

RWorksheet_Salvador#4C

1. Use the dataset mpg Download and open the mpg file. Upload it to your OWN environment 1a. Show your solutions on how to import a csv file into the environment.

```
library(readr)
mpg_file <- read_csv("mpg.csv")
mpg_file
```

##	X	manufacturer	model	displ	year	cyl	trans	drv	cty
## 1	1	audi	a4	1.8	1999	4	auto(l5)	f	18
## 2	2	audi	a4	1.8	1999	4	manual(m5)	f	21
## 3	3	audi	a4	2.0	2008	4	manual(m6)	f	20
## 4	4	audi	a4	2.0	2008	4	auto(av)	f	21
## 5	5	audi	a4	2.8	1999	6	auto(l5)	f	16
## 6	6	audi	a4	2.8	1999	6	manual(m5)	f	18
## 7	7	audi	a4	3.1	2008	6	auto(av)	f	18
## 8	8	audi	a4 quattro	1.8	1999	4	manual(m5)	4	18
## 9	9	audi	a4 quattro	1.8	1999	4	auto(l5)	4	16
## 10	10	audi	a4 quattro	2.0	2008	4	manual(m6)	4	20
## 11	11	audi	a4 quattro	2.0	2008	4	auto(s6)	4	19
## 12	12	audi	a4 quattro	2.8	1999	6	auto(l5)	4	15
## 13	13	audi	a4 quattro	2.8	1999	6	manual(m5)	4	17
## 14	14	audi	a4 quattro	3.1	2008	6	auto(s6)	4	17
## 15	15	audi	a4 quattro	3.1	2008	6	manual(m6)	4	15
## 16	16	audi	a6 quattro	2.8	1999	6	auto(l5)	4	15
## 17	17	audi	a6 quattro	3.1	2008	6	auto(s6)	4	17
## 18	18	audi	a6 quattro	4.2	2008	8	auto(s6)	4	16
## 19	19	chevrolet	c1500 suburban 2wd	5.3	2008	8	auto(l4)	r	14
## 20	20	chevrolet	c1500 suburban 2wd	5.3	2008	8	auto(l4)	r	11
## 21	21	chevrolet	c1500 suburban 2wd	5.3	2008	8	auto(l4)	r	14
## 22	22	chevrolet	c1500 suburban 2wd	5.7	1999	8	auto(l4)	r	13
## 23	23	chevrolet	c1500 suburban 2wd	6.0	2008	8	auto(l4)	r	12
## 24	24	chevrolet	corvette	5.7	1999	8	manual(m6)	r	16
## 25	25	chevrolet	corvette	5.7	1999	8	auto(l4)	r	15
## 26	26	chevrolet	corvette	6.2	2008	8	manual(m6)	r	16
## 27	27	chevrolet	corvette	6.2	2008	8	auto(s6)	r	15
## 28	28	chevrolet	corvette	7.0	2008	8	manual(m6)	r	15
## 29	29	chevrolet	k1500 tahoe 4wd	5.3	2008	8	auto(l4)	4	14
## 30	30	chevrolet	k1500 tahoe 4wd	5.3	2008	8	auto(l4)	4	11
## 31	31	chevrolet	k1500 tahoe 4wd	5.7	1999	8	auto(l4)	4	11
## 32	32	chevrolet	k1500 tahoe 4wd	6.5	1999	8	auto(l4)	4	14
## 33	33	chevrolet	malibu	2.4	1999	4	auto(l4)	f	19
## 34	34	chevrolet	malibu	2.4	2008	4	auto(l4)	f	22
## 35	35	chevrolet	malibu	3.1	1999	6	auto(l4)	f	18
## 36	36	chevrolet	malibu	3.5	2008	6	auto(l4)	f	18
## 37	37	chevrolet	malibu	3.6	2008	6	auto(s6)	f	17
## 38	38	dodge	caravan 2wd	2.4	1999	4	auto(l3)	f	18
## 39	39	dodge	caravan 2wd	3.0	1999	6	auto(l4)	f	17
## 40	40	dodge	caravan 2wd	3.3	1999	6	auto(l4)	f	16

## 41	41	dodge	caravan	2wd	3.3	1999	6	auto(14)	f	16
## 42	42	dodge	caravan	2wd	3.3	2008	6	auto(14)	f	17
## 43	43	dodge	caravan	2wd	3.3	2008	6	auto(14)	f	17
## 44	44	dodge	caravan	2wd	3.3	2008	6	auto(14)	f	11
## 45	45	dodge	caravan	2wd	3.8	1999	6	auto(14)	f	15
## 46	46	dodge	caravan	2wd	3.8	1999	6	auto(14)	f	15
## 47	47	dodge	caravan	2wd	3.8	2008	6	auto(16)	f	16
## 48	48	dodge	caravan	2wd	4.0	2008	6	auto(16)	f	16
## 49	49	dodge	dakota	pickup	4wd	3.7	2008	6 manual(m6)	4	15
## 50	50	dodge	dakota	pickup	4wd	3.7	2008	6 auto(14)	4	14
## 51	51	dodge	dakota	pickup	4wd	3.9	1999	6 auto(14)	4	13
## 52	52	dodge	dakota	pickup	4wd	3.9	1999	6 manual(m5)	4	14
## 53	53	dodge	dakota	pickup	4wd	4.7	2008	8 auto(15)	4	14
## 54	54	dodge	dakota	pickup	4wd	4.7	2008	8 auto(15)	4	14
## 55	55	dodge	dakota	pickup	4wd	4.7	2008	8 auto(15)	4	9
## 56	56	dodge	dakota	pickup	4wd	5.2	1999	8 manual(m5)	4	11
## 57	57	dodge	dakota	pickup	4wd	5.2	1999	8 auto(14)	4	11
## 58	58	dodge	durango	4wd	3.9	1999	6 auto(14)	4	13	
## 59	59	dodge	durango	4wd	4.7	2008	8 auto(15)	4	13	
## 60	60	dodge	durango	4wd	4.7	2008	8 auto(15)	4	9	
## 61	61	dodge	durango	4wd	4.7	2008	8 auto(15)	4	13	
## 62	62	dodge	durango	4wd	5.2	1999	8 auto(14)	4	11	
## 63	63	dodge	durango	4wd	5.7	2008	8 auto(15)	4	13	
## 64	64	dodge	durango	4wd	5.9	1999	8 auto(14)	4	11	
## 65	65	dodge	ram	1500 pickup	4wd	4.7	2008	8 manual(m6)	4	12
## 66	66	dodge	ram	1500 pickup	4wd	4.7	2008	8 auto(15)	4	9
## 67	67	dodge	ram	1500 pickup	4wd	4.7	2008	8 auto(15)	4	13
## 68	68	dodge	ram	1500 pickup	4wd	4.7	2008	8 auto(15)	4	13
## 69	69	dodge	ram	1500 pickup	4wd	4.7	2008	8 manual(m6)	4	12
## 70	70	dodge	ram	1500 pickup	4wd	4.7	2008	8 manual(m6)	4	9
## 71	71	dodge	ram	1500 pickup	4wd	5.2	1999	8 auto(14)	4	11
## 72	72	dodge	ram	1500 pickup	4wd	5.2	1999	8 manual(m5)	4	11
## 73	73	dodge	ram	1500 pickup	4wd	5.7	2008	8 auto(15)	4	13
## 74	74	dodge	ram	1500 pickup	4wd	5.9	1999	8 auto(14)	4	11
## 75	75	ford	expedition	2wd	4.6	1999	8 auto(14)	r	11	
## 76	76	ford	expedition	2wd	5.4	1999	8 auto(14)	r	11	
## 77	77	ford	expedition	2wd	5.4	2008	8 auto(16)	r	12	
## 78	78	ford	explorer	4wd	4.0	1999	6 auto(15)	4	14	
## 79	79	ford	explorer	4wd	4.0	1999	6 manual(m5)	4	15	
## 80	80	ford	explorer	4wd	4.0	1999	6 auto(15)	4	14	
## 81	81	ford	explorer	4wd	4.0	2008	6 auto(15)	4	13	
## 82	82	ford	explorer	4wd	4.6	2008	8 auto(16)	4	13	
## 83	83	ford	explorer	4wd	5.0	1999	8 auto(14)	4	13	
## 84	84	ford	f150 pickup	4wd	4.2	1999	6 auto(14)	4	14	
## 85	85	ford	f150 pickup	4wd	4.2	1999	6 manual(m5)	4	14	
## 86	86	ford	f150 pickup	4wd	4.6	1999	8 manual(m5)	4	13	
## 87	87	ford	f150 pickup	4wd	4.6	1999	8 auto(14)	4	13	
## 88	88	ford	f150 pickup	4wd	4.6	2008	8 auto(14)	4	13	
## 89	89	ford	f150 pickup	4wd	5.4	1999	8 auto(14)	4	11	
## 90	90	ford	f150 pickup	4wd	5.4	2008	8 auto(14)	4	13	
## 91	91	ford	mustang		3.8	1999	6 manual(m5)	r	18	
## 92	92	ford	mustang		3.8	1999	6 auto(14)	r	18	
## 93	93	ford	mustang		4.0	2008	6 manual(m5)	r	17	
## 94	94	ford	mustang		4.0	2008	6 auto(15)	r	16	

## 95	95	ford	mustang	4.6	1999	8	auto(14)	r	15
## 96	96	ford	mustang	4.6	1999	8	manual(m5)	r	15
## 97	97	ford	mustang	4.6	2008	8	manual(m5)	r	15
## 98	98	ford	mustang	4.6	2008	8	auto(15)	r	15
## 99	99	ford	mustang	5.4	2008	8	manual(m6)	r	14
## 100	100	honda	civic	1.6	1999	4	manual(m5)	f	28
## 101	101	honda	civic	1.6	1999	4	auto(14)	f	24
## 102	102	honda	civic	1.6	1999	4	manual(m5)	f	25
## 103	103	honda	civic	1.6	1999	4	manual(m5)	f	23
## 104	104	honda	civic	1.6	1999	4	auto(14)	f	24
## 105	105	honda	civic	1.8	2008	4	manual(m5)	f	26
## 106	106	honda	civic	1.8	2008	4	auto(15)	f	25
## 107	107	honda	civic	1.8	2008	4	auto(15)	f	24
## 108	108	honda	civic	2.0	2008	4	manual(m6)	f	21
## 109	109	hyundai	sonata	2.4	1999	4	auto(14)	f	18
## 110	110	hyundai	sonata	2.4	1999	4	manual(m5)	f	18
## 111	111	hyundai	sonata	2.4	2008	4	auto(14)	f	21
## 112	112	hyundai	sonata	2.4	2008	4	manual(m5)	f	21
## 113	113	hyundai	sonata	2.5	1999	6	auto(14)	f	18
## 114	114	hyundai	sonata	2.5	1999	6	manual(m5)	f	18
## 115	115	hyundai	sonata	3.3	2008	6	auto(15)	f	19
## 116	116	hyundai	tiburon	2.0	1999	4	auto(14)	f	19
## 117	117	hyundai	tiburon	2.0	1999	4	manual(m5)	f	19
## 118	118	hyundai	tiburon	2.0	2008	4	manual(m5)	f	20
## 119	119	hyundai	tiburon	2.0	2008	4	auto(14)	f	20
## 120	120	hyundai	tiburon	2.7	2008	6	auto(14)	f	17
## 121	121	hyundai	tiburon	2.7	2008	6	manual(m6)	f	16
## 122	122	hyundai	tiburon	2.7	2008	6	manual(m5)	f	17
## 123	123	jeep	grand cherokee 4wd	3.0	2008	6	auto(15)	4	17
## 124	124	jeep	grand cherokee 4wd	3.7	2008	6	auto(15)	4	15
## 125	125	jeep	grand cherokee 4wd	4.0	1999	6	auto(14)	4	15
## 126	126	jeep	grand cherokee 4wd	4.7	1999	8	auto(14)	4	14
## 127	127	jeep	grand cherokee 4wd	4.7	2008	8	auto(15)	4	9
## 128	128	jeep	grand cherokee 4wd	4.7	2008	8	auto(15)	4	14
## 129	129	jeep	grand cherokee 4wd	5.7	2008	8	auto(15)	4	13
## 130	130	jeep	grand cherokee 4wd	6.1	2008	8	auto(15)	4	11
## 131	131	land rover	range rover	4.0	1999	8	auto(14)	4	11
## 132	132	land rover	range rover	4.2	2008	8	auto(s6)	4	12
## 133	133	land rover	range rover	4.4	2008	8	auto(s6)	4	12
## 134	134	land rover	range rover	4.6	1999	8	auto(14)	4	11
## 135	135	lincoln	navigator 2wd	5.4	1999	8	auto(14)	r	11
## 136	136	lincoln	navigator 2wd	5.4	1999	8	auto(14)	r	11
## 137	137	lincoln	navigator 2wd	5.4	2008	8	auto(16)	r	12
## 138	138	mercury	mountaineer 4wd	4.0	1999	6	auto(15)	4	14
## 139	139	mercury	mountaineer 4wd	4.0	2008	6	auto(15)	4	13
## 140	140	mercury	mountaineer 4wd	4.6	2008	8	auto(16)	4	13
## 141	141	mercury	mountaineer 4wd	5.0	1999	8	auto(14)	4	13
## 142	142	nissan	altima	2.4	1999	4	manual(m5)	f	21
## 143	143	nissan	altima	2.4	1999	4	auto(14)	f	19
## 144	144	nissan	altima	2.5	2008	4	auto(av)	f	23
## 145	145	nissan	altima	2.5	2008	4	manual(m6)	f	23
## 146	146	nissan	altima	3.5	2008	6	manual(m6)	f	19
## 147	147	nissan	altima	3.5	2008	6	auto(av)	f	19
## 148	148	nissan	maxima	3.0	1999	6	auto(14)	f	18

