

# Resale Value of Used Cars

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# Purpose

- Which brands (makes) of cars hold their value the best?
- What factors significantly alter resale values?
- Ultimately which model has the best resale price

# Motivation

-Nearly everyone buys a used car or sells a used car at some point, if not many times in one's lifetime.

The prices are based on dealer selling prices.

In total, there are 6747 used car rows included in this analysis.

VIN	accident	body_style	damage	drive_type	engine	ext_color	fuel	int_color	location	mileage	one_owner
19XFB2F81FE298796	Accident reported	Sedan	CARFAX 1-Owner vehicle	FWD	4 Cyl 1.8 L	Black	Gasoline	Black	Brooklyn, NY	44,120	Service history records
KNMAT2MV4FP525883	No accidents reported to CARFAX	SUV	No other damage reported to CARFAX	AWD	4 Cyl 2.5 L	Black	Gasoline	Black	Great Neck, NY	47,325	CARFAX 1-Owner vehicle
1N4AL3AP1FC472133	Accident reported	Sedan	CARFAX 1-Owner vehicle	FWD	4 Cyl 2.5 L	Black	Gasoline	Gray	Brooklyn, NY	51,807	Service history record
2T1BURHE0FC298548	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	FWD	4 Cyl 1.8 L	Silver	Gasoline	Black	Great Neck, NY	36,125	CARFAX 1-Owner vehicle
5N1AT2MV2FC913410	No accidents reported to CARFAX	SUV	No other damage reported to CARFAX	AWD	4 Cyl 2.5 L	Gray	Gasoline	Black	Great Neck, NY	35,690	CARFAX 1-Owner vehicle
2T3RFREV5FW278394	No accidents reported to CARFAX	SUV	No other damage reported to CARFAX	AWD	4 Cyl 2.5 L	Black	Gasoline	Black	Great Neck, NY	48,520	CARFAX 1-Owner vehicle
19UDE2F73GA005332	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	FWD	4 Cyl 2.4 L	Black	Gasoline	Black	Great Neck, NY	44,407	CARFAX 1-Owner vehicle
1N4AA5AP4EC475995	No accidents reported to CARFAX	Sedan	Other damage reported	FWD	6 Cyl 3.5 L	Gray	Gasoline	Gray	Brooklyn, NY	74,316	CARFAX 1-Owner vehicle
5J6RM4H35FL088143	No accidents reported to CARFAX	SUV	No other damage reported to CARFAX	AWD	4 Cyl 2.4 L	White	Gasoline	Tan	Great Neck, NY	23,585	CARFAX 1-Owner vehicle
1N4AA5AP1BC845313	Accident reported	Sedan	Previous owners	FWD	6 Cyl 3.5 L	Black	Gasoline	Black	Brooklyn, NY	91,037	Service history records
19XFB2F52FE285609	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	FWD	4 Cyl 1.8 L	White	Gasoline	Tan	Great Neck, NY	28,166	CARFAX 1-Owner vehicle
19XFB5F58CE000165	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	FWD	4 Cyl 1.8 L	Gray	Alternative	Tan	Brooklyn, NY	64,402	CARFAX 1-Owner vehicle
JNKC6V61F09M358790	Accident reported	Sedan	Previous owners	AWD	6 Cyl 3.7 L	Gray	Gasoline	Black	Brooklyn, NY	137,375	Service history records
WVGWU73C09E520071	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	AWD	6 Cyl 3.6 L	White	Gasoline	Unspecified	Hawthorne, NJ	137,798	Previous owners
WBAPH7C51BE675995	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	RWD	6 Cyl 3.0 L	Blue	Gasoline	Tan	Rahway, NJ	110,789	CARFAX 1-Owner vehicle
1HGCR2F56FA032442	No accidents reported to CARFAX	Sedan	No other damage reported to CARFAX	FWD	4 Cyl 2.4 L	Black	Gasoline	Black	Brooklyn, NY	49,056	CARFAX 1-Owner vehicle
1N4AL24E99C199046	No accidents reported to CARFAX	Coupe	No other damage reported to CARFAX	FWD	4 Cyl 2.5 L	Gray	Gasoline	Gray	Brooklyn, NY	93,386	CARFAX 1-Owner vehicle
WAUDFAFL4BN035229	No accidents reported to CARFAX	Sedan	Other damage reported	AWD	4 Cyl 2.0 L	Silver	Gasoline	Black	Teterboro, NJ	100,911	Previous owners

The prices are based on dealer selling prices.

In total, there are 6747 used car rows included in this analysis.

one_owner	personal	price	service	transmission	name	make	model	trim	special
Service history records	Last owned in Virginia	12,999	Personal vehicle	Automatic	2015	Honda	Civic EX		
CARFAX 1-Owner vehicle	Personal lease vehicle	12,480	Service history records	Automatic	2015	Nissan	Rogue S		
Service history record	Last owned in New York	10,999	Personal lease vehicle	Automatic	2015	Nissan	Altima SV		
CARFAX 1-Owner vehicle	Personal lease vehicle	10,980	Regular oil changes	Automatic	2015	Toyota	Corolla S	Plus	
CARFAX 1-Owner vehicle	Personal lease vehicle	14,980	Service history records	Automatic	2015	Nissan	Rogue SV		
CARFAX 1-Owner vehicle	Personal lease vehicle	14,890	Service history records	Automatic	2015	Toyota	RAV4 XLE		
CARFAX 1-Owner vehicle	Personal lease vehicle	14,890	Service history records	Automatic	2016	Acura	ILX Technology	Plus	
CARFAX 1-Owner vehicle	Personal vehicle	10,999	Service history records	Automatic	2014	Nissan	Maxima SV		
CARFAX 1-Owner vehicle	Personal lease vehicle	14,890	Service history records	Automatic	2015	Honda	CR-V LX		
Service history records	Last owned in New Jersey	5,999	Types of owners: Personal lease, Personal	Automatic	2011	Nissan	Maxima SV		
CARFAX 1-Owner vehicle	Personal lease vehicle	9,980	Service history records	Automatic	2015	Honda	Civic LX		
CARFAX 1-Owner vehicle	Personal vehicle	6,999	Service history records	Automatic	2012	Honda	Civic		
Service history records	Last owned in Virginia	4,999	Types of owners: Personal lease, Personal	Automatic	2009	Infiniti	G37		
Previous owners	Types of owners: Personal lease, Personal	7,450	Service history records	Automatic	2009	Volkswagen	CC		
CARFAX 1-Owner vehicle	Service history records	5,995	At least 1 open recall	Automatic	2011	BMW		3 Series 328i	
CARFAX 1-Owner vehicle	Service history records	14,999	At least 1 open recall	Automatic	2015	Honda	Accord Sport		
CARFAX 1-Owner vehicle	Personal vehicle	6,999	Service history records	Automatic	2009	Nissan	Altima S		
Previous owners	Personal vehicle	8,999	Regular oil changes	Manual	2011	Audi	A4 Premium		

# Carfax

Carfax.com is a website that is well known for checking the history and status of used cars to help used car buyers from being sold a car that has problems that the buyer is unaware of.



The data was scraped  
(using Selenium) from  
used cars using filters:

- Sold within a 50 mile  
radius of New York city

- Under \$15,000

**CARFAX** Used Cars for Sale CARFAX Reports My Car Maintenance Used Car Values Research Help 0 Sign In | Sign Up

Home > Used Cars > \$15000 > New York, NY

### Used Vehicles Under \$15,000 for sale in New York, NY

23,069 results Displaying 1 - 25 Sort by **CARFAX Best Match**

[Save This Search](#)

Select Body Type


Less than \$15,000

50 miles of 10027

**Search**

[Search by Make & Model](#)

**Rubber Bros Auto World** [Follow 46](#)



34 Photos

#### 2015 Nissan Altima SV

**\$8,999** \$147/mo est.  
**GREAT VALUE** \$2,541 below \$11,540 CARFAX Value

**Mileage:** 98,100 miles **Body Type:** Sedan  
**Color:** Black **Engine:** 4 Cyl 2.5 L

**Description:** Used 2015 Nissan Altima SV with FWD, AM/FM, Air Conditioning, Alloy Wheels, Cruise Control, Fog Lights, Keyless Entry, Power Windows, Remote Start....

[Rubber Bros Auto World](#) Brooklyn, NY (12 miles from New York, NY)

<b>No Accident or Damage Reported</b> No accident or damage reported to CARFAX	<b>CARFAX 1-Owner</b> Purchased on 09/12/15 and owned in PA until 04/23/18.	<b>Personal Use</b> Driven an estimated 38,011 miles/year.	<b>Service History</b> Last serviced at 69,184 miles in Feasterville Trevose, PA on 08/04/1...
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# Extraction of Vehicle Info

The end result of using selenium was to extract URLs containing the detailed information of each car.

Once all the URLs were collected, I extracted the detailed information for each car using scrapy.

CARFAXUsed Cars for SaleCARFAX ReportsMy Car MaintenanceUsed Car ValuesResearchHelp

0Sign In | Sign Up

2015 Nissan Altima SV


98,100 miles • Stock #489922

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Rubber Bros Auto World

718-621 of 34



Vehicle Info

Price	\$8,999
Mileage	98,100 miles
Location	Brooklyn, NY
Exterior Color	Black
Interior Color	Gray
Drive Type	FWD
Transmission	Automatic
Body Style	Sedan
Engine	4 Cyl 2.5 L
Fuel	Gasoline
MPG City/Hwy	27/37
VIN	1N4AL3AP3FC489922
Stock #	489922

Price & Payment

\$8,999

GREAT VALUE\$2,541 below \$11,540 CARFAX Value

\$147/mo est. 10% down / 60 months

Check Availability

Call: (347) 686-8657

Send To: Rubber Bros Auto World

Hi, my name is First Name Last Name

and I'm interested in your 2015 Nissan Altima SV. I'm in the 10027 area. You can reach me at

When can I test drive this vehicle?

