My data (BMW, Chevy, Toyota, Kia):

Make	Model	Type	LowPrice	HighPrice	Drive	CityMPG	HwyMPG	FuelCap	Length	Width	Wheelbase	Height	UTurn	Weight	Acc030	Acc060	QtrMile	PageNum	Size
BMW	3 Series GT	Sedan	32.950	62.000	AWD	24	36	15.8	183	71	111	56	38	3485	2.6	6.3	14.9	106	Small
BMW	5 series	Sedan	49.950	93.600	AWD	20	29	18.5	193	73	117	57	40	4035	2.5	6.1	14.5	107	Midsized
BMW	7 Series	Sedan	74.000	141.200	AWD	14	22	21.7	205	75	126	58	42	4600	2.3	5.7	14.1	108	Large
BMW	Z4	Sporty	48.950	65.800	RWD	22	34	14.5	167	71	96	51	36	3240	2.4	6.1	14.7	111	Small
BMW	X1	SUV	31.200	39.100	RWD	22	33	16.6	175	71	104	61	40	3780	2.7	6.8	15.3	109	Small
Chevrolet	Spark	Hatchback	12.270	25.560	FWD	30	39	9.0	145	63	94	61	34	2345	4.4	12.8	19.4	123	Small
Chevrolet	Malibu	Sedan	22.465	30.480	FWD	22	34	18.5	192	73	108	58	38	3455	3.2	8.1	16.4	120	Midsized
Chevrolet	Impala	Sedan	27.060	40.660	FWD	18	28	18.5	201	73	112	59	40	3855	2.9	6.9	15.5	120	Large
Chevrolet	Camaro	Sporty	23.705	72.305	RWD	16	24	18.8	190	76	112	54	40	3900	2.3	5.1	13.6	117	Midsized
Chevrolet	Corvette	Sporty	55.000	83.000	RWD	17	29	18.0	177	74	107	49	38	3470	2.0	4.3	12.6	118	Small
Chevrolet	Suburban	SUV	49.000	66.785	RWD	15	22	26.0	224	81	130	74	45	5945	2.9	7.9	16.2	123	Large
Chevrolet	Traverse	SUV	30.995	43.935	FWD	16	23	22.0	204	78	119	70	42	4975	3.0	7.9	16.2	124	Large
Chevrolet	Tahoe	7Pass	46.300	64.085	RWD	16	22	26.0	204	81	116	74	41	5635	2.8	7.7	15.9	124	Large
Chevrolet	Cruze LS	Sedan	16.170	25.660	FWD	24	36	15.6	181	71	106	58	38	3140	3.7	9.8	17.6	119	Small
Kia	Rio	Sedan	13.990	18.290	FWD	28	36	11.3	172	68	101	57	37	2575	3.5	9.5	17.3	163	Small
Kia	Forte	Hatchback	15.890	21.890	FWD	25	36	13.2	180	70	106	57	38	2815	3.6	10.1	17.6	162	Small
Kia	Optima	Sedan	21.690	35.500	FWD	24	34	18.5	191	72	110	57	38	3260	3.4	8.6	16.8	163	Midsized
Kia	Cadenza	Sedan	34.000	43.800	FWD	19	28	18.5	196	73	112	58	38	3765	3.0	7.2	15.7	161	Midsized
Kia	Soul	Wagon	15.190	35.700	FWD	23	31	14.3	163	71	101	63	36	3055	3.3	8.8	16.9	165	Small
Toyota	Yaris	Hatchback	14.845	17.629	FWD	30	35	11.1	154	67	99	59	34	2385	3.9	10.8	18.3	216	Small
Toyota	Camry	Sedan	22.970	31.370	FWD	26	35	17.0	189	72	109	58	38	3155	3.3	8.6	16.7	210	Midsized
Toyota	Venza	Wagon	29.065	39.940	FWD	18	25	17.7	189	75	109	63	42	4125	2.6	6.9	15.3	216	Midsized
Toyota	4Runner	SUV	33.210	43.620	RWD	17	22	23.0	190	76	110	72	45	4665	3.0	7.7	16.1	209	Midsized
Toyota	Sienna	7Pass	28.600	46.150	FWD	18	24	20.9	200	78	119	69	40	4445	3.5	8.8	16.8	214	Large
Toyota	Highlander	7Pass	29.665	50.240	FWD	18	24	19.2	191	76	110	68	40	4490	2.9	7.5	15.9	211	Midsized
Toyota	Sequioa	7Pass	44.395	64.320	RWD	12	18	26.4	205	80	122	75	42	6025	2.7	7.1	15.6	214	Large