## 149	149	nissan	maxima	3.0	1999	6	manual(m5)	f	19
## 150	150	nissan	maxima	3.5	2008	6	auto(av)	f	19
## 151	151	nissan	pathfinder 4wd	3.3	1999	6	auto(14)	4	14
## 152	152	nissan	pathfinder 4wd	3.3	1999	6	manual(m5)	4	15
## 153	153	nissan	pathfinder 4wd	4.0	2008	6	auto(15)	4	14
## 154	154	nissan	pathfinder 4wd	5.6	2008	8	auto(s5)	4	12
## 155	155	pontiac	grand prix	3.1	1999	6	auto(14)	f	18
## 156	156	pontiac	grand prix	3.8	1999	6	auto(14)	f	16
## 157	157	pontiac	grand prix	3.8	1999	6	auto(14)	f	17
## 158	158	pontiac	grand prix	3.8	2008	6	auto(14)	f	18
## 159	159	pontiac	grand prix	5.3	2008	8	auto(s4)	f	16
## 160	160	subaru	forester awd	2.5	1999	4	manual(m5)	4	18
## 161	161	subaru	forester awd	2.5	1999	4	auto(14)	4	18
## 162	162	subaru	forester awd	2.5	2008	4	manual(m5)	4	20
## 163	163	subaru	forester awd	2.5	2008	4	manual(m5)	4	19
## 164	164	subaru	forester awd	2.5	2008	4	auto(14)	4	20
## 165	165	subaru	forester awd	2.5	2008	4	auto(14)	4	18
## 166	166	subaru	impreza awd	2.2	1999	4	auto(14)	4	21
## 167	167	subaru	impreza awd	2.2	1999	4	manual(m5)	4	19
## 168	168	subaru	impreza awd	2.5	1999	4	manual(m5)	4	19
## 169	169	subaru	impreza awd	2.5	1999	4	auto(14)	4	19
## 170	170	subaru	impreza awd	2.5	2008	4	auto(s4)	4	20
## 171	171	subaru	impreza awd	2.5	2008	4	auto(s4)	4	20
## 172	172	subaru	impreza awd	2.5	2008	4	manual(m5)	4	19
## 173	173	subaru	impreza awd	2.5	2008	4	manual(m5)	4	20
## 174	174	toyota	4runner 4wd	2.7	1999	4	manual(m5)	4	15
## 175	175	toyota	4runner 4wd	2.7	1999	4	auto(14)	4	16
## 176	176	toyota	4runner 4wd	3.4	1999	6	auto(14)	4	15
## 177	177	toyota	4runner 4wd	3.4	1999	6	manual(m5)	4	15
## 178	178	toyota	4runner 4wd	4.0	2008	6	auto(15)	4	16
## 179	179	toyota	4runner 4wd	4.7	2008	8	auto(15)	4	14
## 180	180	toyota	camry	2.2	1999	4	manual(m5)	f	21
## 181	181	toyota	camry	2.2	1999	4	auto(14)	f	21
## 182	182	toyota	camry	2.4	2008	4	manual(m5)	f	21
## 183	183	toyota	camry	2.4	2008	4	auto(15)	f	21
## 184	184	toyota	camry	3.0	1999	6	auto(14)	f	18
## 185	185	toyota	camry	3.0	1999	6	manual(m5)	f	18
## 186	186	toyota	camry	3.5	2008	6	auto(s6)	f	19
## 187	187	toyota	camry solara	2.2	1999	4	auto(14)	f	21
## 188	188	toyota	camry solara	2.2	1999	4	manual(m5)	f	21
## 189	189	toyota	camry solara	2.4	2008	4	manual(m5)	f	21
## 190	190	toyota	camry solara	2.4	2008	4	auto(s5)	f	22
## 191	191	toyota	camry solara	3.0	1999	6	auto(14)	f	18
## 192	192	toyota	camry solara	3.0	1999	6	manual(m5)	f	18
## 193	193	toyota	camry solara	3.3	2008	6	auto(s5)	f	18
## 194	194	toyota	corolla	1.8	1999	4	auto(13)	f	24
## 195	195	toyota	corolla	1.8	1999	4	auto(14)	f	24
## 196	196	toyota	corolla	1.8	1999	4	manual(m5)	f	26
## 197	197	toyota	corolla	1.8	2008	4	manual(m5)	f	28
## 198	198	toyota	corolla	1.8	2008	4	auto(14)	f	26
## 199	199	toyota	land cruiser wagon 4wd	4.7	1999	8	auto(14)	4	11
## 200	200	toyota	land cruiser wagon 4wd	5.7	2008	8	auto(s6)	4	13
## 201	201	toyota	toyota tacoma 4wd	2.7	1999	4	manual(m5)	4	15
## 202	202	toyota	toyota tacoma 4wd	2.7	1999	4	auto(14)	4	16

##	203	203	toyota	toyota tacoma 4wd	2.7	2008	4	manual(m5)	4	17
##	204	204	toyota	toyota tacoma 4wd	3.4	1999	6	manual(m5)	4	15
##	205	205	toyota	toyota tacoma 4wd	3.4	1999	6	auto(l4)	4	15
##	206	206	toyota	toyota tacoma 4wd	4.0	2008	6	manual(m6)	4	15
##	207	207	toyota	toyota tacoma 4wd	4.0	2008	6	auto(l5)	4	16
##	208	208	volkswagen	gti	2.0	1999	4	manual(m5)	f	21
##	209	209	volkswagen	gti	2.0	1999	4	auto(l4)	f	19
##	210	210	volkswagen	gti	2.0	2008	4	manual(m6)	f	21
##	211	211	volkswagen	gti	2.0	2008	4	auto(s6)	f	22
##	212	212	volkswagen	gti	2.8	1999	6	manual(m5)	f	17
##	213	213	volkswagen	jetta	1.9	1999	4	manual(m5)	f	33
##	214	214	volkswagen	jetta	2.0	1999	4	manual(m5)	f	21
##	215	215	volkswagen	jetta	2.0	1999	4	auto(l4)	f	19
##	216	216	volkswagen	jetta	2.0	2008	4	auto(s6)	f	22
##	217	217	volkswagen	jetta	2.0	2008	4	manual(m6)	f	21
##	218	218	volkswagen	jetta	2.5	2008	5	auto(s6)	f	21
##	219	219	volkswagen	jetta	2.5	2008	5	manual(m5)	f	21
##	220	220	volkswagen	jetta	2.8	1999	6	auto(l4)	f	16
##	221	221	volkswagen	jetta	2.8	1999	6	manual(m5)	f	17
##	222	222	volkswagen	new beetle	1.9	1999	4	manual(m5)	f	35
##	223	223	volkswagen	new beetle	1.9	1999	4	auto(l4)	f	29
##	224	224	volkswagen	new beetle	2.0	1999	4	manual(m5)	f	21
##	225	225	volkswagen	new beetle	2.0	1999	4	auto(l4)	f	19
##	226	226	volkswagen	new beetle	2.5	2008	5	manual(m5)	f	20
##	227	227	volkswagen	new beetle	2.5	2008	5	auto(s6)	f	20
##	228	228	volkswagen	passat	1.8	1999	4	manual(m5)	f	21
##	229	229	volkswagen	passat	1.8	1999	4	auto(l5)	f	18
##	230	230	volkswagen	passat	2.0	2008	4	auto(s6)	f	19
##	231	231	volkswagen	passat	2.0	2008	4	manual(m6)	f	21
##	232	232	volkswagen	passat	2.8	1999	6	auto(l5)	f	16
##	233	233	volkswagen	passat	2.8	1999	6	manual(m5)	f	18
##	234	234	volkswagen	passat	3.6	2008	6	auto(s6)	f	17
##			hwy	fl						
##	1	29	p	compact						
##	2	29	p	compact						
##	3	31	p	compact						
##	4	30	p	compact						
##	5	26	p	compact						
##	6	26	p	compact						
##	7	27	p	compact						
##	8	26	p	compact						
##	9	25	p	compact						
##	10	28	p	compact						
##	11	27	p	compact						
##	12	25	p	compact						
##	13	25	p	compact						
##	14	25	p	compact						
##	15	25	p	compact						
##	16	24	p	midsize						
##	17	25	p	midsize						
##	18	23	p	midsize						
##	19	20	r	suv						
##	20	15	e	suv						
##	21	20	r	suv						

##	22	17	r	suv
##	23	17	r	suv
##	24	26	p	2seater
##	25	23	p	2seater
##	26	26	p	2seater
##	27	25	p	2seater
##	28	24	p	2seater
##	29	19	r	suv
##	30	14	e	suv
##	31	15	r	suv
##	32	17	d	suv
##	33	27	r	midsize
##	34	30	r	midsize
##	35	26	r	midsize
##	36	29	r	midsize
##	37	26	r	midsize
##	38	24	r	minivan
##	39	24	r	minivan
##	40	22	r	minivan
##	41	22	r	minivan
##	42	24	r	minivan
##	43	24	r	minivan
##	44	17	e	minivan
##	45	22	r	minivan
##	46	21	r	minivan
##	47	23	r	minivan
##	48	23	r	minivan
##	49	19	r	pickup
##	50	18	r	pickup
##	51	17	r	pickup
##	52	17	r	pickup
##	53	19	r	pickup
##	54	19	r	pickup
##	55	12	e	pickup
##	56	17	r	pickup
##	57	15	r	pickup
##	58	17	r	suv
##	59	17	r	suv
##	60	12	e	suv
##	61	17	r	suv
##	62	16	r	suv
##	63	18	r	suv
##	64	15	r	suv
##	65	16	r	pickup
##	66	12	e	pickup
##	67	17	r	pickup
##	68	17	r	pickup
##	69	16	r	pickup
##	70	12	e	pickup
##	71	15	r	pickup
##	72	16	r	pickup
##	73	17	r	pickup
##	74	15	r	pickup
##	75	17	r	suv

## 76	17	r	suv
## 77	18	r	suv
## 78	17	r	suv
## 79	19	r	suv
## 80	17	r	suv
## 81	19	r	suv
## 82	19	r	suv
## 83	17	r	suv
## 84	17	r	pickup
## 85	17	r	pickup
## 86	16	r	pickup
## 87	16	r	pickup
## 88	17	r	pickup
## 89	15	r	pickup
## 90	17	r	pickup
## 91	26	r	subcompact
## 92	25	r	subcompact
## 93	26	r	subcompact
## 94	24	r	subcompact
## 95	21	r	subcompact
## 96	22	r	subcompact
## 97	23	r	subcompact
## 98	22	r	subcompact
## 99	20	p	subcompact
## 100	33	r	subcompact
## 101	32	r	subcompact
## 102	32	r	subcompact
## 103	29	p	subcompact
## 104	32	r	subcompact
## 105	34	r	subcompact
## 106	36	r	subcompact
## 107	36	c	subcompact
## 108	29	p	subcompact
## 109	26	r	midsize
## 110	27	r	midsize
## 111	30	r	midsize
## 112	31	r	midsize
## 113	26	r	midsize
## 114	26	r	midsize
## 115	28	r	midsize
## 116	26	r	subcompact
## 117	29	r	subcompact
## 118	28	r	subcompact
## 119	27	r	subcompact
## 120	24	r	subcompact
## 121	24	r	subcompact
## 122	24	r	subcompact
## 123	22	d	suv
## 124	19	r	suv
## 125	20	r	suv
## 126	17	r	suv
## 127	12	e	suv
## 128	19	r	suv
## 129	18	r	suv

