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> # Assignment: Week4, Assignment 2
> # Name: Koppula, Veera
> # Date: 2010-06-21
>
```

```
> ## Load the ggplot2 package
> library(ggplot2)
> library("readxl")
> library(MASS)
>
```

```
> theme_set(theme_minimal())
>
```

```
> ## Set the working directory to the root of your DSC 520 directory
> ##setwd("/home/jdoe/Workspaces/dsc520")
>
```

```
> ## Load the 'data/acs-14-1yr-s0201.csv'
> acs_df <- read.csv("data/acs-14-1yr-s0201.csv")
> acs_df
```

	Id	Id2	Geography	PopGroupID	POPGROUP.display.label	RacesReported	HSDegree	BachDegree
1	05000000US01073	1073	Jefferson County, Alabama	1	Total population	660793	89.1	30.5
2	05000000US04013	4013	Maricopa County, Arizona	1	Total population	4087191	86.8	30.2
3	05000000US04019	4019	Pima County, Arizona	1	Total population	1004516	88.0	30.8
4	05000000US06001	6001	Alameda County, California	1	Total population	1610921	86.9	42.8
5	05000000US06013	6013	Contra Costa County, California	1	Total population	1111339	88.8	39.7
6	05000000US06019	6019	Fresno County, California	1	Total population	965974	73.6	19.7
7	05000000US06029	6029	Kern County, California	1	Total population	874589	74.5	15.4
8	05000000US06037	6037	Los Angeles County, California	1	Total population	10116705	77.5	30.3
9	05000000US06059	6059	Orange County, California	1	Total population	3145515	84.6	38.0
10	05000000US06065	6065	Riverside County, California	1	Total population	2329271	80.6	20.7
11	05000000US06067	6067	Sacramento County, California	1	Total population	1482026	86.8	28.9
12	05000000US06071	6071	San Bernardino County, California	1	Total population	2112619	78.6	18.9
13	05000000US06073	6073	San Diego County, California	1	Total population	3263431	86.6	37.1
14	05000000US06075	6075	San Francisco County, California	1	Total population	852469	88.1	54.2
15	05000000US06077	6077	San Joaquin County, California	1	Total population	715597	77.6	18.3
16	05000000US06081	6081	San Mateo County, California	1	Total population	758581	88.1	47.5
17	05000000US06085	6085	Santa Clara County, California	1	Total population	1894605	87.4	48.4
18	05000000US06097	6097	Sonoma County, California	1	Total population	500292	87.6	34.8
19	05000000US06099	6099	Stanislaus County, California	1	Total population	531997	78.4	17.0
20	05000000US06111	6111	Ventura County, California	1	Total population	846178	83.6	31.6
21	05000000US08005	8005	Arapahoe County, Colorado	1	Total population	618821	91.9	40.9
22	05000000US08031	8031	Denver County, Colorado	1	Total population	663862	85.5	44.3
23	05000000US08041	8041	El Paso County, Colorado	1	Total population	663519	92.8	36.5
24	05000000US08059	8059	Jefferson County, Colorado	1	Total population	558503	94.1	42.0
25	05000000US09001	9001	Fairfield County, Connecticut	1	Total population	945438	89.8	46.7
26	05000000US09003	9003	Hartford County, Connecticut	1	Total population	897985	89.3	36.8
27	05000000US09009	9009	New Haven County, Connecticut	1	Total population	861277	89.5	34.5
28	05000000US10003	10003	New Castle County, Delaware	1	Total population	552778	90.1	35.8
29	05000000US11001	11001	District of Columbia, District of Columbia	1	Total population	658893	90.2	55.0
30	05000000US12009	12009	Brevard County, Florida	1	Total population	556885	91.6	27.2
31	05000000US12011	12011	Broward County, Florida	1	Total population	1869235	88.4	30.5
32	05000000US12031	12031	Duval County, Florida	1	Total population	897698	89.0	26.1
33	05000000US12057	12057	Hillsborough County, Florida	1	Total population	1316298	87.3	29.8
34	05000000US12071	12071	Lee County, Florida	1	Total population	679513	86.3	26.5
35	05000000US12086	12086	Miami-Dade County, Florida	1	Total population	2662874	80.9	26.6