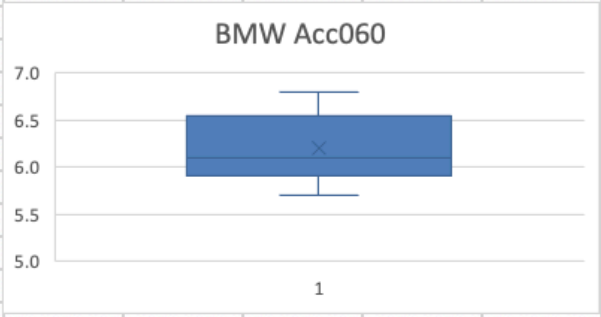
IA

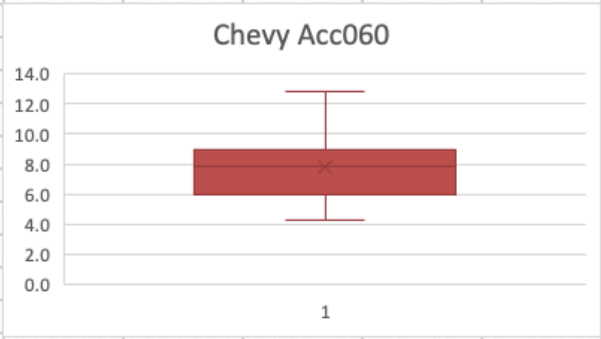
1. Descriptive statistics for Acc060 for each of the four makes (mean, median, mode, standard deviation, variance, five number summary). 4

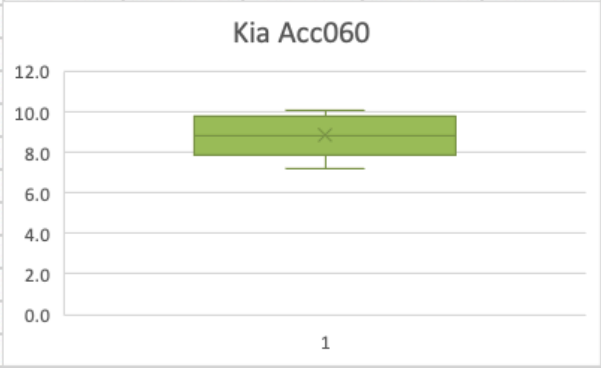
	A	B	C	D	E	F
1	Make	Model	Acc060		BMW Mean Acc060	6.2
2	BMW	3 Series GT	6.3		BMW Median Acc060	6.1
3	BMW	5 series	6.1		BMW Mode Acc060	6.1
4	BMW	7 Series	5.7		BMW Standard Deviation Acc060	0.4
5	BMW	Z4	6.1		BMW Variance Acc060	0.16
6	BMW	X1	6.8		BMW Five Number Summary Acc060:	
7	Chevrolet	Spark	12.8		BMW Minimum	5.7
8	Chevrolet	Malibu	8.1		BMW Q1	6.1
9	Chevrolet	Impala	6.9		BMW Median	6.1
10	Chevrolet	Camaro	5.1		BMW Q3	6.3
11	Chevrolet	Corvette	4.3		BMW Maximum	6.8
12	Chevrolet	Suburban	7.9			
13	Chevrolet	Traverse	7.9			
14	Chevrolet	Tahoe	7.7		Chevy Mean Acc060	7.8
15	Chevrolet	Cruze LS	9.8		Chevy Median Acc060	7.9
16	Kia	Rio	9.5		Chevy Mode Acc060	7.9
17	Kia	Forte	10.1		Chevy Standard Deviation Acc060	2.486463352
18	Kia	Optima	8.6		Chevy Variance Acc060	6.1825
19	Kia	Cadenza	7.2		Chevy Five Number Summary Acc060:	
20	Kia	Soul	8.8		Chevy Minimum	4.3
21	Toyota	Yaris	10.8		Chevy Q1	6.9
22	Toyota	Camry	8.6		Chevy Median	7.9
23	Toyota	Venza	6.9		Chevy Q3	8.1
24	Toyota	4Runner	7.7		Chevy Maximum	12.8
25	Toyota	Sienna	8.8			
26	Toyota	Highlander	7.5			
27	Toyota	Sequioa	7.1		Kia Mean Acc060	8.8
28					Kia Median Acc060	8.8
29					Kia Mode Acc060	#N/A
30					Kia Standard Deviation Acc060	1.092245394
31					Kia Variance Acc060	1.193
32					Kia Five Number Summary Acc060:	
33					Kia Minimum	7.2
34					Kia Q1	8.6
35					Kia Median	8.8
36					Kia Q3	9.5
37					Kia Maximum	10.1
38						
39						
40					Toyota Mean Acc060	8.2
41					Toyota Median Acc060	7.7
42					Toyota Mode Acc060	#N/A
43					Toyota Standard Deviation Acc060	1.349073756
44					Toyota Variance Acc060	1.82
45					Toyota Five Number Summary Acc060:	
46					Toyota Minimum	6.9
47					Toyota Q1	7.3
48					Toyota Median	7.7
49					Toyota Q3	8.7
50					Toyota Maximum	10.8

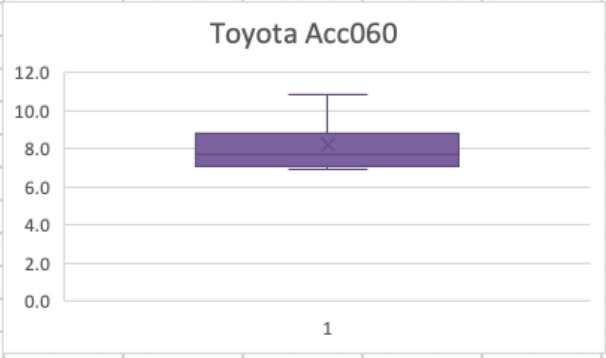
2. Box plots for each of the 4 makes and comments. 6

