

Chapter 2

2.1 Nominal: Occupation, undergraduate major. Ordinal: Rating of university professor, Taste test ratings. Interval: age, income

2.2 a Interval

b Interval

c Nominal

d Ordinal

2.3 a Interval

b Nominal

c Ordinal

d Interval

e Interval

2.4 a Nominal

b Interval

c Nominal

d Interval

e Ordinal

2.5 a Interval

b Interval

c Nominal

d Interval

e Nominal

2.6 a Interval

b Interval

c Nominal

d Ordinal

e Interval

2.7 a Interval

b Nominal

c. Nominal

d Interval
e Interval
f Ordinal

2.8 a Interval
b Ordinal
c Nominal
d Ordinal

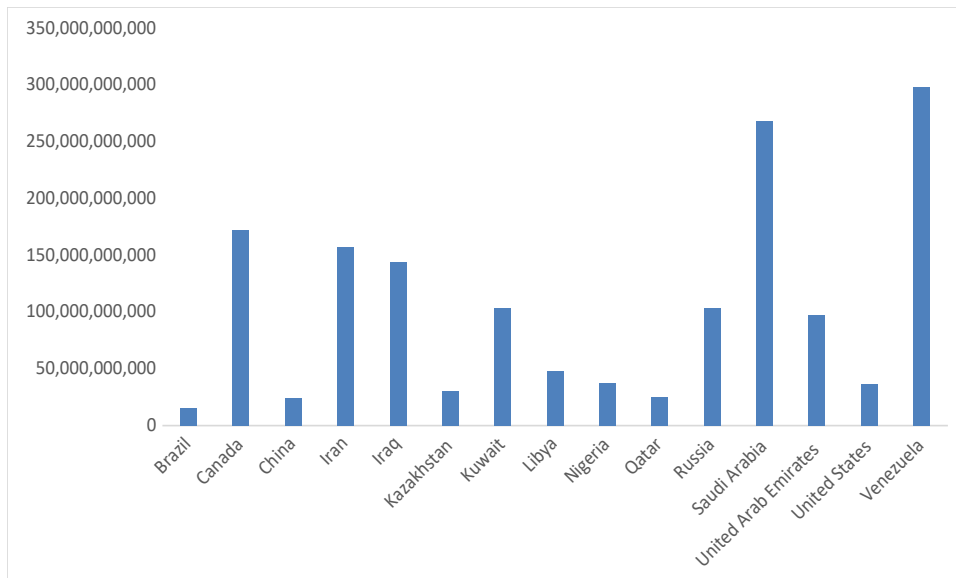
2.9 a Interval
b Nominal
c Nominal

2.10 a Ordinal
b Ordinal
c Ordinal

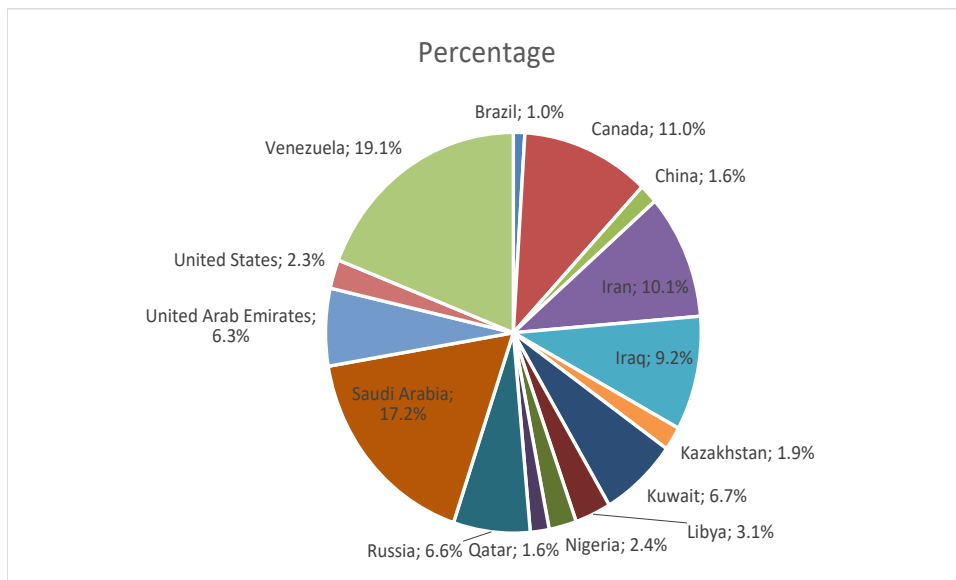
2.11 a Nominal
b Interval
c Ordinal

2.12a Nominal
b Interval
c Interval
d Interval

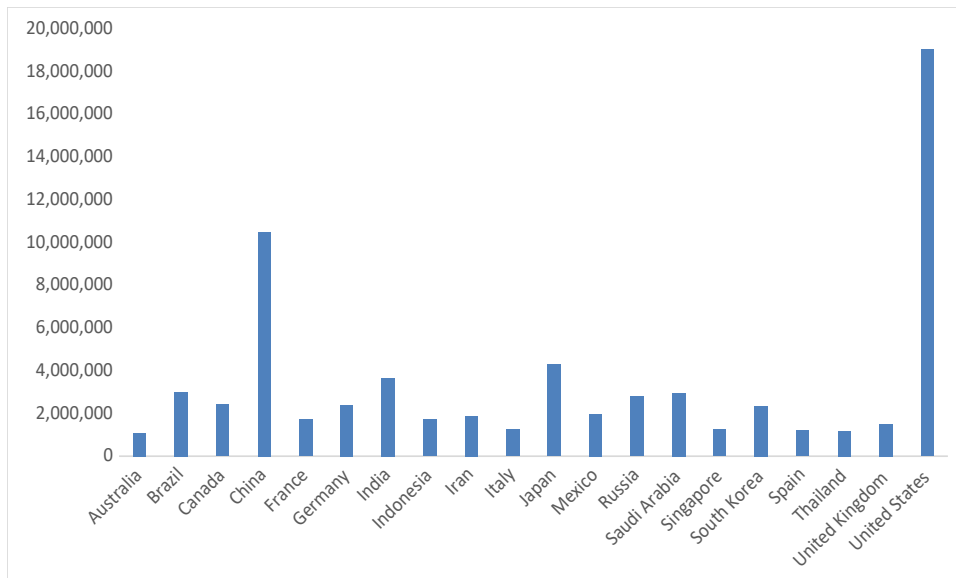
2.13



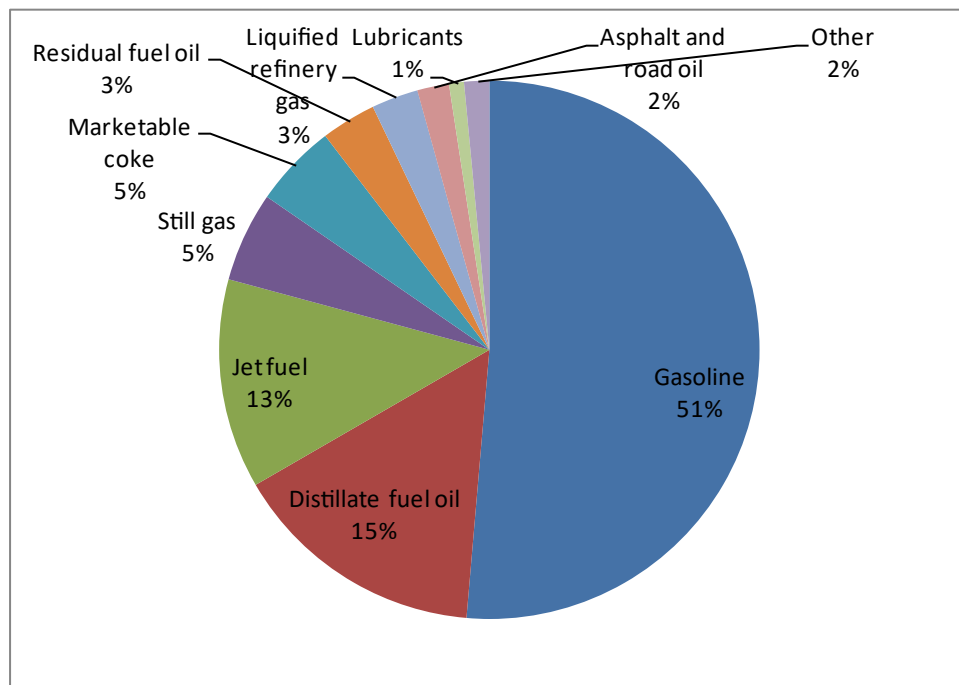
2.14



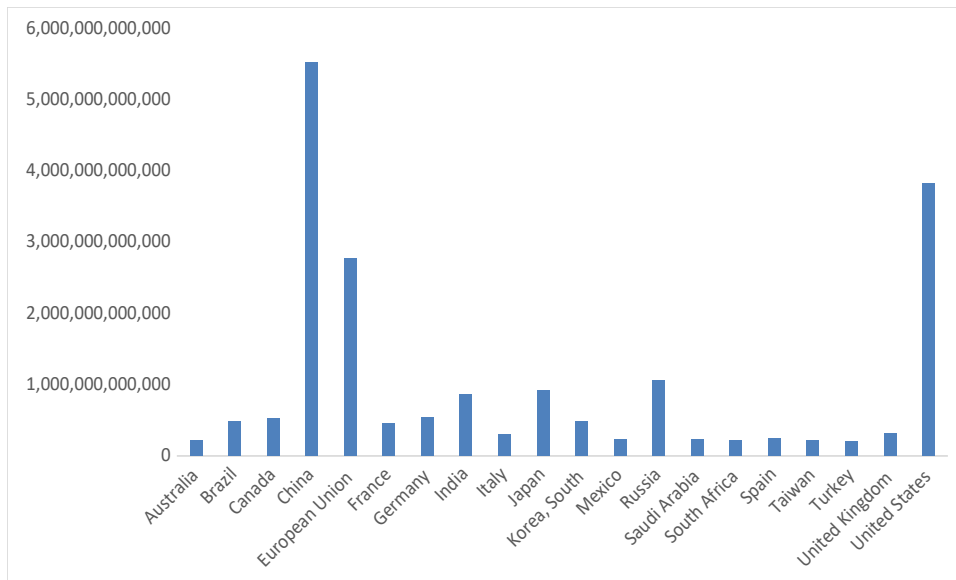
2.15



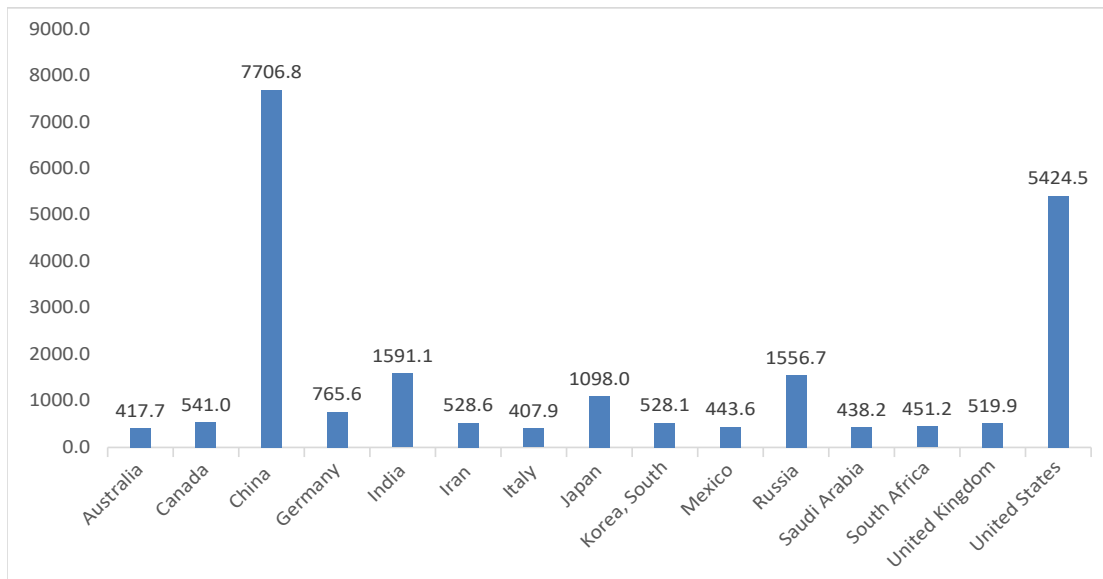
2.16



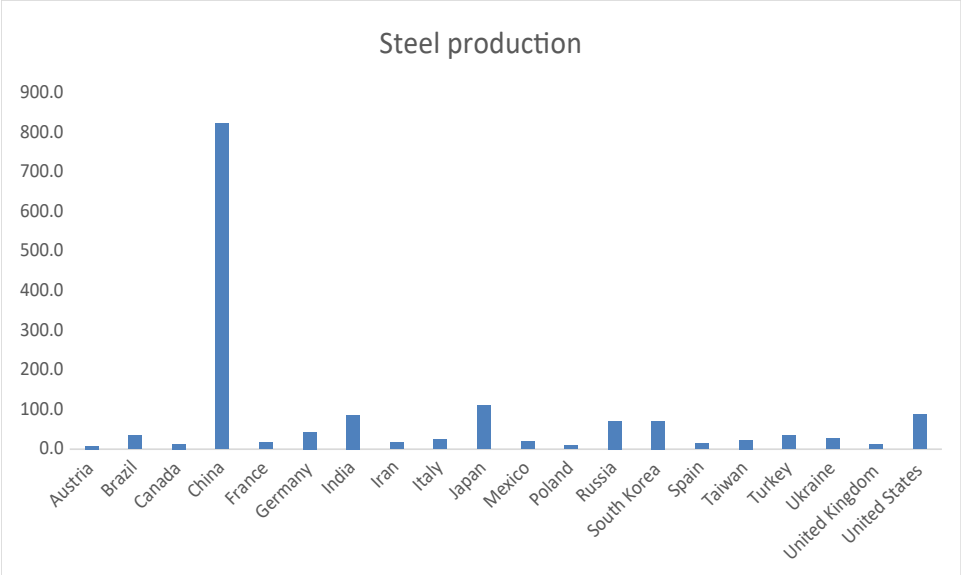
2.17



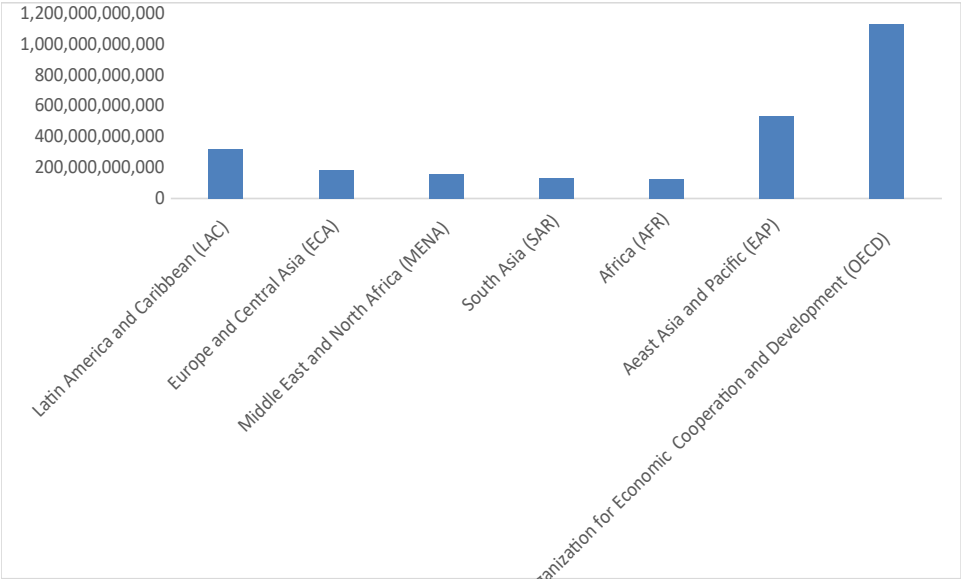
2.18



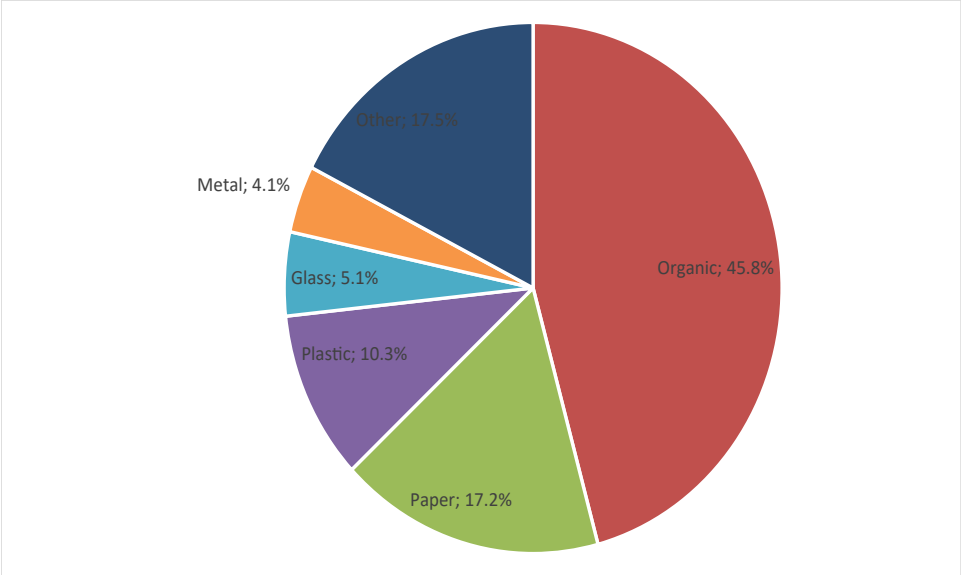