+ Add a personal note(optional)

Send Message

☒ Email me price drops and new listings for my search

I agree to receive autodialed and/or prerecorded telemarketing calls/texts from or on behalf of CARFAX and/or seller at the mobile number provided above. I understand that consent is not a condition of purchase. I agree to creating an account subject to the Privacy Policy & Terms of Use

Dealer Info

Rubber Bros Auto World

5335 Kings Hwy

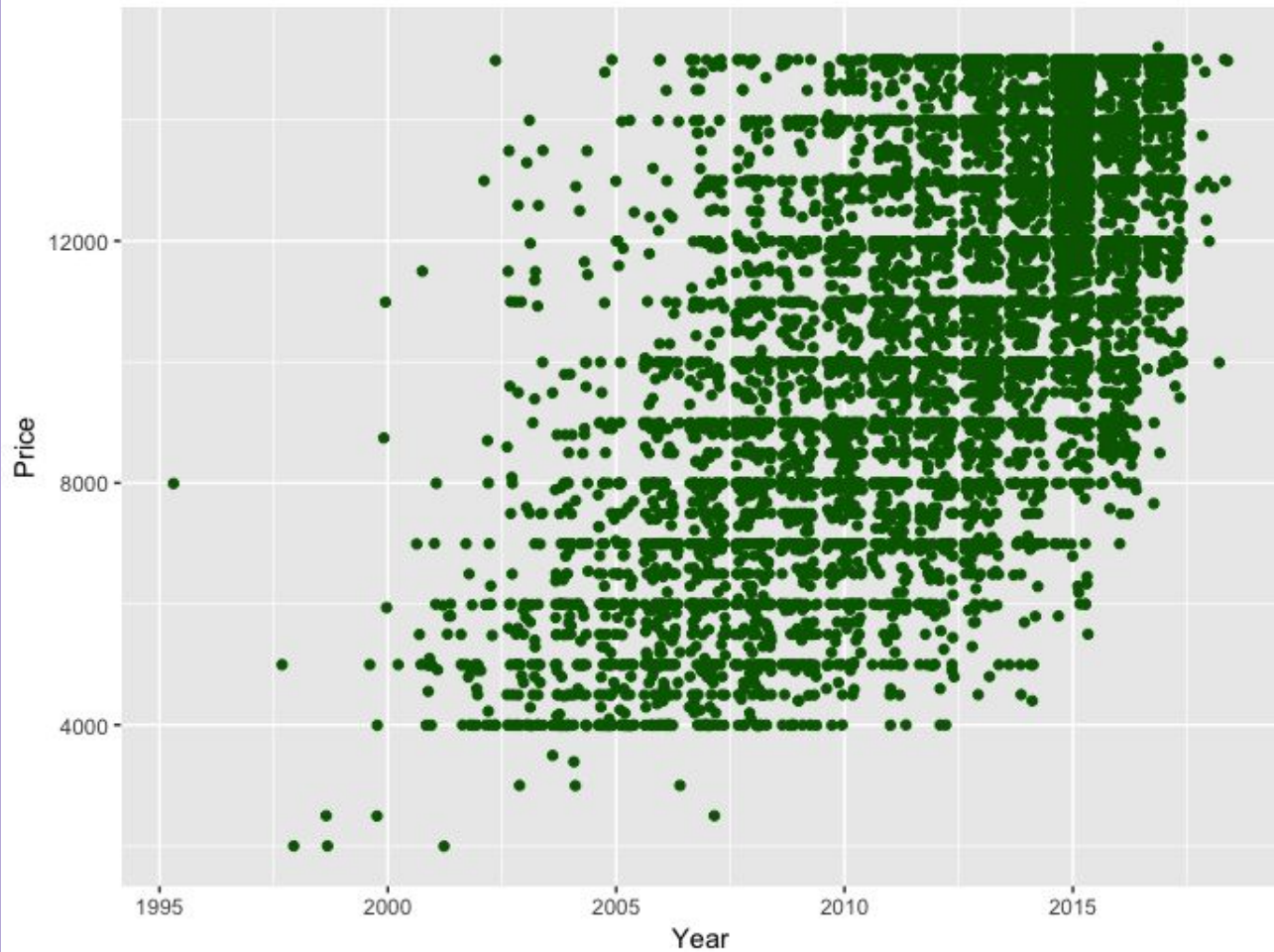
Brooklyn, NY 11203

Map & Directions

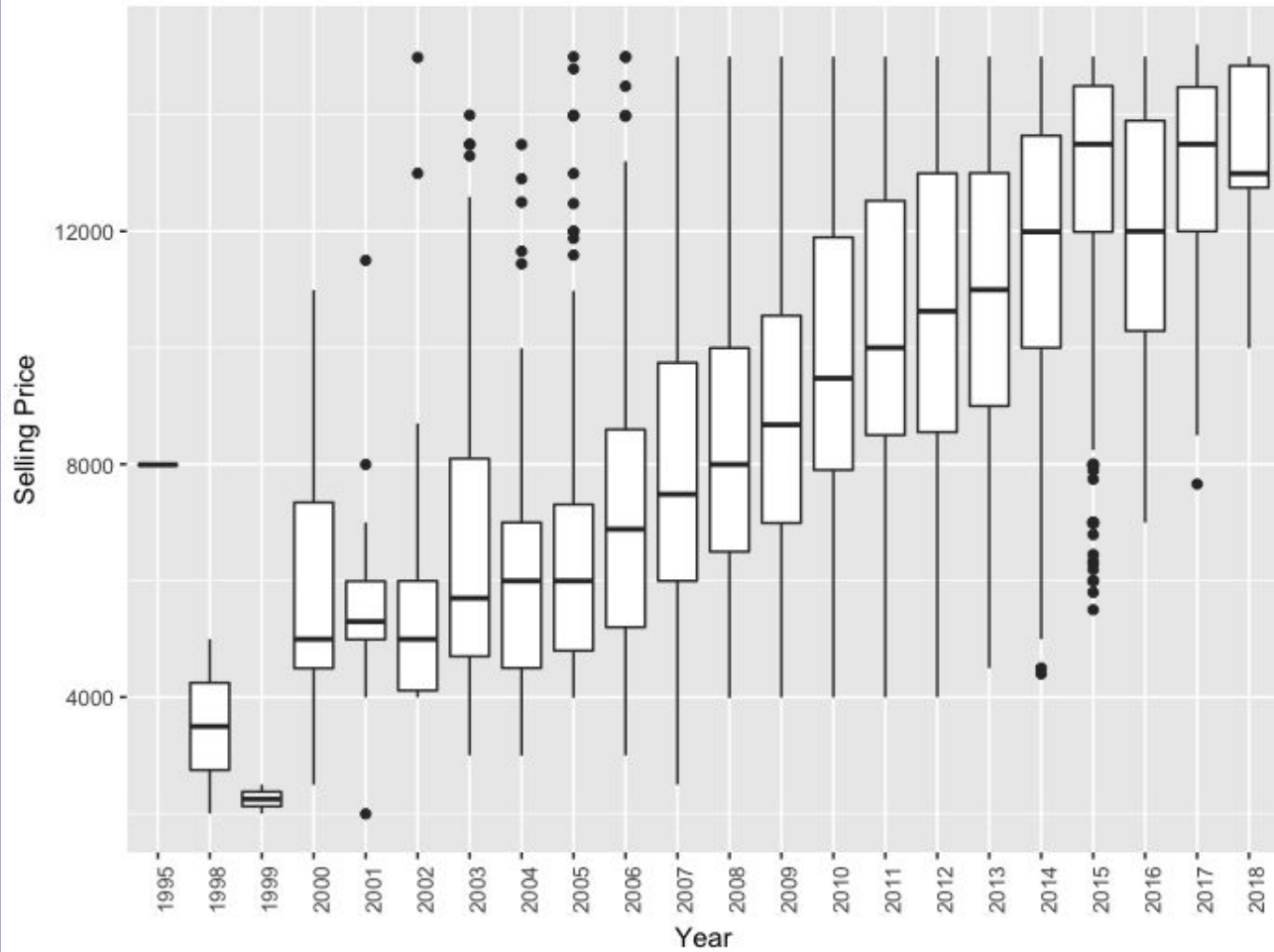


# Data Analysis

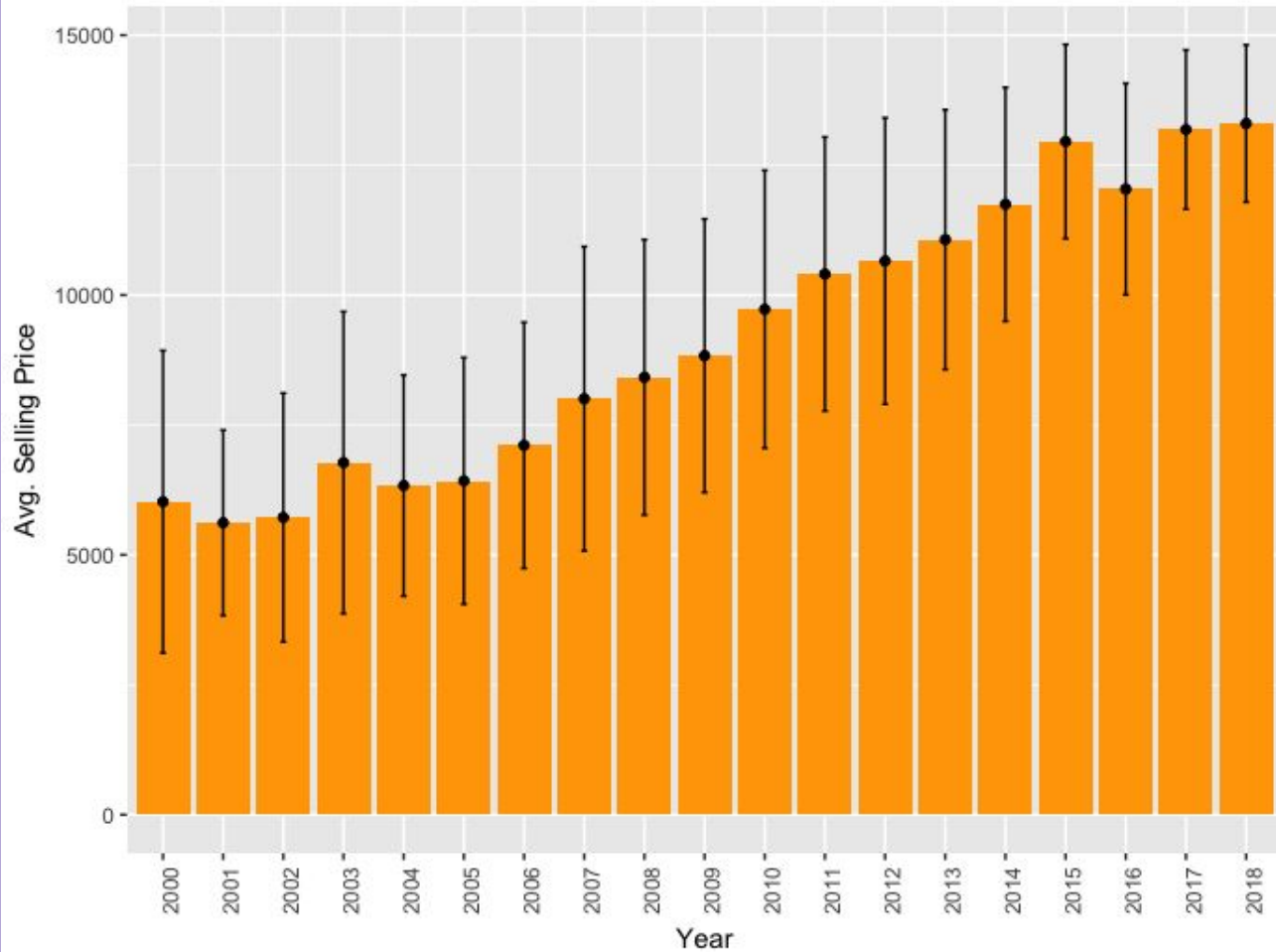
Used Car Resale Data: Price vs. Year



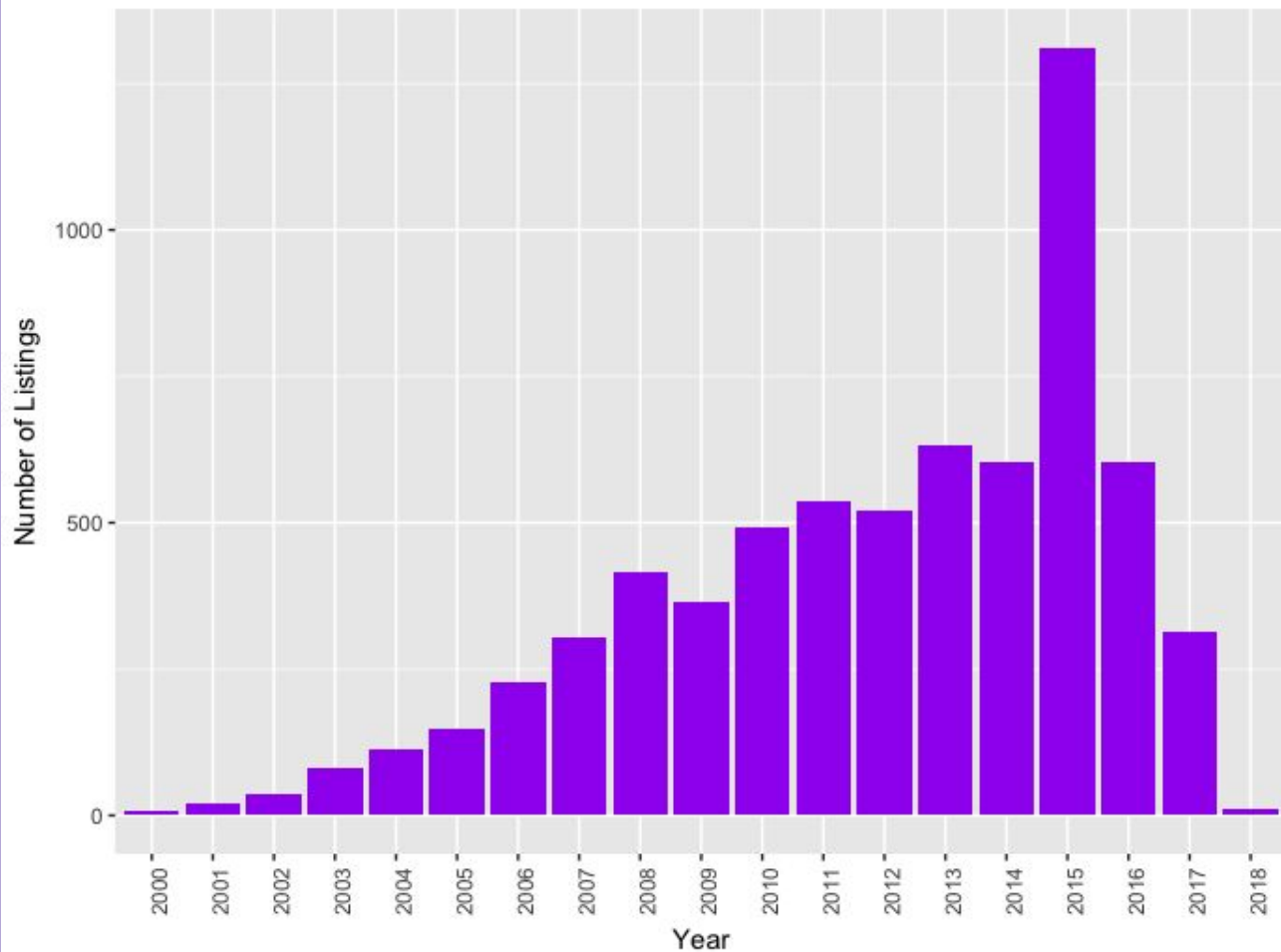
Used Car Resale Data: Price vs. Year



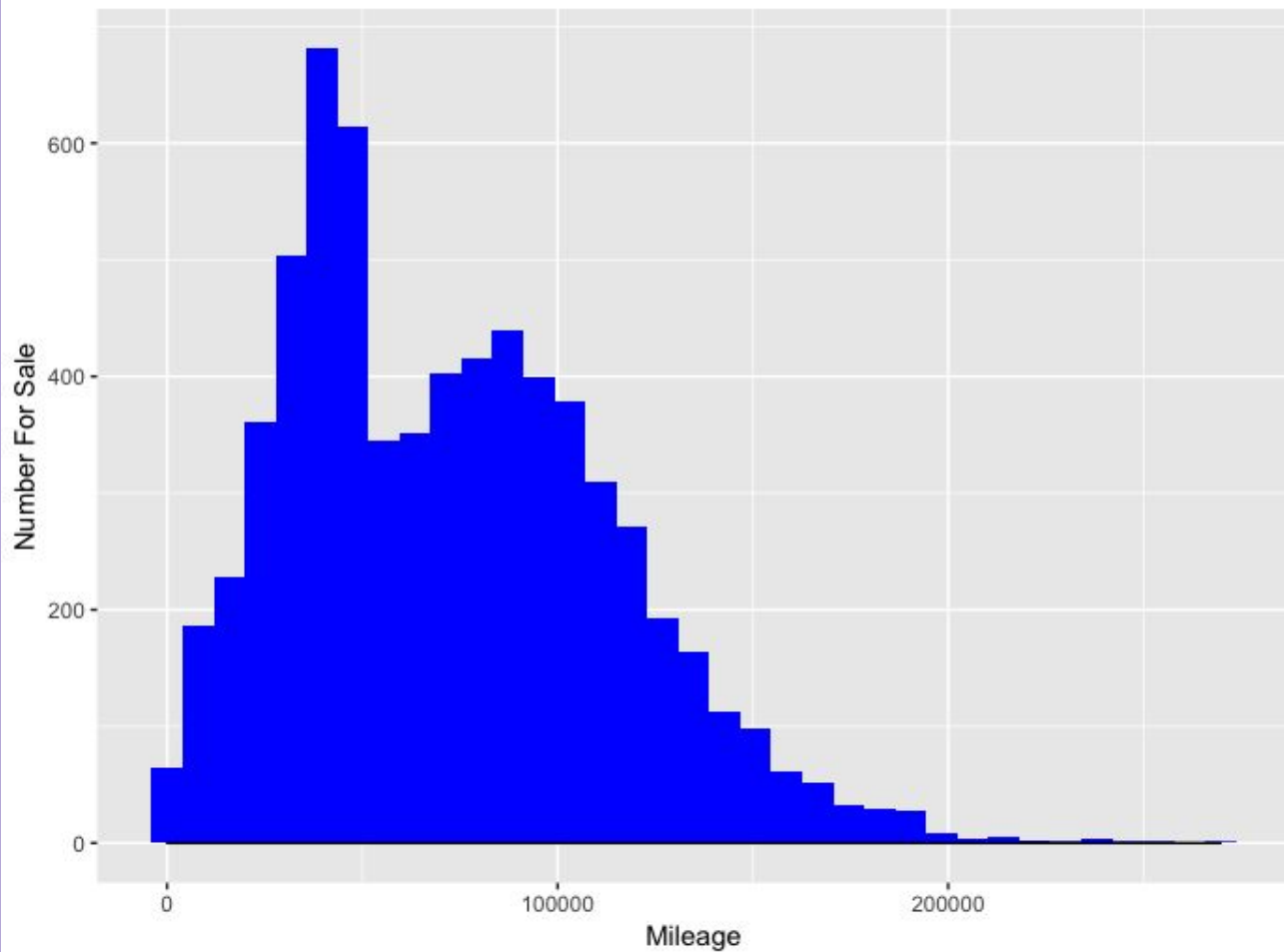
