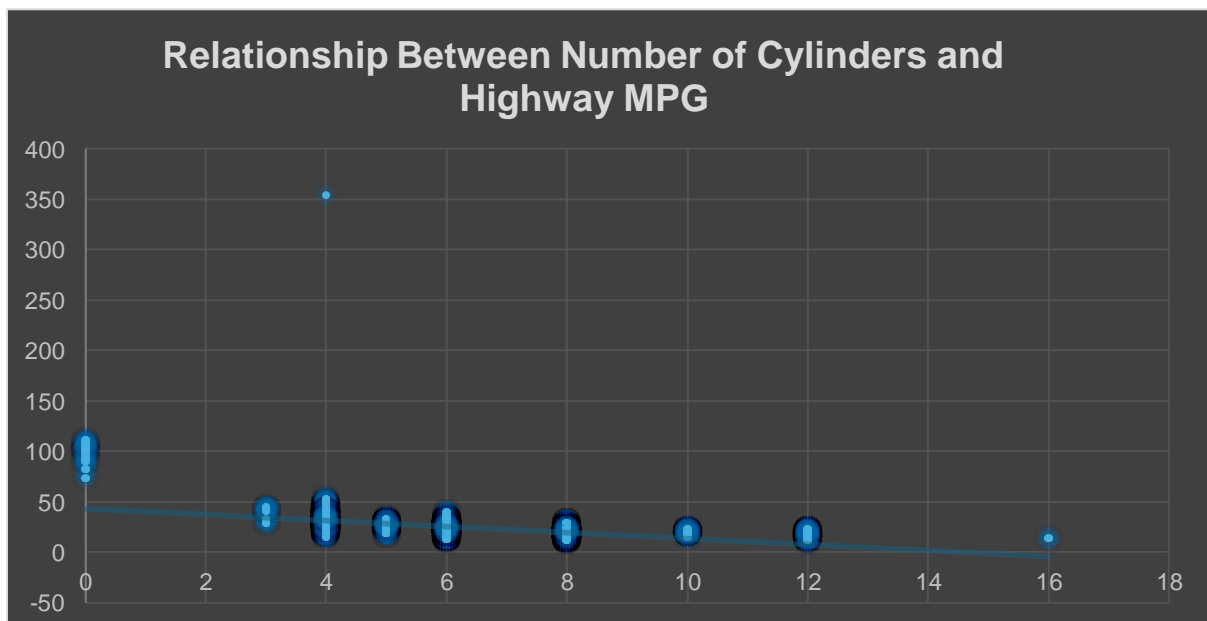
Result:



Insight Required: The average price of a car vary across different manufacturers on large where the Bugatti has highest 1757223.667 followed by Maybach and Rolls-Royce.

Task 5.A: Create a scatter plot with the number of cylinders on the x-axis and highway MPG on the y-axis. Then create a trendline on the scatter plot to visually estimate the slope of the relationship and assess its significance.

Result:



Task 5.B: Calculate the correlation coefficient between the number of cylinders and highway MPG to quantify the strength and direction of the relationship.

Result:

Coefficient -0.6

Insight Required: -0.6 is the relationship between fuel efficiency and the number of cylinders in a car's engine that is Negative Relationship.

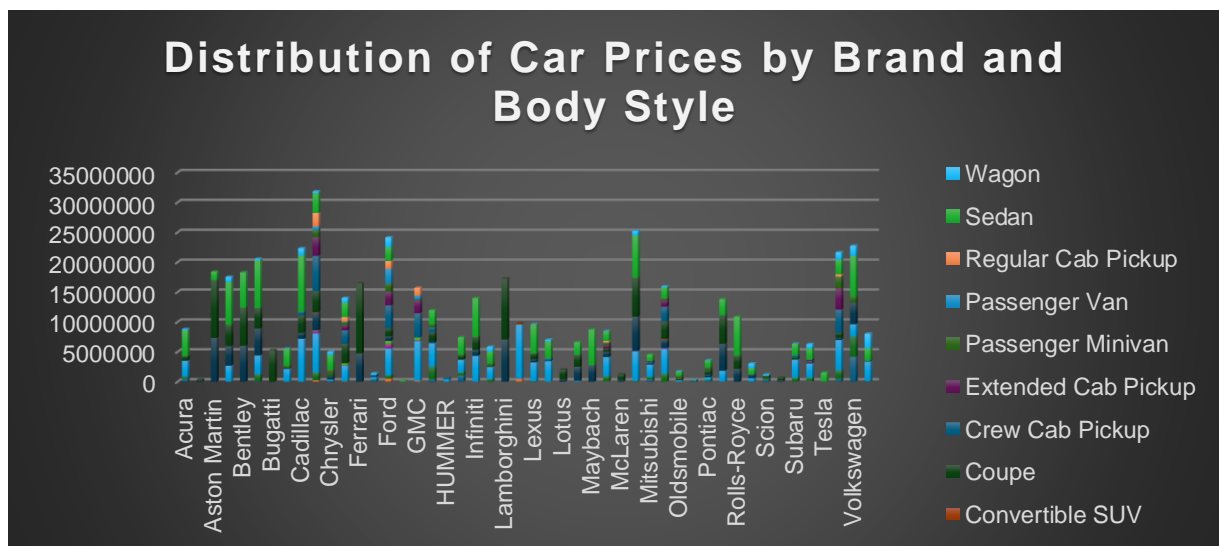
Building the Dashboard:

Now for the Next portion of the Project, you need to create the Interactive Dashboard. Use filters and slicers to make the chart interactive. The client has requested these questions given below:

Task 1: How does the distribution of car prices vary by brand and body style?

Hints: Stacked column chart to show the distribution of car prices by brand and body style. Use filters and slicers to make the chart interactive. Calculate the total MSRP for each brand and body style using SUMIF or Pivot Tables.