2.19



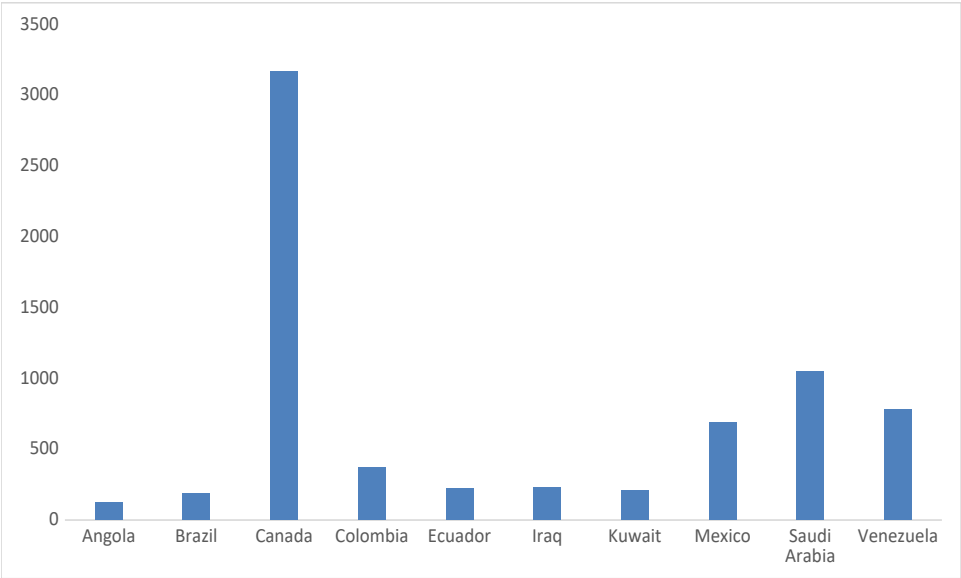
2.20



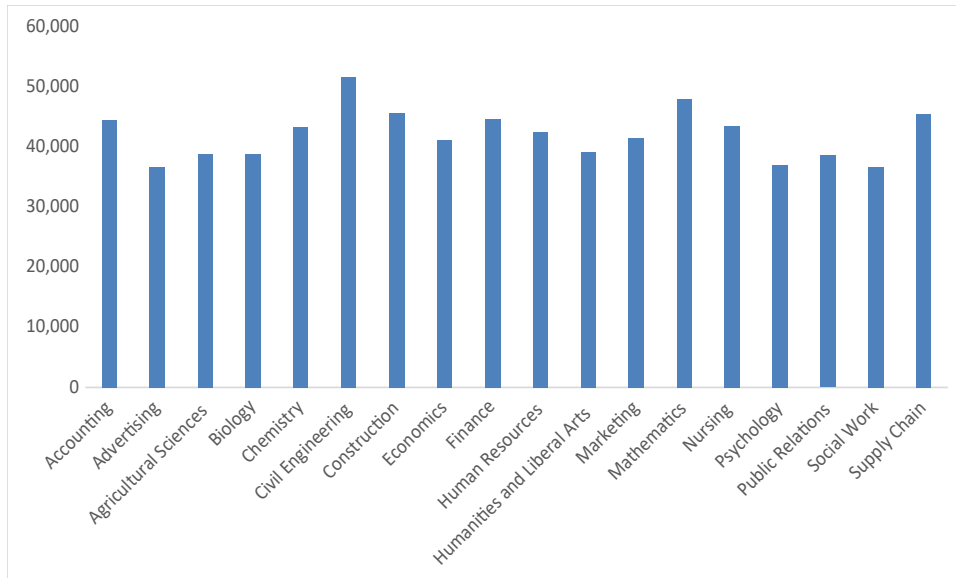
2.21



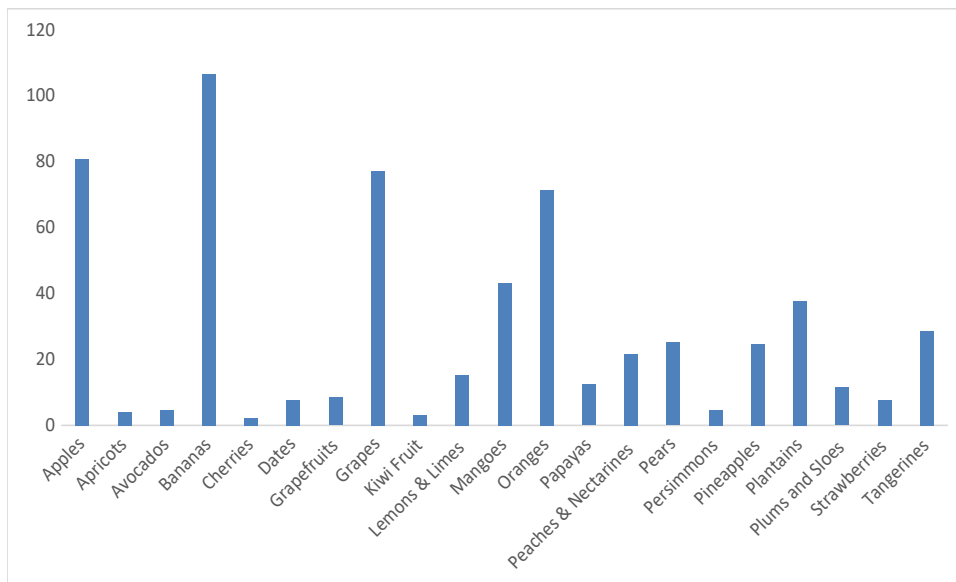
2.22



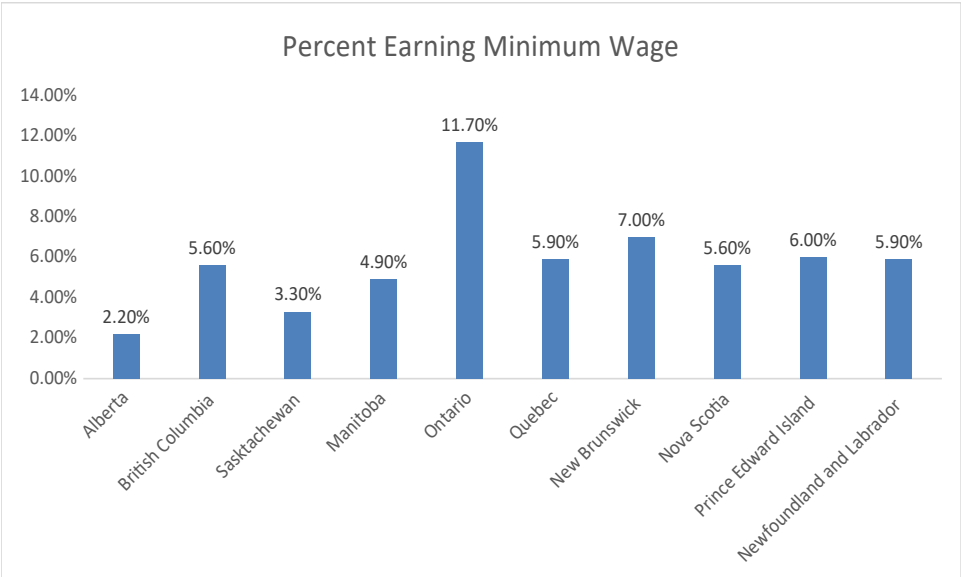
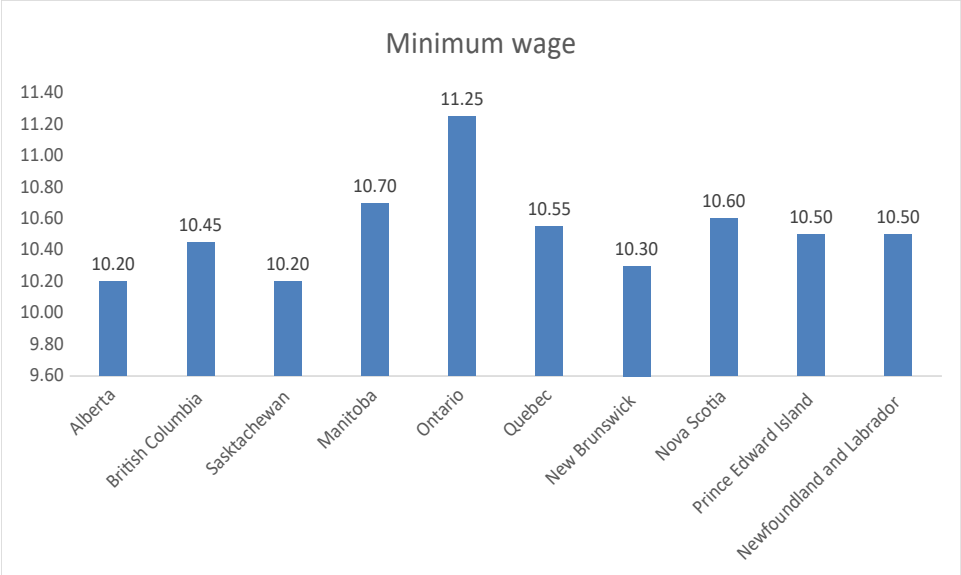
2.23

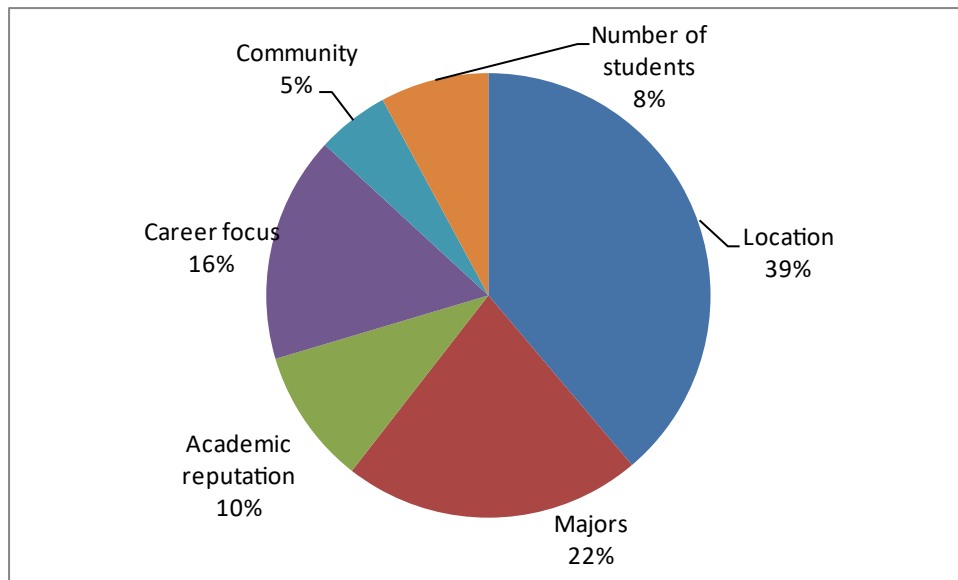


2.24

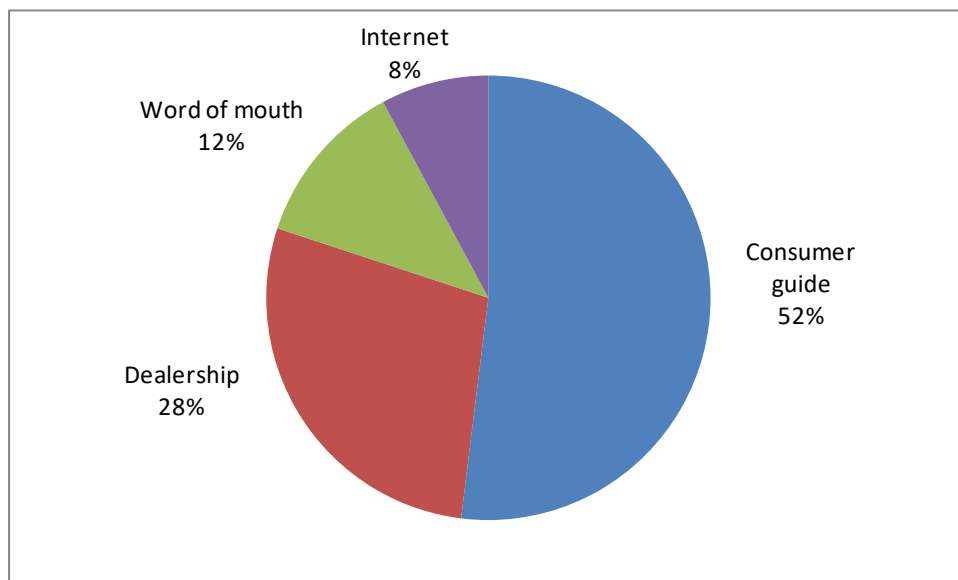


2.25

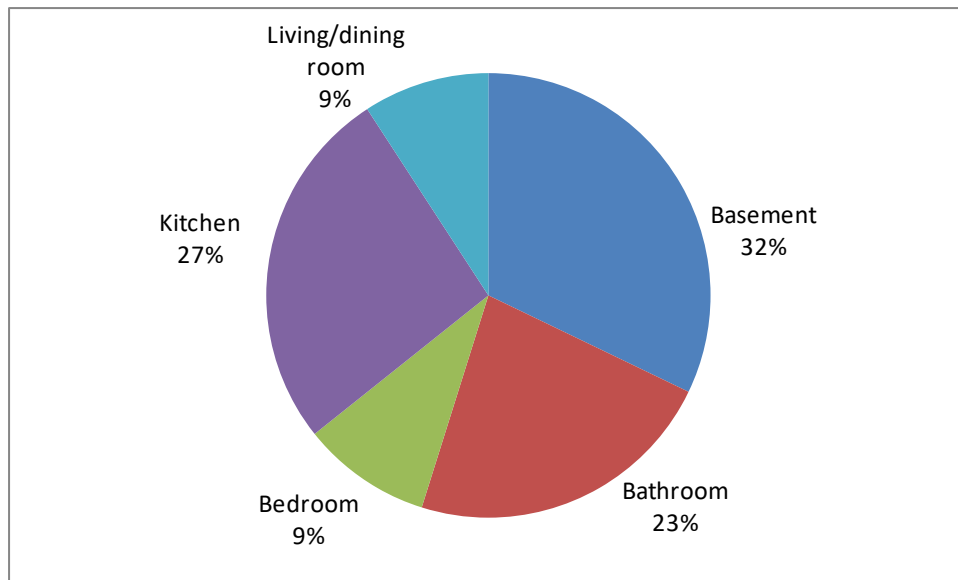




2.27



2.28

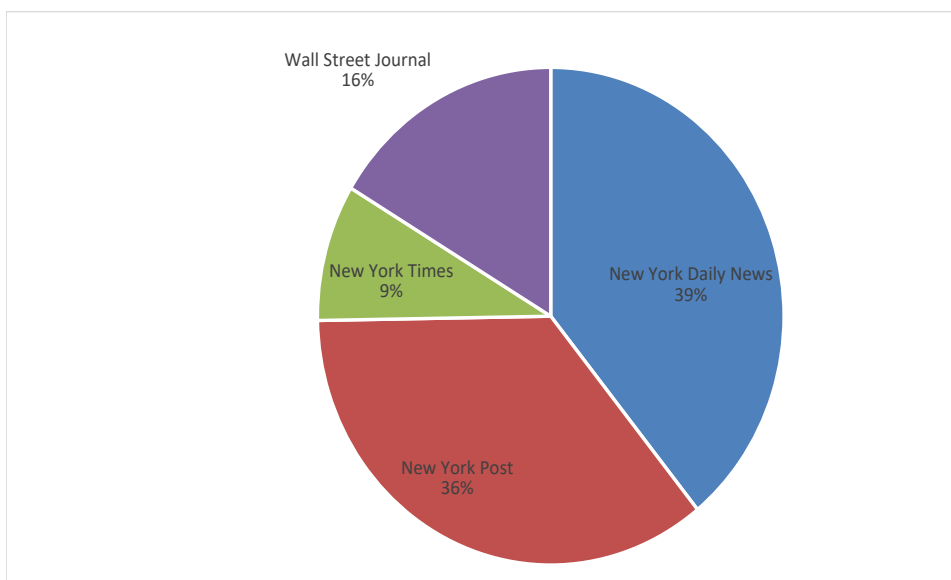


The basement is the top choice followed by kitchen, bathroom, bedroom, and living/dining room.