36	05000000US12095	12095	Orange County, Florida	1	Total population	1253001	87.9	31.4
37	05000000US12099	12099	Palm Beach County, Florida	1	Total population	1397710	87.7	33.0
38	05000000US12103	12103	Pinellas County, Florida	1	Total population	938098	90.1	29.5
39	05000000US12105	12105	Polk County, Florida	1	Total population	634638	84.9	19.7
40	05000000US12127	12127	Volusia County, Florida	1	Total population	507531	88.9	22.5
41	05000000US13067	13067	Cobb County, Georgia	1	Total population	730981	90.3	43.7
42	05000000US13089	13089	DeKalb County, Georgia	1	Total population	722161	88.4	41.7
43	05000000US13121	13121	Fulton County, Georgia	1	Total population	996319	91.3	49.2
44	05000000US13135	13135	Gwinnett County, Georgia	1	Total population	877922	88.0	35.4
45	05000000US15003	15003	Honolulu County, Hawaii	1	Total population	991788	91.8	32.6
46	05000000US17031	17031	Cook County, Illinois	1	Total population	5246456	85.5	36.2
47	05000000US17043	17043	DuPage County, Illinois	1	Total population	932708	92.3	48.0
48	05000000US17089	17089	Kane County, Illinois	1	Total population	527306	82.9	32.6
49	05000000US17097	17097	Lake County, Illinois	1	Total population	705186	90.3	44.0
50	05000000US17197	17197	Will County, Illinois	1	Total population	685419	90.7	33.1
51	05000000US18097	18097	Marion County, Indiana	1	Total population	934243	85.0	28.8
52	05000000US20091	20091	Johnson County, Kansas	1	Total population	574272	95.5	52.8
53	05000000US20173	20173	Sedgwick County, Kansas	1	Total population	508803	88.8	30.7
54	05000000US21111	21111	Jefferson County, Kentucky	1	Total population	760026	88.5	31.6
55	05000000US24003	24003	Anne Arundel County, Maryland	1	Total population	560133	91.9	38.8
56	05000000US24005	24005	Baltimore County, Maryland	1	Total population	826925	90.4	37.2
57	05000000US24031	24031	Montgomery County, Maryland	1	Total population	1030447	90.9	58.5
58	05000000US24033	24033	Prince George's County, Maryland	1	Total population	904430	85.5	31.0
59	05000000US24510	24510	Baltimore city, Maryland	1	Total population	622793	84.4	30.0
60	05000000US25005	25005	Bristol County, Massachusetts	1	Total population	554194	82.5	25.7
61	05000000US25009	25009	Essex County, Massachusetts	1	Total population	769091	89.1	38.9
62	05000000US25017	25017	Middlesex County, Massachusetts	1	Total population	1570315	92.3	52.3
63	05000000US25021	25021	Norfolk County, Massachusetts	1	Total population	692254	94.1	51.9
64	05000000US25023	25023	Plymouth County, Massachusetts	1	Total population	507022	92.2	34.1
65	05000000US25025	25025	Suffolk County, Massachusetts	1	Total population	767254	83.9	42.3
66	05000000US25027	25027	Worcester County, Massachusetts	1	Total population	813475	90.1	34.6
67	05000000US26081	26081	Kent County, Michigan	1	Total population	629237	89.1	33.7
68	05000000US26099	26099	Macomb County, Michigan	1	Total population	860112	89.3	23.9
69	05000000US26125	26125	Oakland County, Michigan	1	Total population	1237868	93.6	44.8
70	05000000US26163	26163	Wayne County, Michigan	1	Total population	1764804	84.9	22.1
71	05000000US27053	27053	Hennepin County, Minnesota	1	Total population	1212064	93.2	47.3
72	05000000US27123	27123	Ramsey County, Minnesota	1	Total population	532655	89.9	40.9
73	05000000US29095	29095	Jackson County, Missouri	1	Total population	683191	90.0	29.5
74	05000000US29189	29189	St. Louis County, Missouri	1	Total population	1001876	93.2	42.8
75	05000000US31055	31055	Douglas County, Nebraska	1	Total population	543244	88.2	36.3
76	05000000US32003	32003	Clark County, Nevada	1	Total population	2069681	84.5	22.7
77	05000000US34003	34003	Bergen County, New Jersey	1	Total population	933572	91.5	46.2
78	05000000US34007	34007	Camden County, New Jersey	1	Total population	511038	88.3	31.3