##	130	14	p	suv
##	131	15	p	suv
##	132	18	r	suv
##	133	18	r	suv
##	134	15	p	suv
##	135	17	r	suv
##	136	16	p	suv
##	137	18	r	suv
##	138	17	r	suv
##	139	19	r	suv
##	140	19	r	suv
##	141	17	r	suv
##	142	29	r	compact
##	143	27	r	compact
##	144	31	r	midsize
##	145	32	r	midsize
##	146	27	p	midsize
##	147	26	p	midsize
##	148	26	r	midsize
##	149	25	r	midsize
##	150	25	p	midsize
##	151	17	r	suv
##	152	17	r	suv
##	153	20	p	suv
##	154	18	p	suv
##	155	26	r	midsize
##	156	26	p	midsize
##	157	27	r	midsize
##	158	28	r	midsize
##	159	25	p	midsize
##	160	25	r	suv
##	161	24	r	suv
##	162	27	r	suv
##	163	25	p	suv
##	164	26	r	suv
##	165	23	p	suv
##	166	26	r	subcompact
##	167	26	r	subcompact
##	168	26	r	subcompact
##	169	26	r	subcompact
##	170	25	p	compact
##	171	27	r	compact
##	172	25	p	compact
##	173	27	r	compact
##	174	20	r	suv
##	175	20	r	suv
##	176	19	r	suv
##	177	17	r	suv
##	178	20	r	suv
##	179	17	r	suv
##	180	29	r	midsize
##	181	27	r	midsize
##	182	31	r	midsize
##	183	31	r	midsize


```

## 184 26 r    midsize
## 185 26 r    midsize
## 186 28 r    midsize
## 187 27 r    compact
## 188 29 r    compact
## 189 31 r    compact
## 190 31 r    compact
## 191 26 r    compact
## 192 26 r    compact
## 193 27 r    compact
## 194 30 r    compact
## 195 33 r    compact
## 196 35 r    compact
## 197 37 r    compact
## 198 35 r    compact
## 199 15 r      suv
## 200 18 r      suv
## 201 20 r    pickup
## 202 20 r    pickup
## 203 22 r    pickup
## 204 17 r    pickup
## 205 19 r    pickup
## 206 18 r    pickup
## 207 20 r    pickup
## 208 29 r    compact
## 209 26 r    compact
## 210 29 p    compact
## 211 29 p    compact
## 212 24 r    compact
## 213 44 d    compact
## 214 29 r    compact
## 215 26 r    compact
## 216 29 p    compact
## 217 29 p    compact
## 218 29 r    compact
## 219 29 r    compact
## 220 23 r    compact
## 221 24 r    compact
## 222 44 d subcompact
## 223 41 d subcompact
## 224 29 r subcompact
## 225 26 r subcompact
## 226 28 r subcompact
## 227 29 r subcompact
## 228 29 p    midsize
## 229 29 p    midsize
## 230 28 p    midsize
## 231 29 p    midsize
## 232 26 p    midsize
## 233 26 p    midsize
## 234 26 p    midsize

```

Show your answer.

```
manufacturer_asTable <- table(mpg_file$manufacturer)
manufacturer_asTable
```

```
##
##      audi  chevrolet    dodge      ford      honda  hyundai    jeep
##      18      19      37      25      9      14      8
## land rover    lincoln  mercury    nissan  pontiac    subaru    toyota
##      4      3      4      13      5      14      34
## volkswagen
##      27
```

```
names(manufacturer_asTable)[which.max(manufacturer_asTable)]
```

```
## [1] "dodge"
```

```
manufacturer_most_models <- names(manufacturer_asTable)[which.max(manufacturer_asTable)]
manufacturer_most_models
```

```
## [1] "dodge"
```

```
# dodge manufacturer has most models
model_asTable <- table(mpg_file$model)
model_asTable
```

```
##
##      4runner 4wd      a4      a4 quattro
##      6      7      8
##      a6 quattro      altima  c1500 suburban 2wd
##      3      6      5
##      camry      camry solara      caravan 2wd
##      7      7      11
##      civic      corolla      corvette
##      9      5      5
##      dakota pickup 4wd      durango 4wd      expedition 2wd
##      9      7      3
##      explorer 4wd      f150 pickup 4wd      forester awd
##      6      7      6
##      grand cherokee 4wd      grand prix      gti
##      8      5      5
##      impreza awd      jetta      k1500 tahoe 4wd
##      8      9      4
## land cruiser wagon 4wd      malibu      maxima
##      2      5      3
##      mountaineer 4wd      mustang      navigator 2wd
##      4      9      3
##      new beetle      passat      pathfinder 4wd
##      6      7      4
##      ram 1500 pickup 4wd      range rover      sonata
##      10      4      7
##      tiburon      toyota tacoma 4wd
##      7      7
```

```
names(model_asTable)[which.max(model_asTable)]
```

```
## [1] "caravan 2wd"
```

```

model_most_vars <- names(model_asTable)[which.max(model_asTable)]
model_most_vars

## [1] "caravan 2wd"
# caravan 2wd has most variations

#install.packages("dplyr")
library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

manufacturers_models <- data.frame(Manufacturer = mpg_file$manufacturer, Model = mpg_file$model)
manufacturers_models

##      Manufacturer      Model
## 1         audi          a4
## 2         audi          a4
## 3         audi          a4
## 4         audi          a4
## 5         audi          a4
## 6         audi          a4
## 7         audi          a4
## 8         audi    a4 quattro
## 9         audi    a4 quattro
## 10        audi    a4 quattro
## 11        audi    a4 quattro
## 12        audi    a4 quattro
## 13        audi    a4 quattro
## 14        audi    a4 quattro
## 15        audi    a4 quattro
## 16        audi    a6 quattro
## 17        audi    a6 quattro
## 18        audi    a6 quattro
## 19   chevrolet c1500 suburban 2wd
## 20   chevrolet c1500 suburban 2wd
## 21   chevrolet c1500 suburban 2wd
## 22   chevrolet c1500 suburban 2wd
## 23   chevrolet c1500 suburban 2wd
## 24   chevrolet      corvette
## 25   chevrolet      corvette
## 26   chevrolet      corvette
## 27   chevrolet      corvette
## 28   chevrolet      corvette
## 29   chevrolet k1500 tahoe 4wd
## 30   chevrolet k1500 tahoe 4wd
## 31   chevrolet k1500 tahoe 4wd
## 32   chevrolet k1500 tahoe 4wd

```

## 33	chevrolet	malibu
## 34	chevrolet	malibu
## 35	chevrolet	malibu
## 36	chevrolet	malibu
## 37	chevrolet	malibu
## 38	dodge	caravan 2wd
## 39	dodge	caravan 2wd
## 40	dodge	caravan 2wd
## 41	dodge	caravan 2wd
## 42	dodge	caravan 2wd
## 43	dodge	caravan 2wd
## 44	dodge	caravan 2wd
## 45	dodge	caravan 2wd
## 46	dodge	caravan 2wd
## 47	dodge	caravan 2wd
## 48	dodge	caravan 2wd
## 49	dodge	dakota pickup 4wd
## 50	dodge	dakota pickup 4wd
## 51	dodge	dakota pickup 4wd
## 52	dodge	dakota pickup 4wd
## 53	dodge	dakota pickup 4wd
## 54	dodge	dakota pickup 4wd
## 55	dodge	dakota pickup 4wd
## 56	dodge	dakota pickup 4wd
## 57	dodge	dakota pickup 4wd
## 58	dodge	durango 4wd
## 59	dodge	durango 4wd
## 60	dodge	durango 4wd
## 61	dodge	durango 4wd
## 62	dodge	durango 4wd
## 63	dodge	durango 4wd
## 64	dodge	durango 4wd
## 65	dodge	ram 1500 pickup 4wd
## 66	dodge	ram 1500 pickup 4wd
## 67	dodge	ram 1500 pickup 4wd
## 68	dodge	ram 1500 pickup 4wd
## 69	dodge	ram 1500 pickup 4wd
## 70	dodge	ram 1500 pickup 4wd
## 71	dodge	ram 1500 pickup 4wd
## 72	dodge	ram 1500 pickup 4wd
## 73	dodge	ram 1500 pickup 4wd
## 74	dodge	ram 1500 pickup 4wd
## 75	ford	expedition 2wd
## 76	ford	expedition 2wd
## 77	ford	expedition 2wd
## 78	ford	explorer 4wd
## 79	ford	explorer 4wd
## 80	ford	explorer 4wd
## 81	ford	explorer 4wd
## 82	ford	explorer 4wd
## 83	ford	explorer 4wd
## 84	ford	f150 pickup 4wd
## 85	ford	f150 pickup 4wd
## 86	ford	f150 pickup 4wd

## 87	ford	f150 pickup 4wd
## 88	ford	f150 pickup 4wd
## 89	ford	f150 pickup 4wd
## 90	ford	f150 pickup 4wd
## 91	ford	mustang
## 92	ford	mustang
## 93	ford	mustang
## 94	ford	mustang
## 95	ford	mustang
## 96	ford	mustang
## 97	ford	mustang
## 98	ford	mustang
## 99	ford	mustang
## 100	honda	civic
## 101	honda	civic
## 102	honda	civic
## 103	honda	civic
## 104	honda	civic
## 105	honda	civic
## 106	honda	civic
## 107	honda	civic
## 108	honda	civic
## 109	hyundai	sonata
## 110	hyundai	sonata
## 111	hyundai	sonata
## 112	hyundai	sonata
## 113	hyundai	sonata
## 114	hyundai	sonata
## 115	hyundai	sonata
## 116	hyundai	tiburon
## 117	hyundai	tiburon
## 118	hyundai	tiburon
## 119	hyundai	tiburon
## 120	hyundai	tiburon
## 121	hyundai	tiburon
## 122	hyundai	tiburon
## 123	jeep	grand cherokee 4wd
## 124	jeep	grand cherokee 4wd
## 125	jeep	grand cherokee 4wd
## 126	jeep	grand cherokee 4wd
## 127	jeep	grand cherokee 4wd
## 128	jeep	grand cherokee 4wd
## 129	jeep	grand cherokee 4wd
## 130	jeep	grand cherokee 4wd
## 131	land rover	range rover
## 132	land rover	range rover
## 133	land rover	range rover
## 134	land rover	range rover
## 135	lincoln	navigator 2wd
## 136	lincoln	navigator 2wd
## 137	lincoln	navigator 2wd
## 138	mercury	mountaineer 4wd
## 139	mercury	mountaineer 4wd
## 140	mercury	mountaineer 4wd