2.29 a

Newspaper	Frequency	Relative Frequency
Daily News	141	39.2%
Post	128	35.6%
Times	32	8.9%
WSJ	59	16.4%

b

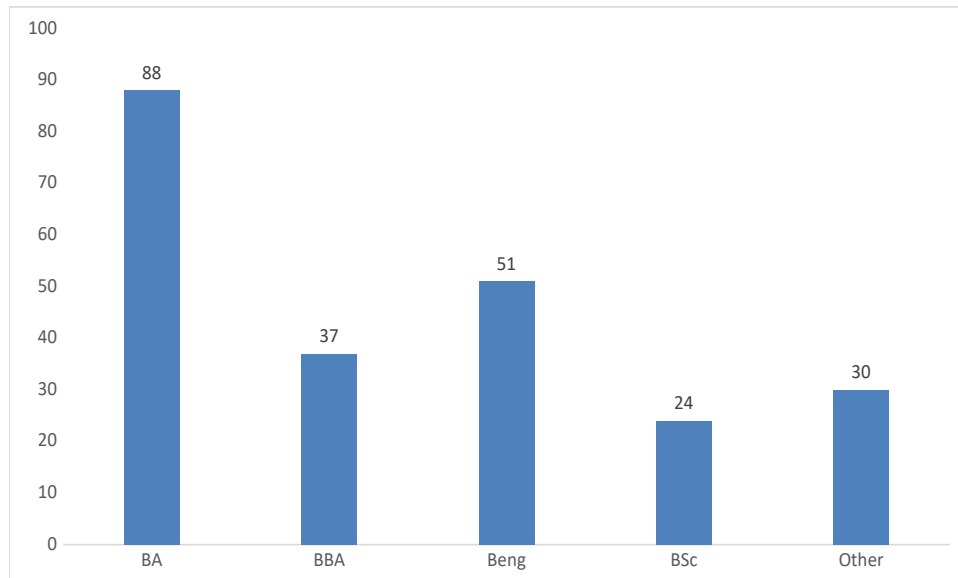


The Daily News and the Post dominate the market

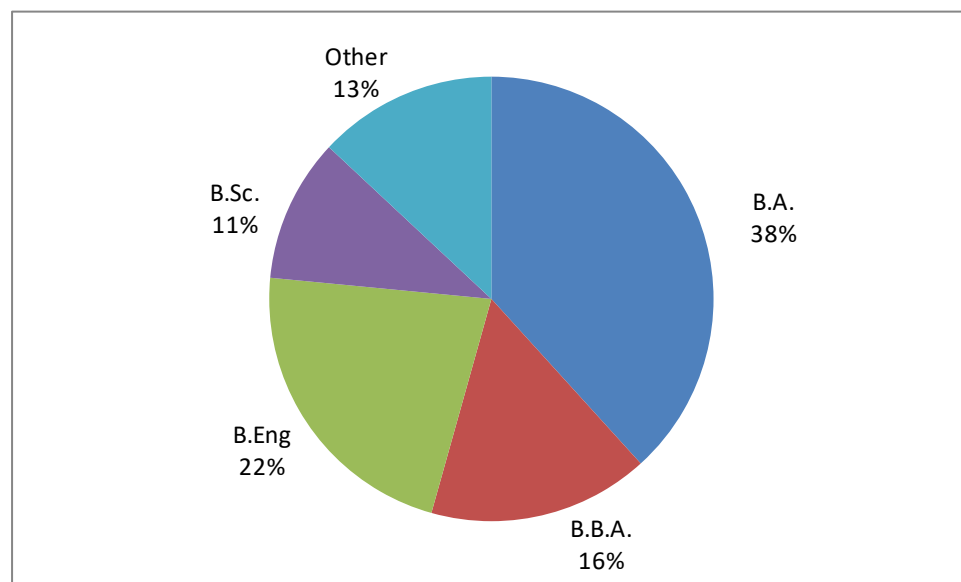
2.30a

<u>Degree</u>	<u>Frequency</u>
BA	88
BBA	37
B Eng	51
B Sc	24
Other	30

b.

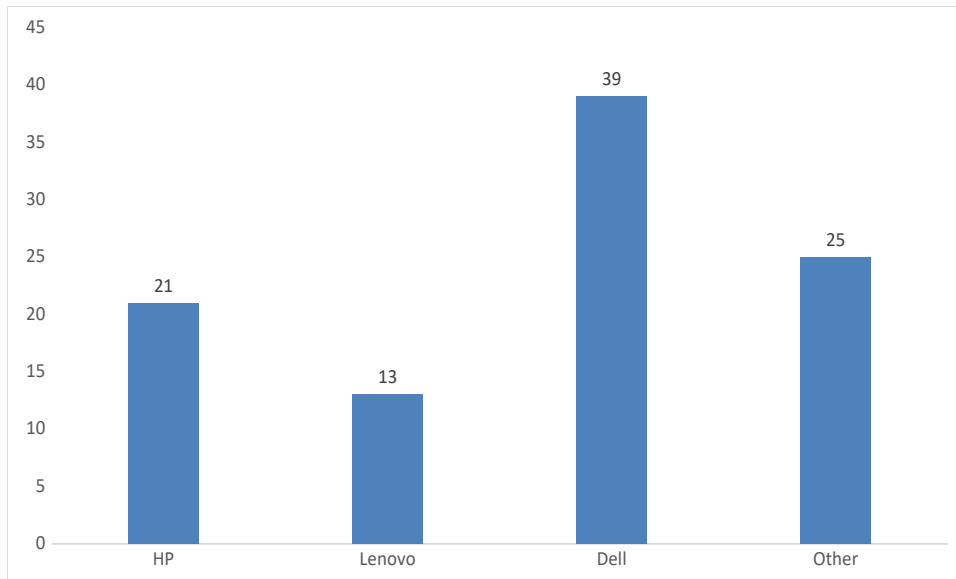


c

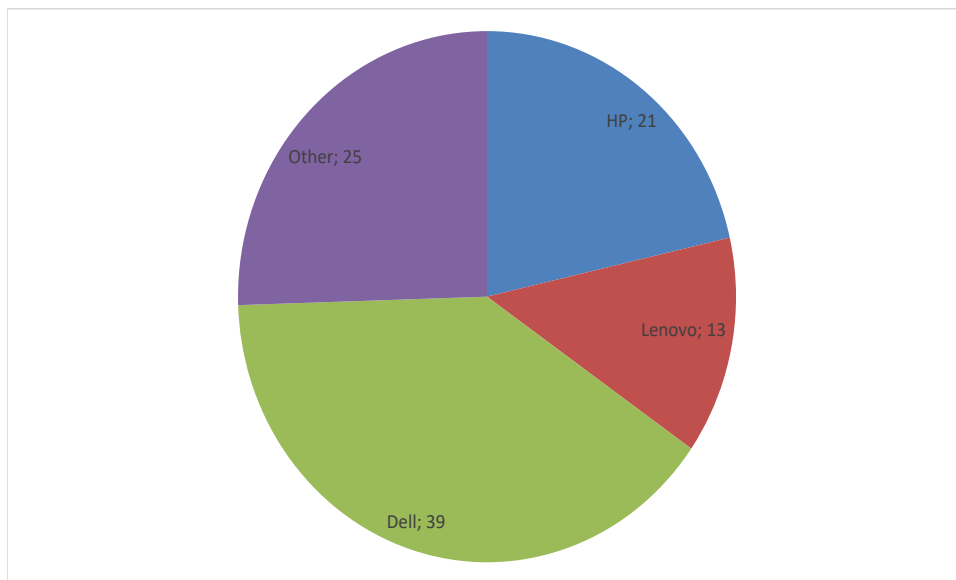


d. About 4 applicants in 10 have the BA degree, about one-fifth have a BEng, and one-sixth have a BBA.

2.31a



b

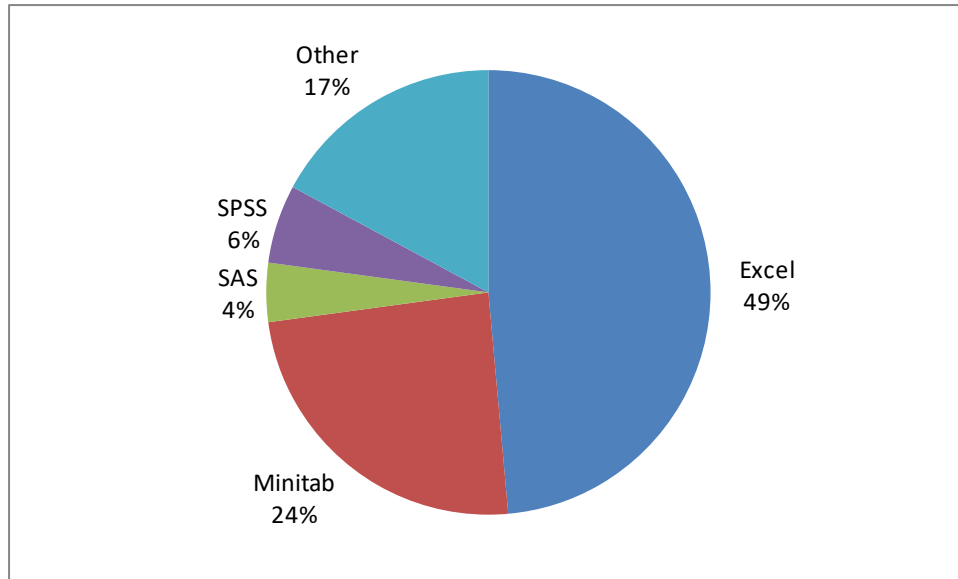


c Dell is most popular with 40% proportion, followed by other, 26%, HP, 21% and Lenovo, 13%.