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79 05000000US34013 34013 Essex County, New Jersey 1 Total population 795723 85.5 32.7
80 05000000US34017 34017 Hudson County, New Jersey 1 Total population 669115 83.4 38.2
81 05000000US34023 34023 Middlesex County, New Jersey 1 Total population 836297 89.1 41.0
82 05000000US34025 34025 Monmouth County, New Jersey 1 Total population 629279 93.1 43.7
83 05000000US34029 34029 Ocean County, New Jersey 1 Total population 586301 91.7 28.6
84 05000000US34031 34031 Passaic County, New Jersey 1 Total population 508856 83.8 28.6
85 05000000US34039 34039 Union County, New Jersey 1 Total population 552939 86.2 33.0
86 05000000US35001 35001 Bernalillo County, New Mexico 1 Total population 675551 88.0 32.7
87 05000000US36005 36005 Bronx County, New York 1 Total population 1438159 70.5 19.3
88 05000000US36029 36029 Erie County, New York 1 Total population 922835 90.6 31.3
89 05000000US36047 36047 Kings County, New York 1 Total population 2621793 80.0 34.3
90 05000000US36055 36055 Monroe County, New York 1 Total population 749857 90.3 35.9
91 05000000US36059 36059 Nassau County, New York 1 Total population 1358627 90.7 43.2
92 05000000US36061 36061 New York County, New York 1 Total population 1636268 86.8 59.9
93 05000000US36081 36081 Queens County, New York 1 Total population 2321580 80.4 29.8
94 05000000US36103 36103 Suffolk County, New York 1 Total population 1502968 89.8 34.0
95 05000000US36119 36119 Westchester County, New York 1 Total population 972634 87.4 47.1
96 05000000US37081 37081 Guilford County, North Carolina 1 Total population 512119 89.0 33.3
97 05000000US37119 37119 Mecklenburg County, North Carolina 1 Total population 1012539 89.5 43.0
98 05000000US37183 37183 Wake County, North Carolina 1 Total population 998691 92.4 49.2
99 05000000US39035 39035 Cuyahoga County, Ohio 1 Total population 1259828 88.1 31.0
100 05000000US39049 39049 Franklin County, Ohio 1 Total population 1231393 90.0 38.0
101 05000000US39061 39061 Hamilton County, Ohio 1 Total population 806631 90.5 35.6
102 05000000US39113 39113 Montgomery County, Ohio 1 Total population 533116 89.7 25.7
103 05000000US39153 39153 Summit County, Ohio 1 Total population 541943 91.1 30.3
104 05000000US40109 40109 Oklahoma County, Oklahoma 1 Total population 766215 86.8 30.6
105 05000000US40143 40143 Tulsa County, Oklahoma 1 Total population 629598 88.6 30.7
106 05000000US41051 41051 Multnomah County, Oregon 1 Total population 776712 91.1 41.6
107 05000000US41067 41067 Washington County, Oregon 1 Total population 562998 90.2 39.7
108 05000000US42003 42003 Allegheny County, Pennsylvania 1 Total population 1231255 93.9 37.7
109 05000000US42017 42017 Bucks County, Pennsylvania 1 Total population 626685 93.9 37.7
110 05000000US42029 42029 Chester County, Pennsylvania 1 Total population 512784 92.3 49.3
111 05000000US42045 42045 Delaware County, Pennsylvania 1 Total population 562960 91.5 36.3
112 05000000US42071 42071 Lancaster County, Pennsylvania 1 Total population 533320 84.9 26.0
113 05000000US42091 42091 Montgomery County, Pennsylvania 1 Total population 816857 93.7 47.3
114 05000000US42101 42101 Philadelphia County, Pennsylvania 1 Total population 1560297 82.6 26.0
115 05000000US44007 44007 Providence County, Rhode Island 1 Total population 631974 82.0 25.2
116 05000000US47037 47037 Davidson County, Tennessee 1 Total population 668347 86.7 37.3
117 05000000US47157 47157 Shelby County, Tennessee 1 Total population 938803 87.4 29.9
118 05000000US48029 48029 Bexar County, Texas 1 Total population 1855866 83.0 26.3
119 05000000US48085 48085 Collin County, Texas 1 Total population 885241 93.7 50.0