	Make	Model	Acc060
1	BMW	3 Series GT	6.3
2	BMW	5 series	6.1
3	BMW	7 Series	5.7
4	BMW	Z4	6.1
5	BMW	X1	6.8
6	Chevrolet	Spark	12.8
7	Chevrolet	Malibu	8.1
8	Chevrolet	Impala	6.9
9	Chevrolet	Camaro	5.1
10	Chevrolet	Corvette	4.3
11	Chevrolet	Suburban	7.9
12	Chevrolet	Traverse	7.9
13	Chevrolet	Tahoe	7.7
14	Chevrolet	Cruze LS	9.8
15	Kia	Rio	9.5
16	Kia	Forte	10.1
17	Kia	Optima	8.6
18	Kia	Cadenza	7.2
19	Kia	Soul	8.8
20	Toyota	Yaris	10.8
21	Toyota	Camry	8.6
22	Toyota	Venza	6.9
23	Toyota	4Runner	7.7
24	Toyota	Sienna	8.8
25	Toyota	Highlander	7.5
26	Toyota	Sequioa	7.1









The box plot for BMW Acc060 is positively (right) skewed.

The box plot for Chevy Acc060 is negatively (left) skewed.

The box plot for Kia Acc060 is symmetric.

The box plot for Toyota Acc060 is positively (right) skewed.

IB

1. Pie chart on Lowest price by make. **4**

	A	B	C	D	E	F	G	H	I
1	Make	Model	LowPrice		Total BMW	237.050			
2	BMW	3 Series GT	32.950		Total Chevy	282.965			
3	BMW	5 series	49.950		Total Kia	100.760			
4	BMW	7 Series	74.000		Total Toyota	202.750			
5	BMW	Z4	48.950		Total Lowest Price	823.525			
6	BMW	X1	31.200						
7	Chevrolet	Spark	12.270		BMW Proportion	0.28784797			
8	Chevrolet	Malibu	22.465		Chevy Proportion	0.3436022			
9	Chevrolet	Impala	27.060		Kia Proportion	0.12235208			
10	Chevrolet	Camaro	23.705		Toyota Proportion	0.24619775			
11	Chevrolet	Corvette	55.000						
12	Chevrolet	Suburban	49.000		Make	Percentage			
13	Chevrolet	Traverse	30.995		BMW	28.7847971			
14	Chevrolet	Tahoe	46.300		Chevrolet	34.3602198			
15	Chevrolet	Cruze LS	16.170		Kia	12.2352084			
16	Kia	Rio	13.990		Toyota	24.6197747			
17	Kia	Forte	15.890						
18	Kia	Optima	21.690						
19	Kia	Cadenza	34.000						
20	Kia	Soul	15.190						
21	Toyota	Yaris	14.845						
22	Toyota	Camry	22.970						
23	Toyota	Venza	29.065						
24	Toyota	4Runner	33.210						
25	Toyota	Sienna	28.600						
26	Toyota	Highlander	29.665						
27	Toyota	Sequioa	44.395						
28									
29									
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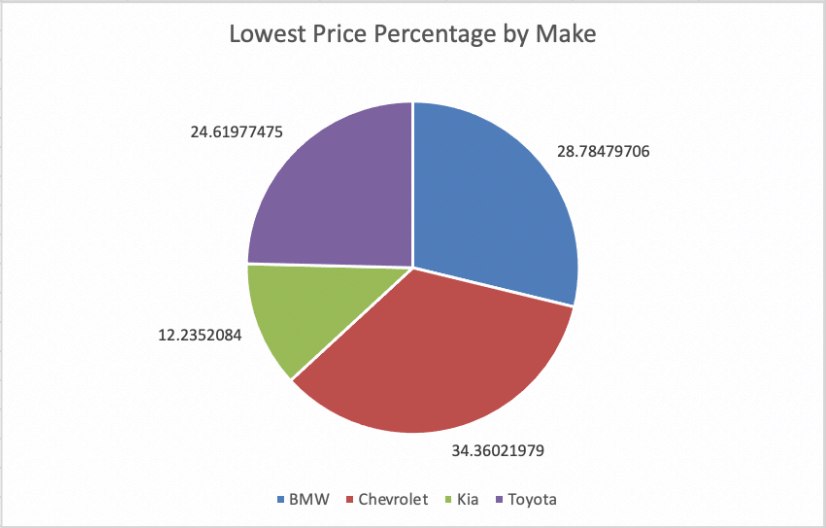
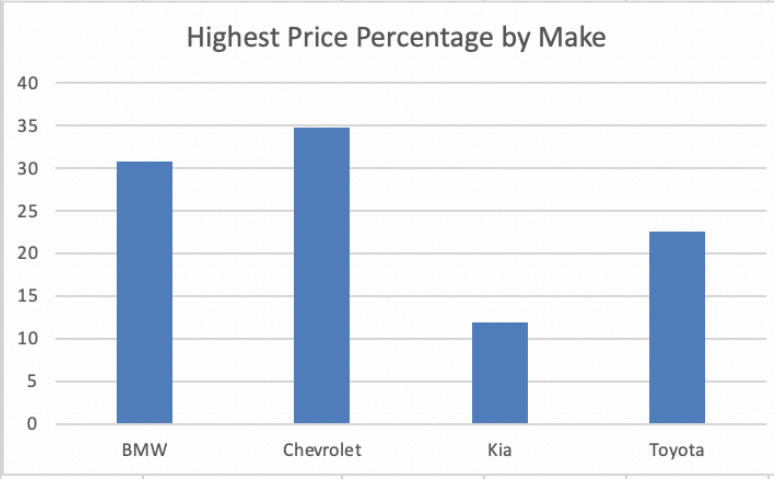
31									
32									
33									
34									