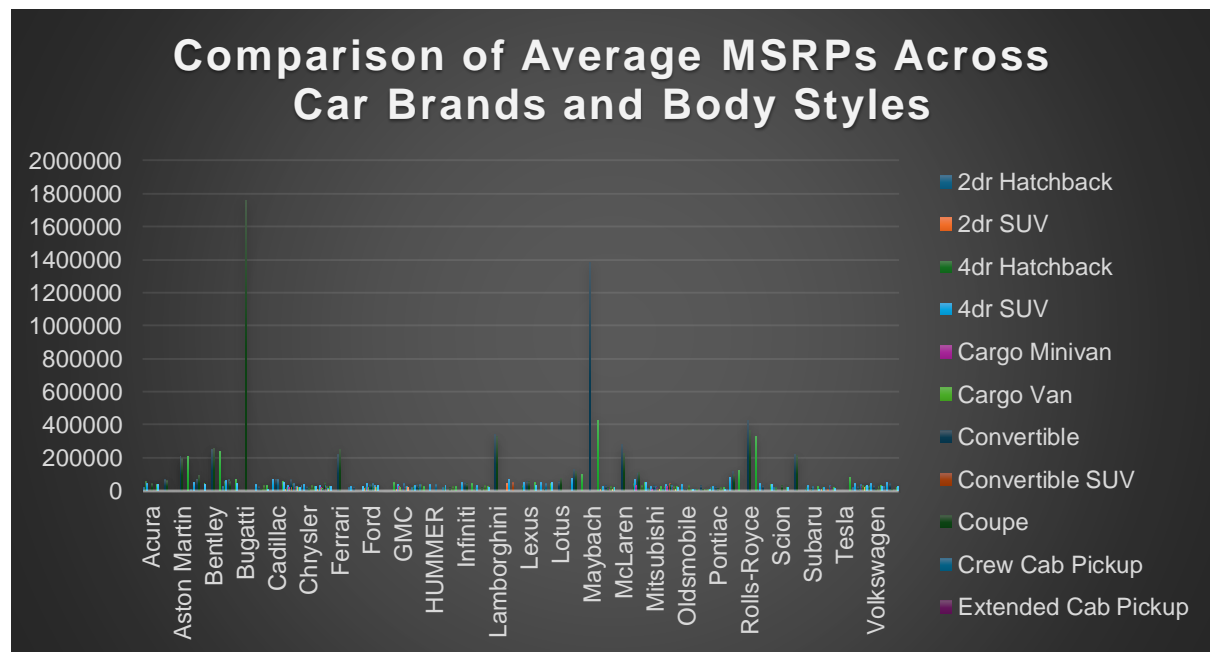
Result:



Task 2: Which car brands have the highest and lowest average MSRPs, and how does this vary by body style?

Hints: Clustered column chart to compare the average MSRPs across different car brands and body styles. Calculate the average MSRP for each brand and body style using AVERAGEIF or Pivot Tables.

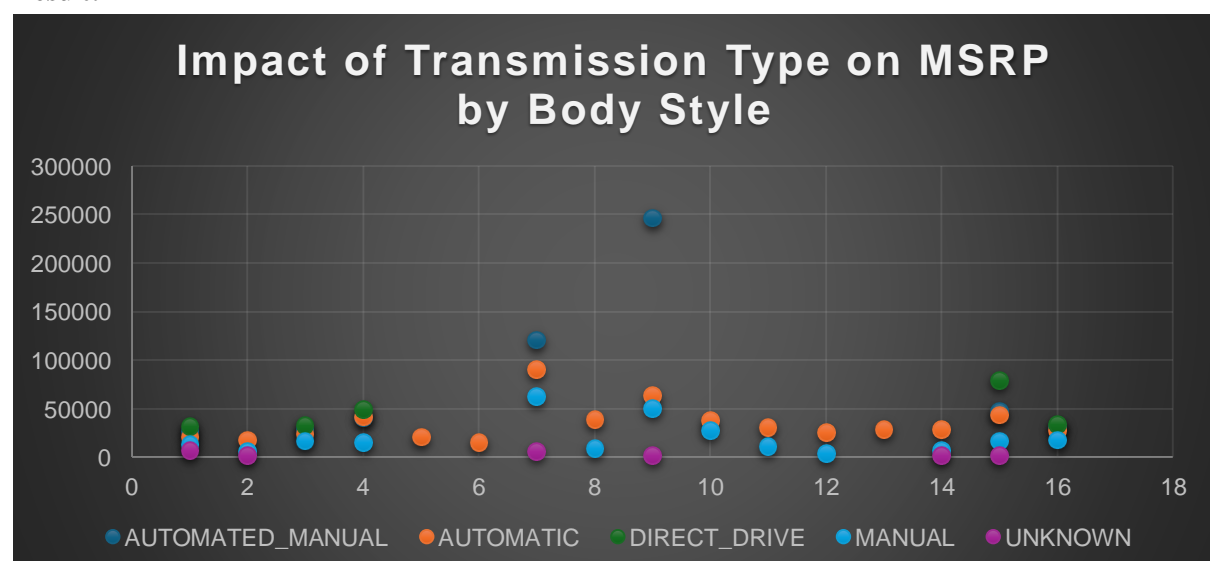
Result:



Task 3: How do the different feature such as transmission type affect the MSRP, and how does this vary by body style?

Hints: Scatter plot chart to visualize the relationship between MSRP and transmission type, with different symbols for each body style. Calculate the average MSRP for each combination of transmission type and body style using AVERAGEIFS or Pivot Tables.