120 05000000US48113 48113 Dallas County, Texas 1 Total population 2518638 77.6 29.1
121 05000000US48121 48121 Denton County, Texas 1 Total population 753363 91.9 41.5
122 05000000US48141 48141 El Paso County, Texas 1 Total population 833487 75.8 21.1
123 05000000US48157 48157 Fort Bend County, Texas 1 Total population 685345 88.6 44.1
124 05000000US48201 48201 Harris County, Texas 1 Total population 4441370 79.8 29.7
125 05000000US48215 48215 Hidalgo County, Texas 1 Total population 831073 62.2 17.9
[ reached 'max' / getOption("max.print") -- omitted 11 rows ]
>
>
> ## Load the 'data/acs-14-1yr-s0201.csv'
> acs_df <- read.csv("data/acs-14-1yr-s0201.csv")
> acs_df
  id id2 Geography PopGroupID POPGROUP.display.label RacesReported HSDegree BachDegree
1 05000000US01073 1073 Jefferson County, Alabama 1 Total population 660793 89.1 30.5
2 05000000US04013 4013 Maricopa County, Arizona 1 Total population 4087191 86.8 30.2
3 05000000US04019 4019 Pima County, Arizona 1 Total population 1004516 88.0 30.8
4 05000000US06001 6001 Alameda County, California 1 Total population 1610921 86.9 42.8
5 05000000US06013 6013 Contra Costa County, California 1 Total population 1111339 88.8 39.7
6 05000000US06019 6019 Fresno County, California 1 Total population 965974 73.6 19.7
7 05000000US06029 6029 Kern County, California 1 Total population 874589 74.5 15.4
8 05000000US06037 6037 Los Angeles County, California 1 Total population 10116705 77.5 30.3
9 05000000US06059 6059 Orange County, California 1 Total population 3145515 84.6 38.0
10 05000000US06065 6065 Riverside County, California 1 Total population 2329271 80.6 20.7
11 05000000US06067 6067 Sacramento County, California 1 Total population 1482026 86.8 28.9
12 05000000US06071 6071 San Bernardino County, California 1 Total population 2112619 78.6 18.9
13 05000000US06073 6073 San Diego County, California 1 Total population 3263431 86.6 37.1
14 05000000US06075 6075 San Francisco County, California 1 Total population 852469 88.1 54.2
15 05000000US06077 6077 San Joaquin County, California 1 Total population 715597 77.6 18.3
16 05000000US06081 6081 San Mateo County, California 1 Total population 758581 88.1 47.5
17 05000000US06085 6085 Santa Clara County, California 1 Total population 1894605 87.4 48.4
18 05000000US06097 6097 Sonoma County, California 1 Total population 500292 87.6 34.8
19 05000000US06099 6099 Stanislaus County, California 1 Total population 531997 78.4 17.0
20 05000000US06111 6111 Ventura County, California 1 Total population 846178 83.6 31.6
21 05000000US08005 8005 Arapahoe County, Colorado 1 Total population 618821 91.9 40.9
22 05000000US08031 8031 Denver County, Colorado 1 Total population 663862 85.5 44.3
23 05000000US08041 8041 El Paso County, Colorado 1 Total population 663519 92.8 36.5
24 05000000US08059 8059 Jefferson County, Colorado 1 Total population 558503 94.1 42.0
25 05000000US09001 9001 Fairfield County, Connecticut 1 Total population 945438 89.8 46.7
26 05000000US09003 9003 Hartford County, Connecticut 1 Total population 897985 89.3 36.8
27 05000000US09009 9009 New Haven County, Connecticut 1 Total population 861277 89.5 34.5
28 05000000US10003 10003 New Castle County, Delaware 1 Total population 552778 90.1 35.8
29 05000000US11001 11001 District of Columbia, District of Columbia 1 Total population 658893 90.2 55.0
30 05000000US12009 12009 Brevard County, Florida 1 Total population 556885 91.6 27.2
31 05000000US12011 12011 Broward County, Florida 1 Total population 1869235 88.4 30.5
32 05000000US12031 12031 Duval County, Florida 1 Total population 897698 89.0 26.1
33 05000000US12057 12057 Hillsborough County, Florida 1 Total population 1316298 87.3 29.8