2. Bar graph on Highest Price by make. **4**

	A	B	C	D	E	F	G	H
1	Make	Model	HighPrice		Total BMW	401.700		
2	BMW	3 Series GT	62.000		Total Chevy	452.470		
3	BMW	5 series	93.600		Total Kia	155.180		
4	BMW	7 Series	141.200		Total Toyota	293.269		
5	BMW	Z4	65.800		Total Lowest Price	1302.619		
6	BMW	X1	39.100					
7	Chevrolet	Spark	25.560		BMW Proportion	0.30837874		
8	Chevrolet	Malibu	30.480		Chevy Proportion	0.34735406		
9	Chevrolet	Impala	40.660		Kia Proportion	0.11912923		
10	Chevrolet	Camaro	72.305		Toyota Proportion	0.22513797		
11	Chevrolet	Corvette	83.000					
12	Chevrolet	Suburban	66.785		Make	Percentage		
13	Chevrolet	Traverse	43.935		BMW	30.8378735		
14	Chevrolet	Tahoe	64.085		Chevrolet	34.7354061		
15	Chevrolet	Cruze LS	25.660		Kia	11.9129231		
16	Kia	Rio	18.290		Toyota	22.5137972		
17	Kia	Forte	21.890					
18	Kia	Optima	35.500					
19	Kia	Cadenza	43.800					
20	Kia	Soul	35.700					
21	Toyota	Yaris	17.629					
22	Toyota	Camry	31.370					
23	Toyota	Venza	39.940					
24	Toyota	4Runner	43.620					
25	Toyota	Sienna	46.150					
26	Toyota	Highlander	50.240					
27	Toyota	Sequioa	64.320					
28								
29								
30								



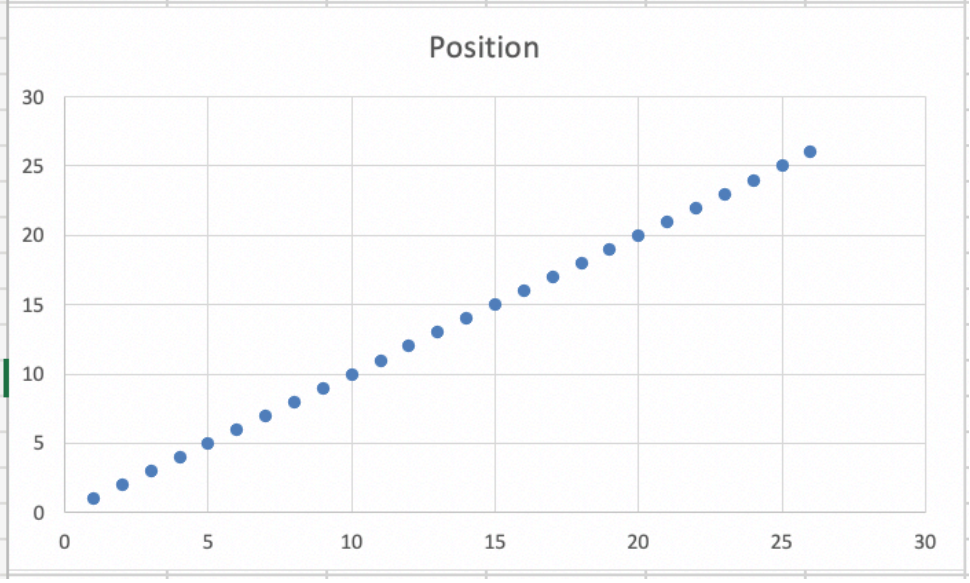
II.

1. **99% confidence interval for the average City Mileage for the 4 makes combined. 8**
2. **Full descriptive statistics with the confidence interval (mean, median, mode, standard deviation, variance, five number summary). 4**

	A	B	C	D	E	F
1	Make	Model	CityMPG		CityMPG Mean	20.5384615
2	BMW	3 Series GT	24		CityMPG Median	19.5
3	BMW	5 series	20		CityMPG Mode	18
4	BMW	7 Series	14		CityMPG Standard Deviation	4.87631639
5	BMW	Z4	22		CityMPG Variance	23.7784615
6	BMW	X1	22		Five Number Summary CityMPG:	
7	Chevrolet	Spark	30		CityMPG Minimum	12
8	Chevrolet	Malibu	22		CityMPG Q1	17
9	Chevrolet	Impala	18		CityMPG Median	19.5
10	Chevrolet	Camaro	16		CityMPG Q3	24
11	Chevrolet	Corvette	17		CityMPG Maximum	30
12	Chevrolet	Suburban	15			
13	Chevrolet	Traverse	16		CityMPG Confidence Level (99.0%)	2.66569267
14	Chevrolet	Tahoe	16		CityMPG Upper CI (99.0%)	23.2041542
15	Chevrolet	Cruze LS	24		CityMPG Lower CI (99.0%)	17.8727689
16	Kia	Rio	28			
17	Kia	Forte	25			
18	Kia	Optima	24			
19	Kia	Cadenza	19			
20	Kia	Soul	23			
21	Toyota	Yaris	30			
22	Toyota	Camry	26			
23	Toyota	Venza	18			
24	Toyota	4Runner	17			
25	Toyota	Sienna	18			
26	Toyota	Highlander	18			
27	Toyota	Sequioa	12			