## 141	mercury	mountaineer 4wd
## 142	nissan	altima
## 143	nissan	altima
## 144	nissan	altima
## 145	nissan	altima
## 146	nissan	altima
## 147	nissan	altima
## 148	nissan	maxima
## 149	nissan	maxima
## 150	nissan	maxima
## 151	nissan	pathfinder 4wd
## 152	nissan	pathfinder 4wd
## 153	nissan	pathfinder 4wd
## 154	nissan	pathfinder 4wd
## 155	pontiac	grand prix
## 156	pontiac	grand prix
## 157	pontiac	grand prix
## 158	pontiac	grand prix
## 159	pontiac	grand prix
## 160	subaru	forester awd
## 161	subaru	forester awd
## 162	subaru	forester awd
## 163	subaru	forester awd
## 164	subaru	forester awd
## 165	subaru	forester awd
## 166	subaru	impreza awd
## 167	subaru	impreza awd
## 168	subaru	impreza awd
## 169	subaru	impreza awd
## 170	subaru	impreza awd
## 171	subaru	impreza awd
## 172	subaru	impreza awd
## 173	subaru	impreza awd
## 174	toyota	4runner 4wd
## 175	toyota	4runner 4wd
## 176	toyota	4runner 4wd
## 177	toyota	4runner 4wd
## 178	toyota	4runner 4wd
## 179	toyota	4runner 4wd
## 180	toyota	camry
## 181	toyota	camry
## 182	toyota	camry
## 183	toyota	camry
## 184	toyota	camry
## 185	toyota	camry
## 186	toyota	camry
## 187	toyota	camry solara
## 188	toyota	camry solara
## 189	toyota	camry solara
## 190	toyota	camry solara
## 191	toyota	camry solara
## 192	toyota	camry solara
## 193	toyota	camry solara
## 194	toyota	corolla

```
## 195      toyota      corolla
## 196      toyota      corolla
## 197      toyota      corolla
## 198      toyota      corolla
## 199      toyota land cruiser wagon 4wd
## 200      toyota land cruiser wagon 4wd
## 201      toyota      toyota tacoma 4wd
## 202      toyota      toyota tacoma 4wd
## 203      toyota      toyota tacoma 4wd
## 204      toyota      toyota tacoma 4wd
## 205      toyota      toyota tacoma 4wd
## 206      toyota      toyota tacoma 4wd
## 207      toyota      toyota tacoma 4wd
## 208      volkswagen      gti
## 209      volkswagen      gti
## 210      volkswagen      gti
## 211      volkswagen      gti
## 212      volkswagen      gti
## 213      volkswagen      jetta
## 214      volkswagen      jetta
## 215      volkswagen      jetta
## 216      volkswagen      jetta
## 217      volkswagen      jetta
## 218      volkswagen      jetta
## 219      volkswagen      jetta
## 220      volkswagen      jetta
## 221      volkswagen      jetta
## 222      volkswagen      new beetle
## 223      volkswagen      new beetle
## 224      volkswagen      new beetle
## 225      volkswagen      new beetle
## 226      volkswagen      new beetle
## 227      volkswagen      new beetle
## 228      volkswagen      passat
## 229      volkswagen      passat
## 230      volkswagen      passat
## 231      volkswagen      passat
## 232      volkswagen      passat
## 233      volkswagen      passat
## 234      volkswagen      passat
```

```
unique_mods <- unique(manufacturers_models)
unique_mods
```

```
##      Manufacturer      Model
## 1      audi      a4
## 8      audi      a4 quattro
## 16     audi      a6 quattro
## 19     chevrolet c1500 suburban 2wd
## 24     chevrolet      corvette
## 29     chevrolet k1500 tahoe 4wd
## 33     chevrolet      malibu
## 38     dodge      caravan 2wd
## 49     dodge      dakota pickup 4wd
## 58     dodge      durango 4wd
```

```
## 65      dodge      ram 1500 pickup 4wd
## 75      ford       expedition 2wd
## 78      ford       explorer 4wd
## 84      ford       f150 pickup 4wd
## 91      ford       mustang
## 100     honda      civic
## 109     hyundai     sonata
## 116     hyundai     tiburon
## 123     jeep       grand cherokee 4wd
## 131     land rover  range rover
## 135     lincoln     navigator 2wd
## 138     mercury     mountaineer 4wd
## 142     nissan       altima
## 148     nissan       maxima
## 151     nissan       pathfinder 4wd
## 155     pontiac     grand prix
## 160     subaru      forester awd
## 166     subaru      impreza awd
## 174     toyota      4runner 4wd
## 180     toyota      camry
## 187     toyota      camry solara
## 194     toyota      corolla
## 199     toyota land cruiser wagon 4wd
## 201     toyota      toyota tacoma 4wd
## 208     volkswagen  gti
## 213     volkswagen  jetta
## 222     volkswagen  new beetle
## 228     volkswagen  passat
```

```
unique_mods_factor <- factoredManufacturer <- as.factor(unique_mods$Manufacturer)
```

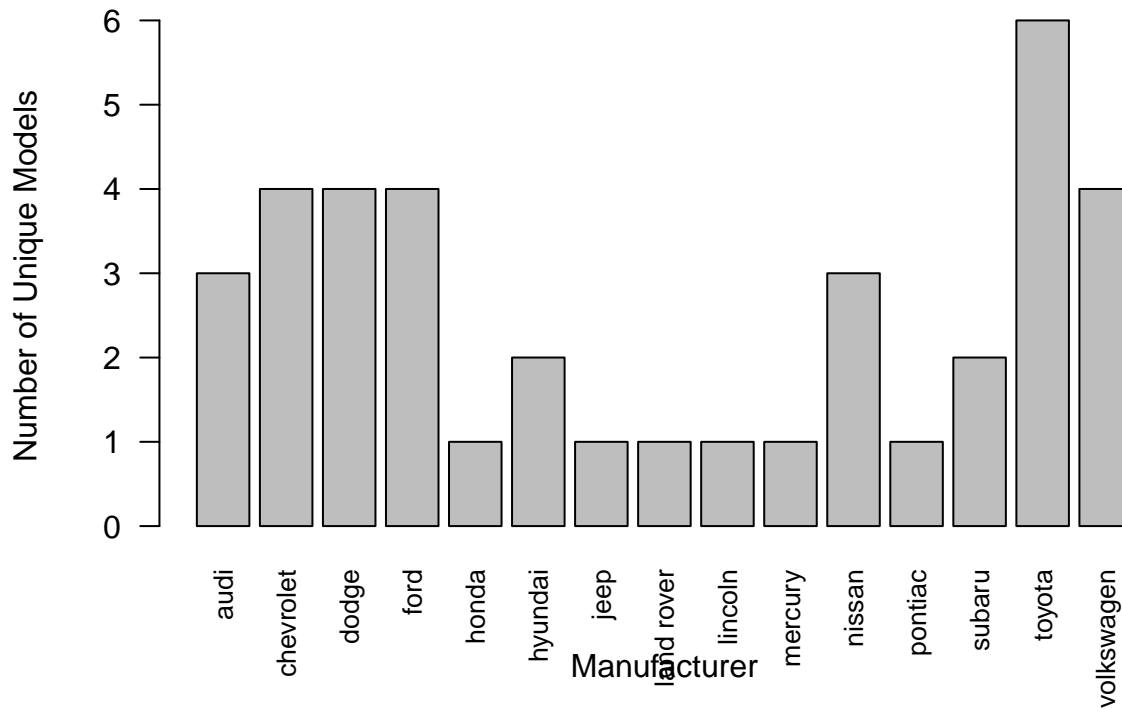
2b. Graph the result by using plot() and ggplot(). Write the codes and its result.

```
#install.packages("ggplot2")
library(ggplot2)

#install.packages("dplyr")
library(dplyr)

unique_plot <- plot(as.factor(factoredManufacturer),
  main = "Unique Models of Manufacturers",
  xlab = "Manufacturer",
  ylab = "Number of Unique Models",
  cex.names = 0.8, las = 2)
```

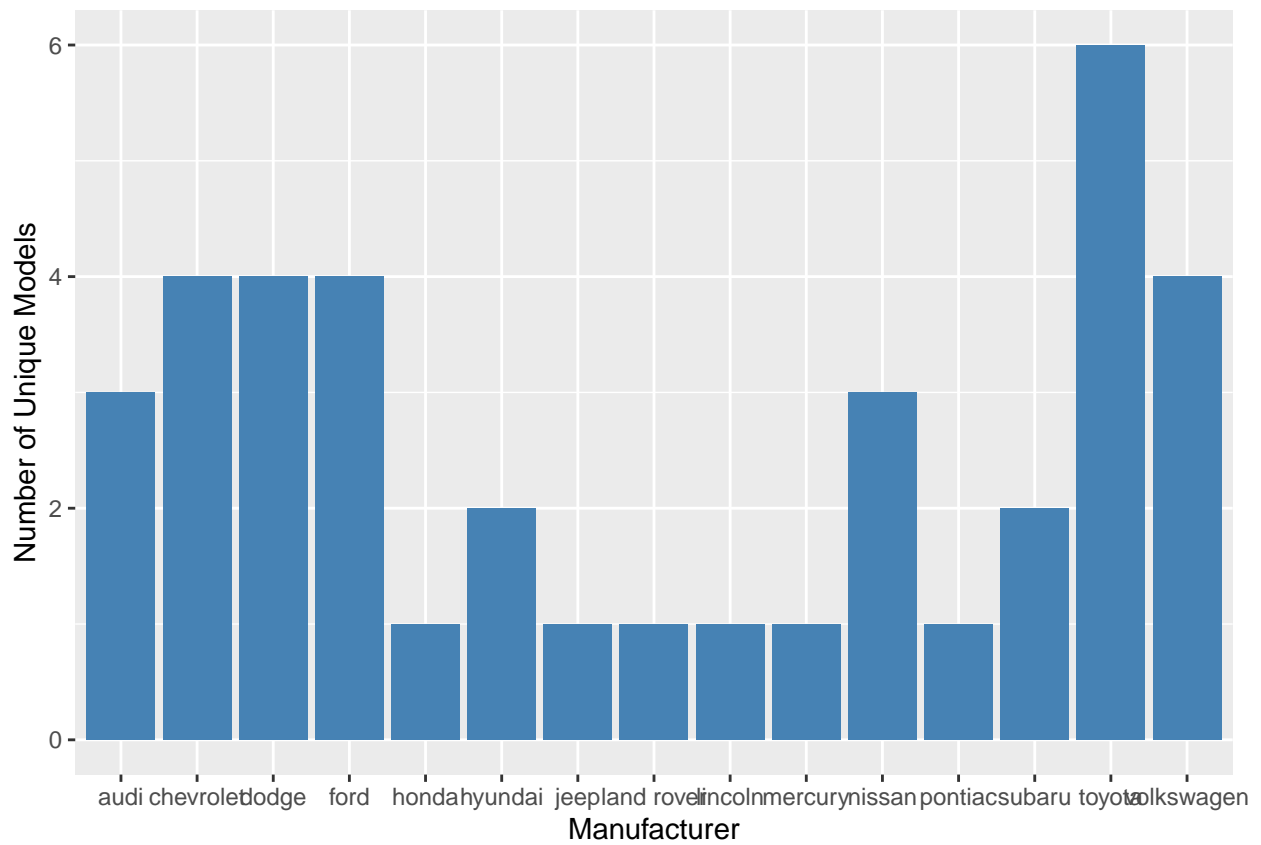

Unique Models of Manufacturers



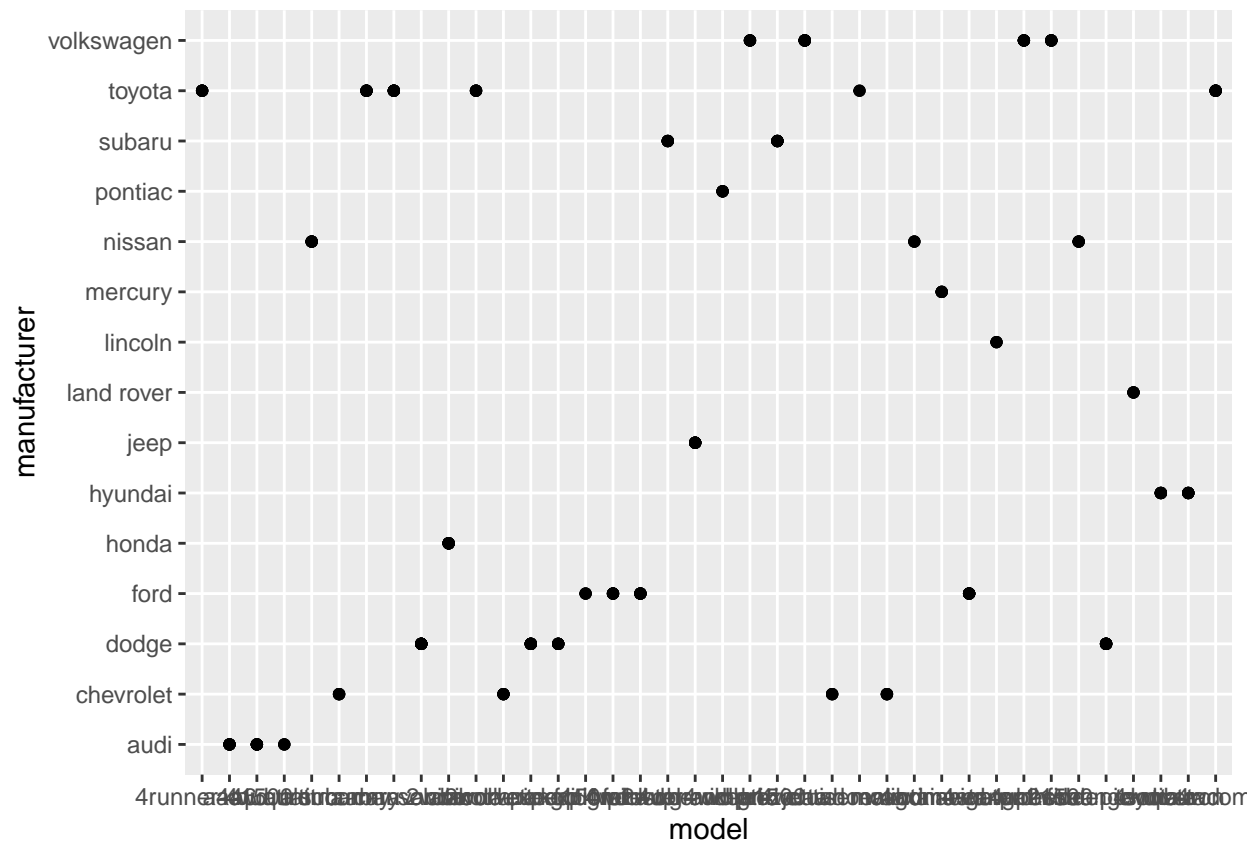
```
unique_count <- unique_mods %>%
  count(unique_mods$Manufacturer)
unique_count
```

```
##   unique_mods$Manufacturer n
## 1             audi 3
## 2          chevrolet 4
## 3             dodge 4
## 4             ford 4
## 5             honda 1
## 6          hyundai 2
## 7             jeep 1
## 8        land rover 1
## 9           lincoln 1
## 10          mercury 1
## 11            nissan 3
## 12          pontiac 1
## 13          subaru 2
## 14           toyota 6
## 15        volkswagen 4
```

```
ggplot(unique_count, aes(x = `unique_mods$Manufacturer`, y = n)) +
  geom_bar(stat = "identity", fill = "steelblue") +
  labs(x = "Manufacturer", y = "Number of Unique Models")
```