34 05000000US12071 12071 Lee County, Florida 1 Total population 679513 86.3 26.5
35 05000000US12086 12086 Miami-Dade County, Florida 1 Total population 2662874 80.9 26.6
36 05000000US12095 12095 Orange County, Florida 1 Total population 1253001 87.9 31.4
37 05000000US12099 12099 Palm Beach County, Florida 1 Total population 1397710 87.7 33.0
38 05000000US12103 12103 Pinellas County, Florida 1 Total population 938098 90.1 29.5
39 05000000US12105 12105 Polk County, Florida 1 Total population 634638 84.9 19.7
40 05000000US12127 12127 Volusia County, Florida 1 Total population 507531 88.9 22.5
41 05000000US13067 13067 Cobb County, Georgia 1 Total population 730981 90.3 43.7
42 05000000US13089 13089 DeKalb County, Georgia 1 Total population 722161 88.4 41.7

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43	05000000U513121	13121	Fulton County, Georgia	1	Total population	996319	91.3	49.2
44	05000000U51335	13135	Gwinnett County, Georgia	1	Total population	877922	88.0	35.4
45	05000000U515003	15003	Honolulu County, Hawaii	1	Total population	991788	91.8	32.6
46	05000000U517031	17031	Cook County, Illinois	1	Total population	5246456	95.5	36.2
47	05000000U517043	17043	DuPage County, Illinois	1	Total population	932708	92.3	48.0
48	05000000U517089	17089	Kane County, Illinois	1	Total population	527306	82.9	32.6
49	05000000U517097	17097	Lake County, Illinois	1	Total population	705186	90.3	44.0
50	05000000U517197	17197	Will County, Illinois	1	Total population	685419	90.7	33.1
51	05000000U518097	18097	Marion County, Indiana	1	Total population	934243	85.0	28.8
52	05000000U520091	20091	Johnson County, Kansas	1	Total population	574272	95.5	52.8
53	05000000U520173	20173	Sedgewick County, Kansas	1	Total population	508803	88.8	30.7
54	05000000U521111	21111	Jefferson County, Kentucky	1	Total population	760026	88.5	31.6
55	05000000U524003	24003	Anne Arundel County, Maryland	1	Total population	560133	91.9	38.8
56	05000000U524005	24005	Baltimore County, Maryland	1	Total population	826925	90.4	37.2
57	05000000U524031	24031	Montgomery County, Maryland	1	Total population	1030447	90.9	58.5
58	05000000U524033	24033	Prince George's County, Maryland	1	Total population	9040430	85.5	31.0
59	05000000U524510	24510	Baltimore city, Maryland	1	Total population	622793	84.4	30.0
60	05000000U525005	25005	Bristol County, Massachusetts	1	Total population	554194	82.5	25.7
61	05000000U525009	25009	Essex County, Massachusetts	1	Total population	769091	89.1	38.9
62	05000000U525017	25017	Middlesex County, Massachusetts	1	Total population	1570315	92.3	52.3
63	05000000U525021	25021	Norfolk County, Massachusetts	1	Total population	692254	94.1	51.9
64	05000000U525023	25023	Plymouth County, Massachusetts	1	Total population	570222	92.2	34.1
65	05000000U525025	25025	Suffolk County, Massachusetts	1	Total population	767254	83.9	42.3
66	05000000U525027	25027	Worcester County, Massachusetts	1	Total population	813475	90.1	34.6
67	05000000U526081	26081	Kent County, Michigan	1	Total population	629237	89.1	33.7
68	05000000U526099	26099	Macomb County, Michigan	1	Total population	860112	93.3	23.9
69	05000000U526125	26125	Oakland County, Michigan	1	Total population	1237868	93.6	44.8
70	05000000U526163	26163	Wayne County, Michigan	1	Total population	1764804	94.9	22.1
71	05000000U527053	27053	Hennepin County, Minnesota	1	Total population	1212064	93.2	47.3
72	05000000U527123	27123	Ramsey County, Minnesota	1	Total population	532655	89.9	40.9
73	05000000U529095	29095	Jackson County, Missouri	1	Total population	683191	90.0	29.5
74	05000000U529189	29189	St. Louis County, Missouri	1	Total population	1001876	93.2	42.8
75	05000000U53005	31005	Douglas County, Nebraska	1	Total population	543244	88.2	36.3