2.32 a Software Frequency

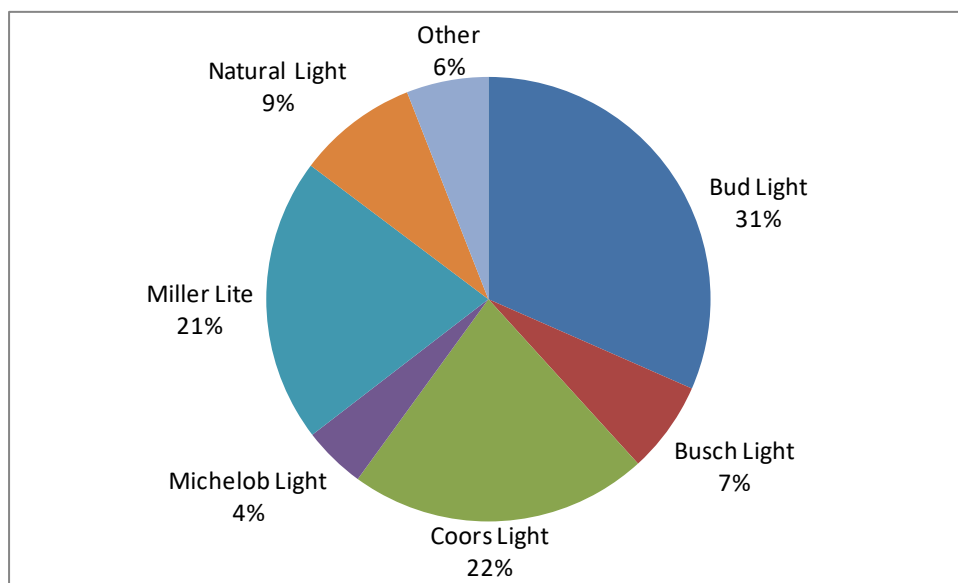
Excel	34
Minitab	17
SAS	3
SPSS	4
Other	12

b

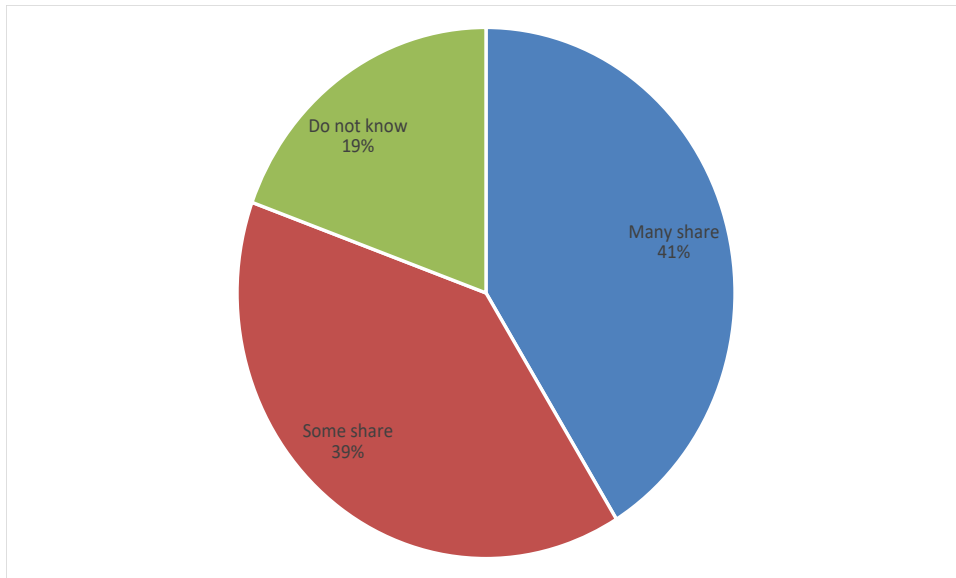


c Excel is the choice of about half the sample, one-quarter have opted for Minitab, and a small fraction chose SAS and SPSS.

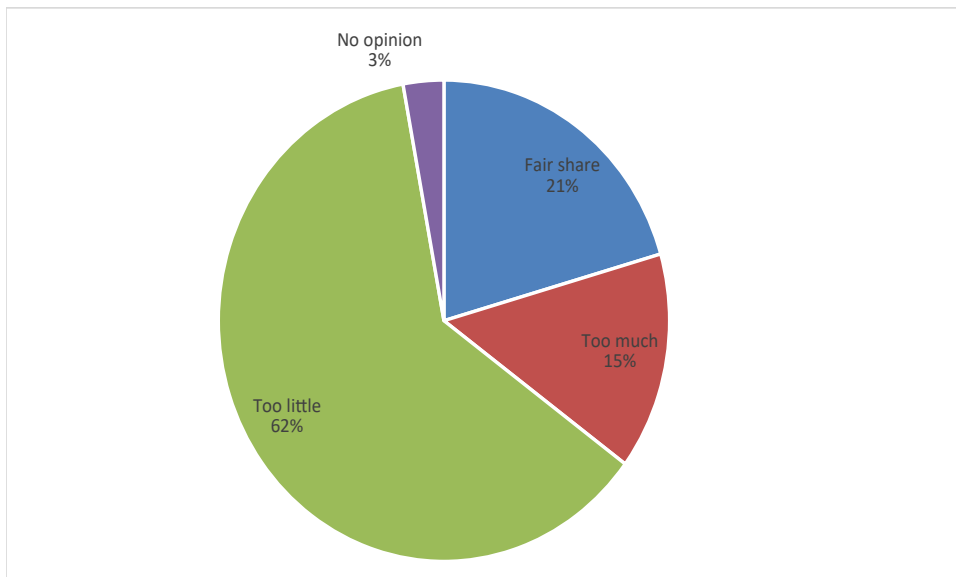
2.33



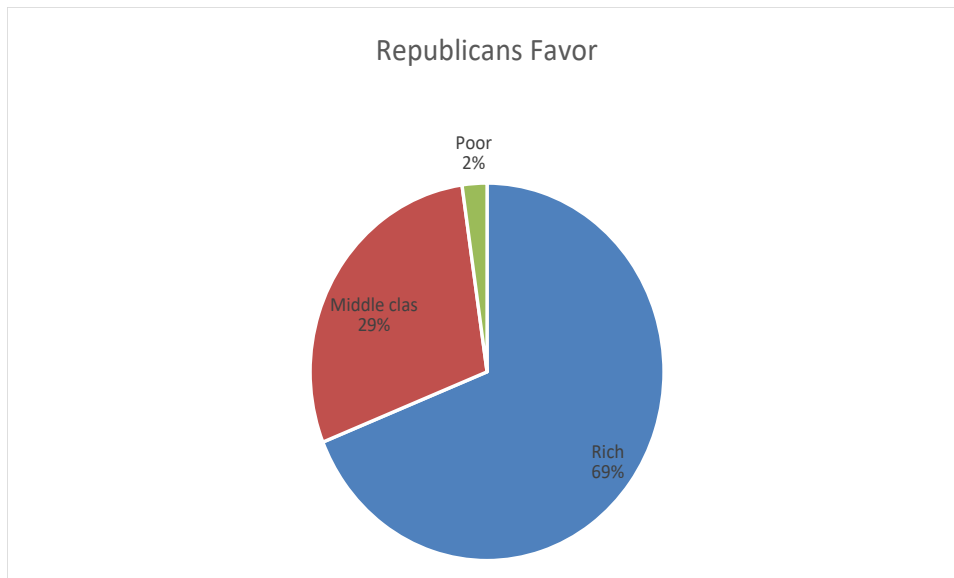
2.34



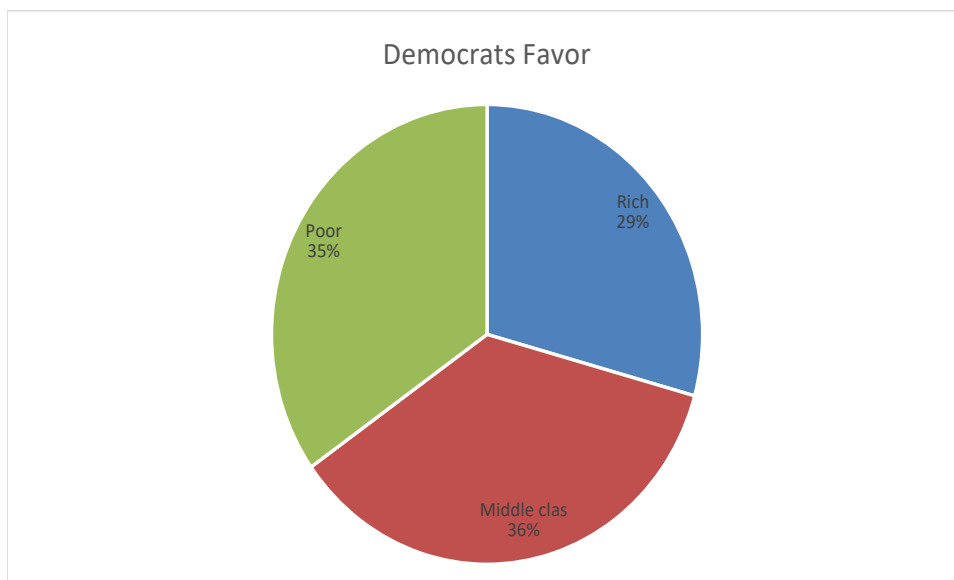
2.35



2.36 a



b

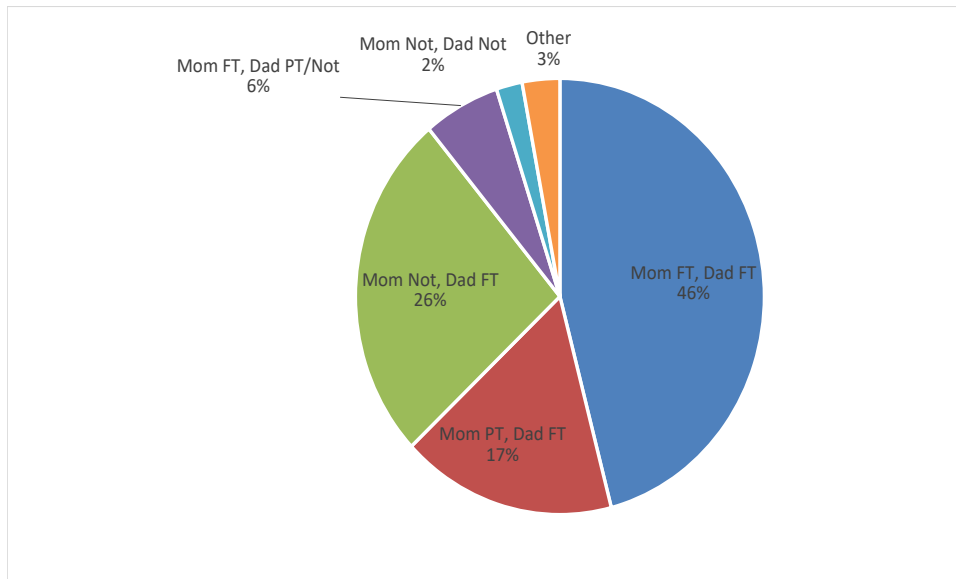


According to the survey Republicans favor the rich and Democrats are split among the middle class, poor, and rich.