Result:

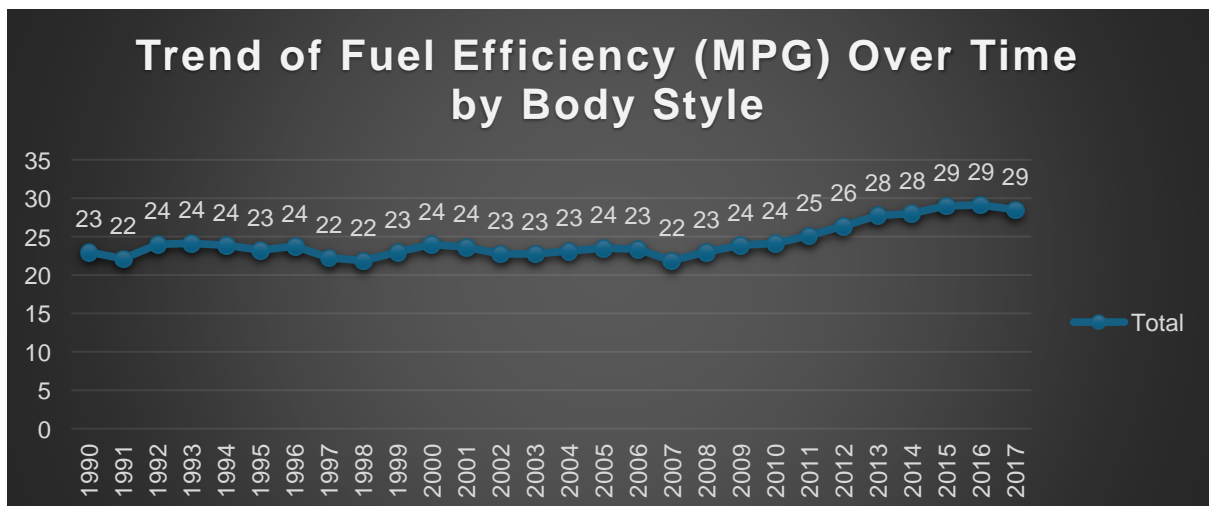


Sum of MSRP	Column Labels					Grand Total
Row Labels	AUTOMATED_MANUAL	AUTOMATIC	DIRECT_DRIVE	MANUAL	UNKNOWN	
2dr Hatchback	1549315	2615808	95400	4259817	14723	8535063
2dr SUV		819069		567343	9484	1395896
4dr Hatchback	1579450	8389455	1213590	4556953		15739448
						10056961
4dr SUV	1051730	97733282	149400	1635205		7
Cargo Minivan		1485390				1485390
Cargo Van		1451621				1451621
				1995448		
Convertible	16369647	30454162		2	11567	66789858
Convertible SUV		311404		193896		505300
				2928093		
Coupe	31239133	31812649		6	4000	92336718
Crew Cab						
Pickup		24269438		1077700		25347138
Extended Cab						
Pickup		11213270		2797238		14010508
Passenger						
Minivan		10617898		66080		10683978
Passenger Van		3713946				3713946
Regular Cab						
Pickup		4537355		1700499	16000	6253854
						11969706
Sedan	9927230	98436743	1590245	9740844	2000	2
Wagon	575735	11956512	171250	2426803		15130300
				7825779		48364569
Grand Total	62292240	339818002	3219885	6	57774	7

Task 4: How does the fuel efficiency of cars vary across different body styles and model years?

Hints: Line chart to show the trend of fuel efficiency (MPG) over time for each body style. Calculate the average MPG for each combination of body style and model year using AVERAGEIFS or Pivot Tables.

Result:

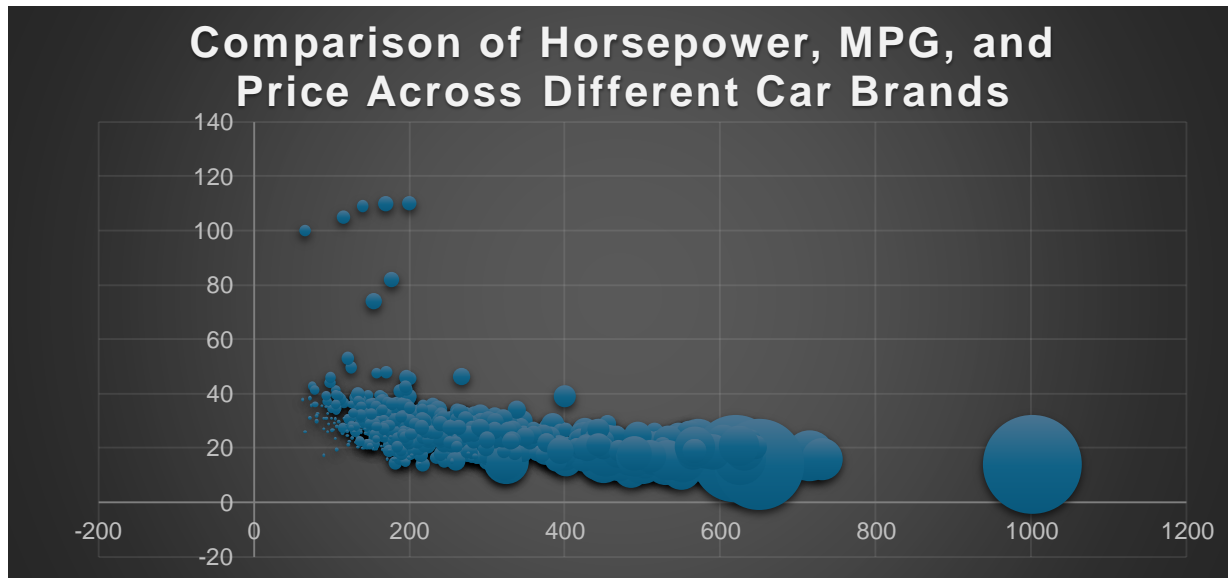


Row Labels	Average of highway MPG
1990	23
1991	22
1992	24
1993	24
1994	24
1995	23
1996	24
1997	22
1998	22
1999	23
2000	24
2001	24
2002	23
2003	23
2004	23
2005	24
2006	23
2007	22
2008	23
2009	24
2010	24
2011	25
2012	26
2013	28
2014	28
2015	29
2016	29
2017	29
Grand Total	26.63748531

Task 5: How does the car's horsepower, MPG, and price vary across different Brands?