76	05000000U532003	32003	Clark County, Nevada	1	Total population	2066881	84.5	22.7
77	05000000U534003	34003	Bergen County, New Jersey	1	Total population	933572	91.5	46.2
78	05000000U534007	34007	Camden County, New Jersey	1	Total population	511038	88.3	31.3
79	05000000U534013	34013	Essex County, New Jersey	1	Total population	795723	85.5	32.7
80	05000000U534017	34017	Hudson County, New Jersey	1	Total population	666115	83.4	38.2
81	05000000U534023	34023	Middlesex County, New Jersey	1	Total population	836297	89.1	41.0
82	05000000U534025	34025	Monmouth County, New Jersey	1	Total population	629279	93.1	43.7
83	05000000U534029	34029	Ocean County, New Jersey	1	Total population	586301	91.7	28.6
84	05000000U534031	34031	Passaic County, New Jersey	1	Total population	508586	83.8	28.6
85	05000000U534039	34039	Union County, New Jersey	1	Total population	552939	86.2	33.0
86	05000000U535001	35001	Bernalillo County, New Mexico	1	Total population	675551	88.0	32.7
87	05000000U536005	36005						

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7 2006-01-04 00:00:00      1050000      1      3 NA      R1      21634 NE 87T... 98053 NA      REDMOND      -122. 47.7      10      3960      5
8 2006-01-04 00:00:00      875000      1      3 NA      R1      21404 NE 67T... 98053 NA      REDMOND      -122. 47.7      10      3720      4
9 2006-01-04 00:00:00      660000      1      3 NA      R1      7525 238TH A... 98053 NA      REDMOND      -122. 47.7      9      4160      4
10 2006-01-04 00:00:00      650000      1      3 NA      R1      17703 NE 26T... 98052 REDMOND REDMOND      -122. 47.6      8      2760      4
# ... with 12,855 more rows, and 9 more variables: bath_full_count<dbl>, bath_half_count<dbl>, bath_3qtr_count<dbl>, year_built<dbl>, year_renovated<dbl>, current_zoning<chr>,
# sq_ft_lot<dbl>, prop_type<chr>, present_use<dbl>
> typeof(housing_data)
[1] "list"
> ##Use the apply function on a variable in your dataset
> sale_price <- housing_data$'Sale Price'
> sale_price
[1] 698000 649990 572500 420000 369900 184667 1050000 875000 660000 650000 599950 526787 470000 165000 803000 507950 765000 589950 501000 372500 513262
[22] 482000 765000 372500 265000 1392000 717390 552000 470000 523935 399900 335105 572950 949950 905000 750073 526718 690749 640000 485000 270000 480000
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[64] 689000 446400 849990 798000 527593 599500 540430 148000 1900000 1080135 451129 393000 384950 579950 538595 535500 530020 1075000 691321 657953 623990
[85] 661500 650100 549000 435000 430000 879950 810000 732500 655000 550000 410000 665906 711000 647500 594950 590000 521674 488610 403250 560000 560000
[106] 390750 405000 1520000 714950 628241 516923 498000 475000 27500 1390000 1390000 687088 490739 430723 400000 375000 745800 634990 928800 795000 479500
[127] 390000 670000 524000 799950 650000 500000 485000 420000 366000 855000 855000 855000 720990 526000 525000 520000 475000 475000 409000 569950 543000
[148] 438500 430000 575000 549953 547096 543000 532000 482000 465000 385000 575650 396000 229000 580000 899950 870000 671332 595000 585000 535313 505000
[169] 487935 475000 371000 370000 614000 609500 549950 488232 417200 390000 693300 660000 650000 588000 510731 1100000 940000 602450 532000 477218 430000
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[931] 242.85714 218.67220 220.24719 523.85892 321.46799 257.46269 185.71429 258.50000 328.38710 165.39924 228.26087 250.68871 249.98611 213.22751 211.95652
[946] 251.68367 244.64286 339.18129 328.66889 281.98718 285.82090 225.77231 298.49948 260.66351 273.71875 185.07712 238.89078 249.99569 225.00000 243.05556