3. Normal probability plot and comments. **4**

	A	B	C	D	E	F
1	Make	Model	CityMPG	Position	f_i	z-value
2	Toyota	Sequioa	12	1	0.02380952	-1.9807524
3	BMW	7 Series	14	2	0.06190476	-1.53897859
4	Chevrolet	Suburban	15	3	0.1	-1.28155157
5	Chevrolet	Camaro	16	4	0.13809524	-1.08891703
6	Chevrolet	Traverse	16	5	0.17619048	-0.92998094
7	Chevrolet	Tahoe	16	6	0.21428571	-0.79163861
8	Chevrolet	Corvette	17	7	0.25238095	-0.66701601
9	Toyota	4Runner	17	8	0.29047619	-0.55199412
10	Chevrolet	Impala	18	9	0.32857143	-0.44386131
11	Toyota	Venza	18	10	0.36666667	-0.34069483
12	Toyota	Sienna	18	11	0.4047619	-0.24104039
13	Toyota	Highlander	18	12	0.44285714	-0.14372923
14	Kia	Cadenza	19	13	0.48095238	-0.04776346
15	BMW	5 series	20	14	0.51904762	0.04776346
16	BMW	Z4	22	15	0.55714286	0.14372923
17	BMW	X1	22	16	0.5952381	0.24104039
18	Chevrolet	Malibu	22	17	0.63333333	0.34069483
19	Kia	Soul	23	18	0.67142857	0.44386131
20	BMW	3 Series GT	24	19	0.70952381	0.55199412
21	Chevrolet	Cruze LS	24	20	0.74761905	0.66701601
22	Kia	Optima	24	21	0.78571429	0.79163861
23	Kia	Forte	25	22	0.82380952	0.92998094
24	Toyota	Camry	26	23	0.86190476	1.08891703
25	Kia	Rio	28	24	0.9	1.28155157
26	Chevrolet	Spark	30	25	0.93809524	1.53897859
27	Toyota	Yaris	30	26	0.97619048	1.9807524



Yes, this data is normally distributed.

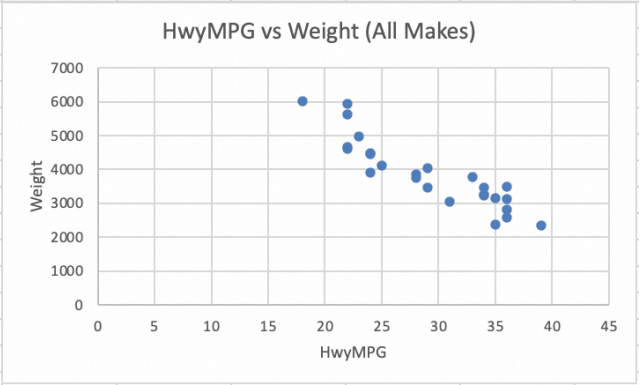
4. **Interpretation of the Confidence Interval in terms of the problem. 2**

We are 99% certain that the average City Mileage for the population is between 17.8727689 and 23.2041542.

III

1. **Correlation between 2 continuous variables in your data (I chose highway mileage and weight). 5**
2. **One combined scatter diagram reflecting the 4 makes. 5**
3. **Comments on the correlation. 2**

	A	B	C	D	E	F	G	H	I	J	K
1	Make	Model	HwyMPG	Weight		Correlation	-0.905127				
2	BMW	3 Series GT	36	3485							
3	BMW	5 series	29	4035							
4	BMW	7 Series	22	4600							
5	BMW	Z4	34	3240							
6	BMW	X1	33	3780							
7	Chevrolet	Spark	39	2345							
8	Chevrolet	Malibu	34	3455							
9	Chevrolet	Impala	28	3855							
10	Chevrolet	Camaro	24	3900							
11	Chevrolet	Corvette	29	3470							
12	Chevrolet	Suburban	22	5945							
13	Chevrolet	Traverse	23	4975							
14	Chevrolet	Tahoe	22	5635							
15	Chevrolet	Cruze LS	36	3140							
16	Kia	Rio	36	2575							
17	Kia	Forte	36	2815							
18	Kia	Optima	34	3260							
19	Kia	Cadenza	28	3765							
20	Kia	Soul	31	3055							
21	Toyota	Yaris	35	2385							
22	Toyota	Camry	35	3155							
23	Toyota	Venza	25	4125							
24	Toyota	4Runner	22	4665							
25	Toyota	Sienna	24	4445							
26	Toyota	Highlander	24	4490							
27	Toyota	Sequioa	18	6025							



Highway mileage and weight are negatively correlated, meaning the higher the highway mileage of a car, the lower its weight and vice versa.