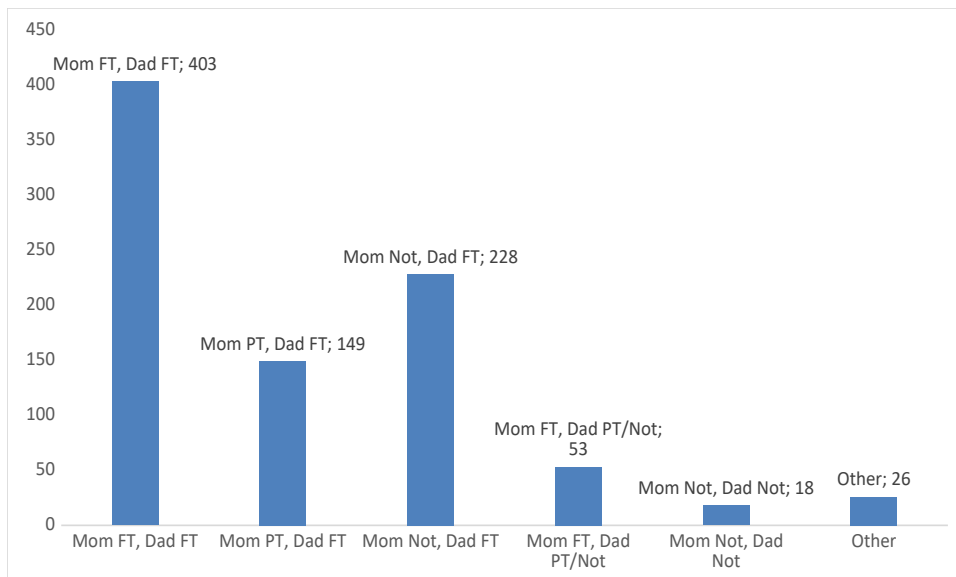
2.37 a

Category	Frequency	Relative Frequency
Mom: Full time, Dad: Full time	403	46.0%
Mom: Part time, Dad: Full time	149	17.0%
Mom: Not employed, Dad: Full time	228	26.0%
Mom: Full time, Dad: Part time or not employed	53	6.0%
Mom: Not employed, Dad: Not employed	18	2.1%
Other	26	3.0%

b

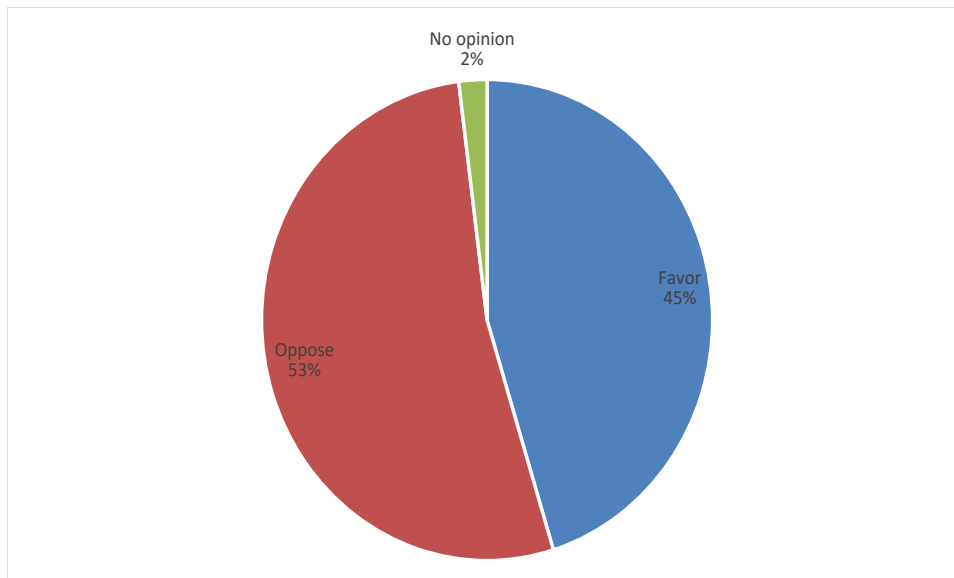


c



d In most households Dad is working full time. There are very few households where neither Mom nor Dad are working.

2.38

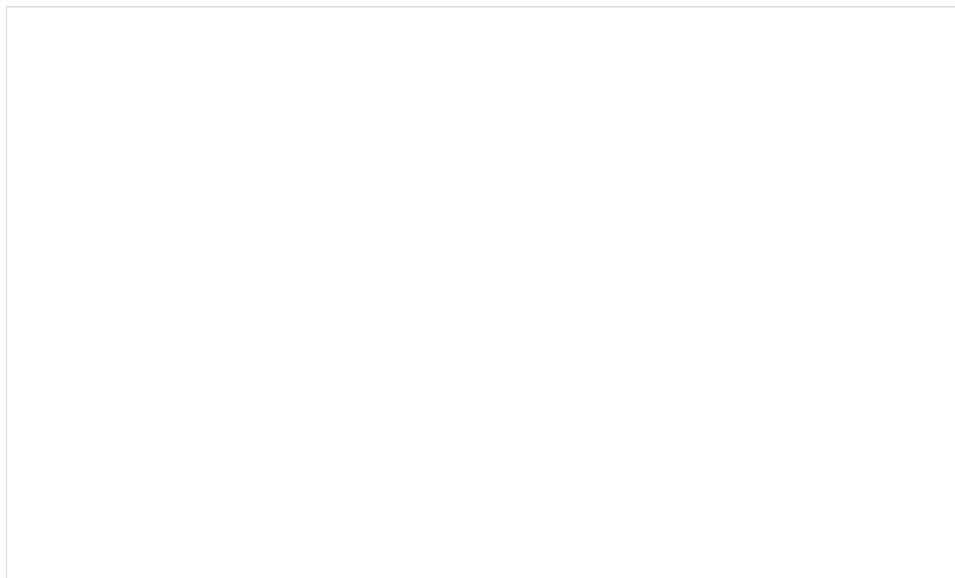


A small majority oppose the Affordable Care Act.

2.39a

Views on social issues	Frequency	Relative Frequency
Liberal	322	31.4%
Moderate	328	32.0%
Conservative	375	36.6%

b

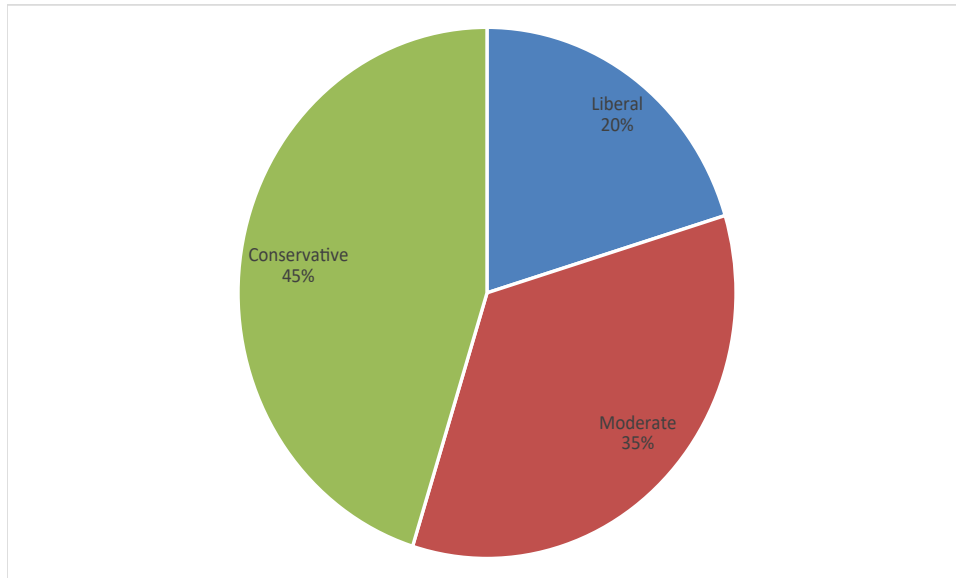


The country is split among the three views on social issues with a small plurality of conservatives.

2.40 a

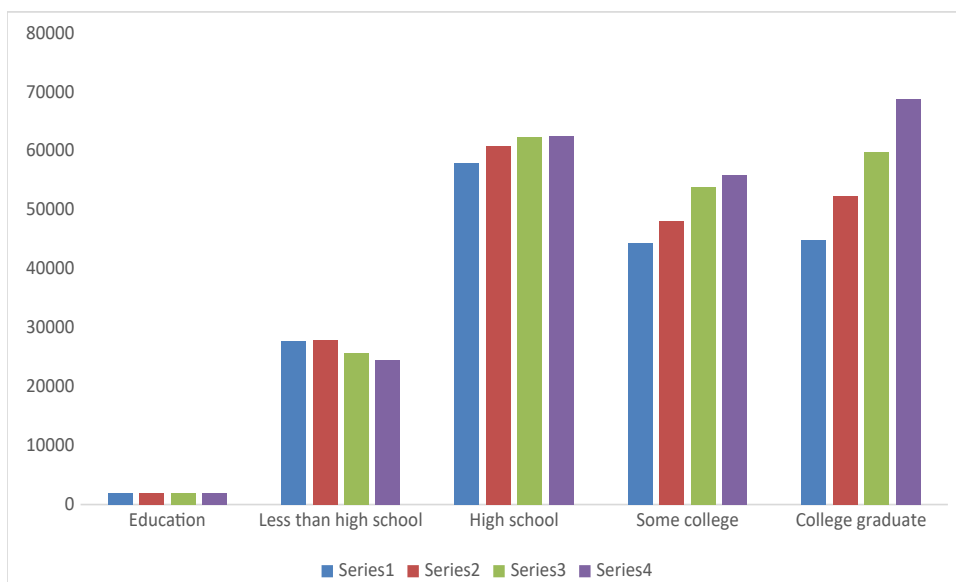
Views on economic issues	Frequency	Relative Frequency
Liberal	208	20.3%
Moderate	354	34.5%
Conservative	463	45.2%

b



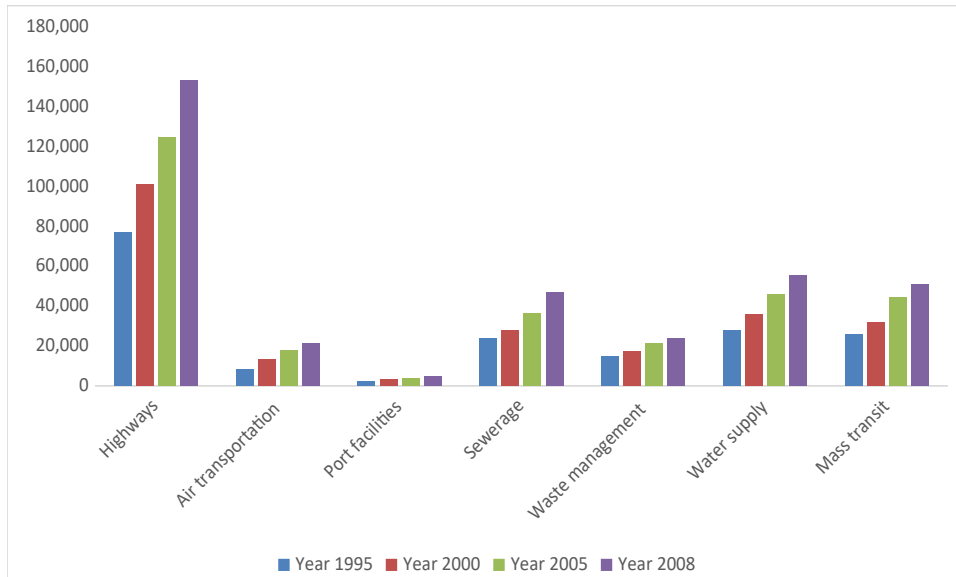
Economically the country is conservative.