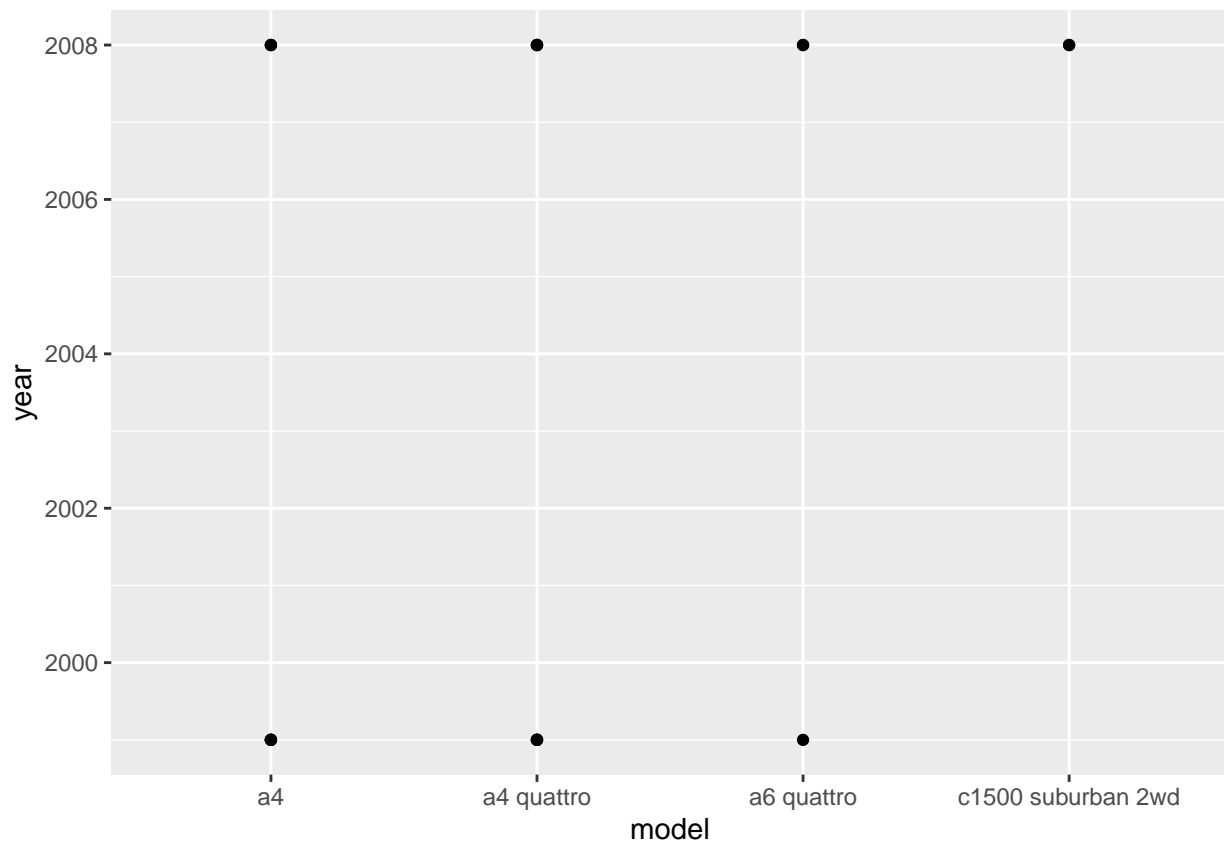


```
ggplot(mpg_file, aes(model, manufacturer)) + geom_point()
```

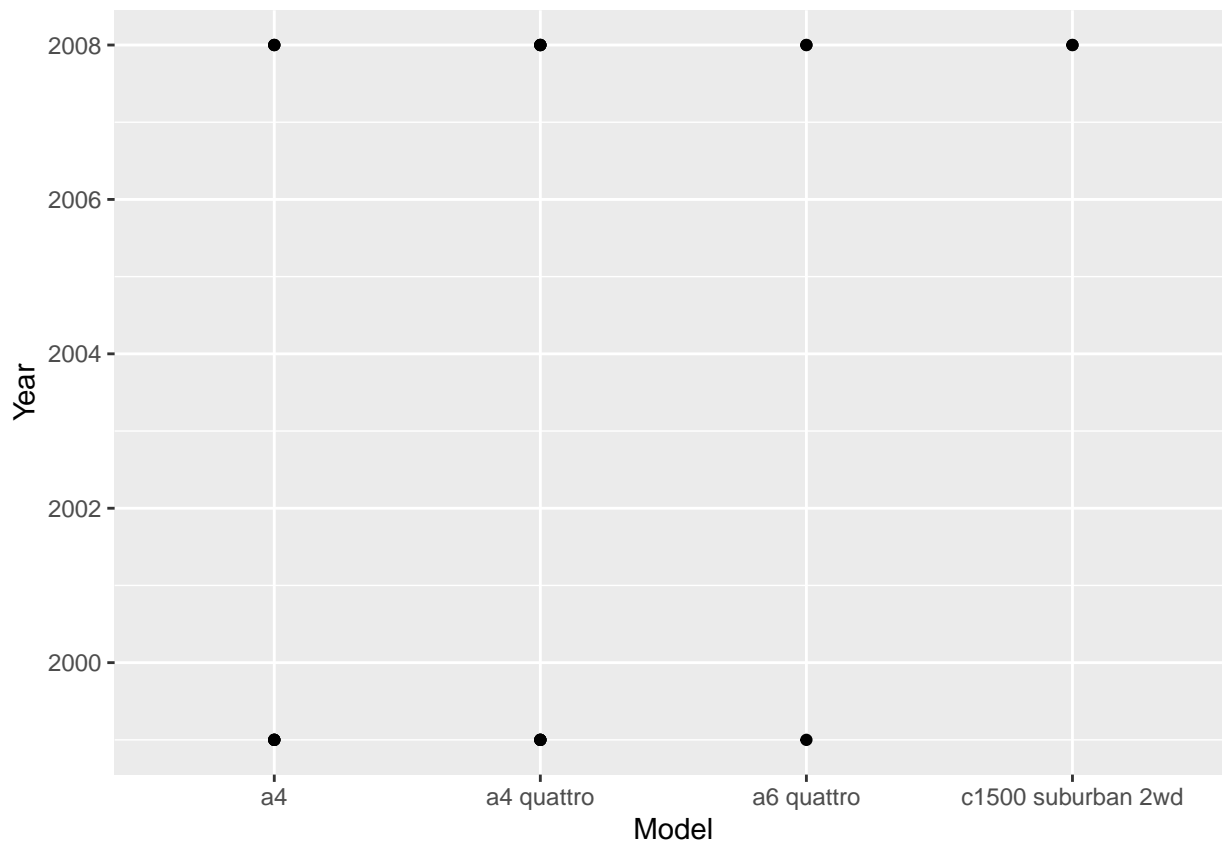



3. Plot the model and the year using ggplot(). Use only the top 20 observations. Write the codes and its results

```
top20 <- head(mpg_file,20)
ggplot(head(mpg_file,20), aes(x = model, y = year)) + geom_point()
```



```
top20Plot <- ggplot(top20, aes(x = model, y = year)) + geom_point() + labs(x = "Model", y = "Year")
top20Plot
```



4. Using the pipe (`%>%`), group the model and get the number of cars per model. Show codes and its result

```
library(dplyr)

model_car_count <- mpg_file %>%
  group_by(model) %>%
  summarize(number_of_cars = n())

model_car_count
```

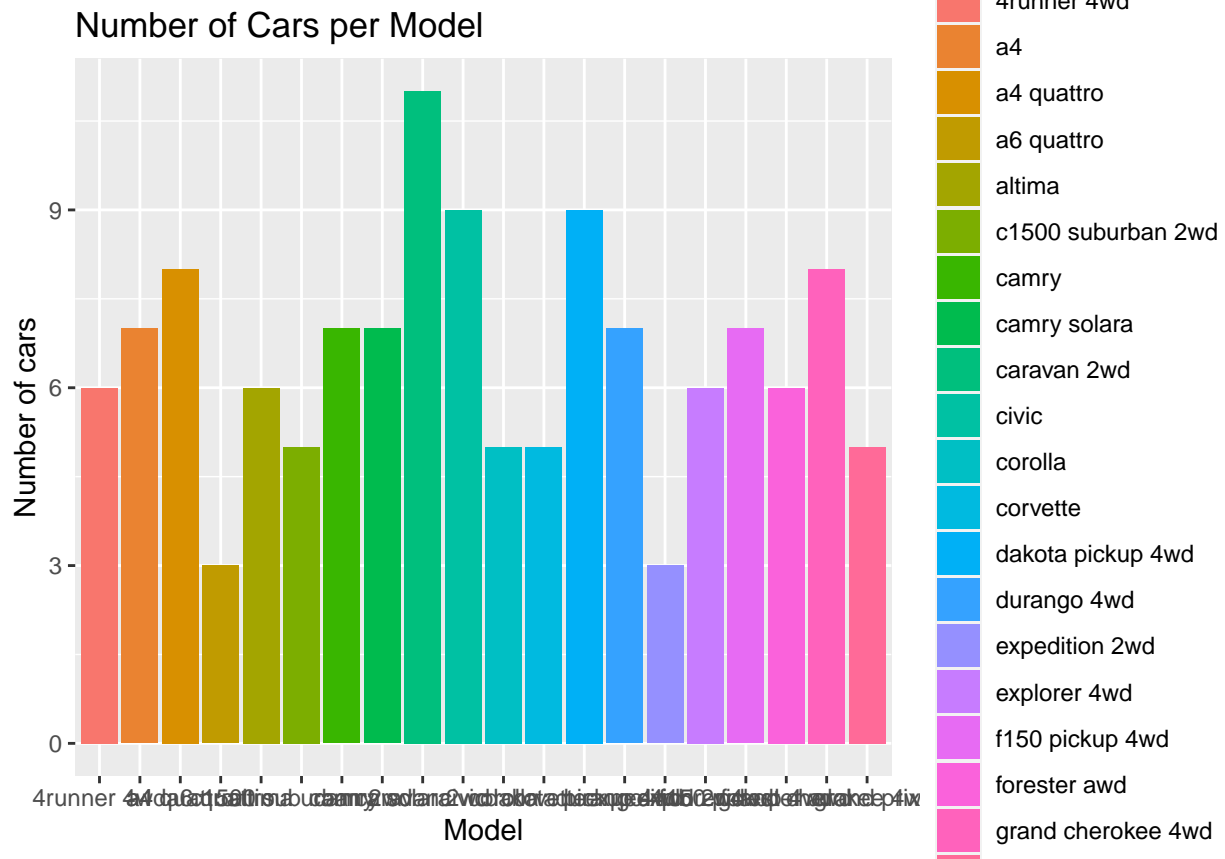
```
## # A tibble: 38 x 2
##   model          number_of_cars
##   <chr>              <int>
## 1 4runner 4wd             6
## 2 a4                     7
## 3 a4 quattro             8
## 4 a6 quattro             3
## 5 altima                 6
## 6 c1500 suburban 2wd     5
## 7 camry                  7
## 8 camry solara           7
## 9 caravan 2wd           11
## 10 civic                  9
## # i 28 more rows
```

4a. Plot using `geom_bar()` using the top 20 observations only. The graphs should have a title, labels and colors. Show code and results

```
obs_20 <- head(model_car_count, 20)
```