Hints: Bubble chart to visualize the relationship between horsepower, MPG, and price across different car brands. Assign different colors to each brand and label the bubbles with the car model name. Calculate the average horsepower, MPG, and MSRP for each car brand using AVERAGEIFS or Pivot Tables.

Result:



Row Labels	Average of Engine HP	Average of highway MPG	Average of MSRP
2	100	35	15822
3	166	38	22195
5	157	28	22184
6	184	37	24761
57	586	16	401357
62	586	16	452471
80	126	24	2000
86	203	30	26615
90	172	23	2000
100	172	22	2000
200	210	31	21496
240	114	26	2000
300	295	29	38134
323	82	33	2000
360	402	15	161979
500	116	37	20450
550	485	12	227170
599	621	15	334449
626	149	26	13787
740	134	24	2000
760	156	20	2000
780	166	20	2000
850	203	25	2004
900	173	25	2025
911	426	26	123764
928	345	17	7704

929	194	22	2000
940	138	23	2000
944	208	24	3094
960	181	24	2000
968	236	24	4643
6000	133	28	2000
9000	204	25	2059
1 Series	268	28	37853
1 Series M	335	26	46135
124 Spider	160	35	26895
190-Class	144	26	2000
2 Series	283	33	41697
200SX	123	33	2008
240SX	155	26	4066
3 Series	230	36	40897
3 Series Gran Turismo	270	32	45250
3000GT	233	22	5036
300-Class	183	21	2386
300M	252	25	30601
300ZX	242	22	2969
350-Class	134	23	2183
350Z	306	24	36442
370Z	336	26	40654
4 Series	269	32	48984
4 Series Gran Coupe	270	33	44750
400-Class	275	19	2398
420-Class	201	17	2093
456M	442	15	225028
458 Italia	571	17	258060
4C	237	34	61600
4Runner	270	22	38221
5 Series	310	32	58306
5 Series Gran Turismo	358	26	65740
500-Class	319	17	3644
500e		105	31800
500L	160	32	22121
500X	177	31	24620
560-Class	238	16	2310
570S	562	23	184900
575M	515	16	221966
6 Series	380	27	87933
6 Series Gran Coupe	380	27	86383
600-Class	392	15	3476
612 Scaglietti	532	16	313088
650S Coupe	641	22	265500
650S Spider	641	22	280225
7 Series	391	26	90663
718 Cayman	325	27	60100
8 Series	312	19	6583
9-2X	199	26	24970
9-3 Griffin	220	30	36581
9-4X	272	24	38952
9-7X	318	19	43393
A3	190	35	38652

A4	225	32	39752
A4 allroad	252	28	47467
A5	220	29	44300
A6	267	46	54674
A7	291	32	69895
A8	384	29	94850
Acadia	270	24	40086
Acadia Limited	281	22	44850
Accent	137	38	15912
Acclaim	102	27	2000
Accord	212	34	27886
Accord Crosstour	271	26	33610
Accord Hybrid	201	46	32316
Accord Plug-In Hybrid	196	46	39780
Achieva	150	29	2000
ActiveHybrid 5	335	30	61800
ActiveHybrid 7	345	30	84300
ActiveHybrid X6	480	19	88900
Aerio	155	27	15918
Aerostar	142	21	2000
Alero	155	29	20626
Allante	232	20	2197
allroad	220	28	44675
allroad quattro	263	20	41944
Alpina	375	19	136900
ALPINA B6 Gran Coupe	580	24	120667
ALPINA B7	547	24	132333
Altima	218	36	26956
Altima Hybrid	185	33	26743
Amanti	264	24	25678
AMG GT	487	22	124100
Armada	339	19	48204
Arnage	470	15	246890
Aspen	295	18	35792
Aspire	63	38	2000
Astro	190	18	25105
Astro Cargo	190	19	23792
ATS	287	30	42111
ATS Coupe	297	29	45772
ATS-V	464	23	61680
Aurora	236	24	33368
Avalanche	320	21	42065
Avalon	268	31	36230
Avalon Hybrid	200	39	39019
Avenger	217	30	22825
Aventador	715	17	470050
Aveo	108	35	13843
Aviator	302	17	42543
Axxess	138	22	2000
Azera	293	28	36500
Aztek	185	23	22688
Azure	450	15	331657
Azure T	500	15	363000
B9 Tribeca	248	21	34088

Baja	192	23	24398
B-Class Electric Drive	177	82	40933
Beetle	183	33	26101
Beetle Convertible	186	32	30492
Beretta	141	30	2000
Black Diamond Avalanche	320	21	41296
Blackwood	300	15	51785
Blazer	190	19	24151
Bolt EV	200	110	38763
Bonneville	224	26	30753
Borrego	310	21	31723
Boxster	300	28	61413
Bravada	273	19	34021
Breeze	132	33	2000
Bronco	196	16	2697
Bronco II	140	20	2000
Brooklands	530	15	340990
Brougham	155	23	2000
BRZ	201	31	27686
B-Series	152	22	16713
B-Series Pickup	142	21	2985
B-Series Truck	173	21	20609
C/K 1500 Series	206	19	2902
C/K 2500 Series	243	18	3049
C30	227	29	26258
C36 AMG	273	21	3960
C43 AMG	302	21	4957
C70	227	28	40533
C8	400	18	213323
Cabrio	115	27	18592
Cabriolet	120	26	2289
Cadenza	292	28	38393
Caliber	161	30	18739
California	473	19	197407
California T	553	23	198973
Camaro	394	26	38992
Camry	206	33	26953
Camry Hybrid	200	38	28291
Camry Solara	187	28	24342
Canyon	240	25	28899
Caprice	226	24	2000
Captiva Sport	180	28	26206
Caravan	168	24	20481
Carrera GT	605	15	440000
Cascada	200	27	35065
Catera	200	23	9429
Cavalier	140	32	15308
Cayenne	423	24	94386
Cayman	310	28	62488
Cayman S	295	26	58900
CC	205	31	35854
C-Class	311	29	49298
Celebrity	123	28	2000
Celica	160	30	20725