2.41



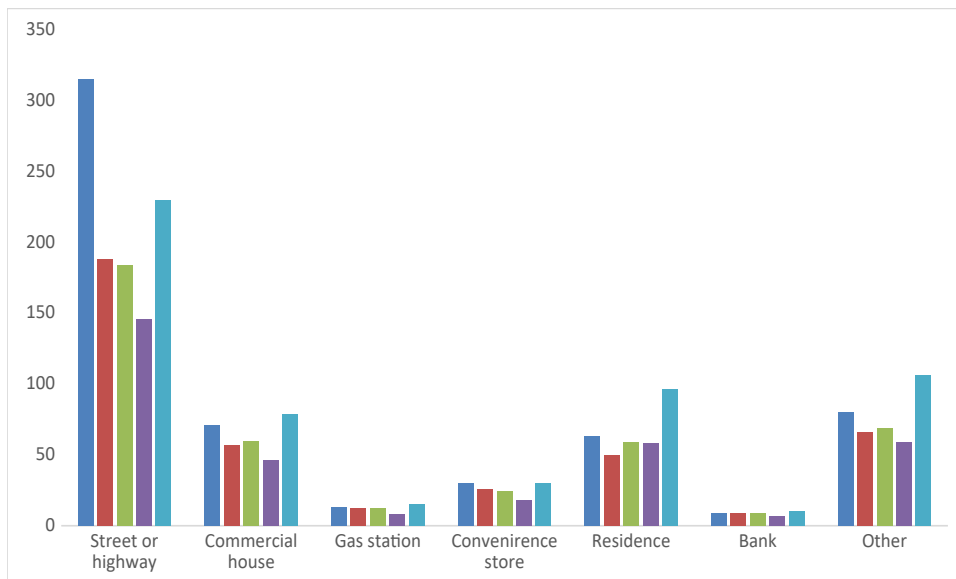
There is decreasing numbers of Americans who did not finish high school and increasing numbers of those that go to college.

2.42



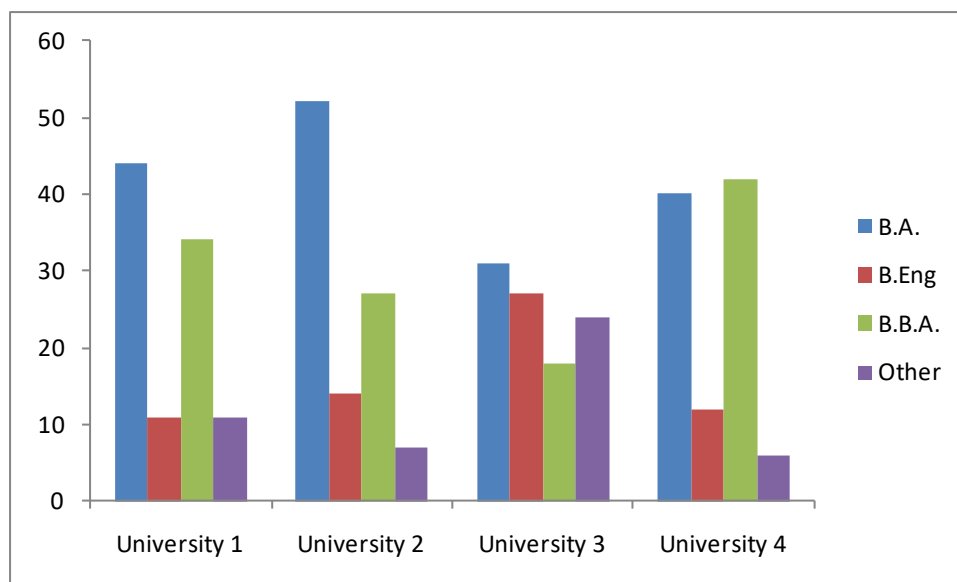
Spending is increasing in all seven areas.

2.43



In general crime was decreasing until 2014 when it started increasing.

2.44



Universities 1 and 2 are similar and quite dissimilar from universities 3 and 4, which also differ. The two nominal variables appear to be related.

2.45

3	Count of Owner	Last				
4	Second-last	Exxon	Amoco	Texaco	Other	Grand Total
5	Exxon	39	36	51	23	149
6	Amoco	36	32	46	20	134
7	Texaco	54	46	65	29	194
8	Other	24	20	28	10	82
9	Grand Total	153	134	190	82	559

3	Count of Owner	Last				
4	Second-last	Exxon	Amoco	Texaco	Other	Grand Total
5	Exxon	25%	27%	27%	28%	27%
6	Amoco	24%	24%	24%	24%	24%
7	Texaco	35%	34%	34%	35%	35%
8	Other	16%	15%	15%	12%	15%
9	Grand Total	100%	100%	100%	100%	100%

The column proportions are similar; the two nominal variables appear to be unrelated. There does not appear to be any brand loyalty.

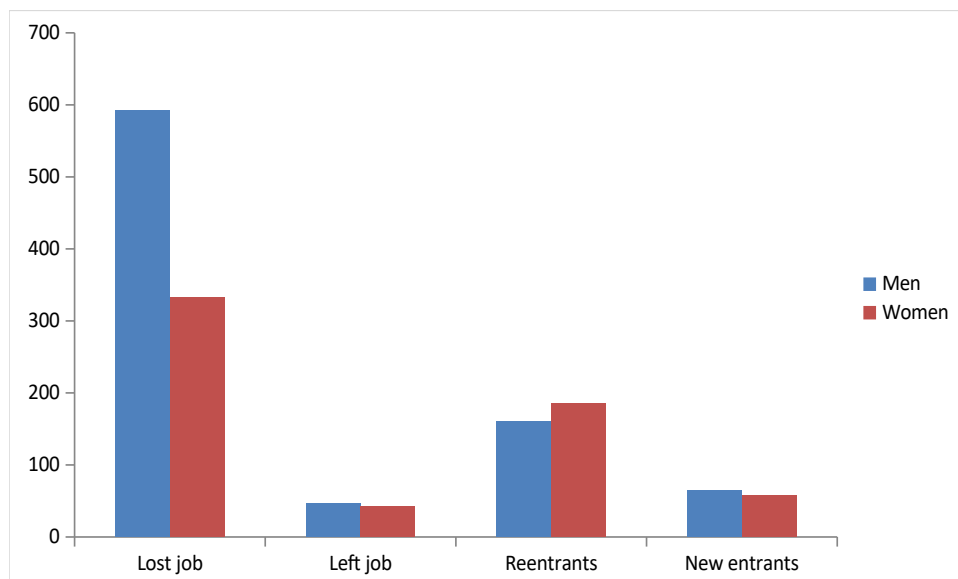
2.46

3	Count of Respondent	Smoke?	
4	Parent	Smoke?	Do not smo
5	Neither	73	14
6	Father	26	12
7	Mother	31	18
8	Both	10	41
9	Grand Total	140	85

3	Count of Respondent	Smoke?	
4	Parent	Smoke?	Do not smoke
5	Neither	52%	16%
6	Father	19%	14%
7	Mother	22%	21%
8	Both	7%	48%
9	Grand Total	100%	100%

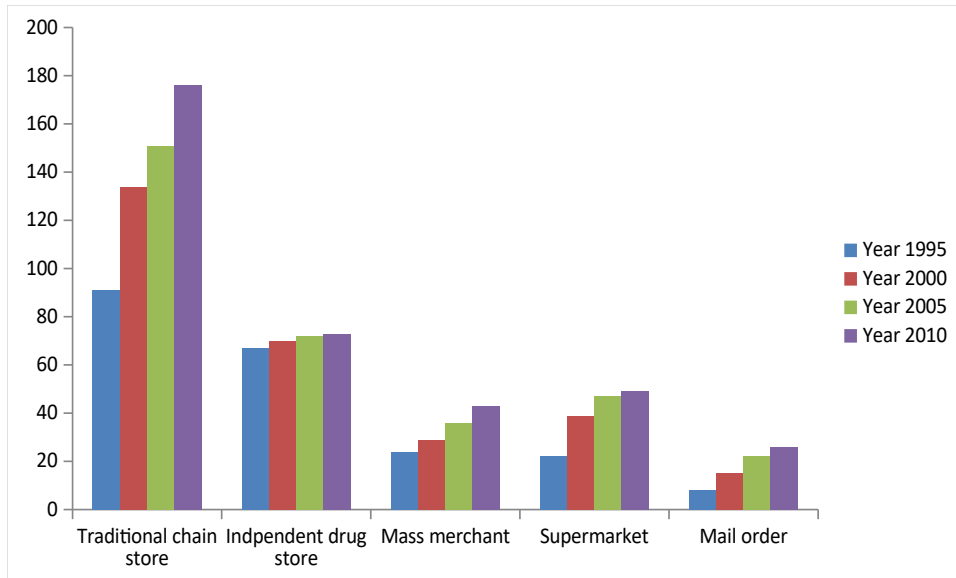
The two variables are related.

2.47



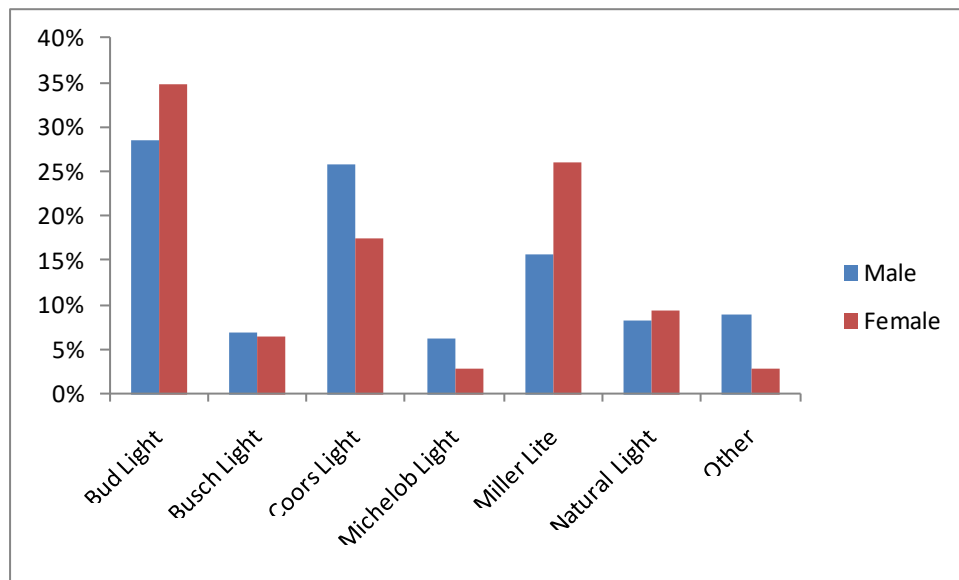
There are large differences between men and women in terms of the reason for unemployment.