Used Car Resale Data: Price vs. Year



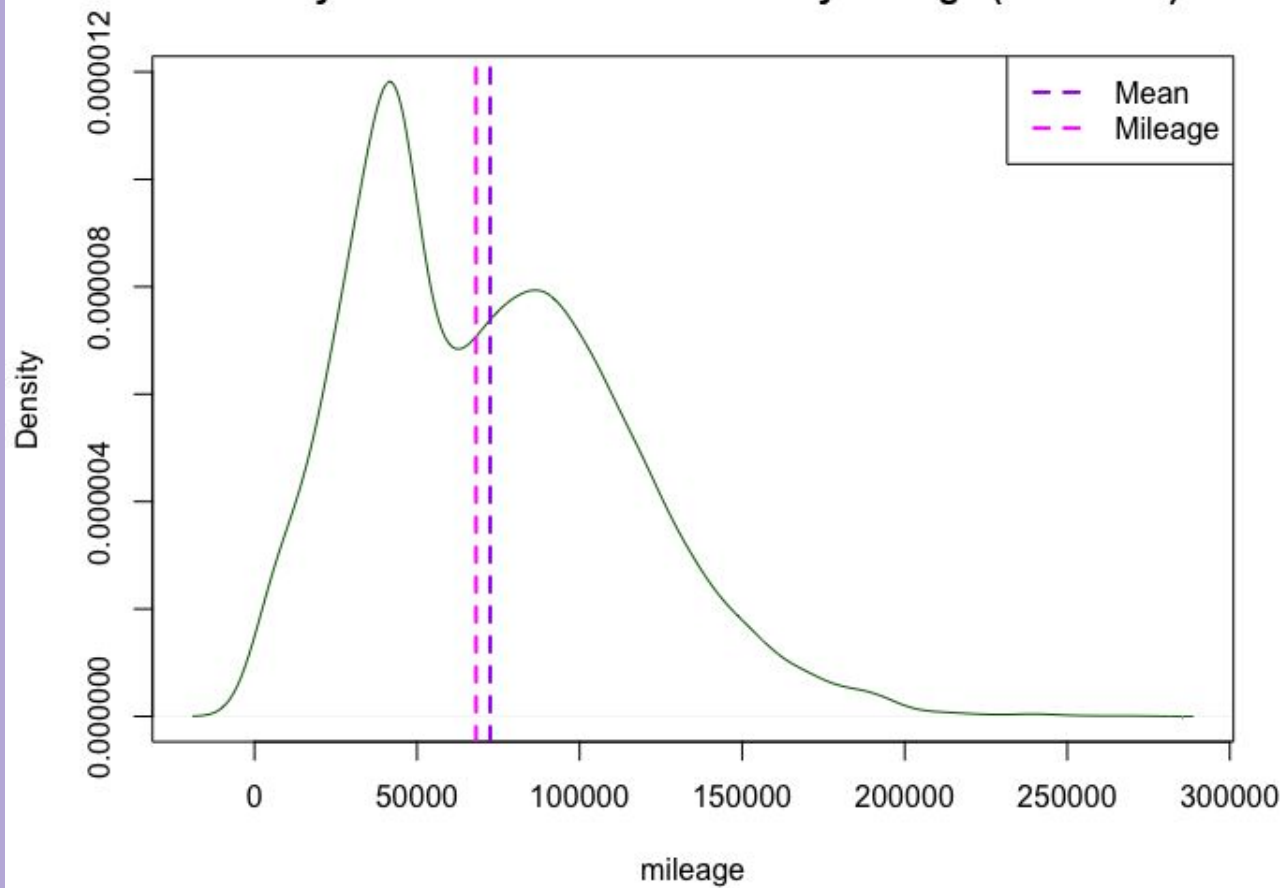
Used Car Resale Data: Number of Listings by Year



Used Cars for Sale by Mileage (6747 total)



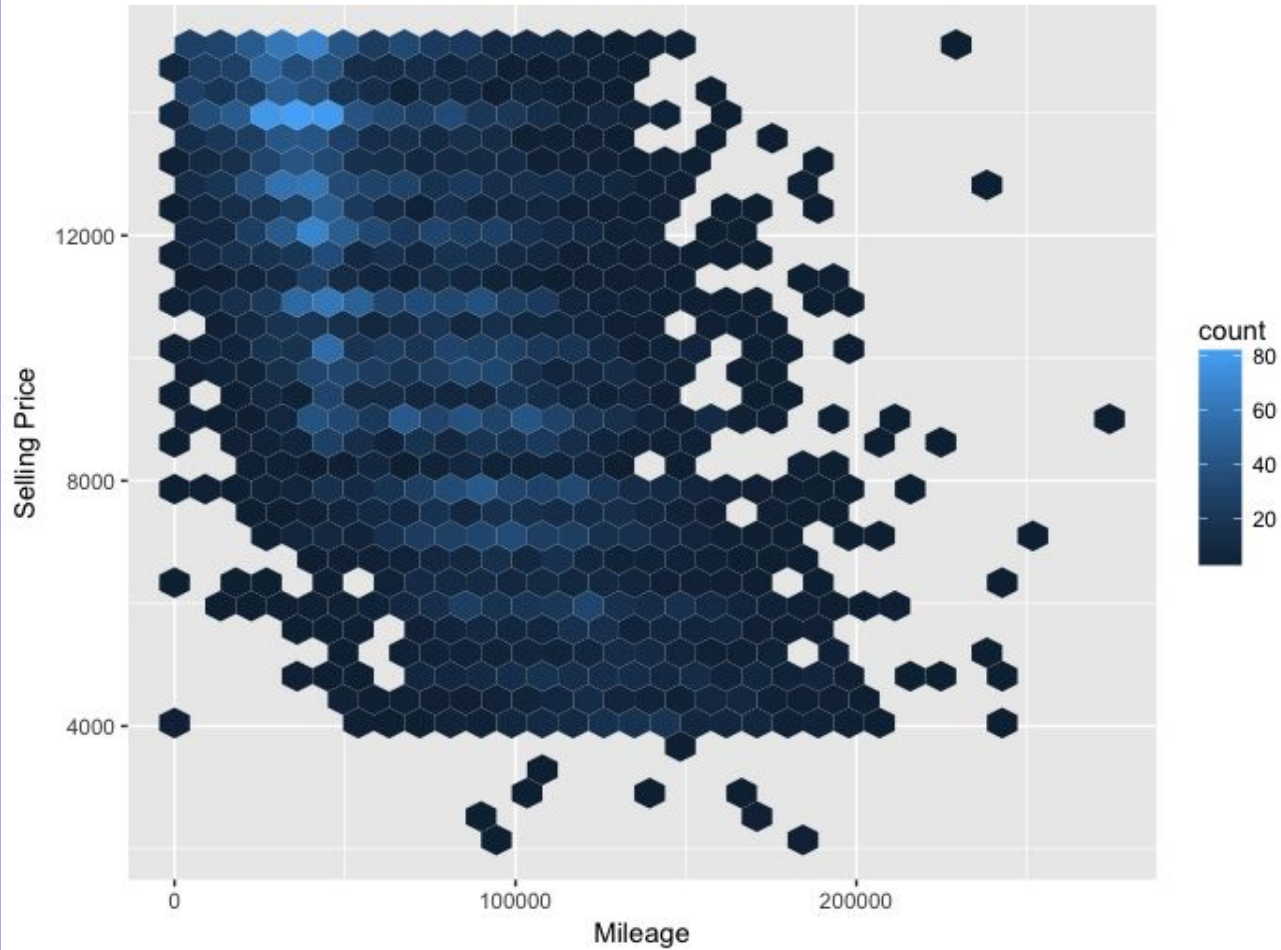
**Density Plot of Used Cars for Sale by Mileage (6747 total)**



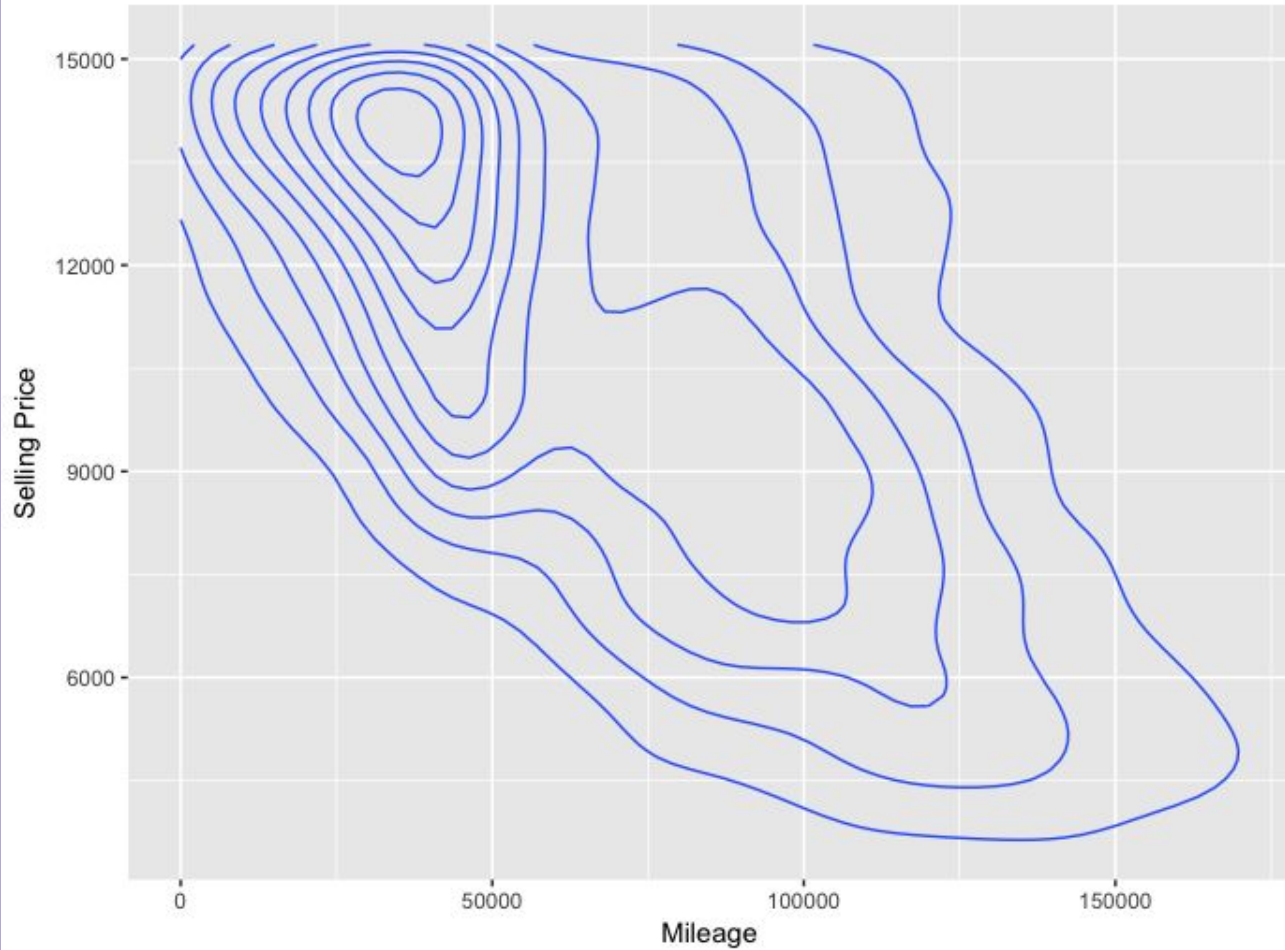
```
##      meanval medianval      std
## 1 72484.35      68155 41156.2
```