IV. Sort by wheelbase by less than 105 and >= 105.

1. **Comparing mean diameter needed for U turn.** **3**

E	F	G	H	I	J
Wheelbase <105					
Make	Model	Wheelbase	UTurn	Mean UTurn Diameter for Wheelbase <105	36.1666667
Chevrolet	Spark	94	34	S.D. UTurn Diameter for Wheelbase <105	2.22860195
BMW	Z4	96	36		
Toyota	Yaris	99	34		
Kia	Rio	101	37		
Kia	Soul	101	36		
BMW	X1	104	40		
Wheelbase >=105					
Chevrolet	Cruze LS	106	38	Mean UTurn Diameter for Wheelbase >=105	40.15
Kia	Forte	106	38	S.D. UTurn Diameter for Wheelbase >=105	2.27746396
Chevrolet	Corvette	107	38		
Chevrolet	Malibu	108	38		
Toyota	Camry	109	38		
Toyota	Venza	109	42		
Kia	Optima	110	38		
Toyota	4Runner	110	45		
Toyota	Highlander	110	40		
BMW	3 Series GT	111	38		
Chevrolet	Impala	112	40		
Chevrolet	Camaro	112	40		
Kia	Cadenza	112	38		
Chevrolet	Tahoe	116	41		
BMW	5 series	117	40		
Chevrolet	Traverse	119	42		
Toyota	Sienna	119	40		
Toyota	Sequioa	122	42		
BMW	7 Series	126	42		
Chevrolet	Suburban	130	45		

Test whether the means are unequal. Use alpha =0.01. Use appropriate test for comparing two means:

2. **Null and Alternate Hypotheses** **2**

The null hypothesis is that the mean U Turn diameter for cars with a wheelbase less than 105 is equal to the mean U Turn diameter for cars with a wheelbase greater than or equal to 105.

The alternate hypothesis is that the mean U Turn diameter for cars with a wheelbase less than 105 is NOT equal to the mean U Turn diameter for cars with a wheelbase greater than or equal to 105.

In other words, H_0: $\mu_1 - \mu_2 = 0$ and H_a: $\mu_1 - \mu_2 \neq 0$ where μ_1 = the mean U Turn diameter for cars with a wheelbase less than 105 and μ_2 = the mean U Turn diameter for cars with a wheelbase greater than or equal to 105.

3. An appropriate test for comparing the two means. 5

t-Test: Two-Sample Assuming Unequal Variances		
	Variable 1	*Variable 2*
Mean	36.16666667	40.15
Variance	4.966666667	5.18684211
Observations	6	20
Hypothesized Mean Difference	0	
df	8	
t Stat	-3.820392036	
P(T<=t) one-tail	0.002543444	
t Critical one-tail	1.859548038	
P(T<=t) two-tail	0.005086888	
t Critical two-tail	2.306004135	

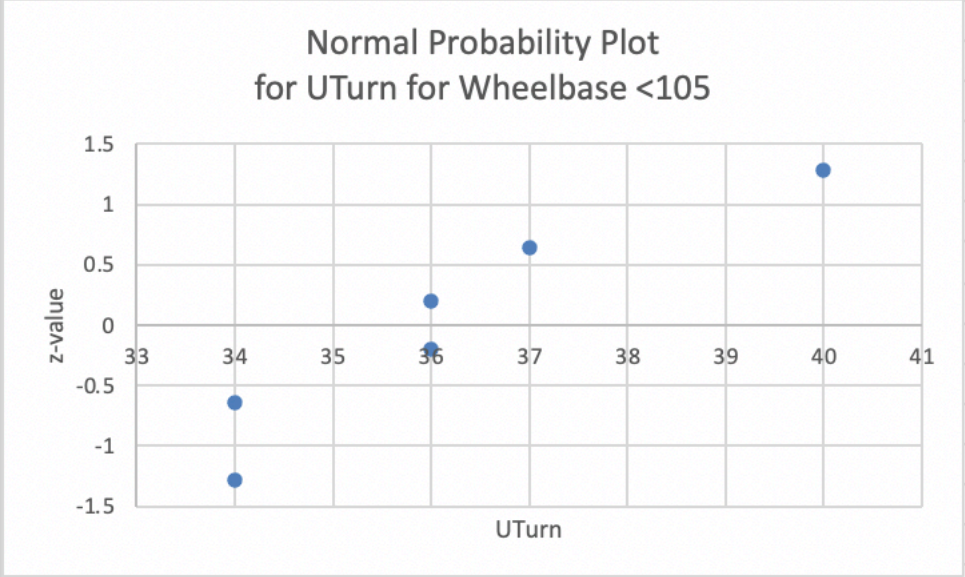
Variable 1 here is the U Turn diameter for cars with a wheelbase less than 105, while Variable 2 is the U Turn diameter for cars with a wheelbase greater than or equal to 105.