Century	175	27	21697
Challenger	426	24	39230
Charger	401	27	38836
Chevy Van	198	17	2024
Ciera	147	27	2000
Cirrus	168	25	2227
City Express	131	26	22810
Civic	162	39	22518
Civic CRX	87	36	2000
Civic del Sol	130	32	2136
CL	237	27	29819
CLA-Class	261	34	38428
Classic	140	31	19598
CL-Class	524	21	160483
CLK-Class	357	22	65133
CLS-Class	420	26	80448
C-Max Hybrid	188	37	25653
Cobalt	174	34	17302
Colorado	240	25	27665
Colt	105	31	2000
Concorde	228	25	25935
Continental	340	22	130510
Continental Flying Spur	552	19	183200
Continental Flying Spur Speed	600	17	208600
Continental GT	551	23	215979
Continental GT Speed	608	19	212350
Continental GT Speed Convertible	626	20	238700
Continental GT3-R	572	23	337000
Continental GTC	537	22	207817
Continental GTC Speed	600	17	233750
Continental Supersports	621	19	267000
Continental Supersports Convertible	621	19	280400
Contour	131	31	2010
Contour SVT	198	26	2765
Corniche	325	15	359990
Corolla	134	38	20221
Corolla iM	137	36	19120
Corrado	173	24	2000
Corsica	120	29	2000
Corvette	516	26	71505
Corvette Stingray	455	29	57500
Coupe	316	18	56575
Cressida	190	22	2000
Crossfire	234	23	36850
Crosstour	246	30	33064
Crosstrek	150	32	24175
Crown Victoria	229	24	29672
Cruze	147	39	20469
Cruze Limited	138	38	20189
CR-V	185	32	27968
CR-Z	130	39	22289
CT 200h	134	40	31567
CT6	342	27	66033
CTS	314	28	56960

CTS Coupe	318	27	44645
CTS Wagon	296	26	45185
CTS-V	612	20	77863
CTS-V Coupe	556	19	65572
CTS-V Wagon	556	19	63343
Cube	122	31	17500
Custom Cruiser	160	23	2000
Cutlass	153	26	2045
Cutlass Calais	140	30	2000
Cutlass Ciera	145	26	2000
Cutlass Supreme	160	26	2000
CX-3	146	33	22928
CX-5	176	32	25404
CX-7	211	25	27215
CX-9	256	25	34962
Dakota	217	19	26955
Dart	173	36	20150
Dawn	563	19	335000
Daytona	138	27	2000
DB7	424	17	151550
DB9	510	19	196523
DB9 GT	540	19	215602
DBS	510	18	281573
Defender	182	15	33761
DeVille	282	24	48548
Diablo	550	12	294900
Diamante	207	23	26901
Discovery	217	14	37792
Discovery Series II	188	16	29519
Discovery Sport	240	26	41784
DTS	279	23	51683
Durango	308	25	39512
Dynasty	121	25	2000
E-150	183	16	2077
E-250	196	15	2019
E55 AMG	349	21	5999
ECHO	108	37	11017
E-Class	326	29	61857
Eclipse	191	27	23968
Eclipse Spyder	206	26	29985
Edge	258	28	34237
e-Golf	115	105	33371
Eighty-Eight	205	27	2105
Eighty-Eight Royale	186	26	2000
Elantra	156	36	20438
Elantra Coupe	153	37	19459
Elantra GT	173	33	19300
Elantra Touring	138	31	18162
Eldorado	289	25	32238
Electra	165	25	2000
Element	166	24	23146
Elise	203	27	51658
Enclave	288	22	45055
Encore	139	32	27878

Endeavor	225	20	29689
Entourage	245	23	26615
Envision	225	27	40618
Envoy	292	20	33077
Envoy XL	285	18	33926
Envoy XUV	275	18	32948
Enzo	660	12	643330
Eos	200	30	38064
Equator	223	20	24513
Equinox	182	31	27577
Equus	429	23	65042
ES 250	156	24	2000
ES 300	210	26	31578
ES 300h	200	39	41140
ES 330	223	27	32067
ES 350	268	31	38785
Escalade	420	21	81037
Escalade ESV	420	21	84037
Escalade EXT	403	18	66572
Escalade Hybrid	332	23	80523
Escape	175	30	27459
Escape Hybrid	177	29	32125
Escort	126	31	13867
E-Series Van	235	16	29894
E-Series Wagon	245	15	33478
Esprit	350	21	91292
Estate Wagon	140	22	2000
Esteem	121	31	13296
EuroVan	201	18	26950
Evora	304	26	71776
Evora 400	400	39	91900
EX	306	24	37808
EX35	297	24	35192
Excel	81	32	2000
Exige	249	26	69628
Expedition	365	20	56883
Explorer	305	23	38451
Explorer Sport	203	19	24422
Explorer Sport Trac	243	20	30261
Expo	133	24	2000
Express	288	17	34804
Express Cargo	253	18	30235
F12 Berlinetta	731	16	317257
F-150	332	23	40747
F-150 Heritage	211	18	24146
F-150 SVT Lightning	320	15	5353
F-250	220	17	3280
F430	483	16	205580
Festiva	63	38	2000
FF	651	16	295000
Fiesta	131	35	17126
Firebird	265	25	19644
Fit	130	38	18338
Fit EV		105	36625