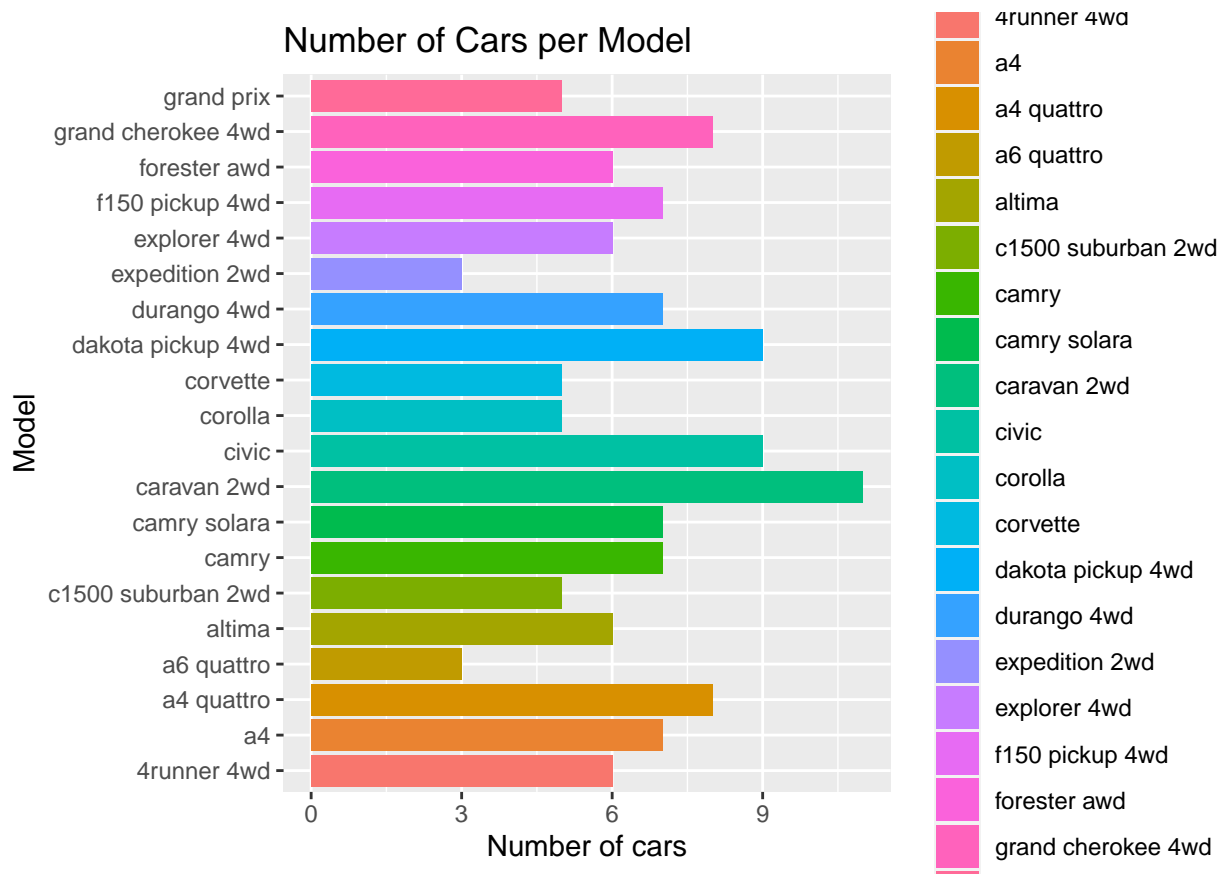
```
top_20 <- ggplot(obs_20, aes(x = model, y = number_of_cars, fill = model)) + geom_bar(stat = "identity")
```

```
top_20
```



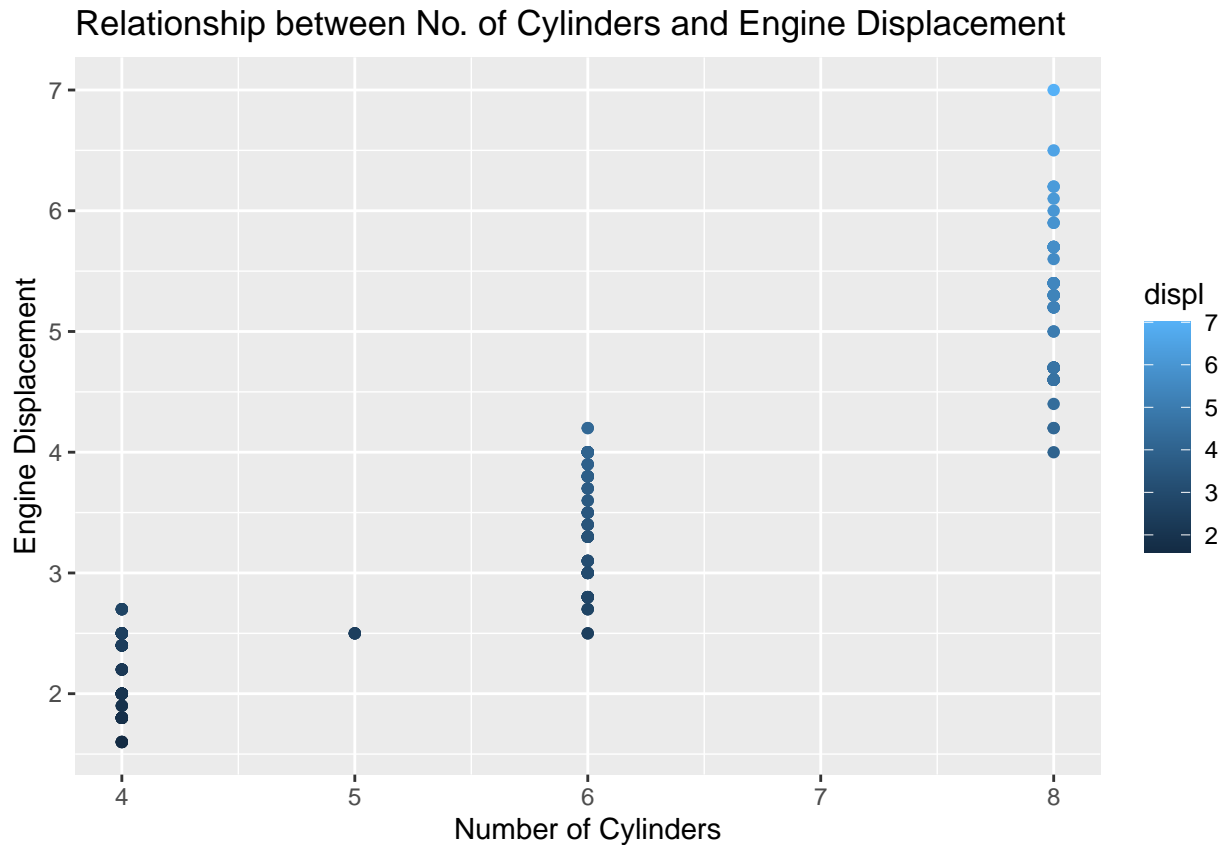
4b. b. Plot using the `geom_bar()` + `coord_flip()` just like what is shown below. Show codes and its result.

```
flipped_top_20 <- ggplot(obs_20, aes(x = model, y = number_of_cars, fill = model)) + geom_bar(stat = "identity")
flipped_top_20
```



5. Plot the relationship between cyl - number of cylinders and displ - engine displacement using `geom_point` with aesthetic color = engine displacement. Title should be "Relationship between No. of Cylinders and Engine Displacement".

```
cyl_displ_plot <- ggplot(mpg_file, aes(x = cyl, y = displ, color = displ)) +
  geom_point() +
  labs(title = "Relationship between No. of Cylinders and Engine Displacement",
        x = "Number of Cylinders",
        y = "Engine Displacement")
cyl_displ_plot
```

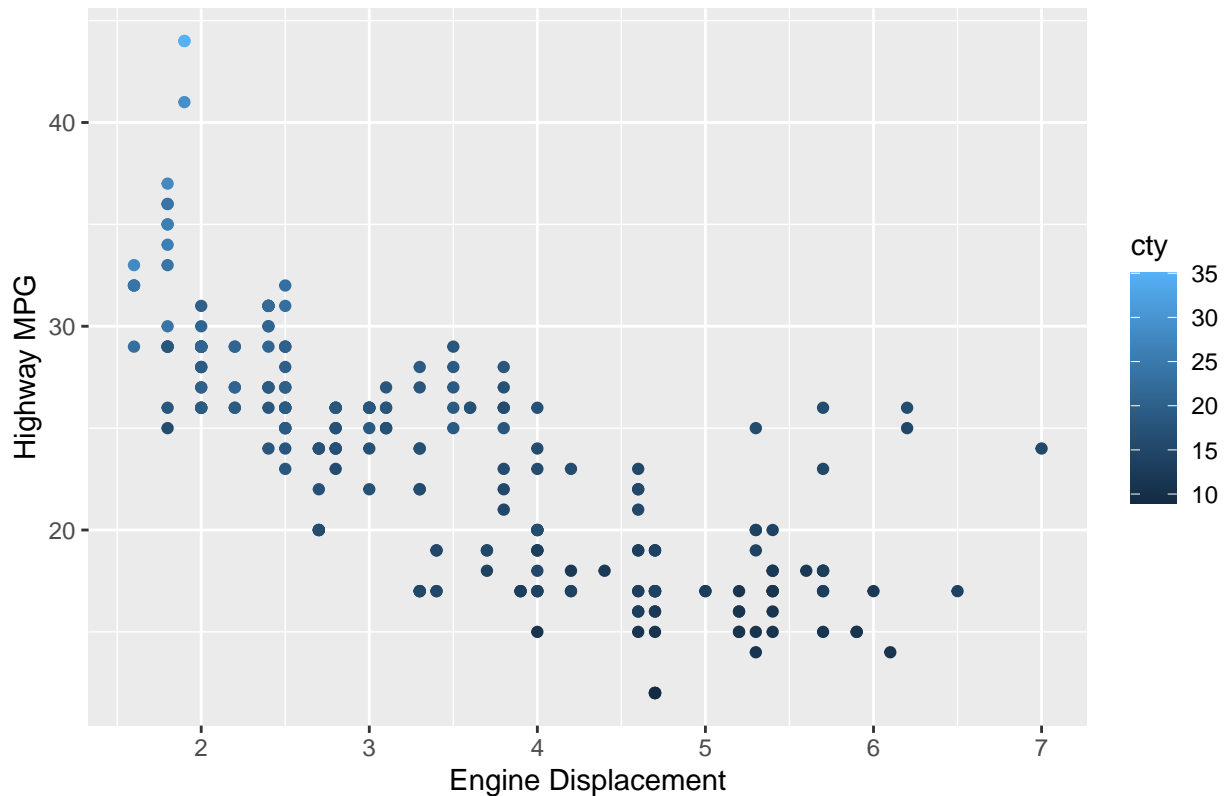
5a. How would you describe its relationship? Show the codes and its result.

It will generate a scatter plot showing the relationship between the number of cylinders and engine displacement.
As the number of cylinders increases, the engine displacement tends to increase as well. This suggests a positive correlation.

6. Plot the relationship between displ (engine displacement) and hwy (highway miles per gallon). Mapped it with a continuous variable you have identified in #1-c. What is its result? Why it produced such output?

```
displ_hwy_plot <- ggplot(mpg_file, aes(x = displ, y = hwy, color = cty)) +
  geom_point() +
  labs(title = "Relationship between Engine Displacement and Highway MPG",
        x = "Engine Displacement",
        y = "Highway MPG")
displ_hwy_plot
```

Relationship between Engine Displacement and Highway MPG



*# This is a scatterplot with engine displacement on the x-axis and highway miles per gallon on the y-axis
 # Using this plot, we can understand the relationship between the displ, hwy, and cty. By mapping the cty
 # This can provide understanding of the fuel efficiency of vehicle with different engine sizes*

6. Import the traffic.csv onto your R environment.

6a. How many numbers of observation does it have? What are the variables of the traffic dataset the Show your answer.

```
library(readr)
traffic <- read_csv("traffic.csv")
num_obs <- nrow(traffic)
num_obs
```

```
## [1] 48120
```

```
num_vars <- ncol(traffic)
num_vars
```

```
## [1] 4
```

```
vars <- colnames(traffic)
vars
```

```
## [1] "DateTime" "Junction" "Vehicles" "ID"
```

6b. subset the traffic dataset into junctions. What is the R codes and its output?