4. Explanation as to why the test I used is appropriate for the problem. 2

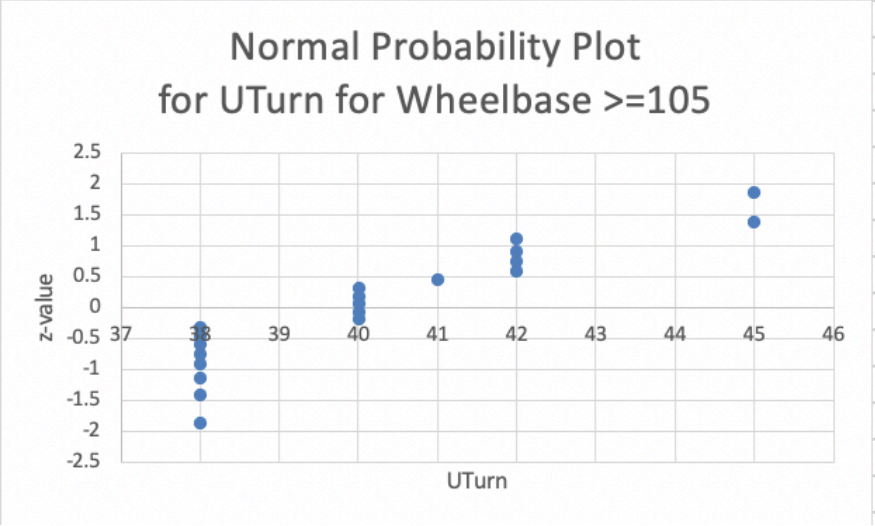
A t-test is appropriate here because our sample size is small and the population variance is unknown. We assumed unequal variances because we cannot be sure if the population variances are equal. We will use the two-tailed test here because we are interested in whether the two means are different (not just if one is greater than the other or just if one is less than the other).

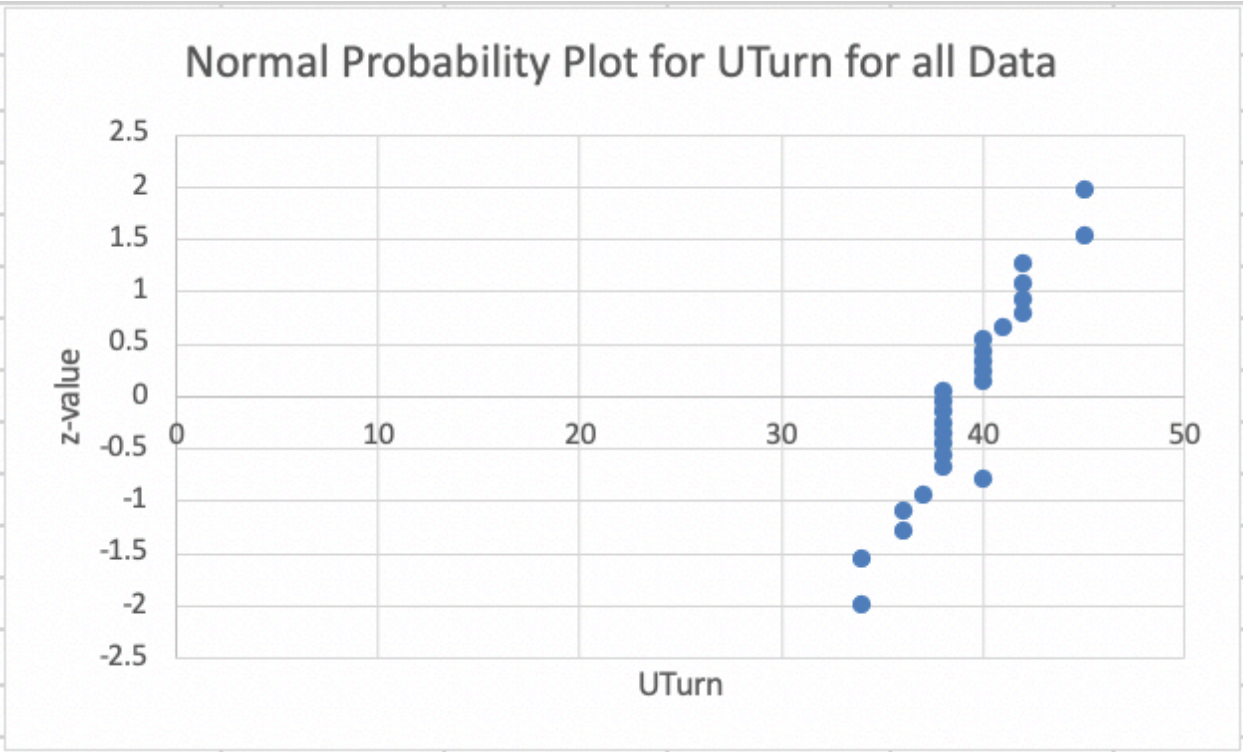
5. Obtain the normal probability plot. Are the two populations normally distributed? 3

AA	AB	AC	AD	AE	AF
UTurn	Position	f_i	z-value		
34	1	0.1	-1.2815516		
34	2	0.26	-0.6433454		
36	3	0.42	-0.2018935		
36	4	0.58	0.20189348		
37	5	0.74	0.64334541		
40	6	0.9	1.28155157		



Uturn	Position	f_i	z-value		
38	1	0.0308642	-1.8682417		
38	2	0.08024691	-1.4034126		
38	3	0.12962963	-1.1281436		
38	4	0.17901235	-0.9191355		
38	5	0.22839506	-0.7441427		
38	6	0.27777778	-0.5894558		
38	7	0.32716049	-0.4477675		
38	8	0.37654321	-0.3145723		
40	9	0.42592593	-0.1867561		
40	10	0.47530864	-0.0619316		
40	11	0.52469136	0.06193162		
40	12	0.57407407	0.18675612		
40	13	0.62345679	0.31457229		
41	14	0.67283951	0.44776752		
42	15	0.72222222	0.5894558		
42	16	0.77160494	0.74414274		
42	17	0.82098765	0.91913552		
42	18	0.87037037	1.12814365		
45	19	0.91975309	1.40341264		
45	20	0.9691358	1.86824165		





Yes, the two populations are approximately normally distributed because their normal probability plots are approximately linear.