[961] 287.87879 283.95062 238.50267 311.35531 236.50154 257.75862 256.12536 236.03352 276.33136 119.14062 464.26786 272.95285 247.78761 316.73681 425.47872
[976] 164.80496 314.91713 239.49580 333.57086 285.14286 337.20207 289.31034 239.23611 254.23729 321.62162 331.42857 237.85597 344.59820 183.50340 266.44670
[991] 247.61905 281.16298 312.05185 269.23077 204.45833 241.68798 200.82742 117.33333 262.90323 288.59060
```

```
[ reached getOption("max.print") - omitted 11865 entries ]
```

```
>
```

```
> ##Use the aggregate function on a variable in your dataset
```

```
> mean_sale_price_by_zip <- aggregate(housing_data$Sale Price',list(housing_data$zip5),mean)
```

```
> mean_sale_price_by_zip
```

```
Group.1
```

```
1 98052 649375.4
```

```
2 98053 672623.7
```

```
3 98059 645000.0
```

```
4 98074 951543.8
```

```
>
```

```
> ##Use the plyr function on a variable in your dataset – more specifically, I want to see you split some data, perform a modification to the data, and then bring it back together
```

```
> library(dplyr)
```

```
> library(tidyverse)
```

```
> housing_data <- read_excel("data/week-6-housing.xlsx")
```

```
> housing_data <- housing_data %>%
```

```
+ mutate(ctname = case_when(is.na(ctname) & zip5 == 98502 ~ "REDMOND",
```

```
+ TRUE ~ ctname))
```

```
> housing_data
```

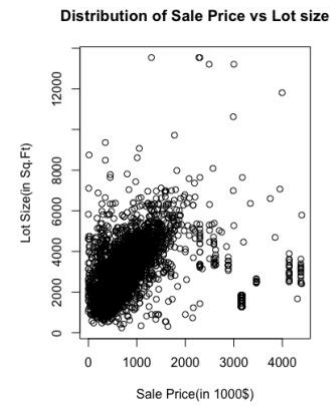
```
# A tibble: 12,865 x 24
```

'Sale Date'	'Sale Price'	'sale_reason'	sale_instrument	sale_warning	sitetype	addr_full	zip5	ctname	postalctyn	lon	lat	building_grade	square_feet	total_...	bedrooms
<dtm>	<dbl>	<dbl>	<chr>	<chr>	<chr>	<dbl>	<chr>	<chr>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1 2006-01-03 00:00:00	698000	1	3	NA	R1	17021 NE 113...	98052	REDMOND	REDMOND	-122.	47.7	9	2810	4	
2 2006-01-03 00:00:00	649990	1	3	NA	R1	11927 178TH ...	98052	REDMOND	REDMOND	-122.	47.7	9	2880	4	
3 2006-01-03 00:00:00	572500	1	3	NA	R1	13315 174TH ...	98052	REDMOND	REDMOND	-122.	47.7	8	2770	4	
4 2006-01-03 00:00:00	420000	1	3	NA	R1	3303 178TH A...	98052	REDMOND	REDMOND	-122.	47.6	8	1620	3	
5 2006-01-03 00:00:00	369900	1	3	15	R1	16126 NE 108...	98052	REDMOND	REDMOND	-122.	47.7	7	1440	3	
6 2006-01-03 00:00:0															

```

8 2006-01-04 00:00:00 875000 1 3 NA R1 21404 NE 67T... 98053 REDMOND REDMOND -122. 47.7 10 3720 4
9 2006-01-04 00:00:00 660000 1 3 NA R1 7525 238TH A... 98053 REDMOND REDMOND -122. 47.7 9 4160 4
10 2006-01-04 00:00:00 650000 1 3 NA R1 17703 NE 26T... 98052 REDMOND REDMOND -122. 47.6 8 2760 4
# ... with 12,855 more rows, and 9 more variables: bath_full_count <dbl>, bath_half_count <dbl>, bath_3qtr_count <dbl>, year_built <dbl>, year_renovated <dbl>, current_zoning <chr>,
# sq_ft_lot <dbl>, prop_type <chr>, present_use <dbl>
> ##Check distributions of the data
> plot(housing_data$`Sale Price`/1000, housing_data$`square_feet_total_living`, xlab = "Sale Price(in 1000$)", ylab = "Lot Size(in Sq.Ft)", main = "Distribution of Sale Price vs Lot size")

```



```

>
> ##Identify if there are any outliers
> summary(housing_data$`Sale Price`)
  Min. 1st Qu.  Median    Mean 3rd Qu.   Max.
  698  460000  593000  660738  750000 4400000
> #Based on the above summary and also the data distribution plot shared above there are outliers in the data. The min sale price is shown as $698 while Mean & Median are around $600000
> ##Create at least 2 new variables
> housing_data <- read_excel("data/week-6-housing.xlsx")
> sale_price <- housing_data$`Sale Price`
> square_footage <- housing_data$`square_feet_total_living`
> sale_price_per_feet_living_space <- mapply(function(x, y) x/y, sale_price, square_footage)
> mean_sale_price_by_zip <- aggregate(housing_data$`Sale Price`, list(housing_data$zip5), mean)

```