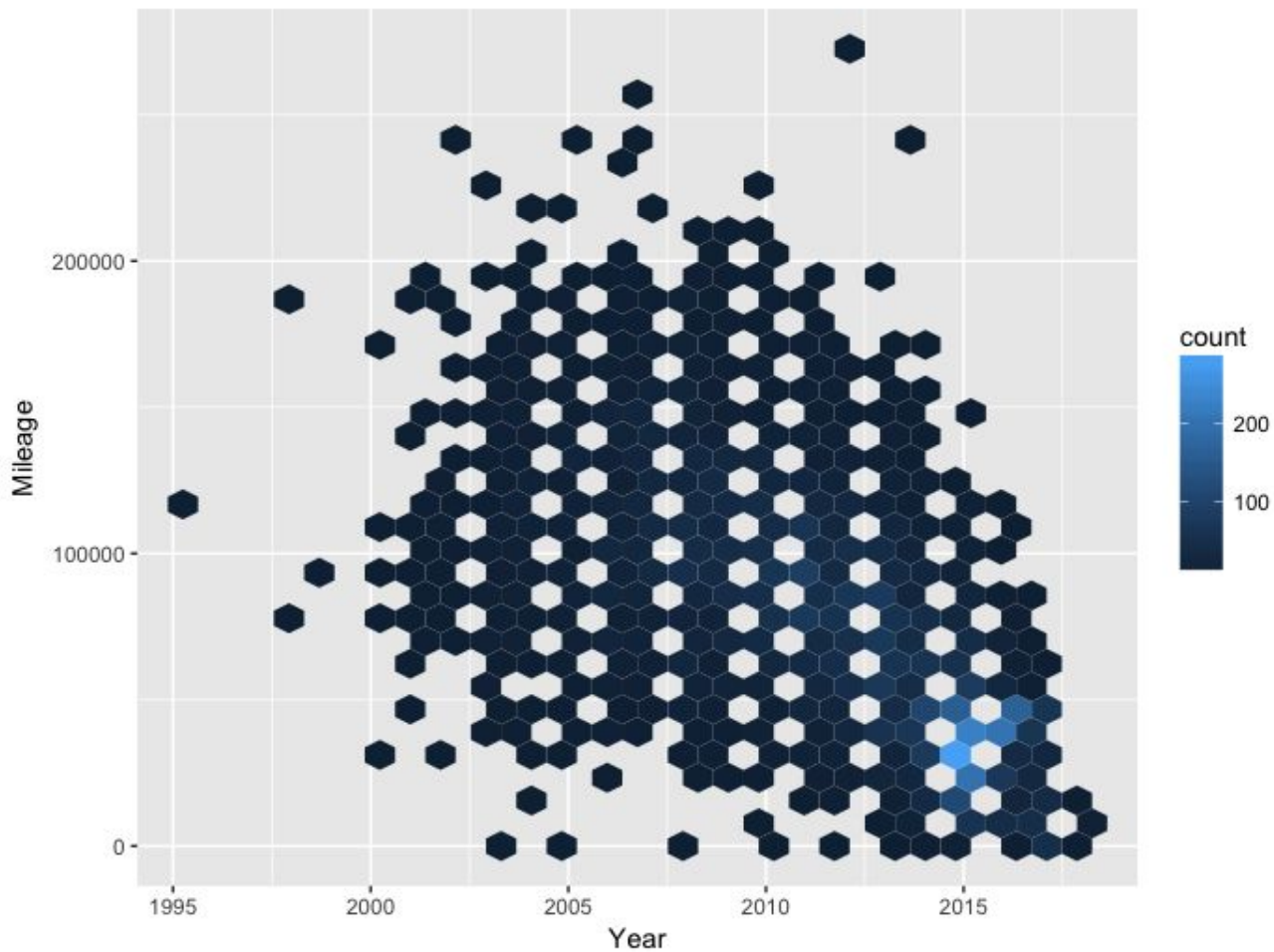
Used Car Resale Data: Price vs. Mileage



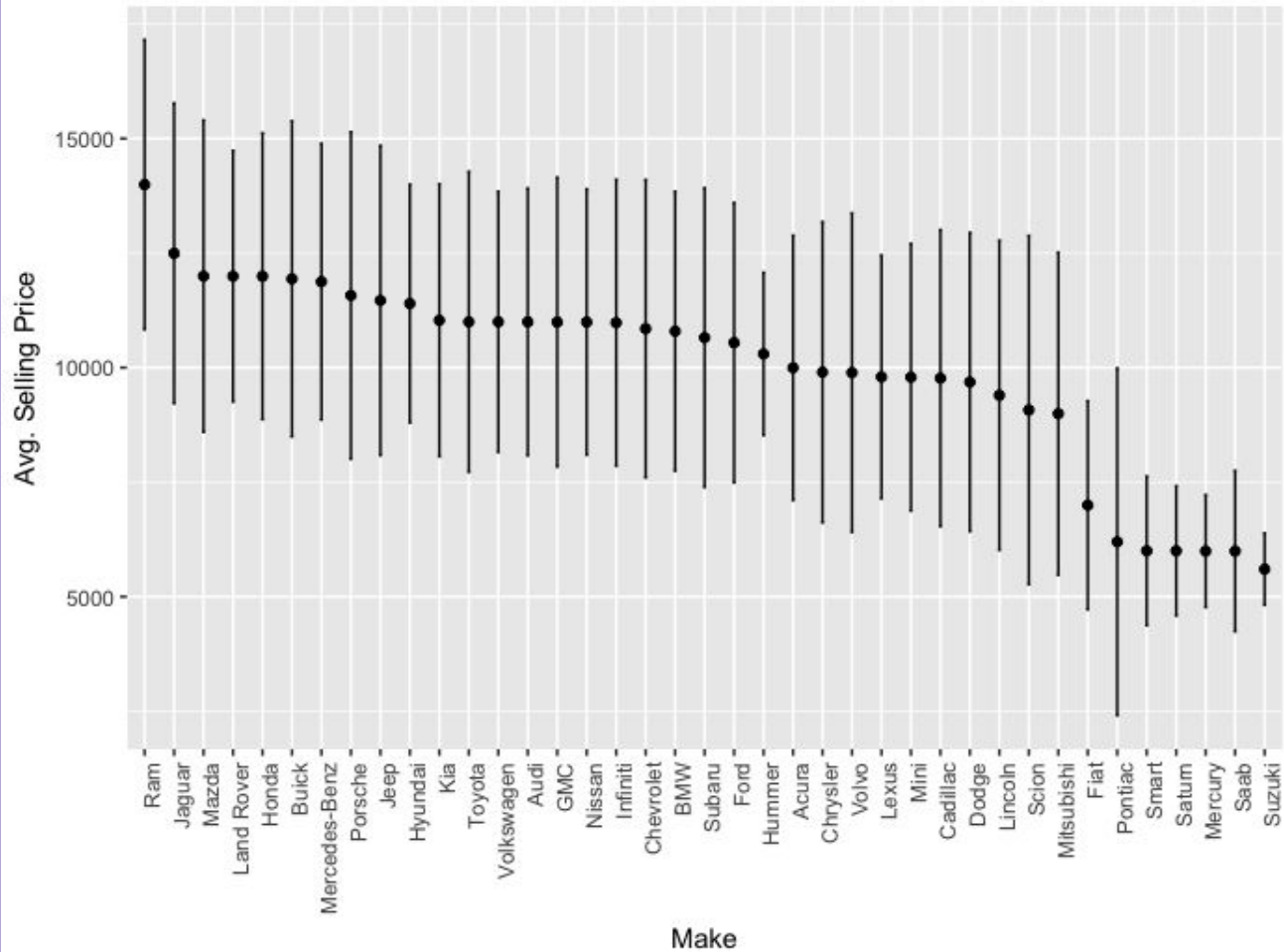
Used Car Resale Data: Price vs. Mileage



Used Car Resale Data: Mileage vs. Year



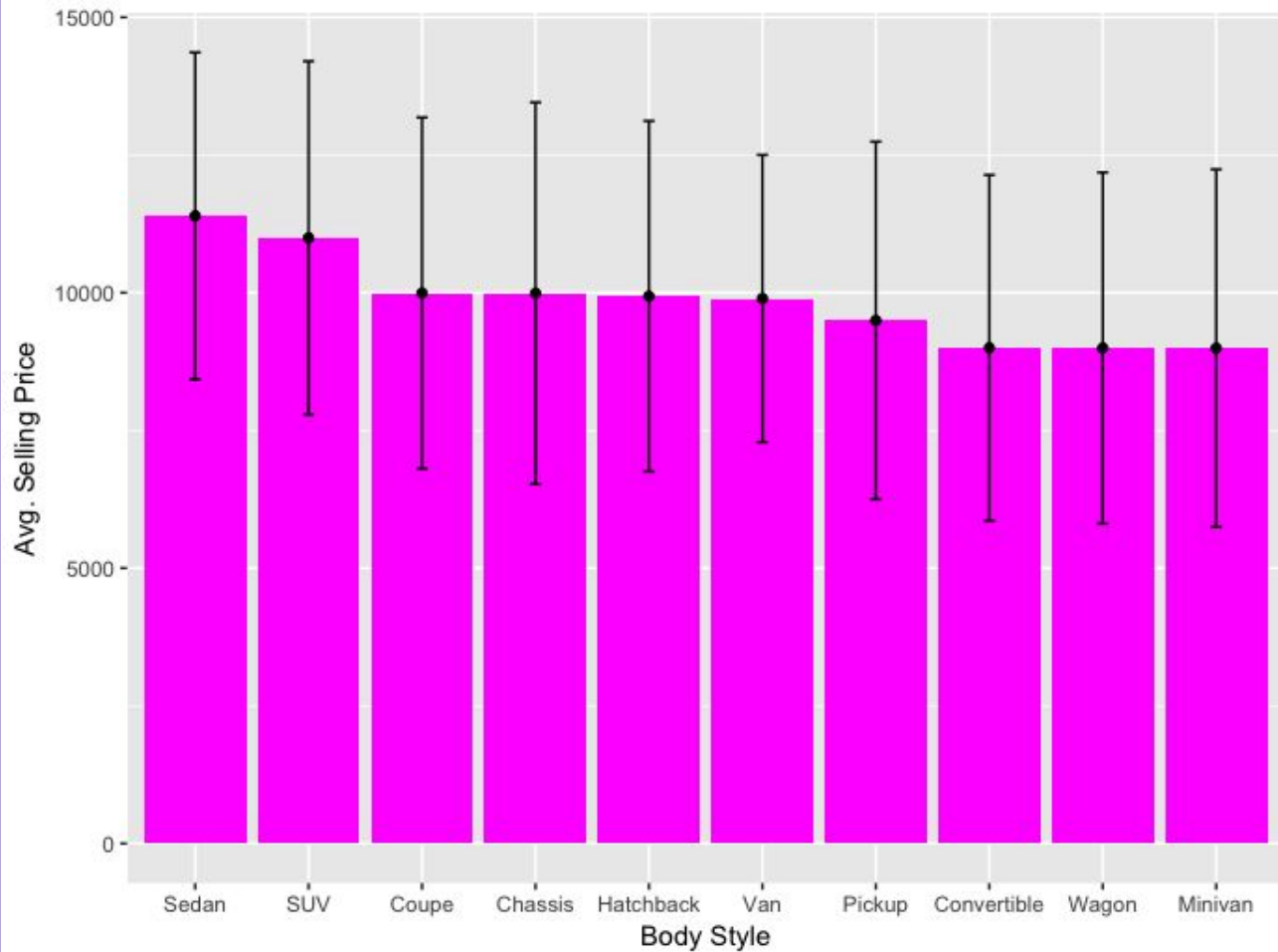
# Used Car Resale Data: Price vs. Make



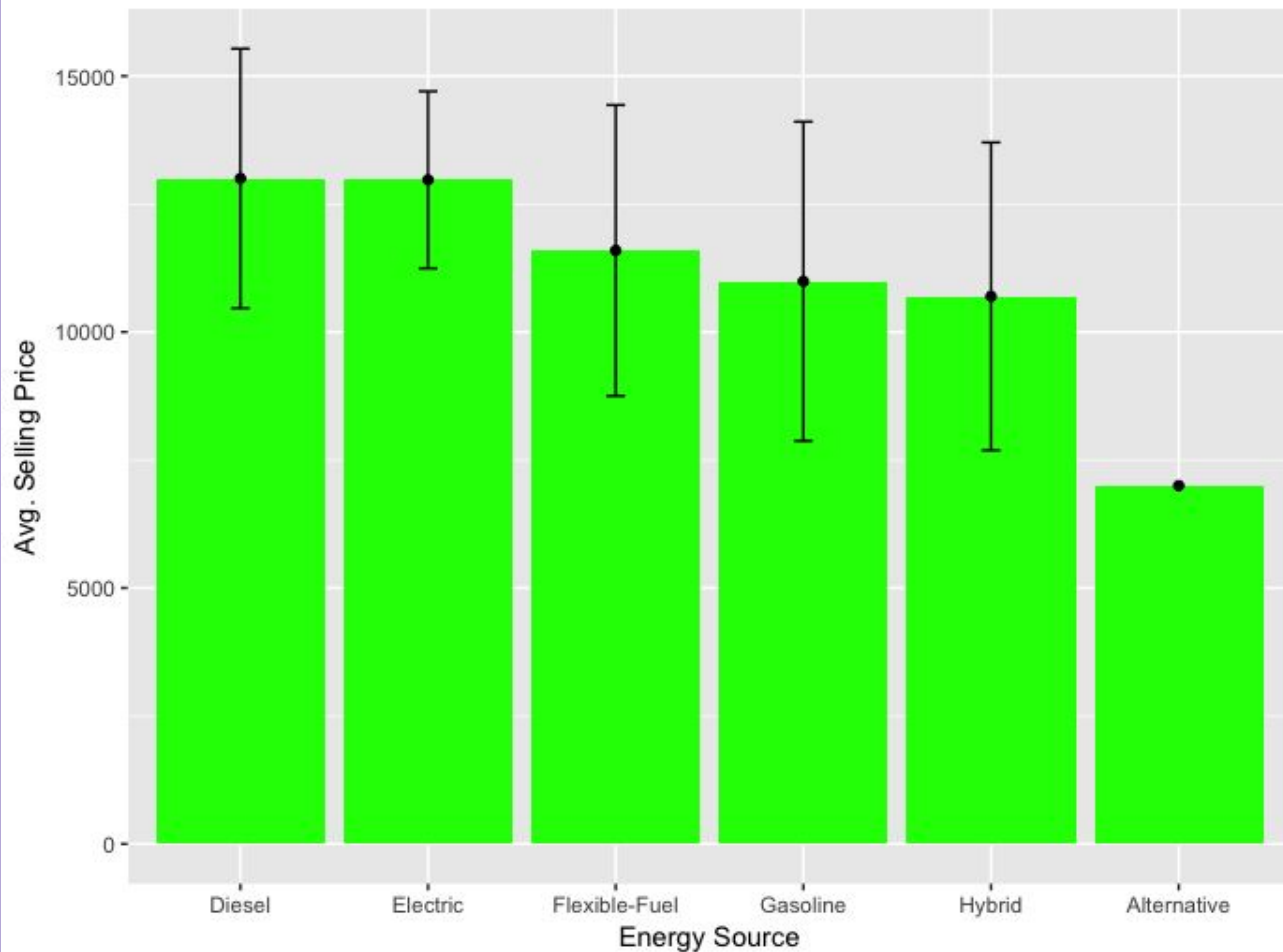
## Make

##	make	medianval	std
## 1	Ram	13995.0	3162.5919
## 2	Jaguar	12495.0	3276.3215
## 3	Mazda	11997.0	3402.4451
## 4	Land Rover	11995.0	2739.5943
## 5	Honda	11994.0	3125.9311
## 6	Buick	11938.0	3444.4390
## 7	Mercedes-Benz	11877.0	3014.2723
## 8	Porsche	11575.0	3567.6272
## 9	Jeep	11467.0	3379.7847
## 10	Hyundai	11399.0	2600.1233
## 11	Kia	11033.0	2973.5412
## 12	Toyota	10999.0	3280.6603
## 13	Volkswagen	10999.0	2844.6444
## 14	Audi	10998.0	2916.1142
## 15	GMC	10995.0	3156.8343