Five Hundred	203	24	25304
FJ Cruiser	260	19	27865
Fleetwood	260	23	2053
Flex	300	23	36121
Flying Spur	570	22	206940
Focus	158	48	21791
Focus RS	350	25	36120
Focus ST	252	31	24523
Forenza	127	28	15575
Forester	190	30	27337
Forte	175	33	19895
Fox	81	30	2000
Freelander	174	19	27149
Freestar	199	21	25789
Freestyle	203	24	27839
Frontier	244	22	27462
FR-S	200	32	27518
Fusion	211	32	28808
Fusion Hybrid	188	41	29006
FX	333	22	50105
FX35	294	22	41750
FX45	320	17	49900
FX50	390	20	58700
G Convertible	327	25	51750
G Coupe	336	26	44409
G Sedan	299	26	38393
G20	145	28	17609
G3	106	34	14335
G35	297	24	32884
G37	329	25	36900
G37 Convertible	325	25	48733
G37 Coupe	330	26	40730
G37 Sedan	328	26	37942
G5	158	33	17664
G6	211	27	25020
G8	329	24	30767
G80	347	25	46617
Galant	160	30	22899
Gallardo	561	20	219844
G-Class	504	14	146040
Genesis	356	26	43306
Genesis Coupe	336	25	30578
Ghibli	382	24	75175
Ghost	563	21	276525
Ghost Series II	563	21	307831
GLA-Class	261	32	38564
GLC-Class	241	28	40050
GL-Class	395	20	84226
GLE-Class	393	21	73775
GLE-Class Coupe	470	21	88675
GLI	200	31	25538
GLK-Class	268	27	38657
GLS-Class	463	19	95550
Golf	166	38	22647

Golf Alltrack	170	30	29130
Golf GTI	215	33	28792
Golf R	292	30	37724
Golf SportWagen	164	37	26127
Grand Am	164	28	21346
Grand Caravan	283	25	27101
Grand Prix	254	26	24986
Grand Vitara	166	24	22763
Grand Voyager	156	23	2152
GranSport	400	18	100267
GranTurismo	454	21	145993
GranTurismo Convertible	451	20	155824
GS 200t	241	31	49798
GS 300	233	25	41500
GS 350	309	27	52624
GS 400	300	22	3749
GS 430	297	23	50575
GS 450h	338	34	61613
GS 460	342	24	54303
GS F	467	24	84440
GT	550	19	149995
GTI	200	32	28038
GTO	383	19	31793
GT-R	561	23	119030
GX 460	301	19	56299
GX 470	263	18	47188
H3	259	17	37749
H3T	265	17	34629
HHR	178	31	20763
Highlander	262	25	37220
Highlander Hybrid	280	28	48939
Horizon	93	31	2000
HR-V	141	33	22315
HS 250h	187	34	37388
Huracan	603	21	234475
i3	170	110	42700
I30	215	25	11904
I35	255	24	29483
iA	106	42	16250
ILX	191	35	30713
ILX Hybrid	111	38	31750
iM	137	37	18830
i-MiEV	66	100	22995
Impala	241	28	33559
Impala Limited	300	30	27735
Imperial	150	23	2000
Impreza	149	36	21169
Impreza WRX	278	24	30656
Insight	98	44	21193
Integra	152	28	11769
Intrepid	225	25	23596
Intrigue	215	26	17360
iQ	94	37	16169
IS 200t	241	33	37575

IS 250	204	29	38511
IS 250 C	204	30	42943
IS 300	231	24	34369
IS 350	306	27	41289
IS 350 C	306	27	47223
IS F	416	23	62217
J30	210	22	2028
Jetta	172	37	23954
Jetta GLI	207	33	27350
Jetta Hybrid	170	48	28479
Jetta SportWagen	157	35	25285
Jimmy	190	19	11240
Journey	240	25	28166
Juke	193	31	25125
Justy	72	31	2000
JX	265	24	41950
K900	376	24	56040
Kizashi	181	30	23994
LaCrosse	293	29	37077
Lancer	165	31	20756
Lancer Evolution	293	23	36752
Lancer Sportback	158	31	20045
Land Cruiser	381	18	82768
Landaulet	620	16	1381375
Laser	154	26	2000
Le Baron	131	26	2000
Le Mans	74	36	2000
Leaf		101	32423
Legacy	188	34	25371
Legend	215	23	2144
LeSabre	205	27	29050
Levante	385	20	77500
LFA	552	16	375000
LHS	253	24	10922
Loyale	90	27	2000
LR2	240	24	39067
LR3	300	17	49508
LR4	340	19	56608
LS	254	23	37970
LS 400	290	23	4599
LS 430	286	23	56042
LS 460	373	24	78524
LS 600h L	438	23	120313
LSS	221	26	2330
LTD Crown Victoria	150	22	2000
Lucerne	236	26	34554
Lumina	174	26	5407
Lumina Minivan	140	22	2000
LX 450	212	14	3975
LX 470	259	15	66672
LX 570	383	18	87147
M	355	25	52528
M2	365	26	51700
M3	425	26	63167

M30	162	23	2000
M35	289	23	46175
M37	330	25	48125
M4	425	26	69583
M4 GTS	493	23	133205
M45	325	21	52767
M5	557	20	93533
M56	420	24	59700
M6	557	20	116150
M6 Gran Coupe	557	20	116800
Macan	354	23	61725
Magnum	305	22	30827
Malibu	196	36	25705
Malibu Classic	194	29	19317
Malibu Hybrid	164	33	25040
Malibu Limited	197	34	24346
Malibu Maxx	212	27	21954
Mark LT	300	16	40148
Mark VII	225	22	2000
Mark VIII	282	24	2224
Matrix	148	29	20310
Maxima	298	29	35799
Maybach	523	21	190325
Mazdaspeed 3	263	25	23967
Mazdaspeed 6	274	23	28960
Mazdaspeed MX-5 Miata	178	24	26030
Mazdaspeed Protege	170	27	20230
M-Class	356	22	61332
MDX	290	27	50332
Metris	208	24	30725
Metro	72	38	3502
Mighty Max Pickup	123	22	2000
Millenia	192	25	20623
Mirage	75	43	14470
Mirage G4	78	41	15395
MKC	240	27	40210
MKS	335	26	41898
MKT	334	23	44951
MKX	303	25	45256
MKZ	228	33	40691
MKZ Hybrid	191	36	34645
ML55 AMG	342	16	5650
Model S		99	85256
Monaco	150	24	2000
Montana	189	23	27944
Montana SV6	199	22	26000
Monte Carlo	232	27	23869
Montero	215	17	35652
Montero Sport	184	19	27504
MP4-12C	604	22	234200
MPV	200	23	24889
MR2	168	26	2139
MR2 Spyder	138	30	25395
Mulsanne	511	18	310475