6. Conclusion based on my results. 2

Since the p-value for our two-tailed t-test is 0.005086888, which is less than alpha =0.01, we will reject the null hypothesis and conclude that the mean U Turn diameter for cars with a wheelbase less than 105 is NOT equal to the mean U Turn diameter for cars with a wheelbase greater than or equal to 105.

V. **Regression Analysis:**

1. Choose one independent variable and a dependent variable. 2

Independent variable: Weight

Dependent variable: Acc030

C	D
Weight	Acc030
3485	2.6
4035	2.5
4600	2.3
3240	2.4
3780	2.7
2345	4.4
3455	3.2
3855	2.9
3900	2.3
3470	2.0
5945	2.9
4975	3.0
5635	2.8
3140	3.7
2575	3.5
2815	3.6
3260	3.4
3765	3.0
3055	3.3
2385	3.9
3155	3.3
4125	2.6
4665	3.0
4445	3.5
4490	2.9
6025	2.7

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.48523333
R Square	0.23545139
Adjusted R Sq	0.2035952
Standard Error	0.49378375
Observations	26

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	1	1.8021087	1.8021087	7.39107133	0.01198247
Residual	24	5.85173745	0.24382239		
Total	25	7.65384615			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	4.04303667	0.39020787	10.3612383	2.447E-10	3.23768722	4.84838613	3.23768722	4.84838613
Weight	-0.0002655	9.7675E-05	-2.7186525	0.01198247	-0.0004671	-6.395E-05	-0.0004671	-6.395E-05

2. Obtain regression equation. **4**

The regression equation obtained from the above output is

Acc030=-0.0002655*Weight+4.04303667

3. Calculate R2 and interpret **3**

R2=0.23545139. This means that 23.545139% of the variation in Acc030 is explained by Weight.

4. Interpret. **2**

Since 23.545139% of the variation in Acc030 is explained by Weight, 76.454861% of the variation of the mean of the time (in seconds) it takes to go from 0 to 30 mph must be due to other variables.

5. F statistic. **2**

The F statistic, as shown in the above output, is 7.39107133. This means that the ratio of the variation between sample means to the variation within the samples is 7.39107133.

6. P value. **2**

The p-value, as shown in the above output, is 0.01198247. This means that weight has a statistically significant impact on Acc030 at any significance level greater than 0.01198247 (e.g. it is statistically significant at a significance level of 0.05).

7. Summary: **2**

The regression equation relating Weight and Acc030 is Acc030=-0.0002655*Weight+4.04303667. Also R2=0.23545139, so 23.545139% of the variation in the speed at which a car is able to accelerate from 0 to 30 mph is explained by its weight. The F statistic is 7.39107133, meaning that the ratio of the variation between sample means to the variation within the samples is 7.39107133. Finally, the p-value is 0.01198247, meaning the weight of a car has a statistically significant impact on the time it takes said car to accelerate from 0 to 30 mph at any significance level greater than 0.01198247 (e.g. a significance level of 0.05).

VI

Comparing Mean Highway mileage for 4 makes. (Use ANOVA for comparison):

1. **Null and Alternate Hypothesis.** **2**

The null hypothesis is that the mean highway mileage is the same for all 4 makes.

The alternate hypothesis is that the mean highway mileage is NOT the same for all 4 makes (in other words, at least one of the means is different from the rest).

2. **ANOVA test using alpha = 0.10** **6**

	F	G	H	I	J	K	L
1	BMW HwyMPG	Chevrolet HwyMPG	Kia HwyMPG	Toyota HwyMPG			
2	36	39	36	35			
3	29	34	36	35			
4	22	28	34	25			
5	34	24	28	22			
6	33	29	31	24			
7		22		24			
8		23		18			
9		22					
10		36					
11							
12	Anova: Single Factor						
13							
14	SUMMARY						
15	*Groups*	*Count*	*Sum*	*Average*	*Variance*		
16	BMW HwyMPG	5	154	30.8	30.7		
17	Chevrolet HwyMPG	9	257	28.55555556	41.5277778		
18	Kia HwyMPG	5	165	33	12		
19	Toyota HwyMPG	7	183	26.14285714	41.8095238		
20							
21							
22	ANOVA						
23	*Source of Variation*	*SS*	*df*	*MS*	*F*	*P-value*	*F crit*
24	Between Groups	154.1590965	3	51.38636549	1.49957685	0.24236328	2.3511696
25	Within Groups	753.8793651	22	34.26724387			
26							
27	Total	908.0384615	25				

3. **Write down the F statistic.** **2**

The F statistic, as shown in the above output, is 1.49957685.

4. **Summarize your result.** **3**

We do NOT reject the null hypothesis, since the p-value (0.24236328) is greater than alpha=0.10. Therefore we conclude that the null hypothesis is true and the mean highway mileage is the same for all 4 makes.