## 16	Nissan	10995.0	2900.4482
## 17	Infiniti	10980.0	3126.1959
## 18	Chevrolet	10849.5	3251.5422
## 19	BMW	10794.5	3049.2763
## 20	Subaru	10655.0	3264.3019
## 21	Ford	10544.5	3052.6072
## 22	Hummer	10298.0	1774.7533
## 23	Acura	9995.0	2891.0438
## 24	Chrysler	9900.0	3282.8165
## 25	Volvo	9890.0	3481.0095
## 26	Lexus	9797.0	2655.5260
## 27	Mini	9790.0	2914.1477
## 28	Cadillac	9770.0	3235.7789
## 29	Dodge	9685.0	3260.6616
## 30	Lincoln	9397.0	3379.5961
## 31	Scion	9074.5	3807.9695
## 32	Mitsubishi	8994.0	3521.0927
## 33	Fiat	6997.0	2275.1845
## 34	Pontiac	6197.5	3788.2106
## 35	Smart	6000.0	1627.0120
## 36	Saturn	5999.0	1414.8208
## 37	Mercury	5995.0	1225.8297
## 38	Saab	5995.0	1755.8748
## 39	Suzuki	5600.0	783.9877

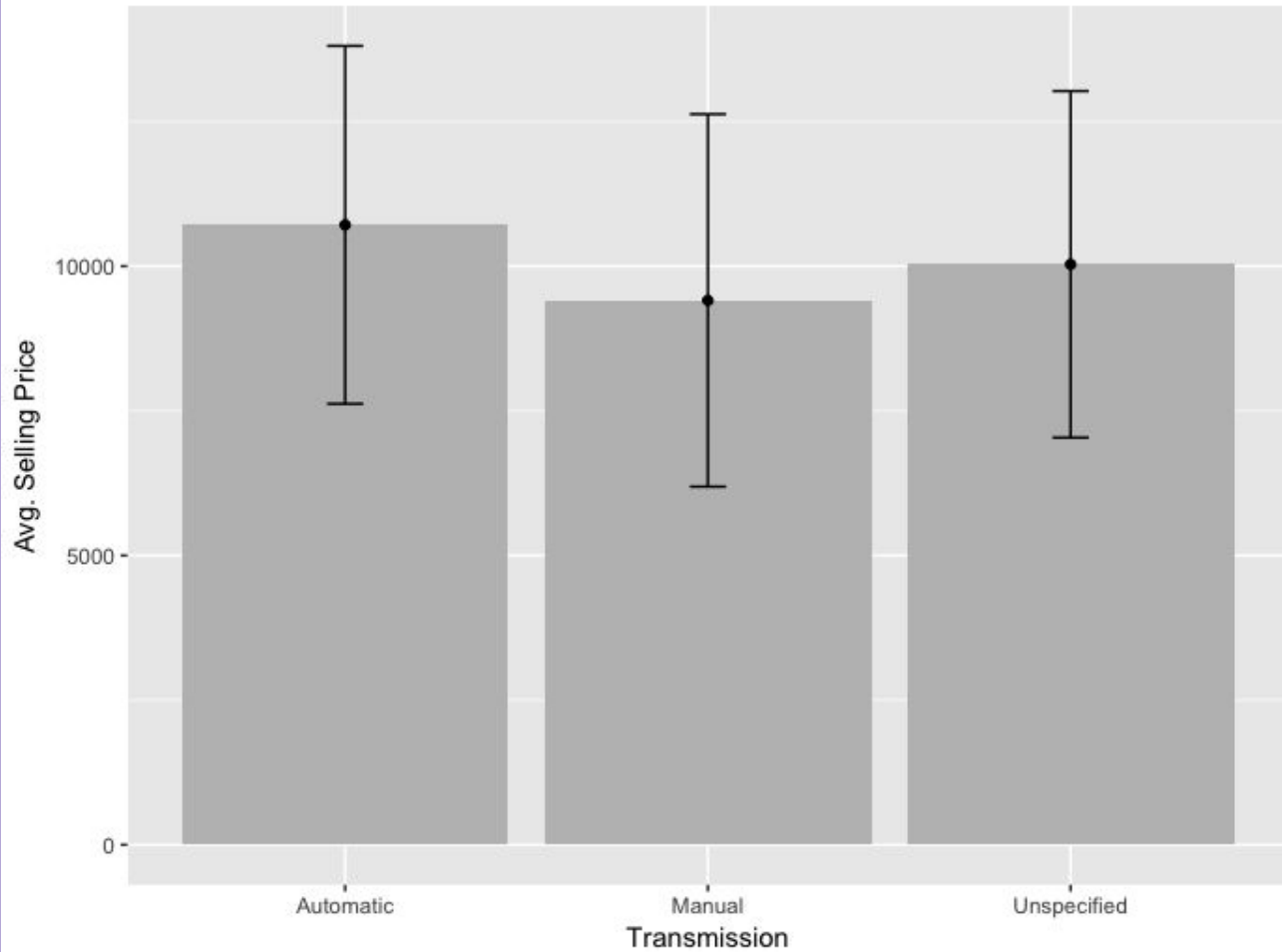
Used Car Resale Data: Price vs. Body Style