Murano	259	28	36381
Murano CrossCabriolet	265	22	43692
Murcielago	636	14	374667
Mustang	360	27	32521
Mustang SVT Cobra	310	23	4041
MX-3	109	30	2000
MX-5 Miata	161	30	28301
MX-6	144	27	2000
Navajo	158	20	2000
Navigator	377	20	68918
Neon	148	32	11027
New Beetle	150	28	21974
New Yorker	214	24	2000
Ninety-Eight	196	25	2000
Nitro	227	21	24705
NSX	331	22	102400
NV200	131	26	21437
NX	125	31	2000
NX 200t	235	28	36593
NX 300h	194	30	40356
Odyssey	248	28	36879
Omni	93	31	2000
Optima	217	34	27312
Optima Hybrid	197	42	28886
Outback	191	32	29622
Outlander	176	30	25939
Outlander Sport	160	28	23059
Pacifica	257	24	31424
Panamera	437	26	123341
Park Avenue	223	26	37714
Park Ward	322	15	261445
Paseo	95	33	2045
Passat	178	36	27466
Passport	205	19	22186
Pathfinder	267	27	35520
Phaeton	386	19	83318
Phantom	453	19	445959
Phantom Coupe	453	19	440467
Phantom Drophead Coupe	453	19	482125
Pickup	134	20	2274
Pilot	271	26	36904
Precis	81	30	2000
Prelude	199	25	12569
Previa	155	20	2200
Prius	125	50	26909
Prius c	99	46	21378
Prius Prime	121	53	29667
Prius v	134	40	28841
Prizm	125	36	10872
Probe	135	28	2000
Protege	126	29	14789
Protege5	130	28	16675
Prowler	253	21	34976
PT Cruiser	158	25	19908

Pulsar	90	31	2000
Q3	200	28	36293
Q40	328	26	34750
Q45	340	22	57125
Q5	244	28	48255
Q50	304	29	43131
Q60 Convertible	331	25	54683
Q60 Coupe	309	27	45647
Q7	282	25	57373
Q70	373	26	57761
Quattroporte	441	23	119415
Quest	260	26	33443
QX	400	20	62225
QX4	240	18	35050
QX50	325	24	36025
QX56	347	18	58150
QX60	261	27	45890
QX70	325	23	46633
QX80	400	20	68079
R32	245	24	31045
R8	506	21	158820
Rabbit	163	29	17081
Raider	213	19	24838
Rainier	286	20	32946
Rally Wagon	172	16	2000
RAM 150	183	16	2002
RAM 250	193	15	2022
Ram 50 Pickup	122	21	2000
Ram Cargo	195	15	20806
Ram Pickup 1500	310	18	30623
Ram Van	197	17	2201
Ram Wagon	195	15	14142
Ramcharger	214	14	2000
Range Rover	449	21	118230
Range Rover Evoque	240	30	50522
Range Rover Sport	428	21	80023
Ranger	179	23	21340
Rapide	470	19	210123
Rapide S	551	21	202748
RAV4	176	30	28789
RAV4 EV	154	74	49800
RAV4 Hybrid	194	30	31445
RC 200t	241	32	40075
RC 300	255	26	42690
RC 350	306	27	43966
RC F	467	25	63123
R-Class	245	22	51435
RDX	278	28	39233
Reatta	168	25	2000
Regal	250	29	31872
Regency	205	27	2042
Rendezvous	192	23	27128
Reno	127	28	14647
Reventon	650	14	1500000

Ridgeline	266	23	34249
Rio	138	37	16810
Riviera	231	25	2134
RL	300	23	51340
RLX	321	31	56492
Roadmaster	260	23	2045
Rogue	170	33	26121
Rogue Select	170	28	20825
Rondo	174	26	18948
Routan	261	25	35601
RS 4	420	20	71603
RS 5	450	23	74067
RS 6	450	20	82700
RS 7	560	26	108700
RSX	167	30	21689
RX 300	220	21	35228
RX 330	228	23	36590
RX 350	286	26	45752
RX 400h	268	25	43340
RX 450h	304	28	52726
RX-7	255	23	8170
RX-8	224	22	29728
S-10	156	21	19452
S-10 Blazer	164	21	2000
S-15	131	22	2000
S-15 Jimmy	153	20	2000
S2000	237	25	36019
S3	292	30	45092
S4	333	27	52150
S40	212	29	30288
S5	333	27	58183
S6	444	27	73340
S60	274	32	40721
S60 Cross Country	240	30	44200
S7	443	27	82050
S70	192	25	2318
S8	563	25	115150
S80	263	33	43366
S90	263	31	41774
Safari	190	18	25105
Safari Cargo	190	19	23792
Samurai	66	26	2000
Santa Fe	290	24	35031
Santa Fe Sport	237	26	30525
Savana	287	17	34804
Savana Cargo	280	17	31863
SC 300	225	22	3633
SC 400	290	23	3959
SC 430	288	23	67188
S-Class	533	23	157421
Scoupe	100	31	2000
Sebring	187	29	25976
Sedona	276	24	32977
Sentra	135	37	19147