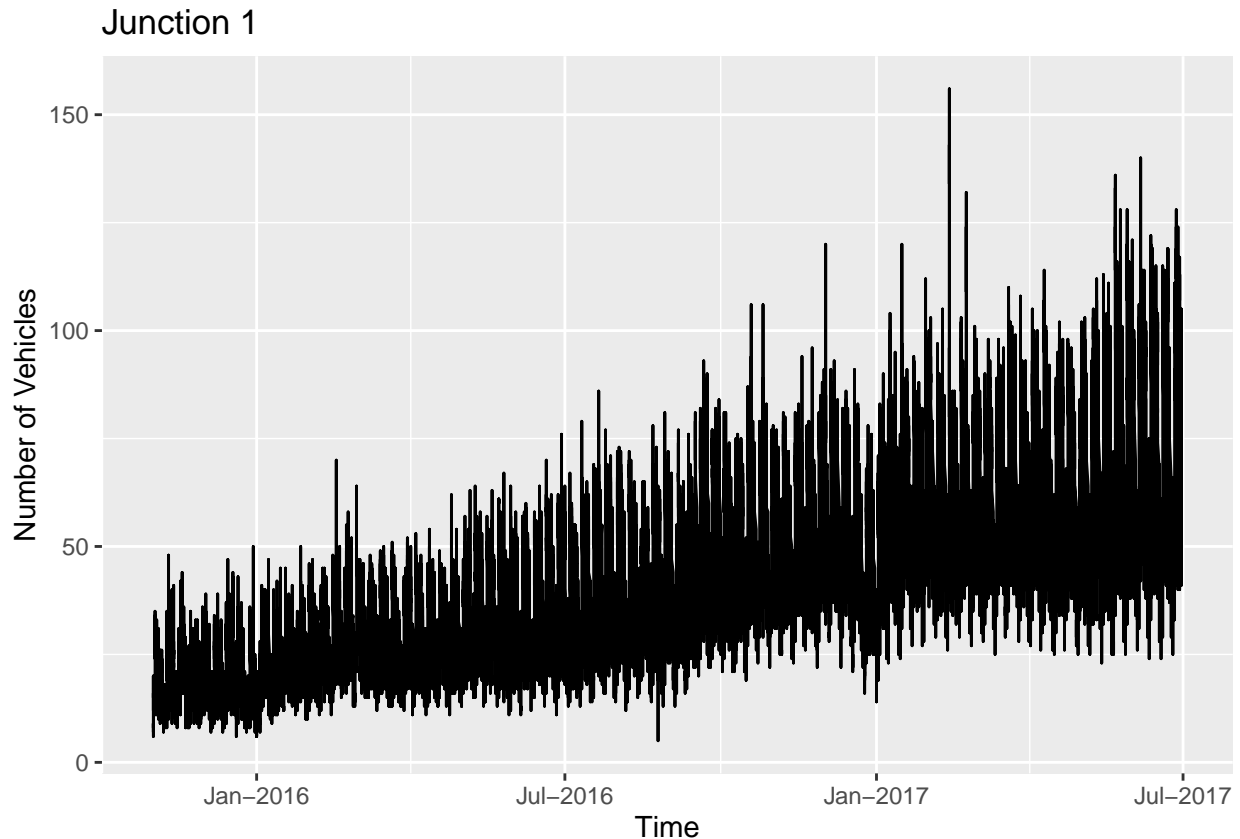
```
junctions_subset_1 <- subset(traffic, Junction == 1)
junctions_subset_2 <- subset(traffic, Junction == 2)
junctions_subset_3 <- subset(traffic, Junction == 3)
```

```
junctions_subset_4 <- subset(traffic, Junction == 4)
```

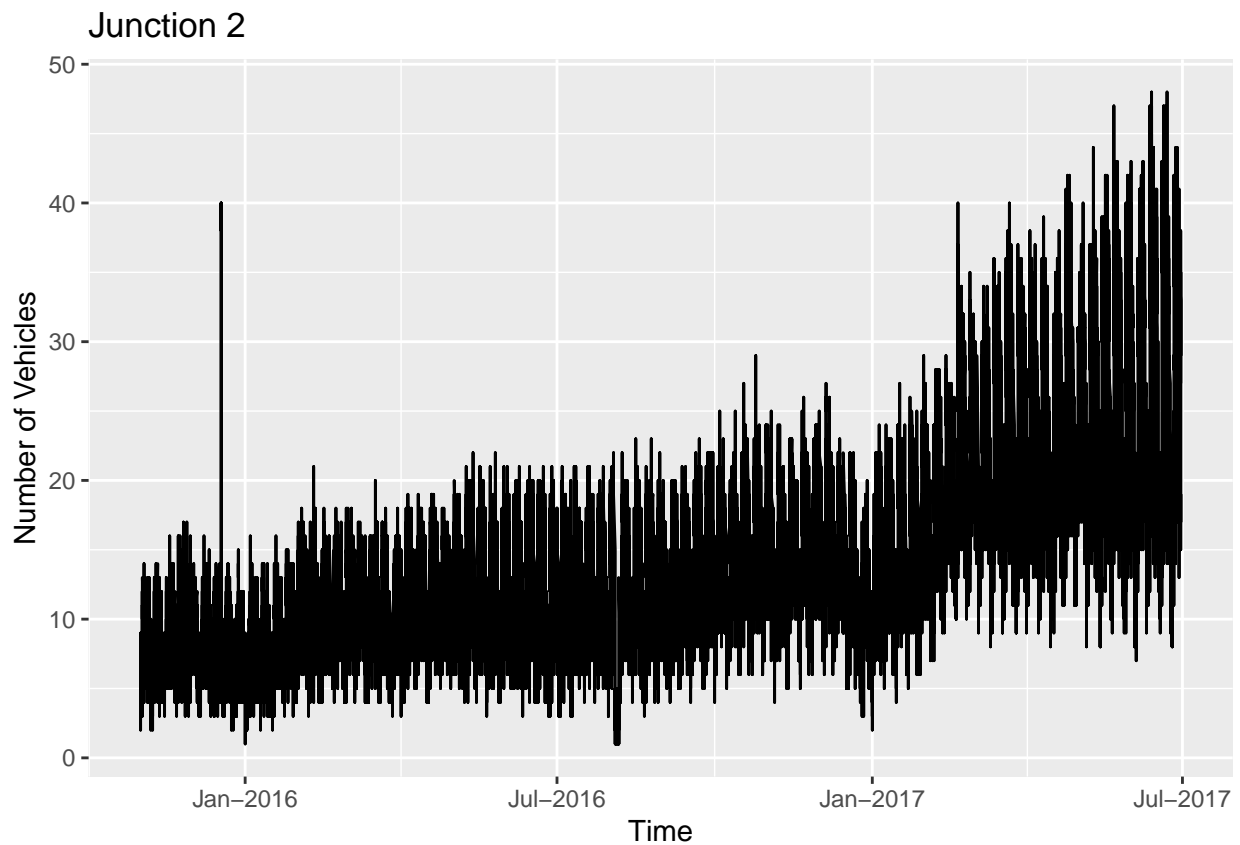
6c. Plot each junction in a using `geom_line()`. Show your solution and output.

```
junction_1_plot <- ggplot(junctions_subset_1, aes(x = as.Date(junctions_subset_1$DateTime), y = Vehicles)) +
  geom_line() +
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") +
  labs(title = "Junction 1", x = "Time", y = "Number of Vehicles")
junction_1_plot
```

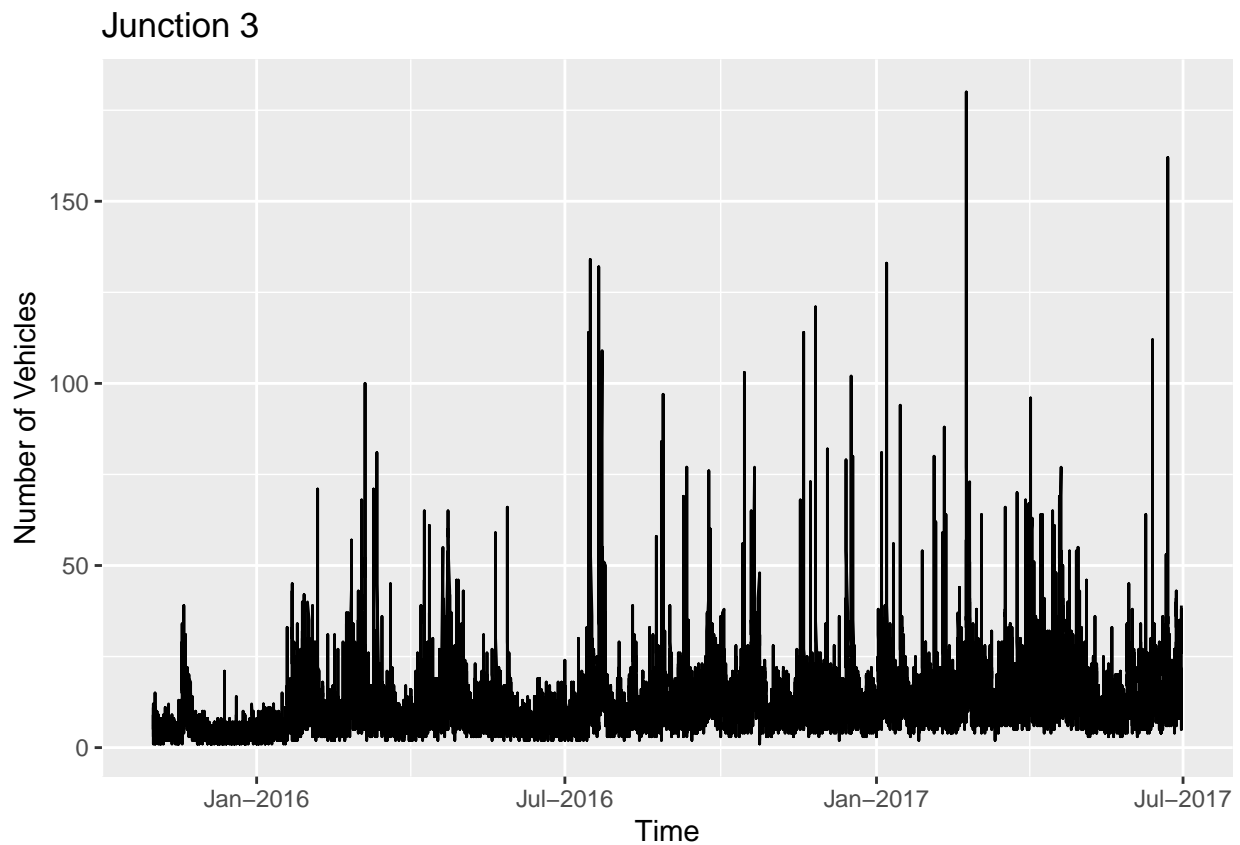
```
## Warning: Use of `junctions_subset_1$DateTime` is discouraged.
## i Use `DateTime` instead.
```



```
junction_2_plot <- ggplot(junctions_subset_2, aes(x = as.Date(junctions_subset_2$DateTime), y = Vehicles)) +
  geom_line() +
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") +
  labs(title = "Junction 2", x = "Time", y = "Number of Vehicles")
junction_2_plot
```

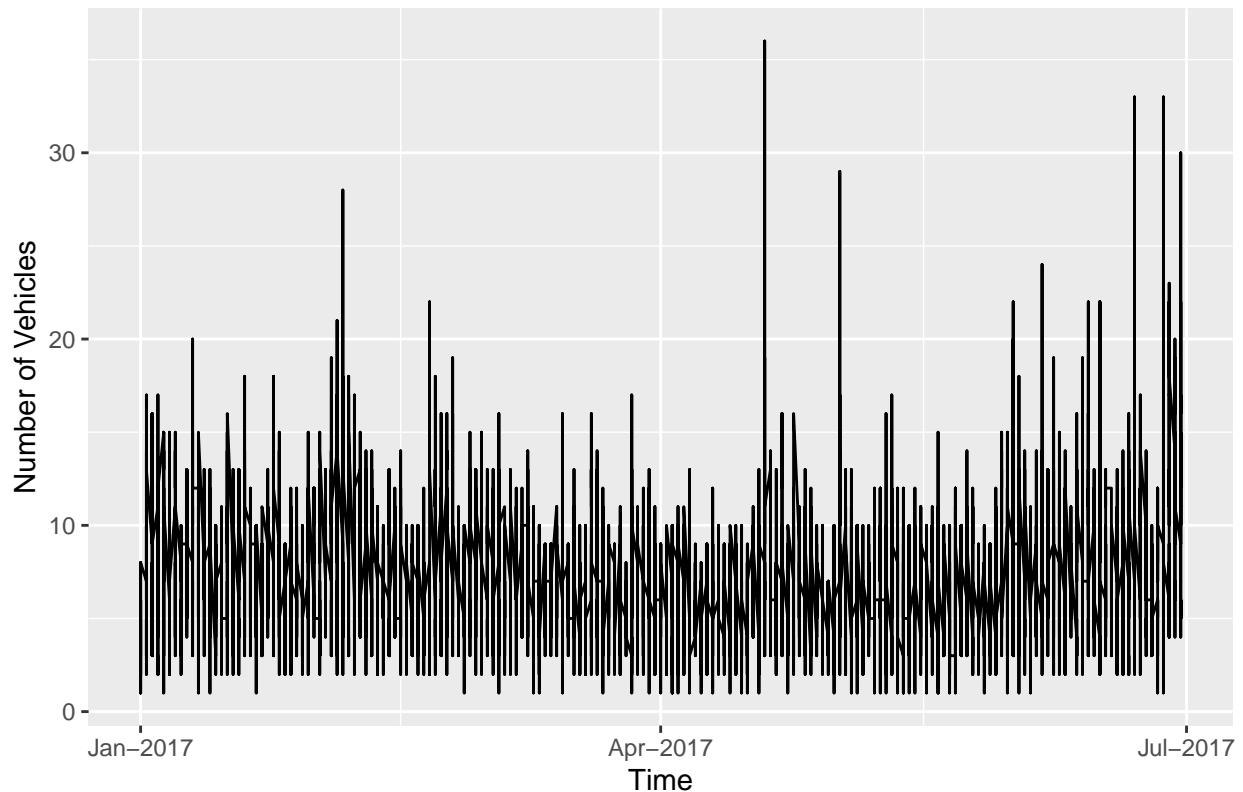


```
junction_3_plot <- ggplot(junctions_subset_3, aes(x = as.Date(junctions_subset_3$DateTime), y = Vehicle
  geom_line() +
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") +
  labs(title = "Junction 3", x = "Time", y = "Number of Vehicles")
junction_3_plot
```



```
junction_4_plot <- ggplot(junctions_subset_4, aes(x = as.Date(junctions_subset_4$DateTime), y = Vehicles)) +  
  geom_line() +  
  scale_x_date(date_labels = "%b-%Y") + theme(legend.position = "none") +  
  labs(title = "Junction 4", x = "Time", y = "Number of Vehicles")  
junction_4_plot
```