Used Car Resale Data: Price vs. Energy Source

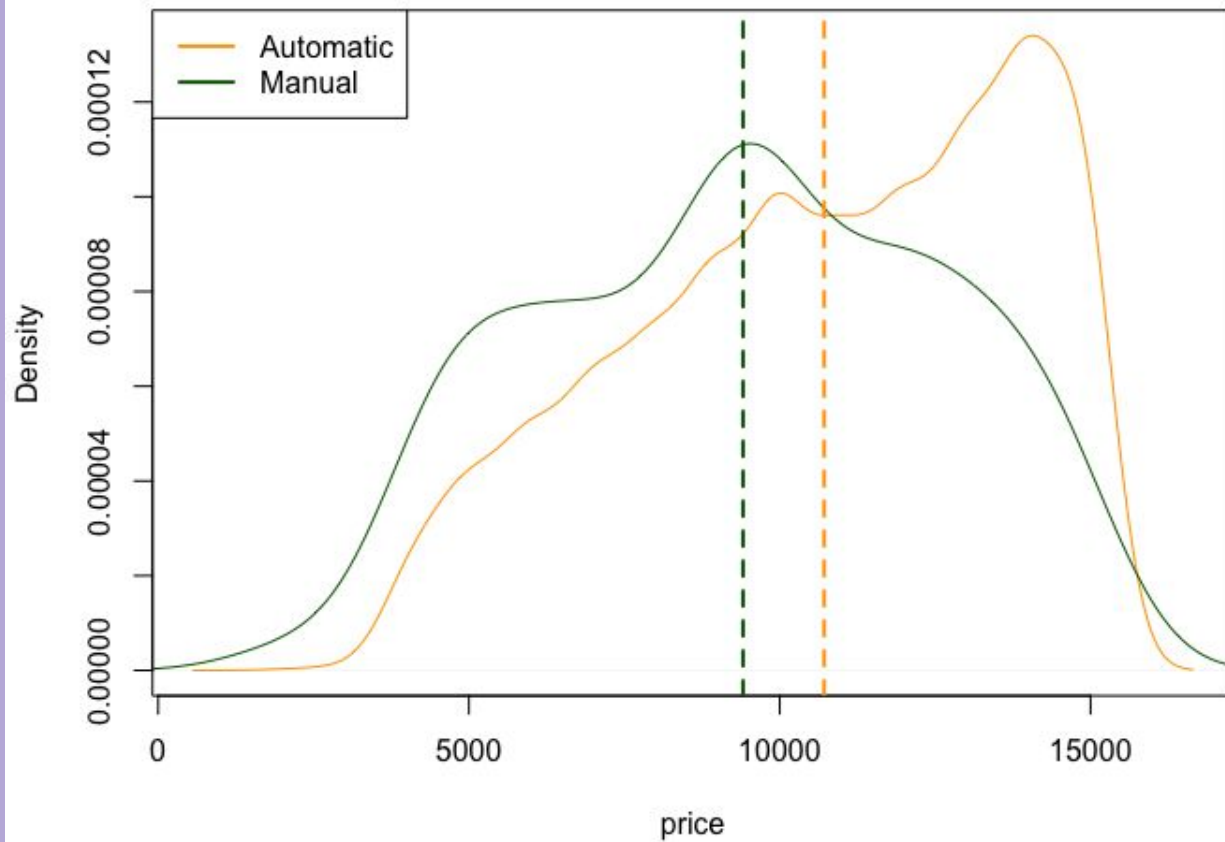


Used Car Resale Data: Price vs. Transmission Type



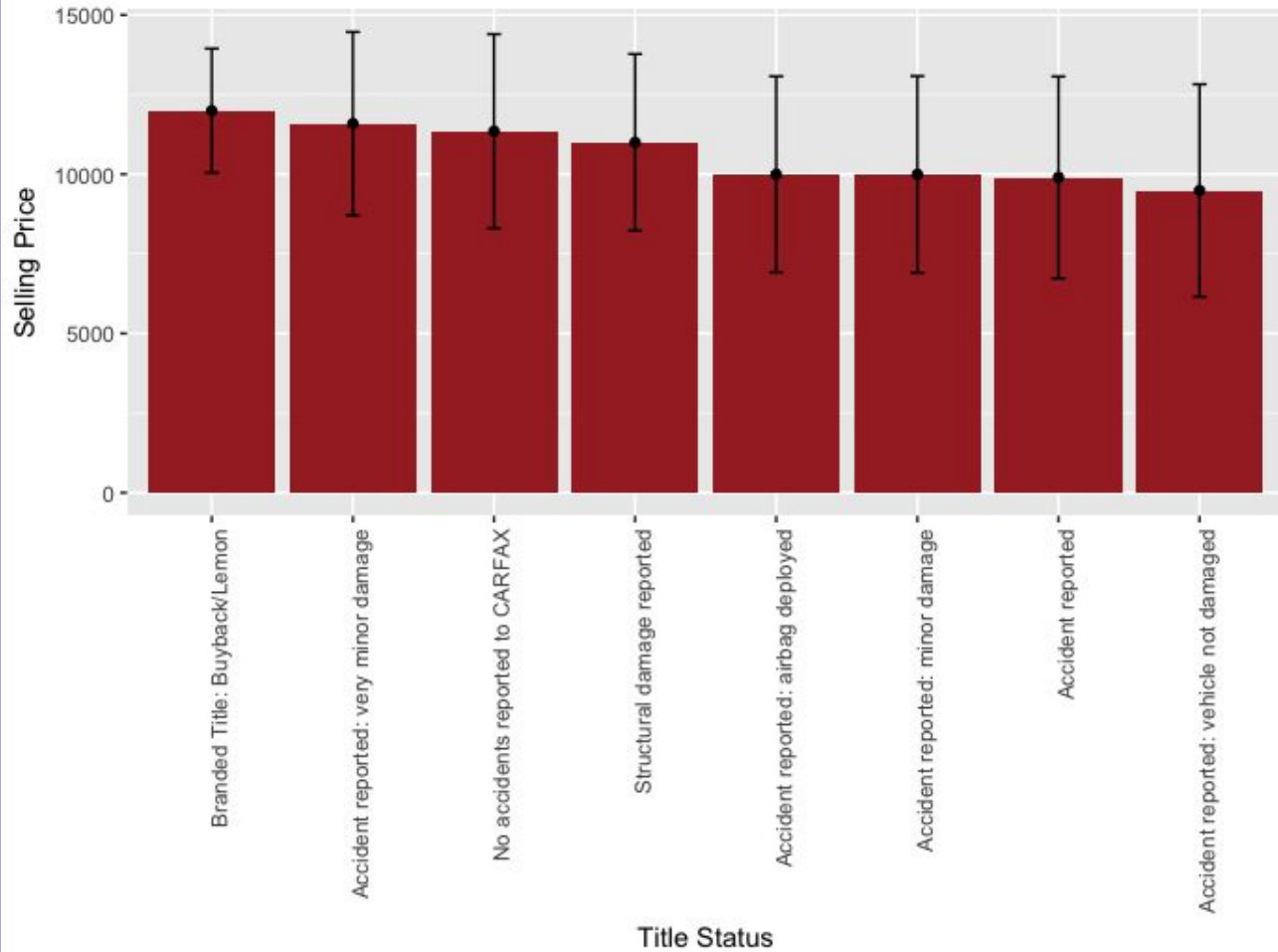


## Resale Value of Automatic vs. Manual Transmission

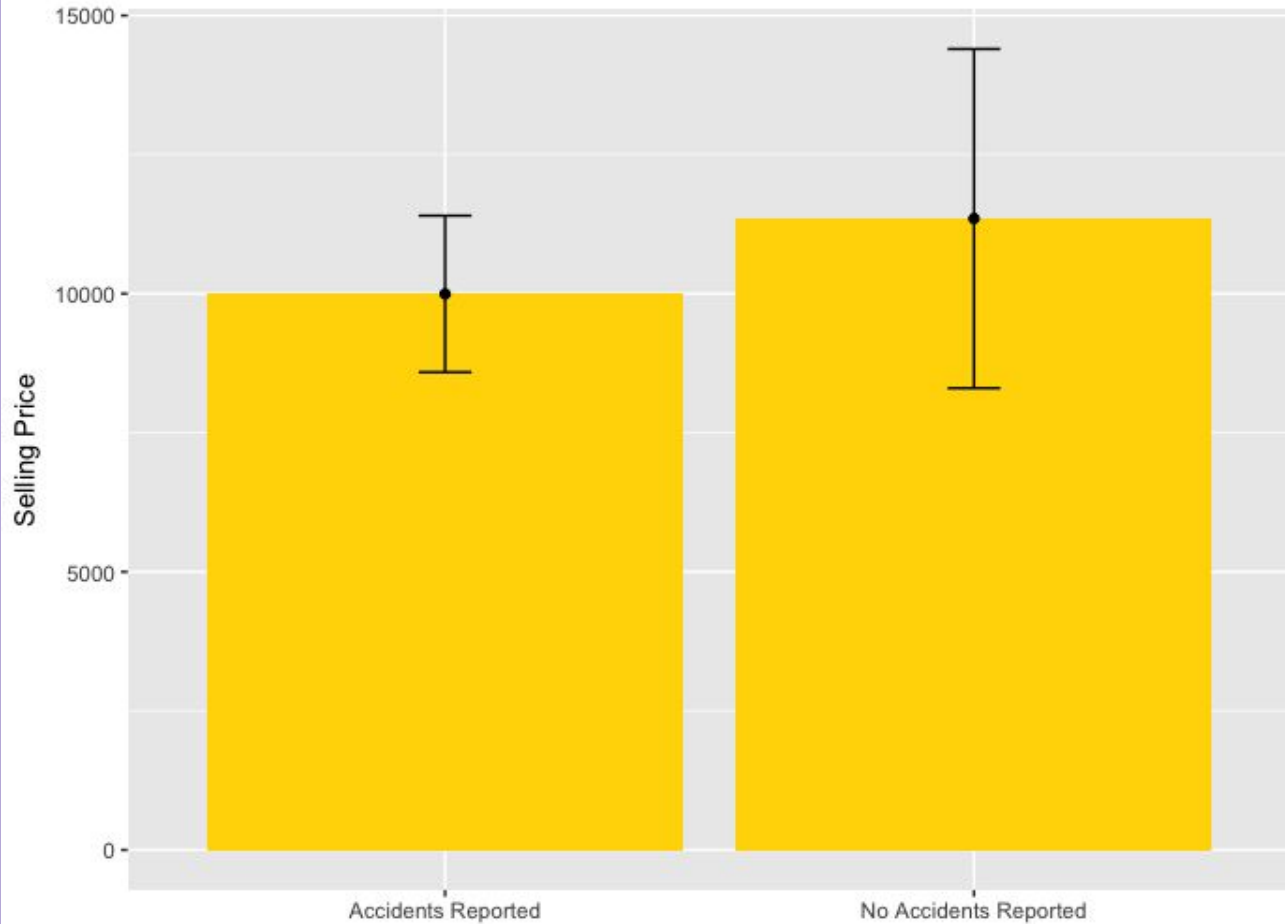


```
##  
## Welch Two Sample t-test  
##  
## data: withautomatic and withmanual  
## t = 6.4112, df = 277.62, p-value = 0.0000000006181  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## 905.0155 1707.0337  
## sample estimates:  
## mean of x mean of y  
## 10714.936 9408.911
```