Sephia	125	28	7066
Sequoia	381	17	55688
Seville	285	25	47453
Shadow	107	28	2000
Shelby GT350	526	21	55712
Shelby GT500	640	24	55486
Sidekick	105	24	2022
Sienna	276	25	37673
Sierra 1500	315	23	40312
Sierra 1500 Classic	279	18	27965
Sierra 1500 Hybrid	332	23	45193
Sierra 1500HD	300	17	33127
Sierra C3	325	13	38370
Sierra Classic 1500	200	17	4567
Sigma	142	20	2000
Silhouette	185	23	32804
Silver Seraph	322	15	224945
Silverado 1500	310	23	38876
Silverado 1500 Classic	274	19	27337
Silverado 1500 Hybrid	332	23	44803
Sixty Special	200	23	2000
Skylark	153	28	2000
SLC-Class	302	31	54125
SL-Class	493	24	140150
SLK-Class	311	30	57769
SLR McLaren	625	16	490000
SLS AMG	563	20	189567
SLS AMG GT	591	19	218000
SLS AMG GT Final Edition	583	19	224830
SLX	203	18	2659
Solstice	213	26	27140
Sonata	201	35	25708
Sonata Hybrid	195	43	28488
Sonic	138	35	18168
Sonoma	147	22	18098
Sorento	260	25	33765
Soul	147	31	18047
Soul EV		92	34250
Spark	93	39	14940
Spark EV	140	109	25843
Spectra	138	31	15727
Spirit	101	27	2000
Sportage	205	26	26726
Sportvan	180	16	2000
Spyder	388	16	88166
SQ5	354	24	56850
SRT Viper	640	19	102515
SRX	308	24	45904
SS	415	21	45265
SSR	363	18	41138
Stanza	138	26	2000
Stealth	234	22	2618
Stratus	182	26	21531
STS	307	26	53598

STS-V	469	19	78527
Suburban	330	21	43991
Sunbird	116	31	2000
Sundance	96	29	2000
Sunfire	140	32	13371
Superamerica	532	16	287625
Supersports Convertible ISR	631	19	291900
Supra	271	22	19738
SVX	230	23	2281
Swift	79	36	6642
SX4	149	31	17609
Syclone	280	16	5667
T100	182	19	2861
Tacoma	240	22	30318
Tahoe	355	23	54972
Tahoe Hybrid	332	23	53648
Tahoe Limited/Z71	255	16	3439
Taurus	301	26	33593
Taurus X	262	23	30838
TC	176	29	18097
Tempo	104	29	2000
Tercel	93	35	2029
Terrain	182	30	30443
Terraza	210	22	30006
Thunderbird	280	22	38503
Tiburon	162	25	19910
Tiguan	200	25	31651
Titan	336	18	37958
TL	293	27	40877
TLX	266	33	38730
Toronado	168	24	2000
Torrent	217	24	26542
Touareg	272	25	54167
Touareg 2	299	20	47838
Town and Country	283	25	35131
Town Car	239	24	49719
Tracker	145	21	19742
TrailBlazer	321	19	31843
TrailBlazer EXT	280	18	30167
Trans Sport	180	23	2020
Transit Connect	169	28	25111
Transit Wagon	278	19	37716
Traverse	283	22	36283
Trax	138	32	23124
Tribeca	256	21	33155
Tribute	193	26	24723
Tribute Hybrid	155	29	29463
Truck	150	21	8872
TSX	221	30	33284
TSX Sport Wagon	201	30	33560
TT	217	30	43917
TT RS	360	25	57025
TTS	279	29	51200
Tucson	174	28	25971

Tundra	372	18	37844
Typhoon	285	17	6393
Uplander	225	23	24610
V12 Vanquish	490	17	245880
V12 Vantage	510	17	187565
V12 Vantage S	565	18	188095
V40	168	27	26336
V50	207	29	31483
V60	272	31	42403
V60 Cross Country	247	29	43125
V70	235	26	34229
V8	276	18	2129
V8 Vantage	429	20	129535
V90	181	23	2200
Van	106	20	2000
Vanagon	90	17	2000
Vandura	175	19	2000
Vanquish	567	21	297084
Vanwagon	107	20	2000
Veloster	165	34	20928
Venture	185	24	26837
Venza	229	26	33032
Veracruz	260	22	32220
Verano	190	32	24695
Verona	155	25	19221
Versa	109	38	14661
Versa Note	109	39	16834
Veyron 16.4	1001	14	1757224
Vibe	149	29	18388
Vigor	176	24	2000
Viper	645	20	99709
Virage	490	18	215795
Vitara	137	22	17474
Voyager	158	23	10884
Windstar	200	22	28444
Windstar Cargo	200	22	20627
Wraith	624	21	294425
WRX	283	25	32863
X1	244	31	34383
X3	240	29	42238
X4	291	27	49871
X5	325	26	60308
X5 M	567	19	98767
X6	348	24	66044
X6 M	567	19	102167
X-90	95	26	2000
xA	106	34	12997
xB	158	28	18445
XC	197	23	36500
XC60	281	27	43620
XC70	253	28	40878
XC90	276	25	50794
xD	128	33	16683
XG300	192	25	24249

XG350	194	24	25099
XL7	252	22	27014
XL-7	185	20	23689
XLR	320	24	82503
XLR-V	443	21	100374
XT	129	26	2000
XT5	310	27	50011
Xterra	261	21	26980
XTS	328	26	58116
XV Crosstrek	151	33	24395
Yaris	106	36	16464
Yaris iA	106	40	16500
Yukon	377	22	58271
Yukon Denali	255	15	3949
Yukon Hybrid	332	23	57980
Yukon XL	377	22	60971
Z3	203	25	25359
Z4	292	28	57439
Z4 M	330	23	51250
Z8	394	19	129833
ZDX	300	23	51063
Zephyr	221	26	28995
09-03-2023	216	28	37603
09-05-2023	264	28	42926
Grand Total	249.3860701	26.63748531	40594.73703

Result:

The analysis revealed the connections between car features, market categories, and pricing. We determined which features contribute most to profitability and identified the car types that are both popular and profitable. By refining pricing and prioritizing these important features, the manufacturer can improve product selection and pricing strategies. This approach allows the company to remain competitive and boost profits by focusing on the most sought-after and lucrative car models.