Junction 4



7. From alexa_file.xlsx, import it to your environment

7a. How many observations does alexa_file has? What about the number of columns? Show your solution and answer.

```
library(readxl)
alexa_data <- read_excel("alexa_file.xlsx")
num_obs <- nrow(alexa_data)
num_obs
```

```
## [1] 3150
```

```
num_cols <- ncol(alexa_data)
num_cols
```

```
## [1] 5
```

7b. group the variations and get the total of each variations. Use dplyr package. Show solution and answer

```
var_counts <- alexa_data %>%
  count(variation)
var_counts
```

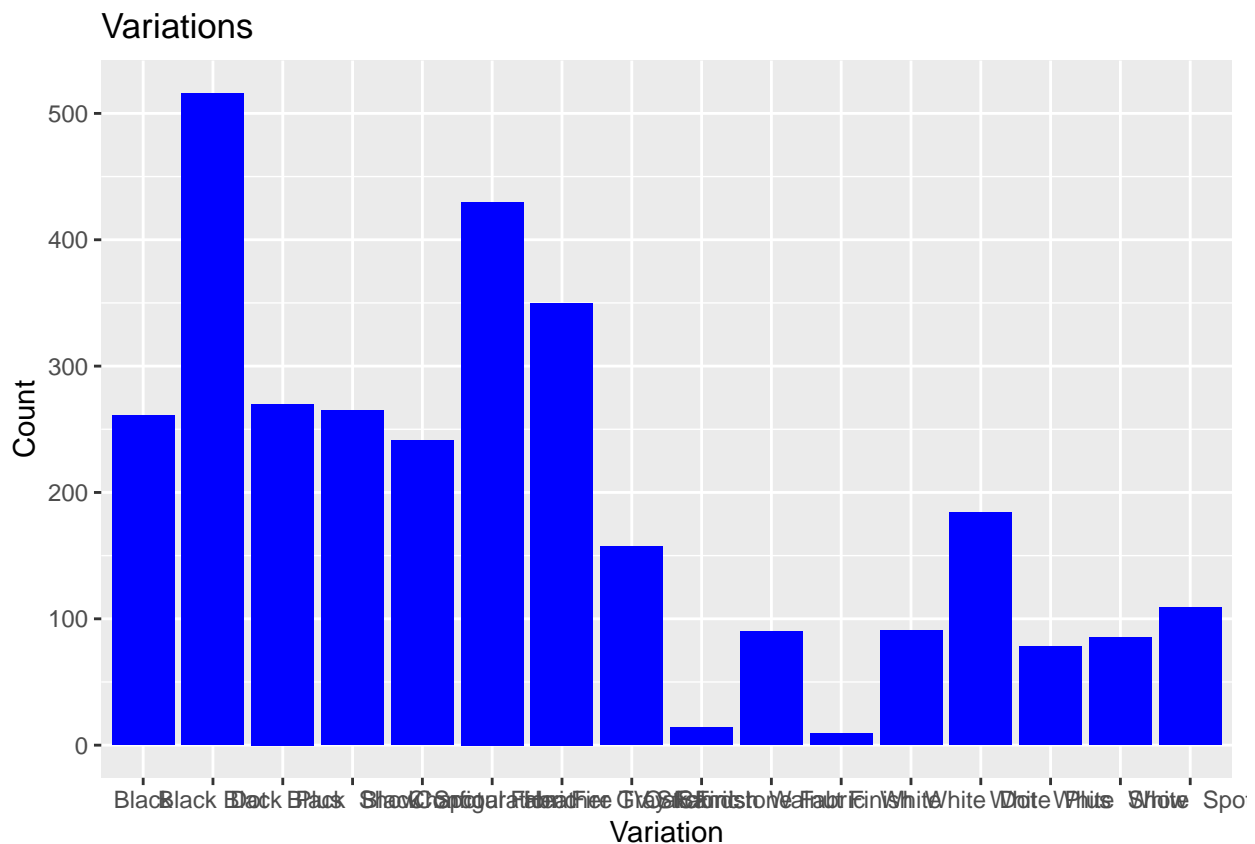
```
## # A tibble: 16 x 2
```

```
##   variation      n
##   <chr>      <int>
## 1 Black      261
## 2 Black Dot   516
## 3 Black Plus  270
## 4 Black Show  265
```

```
## 5 Black Spot 241
## 6 Charcoal Fabric 430
## 7 Configuration: Fire TV Stick 350
## 8 Heather Gray Fabric 157
## 9 Oak Finish 14
## 10 Sandstone Fabric 90
## 11 Walnut Finish 9
## 12 White 91
## 13 White Dot 184
## 14 White Plus 78
## 15 White Show 85
## 16 White Spot 109
```

7c. Plot the variations using the `ggplot()` function. What did you observe? Complete the details of the graph. Show solution and answer.

```
alexa_plot <- ggplot(alexa_data, aes(x = variation)) +
  geom_bar(fill = "blue") +
  labs(title = "Variations",
       x = "Variation",
       y = "Count")
alexa_plot
```



The graph shows the distribution of variations and their respective counts. Each bar represents a spe

7d. Plot a `geom_line()` with the date and the number of verified reviews. Complete the details of the graphs. Show your answer and solution

```

library(dplyr)
alexa_data$date <- as.Date(alexa_data$date)
alexa_data$month <- format(alexa_data$date, "%m")
countMonth <- alexa_data %>%
  count(month)
countMonth

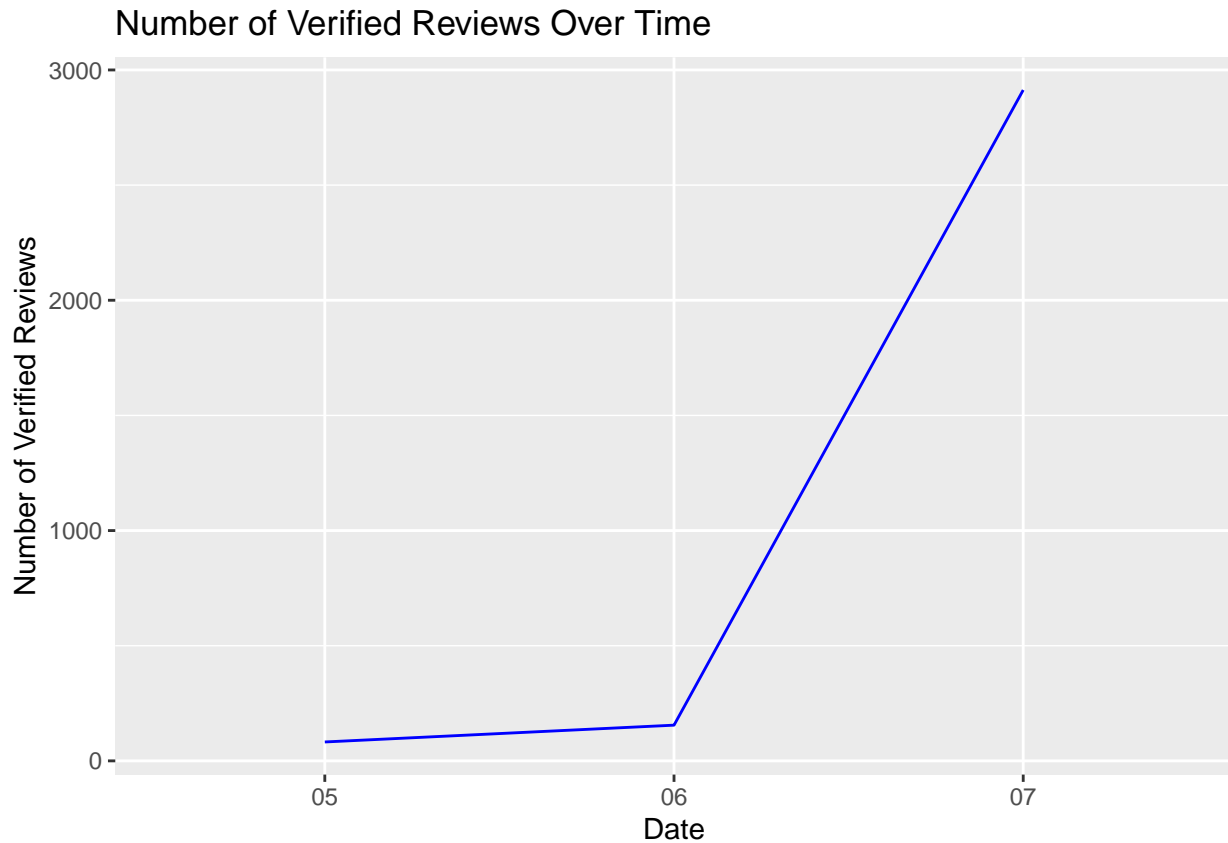
## # A tibble: 3 x 2
##   month     n
##   <chr> <int>
## 1 05      82
## 2 06     155
## 3 07    2913

monthly_revCount <- table(countMonth)
monthly_revCount

##           n
## month 82 155 2913
##   05  1   0   0
##   06  0   1   0
##   07  0   0   1

alexa_line <- ggplot(countMonth, aes(x = month, y = n, group = 1)) +
  geom_line(color = "blue") +
  labs(title = "Number of Verified Reviews Over Time",
       x = "Date",
       y = "Number of Verified Reviews")
alexa_line

```

7e. Get the relationship of variations and ratings. Which variations got the most highest in rating? Plot a graph to show its relationship. Show your solution and answer.

```
variation_ratings <- alexa_data %>%
  group_by(variation) %>%
  summarise(avg_rating = mean(rating))
variation_ratings
```

```
## # A tibble: 16 x 2
##   variation          avg_rating
##   <chr>             <dbl>
## 1 Black             4.23
## 2 Black Dot         4.45
## 3 Black Plus        4.37
## 4 Black Show        4.49
## 5 Black Spot        4.31
## 6 Charcoal Fabric   4.73
## 7 Configuration: Fire TV Stick 4.59
## 8 Heather Gray Fabric 4.69
## 9 Oak Finish        4.86
## 10 Sandstone Fabric  4.36
## 11 Walnut Finish     4.89
## 12 White             4.14
## 13 White Dot         4.42
## 14 White Plus        4.36
## 15 White Show        4.28
## 16 White Spot        4.31
```

```
highest_ratings <- variation_ratings %>%
  filter(avg_rating == max(avg_rating))
highest_ratings
```

```
## # A tibble: 1 x 2
##   variation    avg_rating
##   <chr>        <dbl>
## 1 Walnut Finish    4.89
```

```
# The walnut finish variation has the highest rating
ggplot(variation_ratings, aes(x = variation, y = avg_rating)) +
  geom_bar(stat = "identity", fill = "blue") +
  labs(title = "Average Ratings by Variation",
       x = "Variation",
       y = "Average Rating")
```