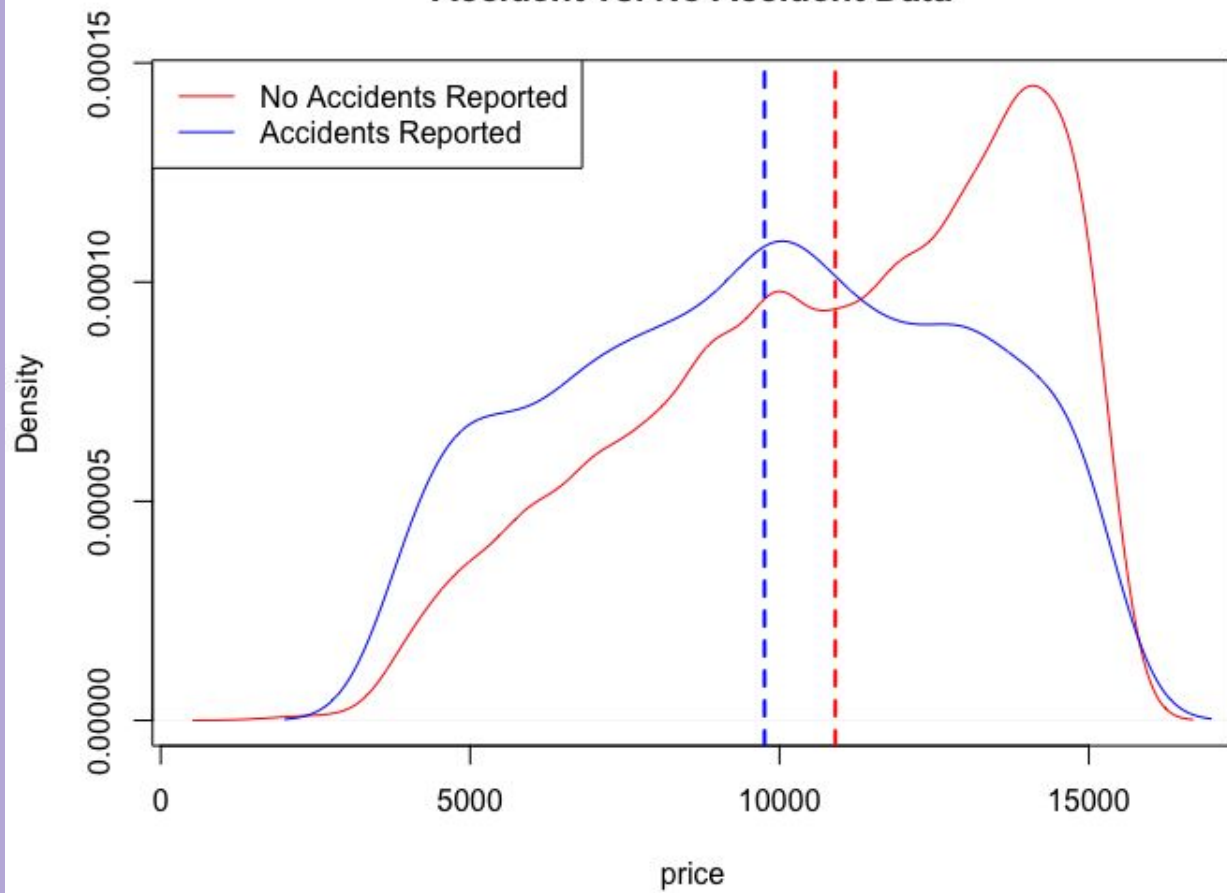
Comparing Used Cars by Title Status



Side-by-Side Used Car Accident vs. Non-Accident Comparison

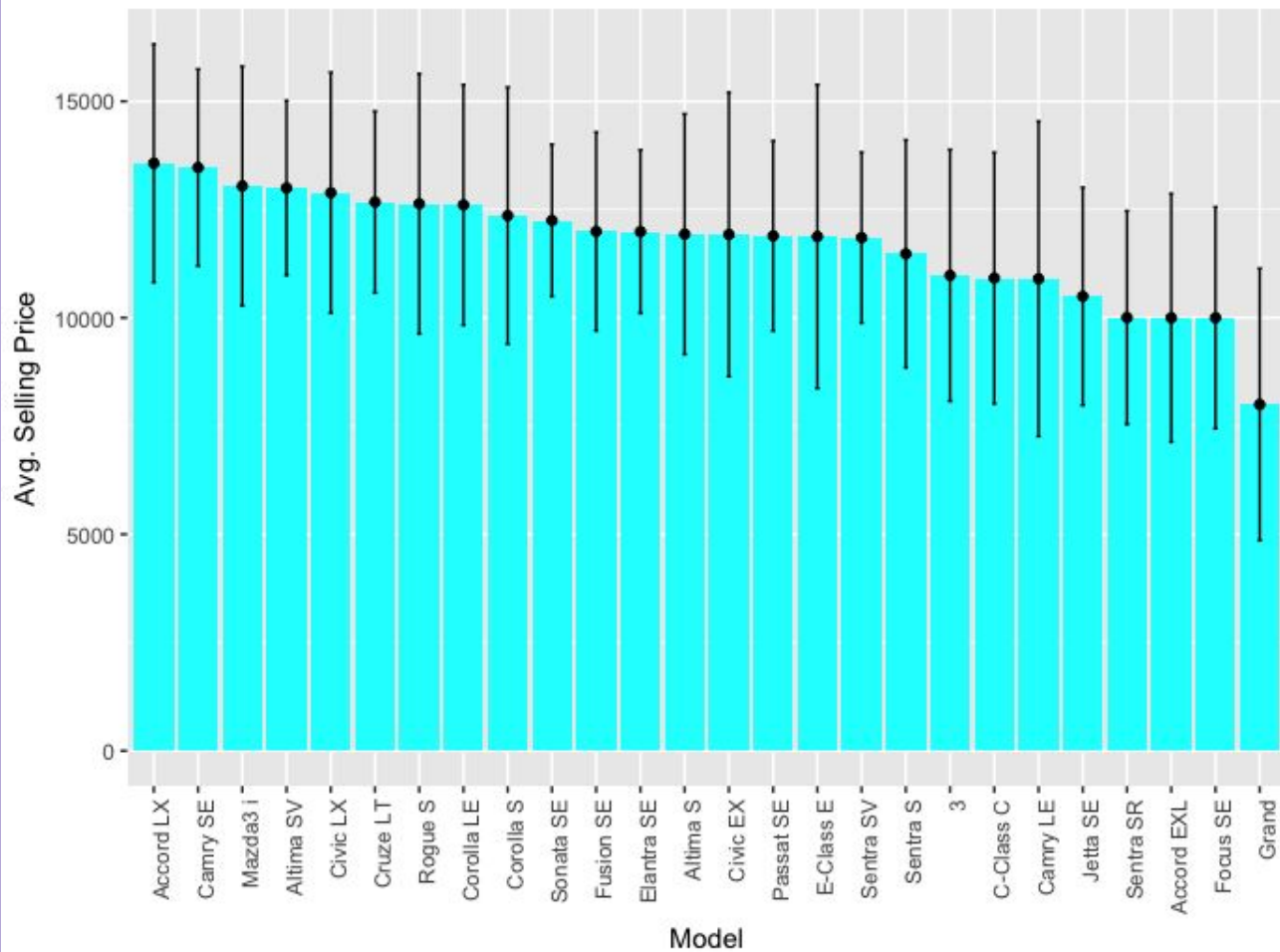


### Accident vs. No Accident Data



```
##  
## Welch Two Sample t-test  
##  
## data: withaccident and withoutaccident  
## t = -12.344, df = 2258.4, p-value < 2.2e-16  
## alternative hypothesis: true difference in means is not equal to 0  
## 95 percent confidence interval:  
## -1325.6244 -962.1869  
## sample estimates:  
## mean of x mean of y  
## 9758.947 10902.853
```

Used Car Resale Data: Price vs. Model (50 or More Data Points)



# Conclusions

1. An automatic transmission resells at \$1300 more than a manual transmission.
2. A used car without accidents reported resells at \$1350 more than a car with accidents reported.

Sedans resell better than other body types of used cars.

Interesting fact: Gold color cars resell the worst of all exterior colors.



# Conclusions

These results can be applied not only for those who are interested in purchasing a used car, but also for:

- **Those considering purchasing a new car.**
- **Whether or not to buy or lease a new car.**
- **Whether to sell a currently owned used car or keep it.**

# Dream Cars

Don't make much financial sense, but are really, really fun!