2.48



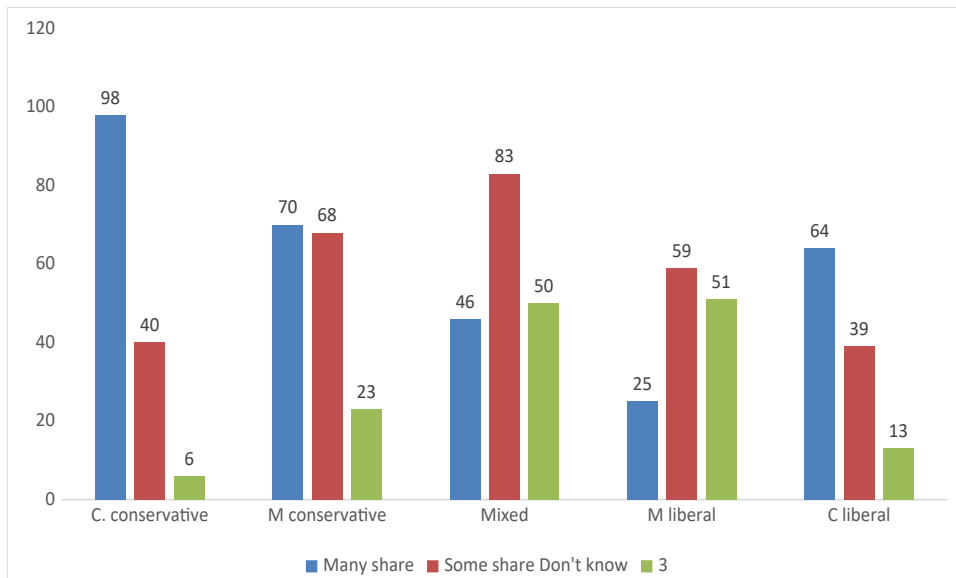
The number of prescriptions filled by all stores except independent drug stores has increased substantially.

2.49



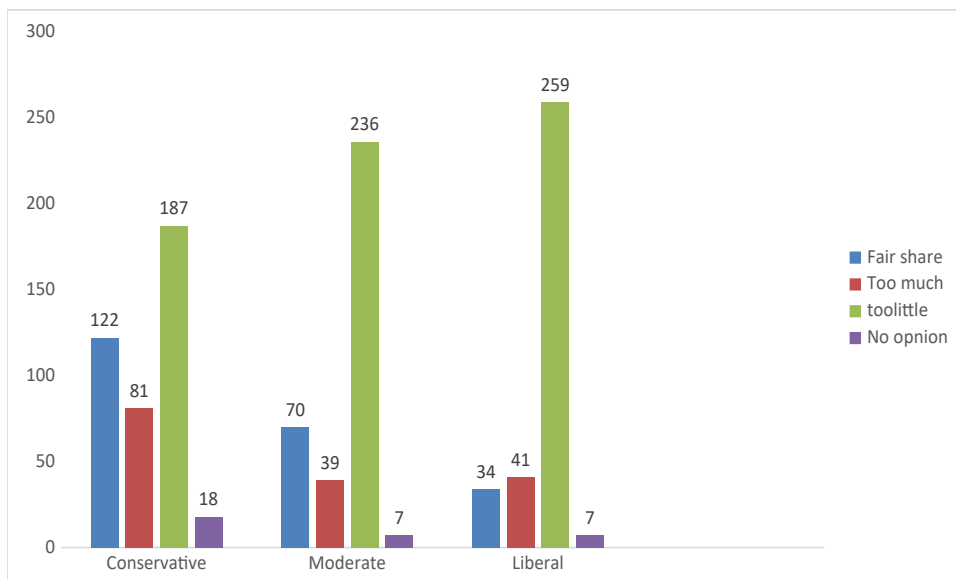
There appears to be differences between female and male students in their choice of light beer.

2.50



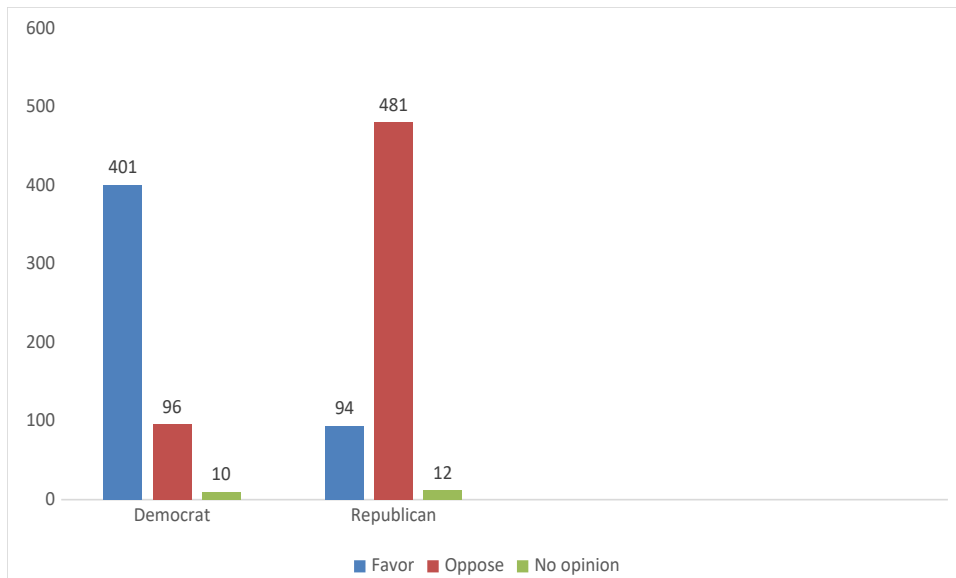
There are differences among the five groups.

2.51



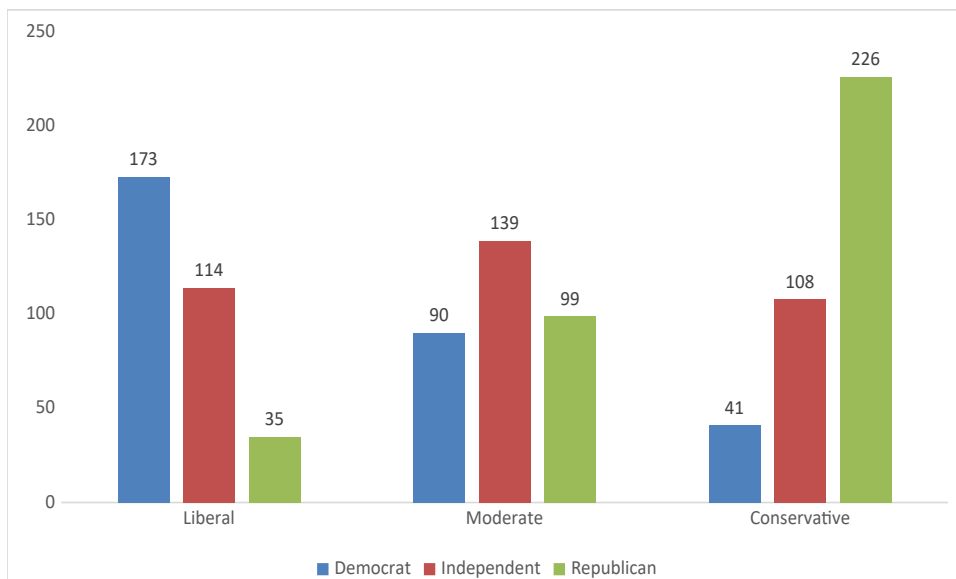
All three groups say that upper-income people pay too little. However Conservatives are more likely to say fair share than Moderates or Liberals

2.52



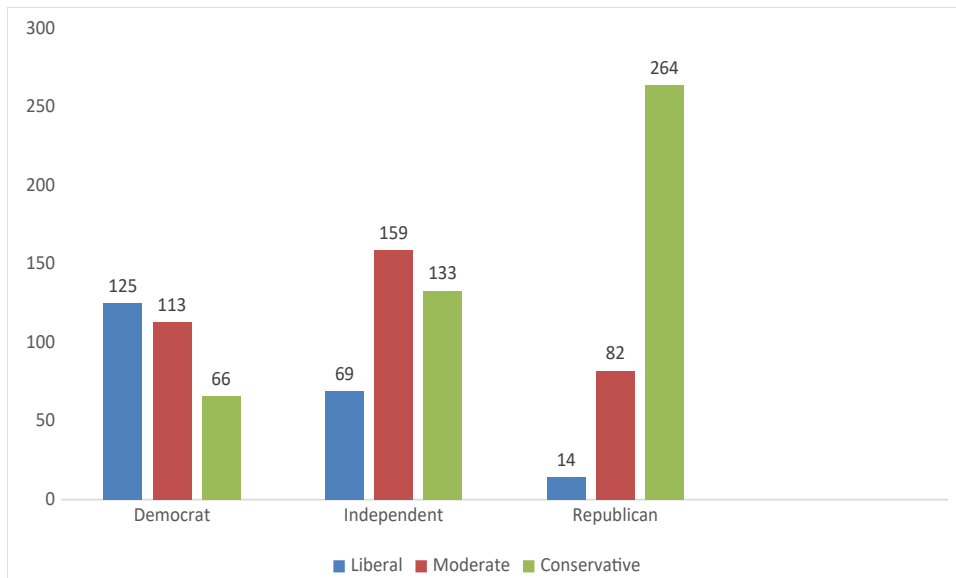
Democrats support and Republicans oppose the Affordable Care Act.

2.53



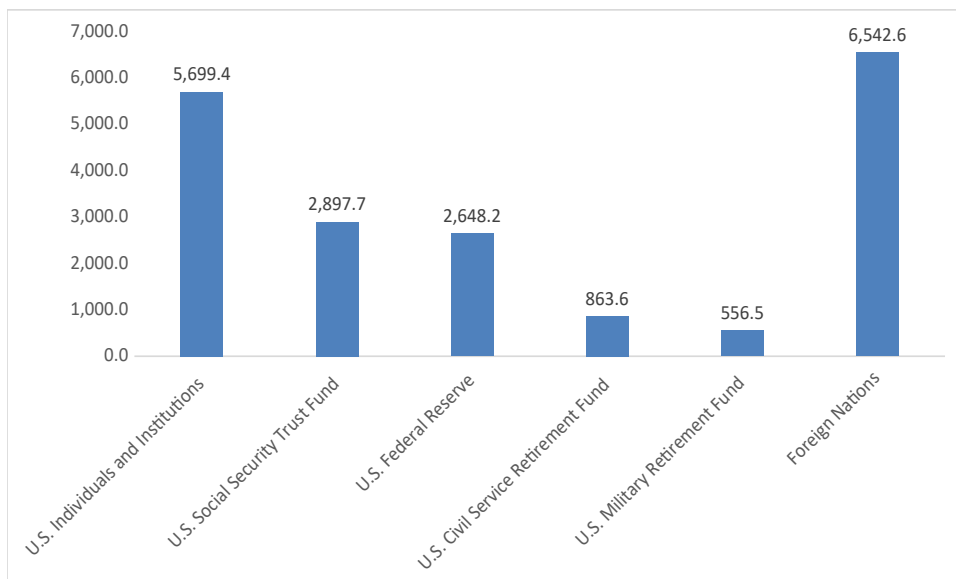
No surprise-on social issues Democrats are liberal and Republicans are conservative.

2.54

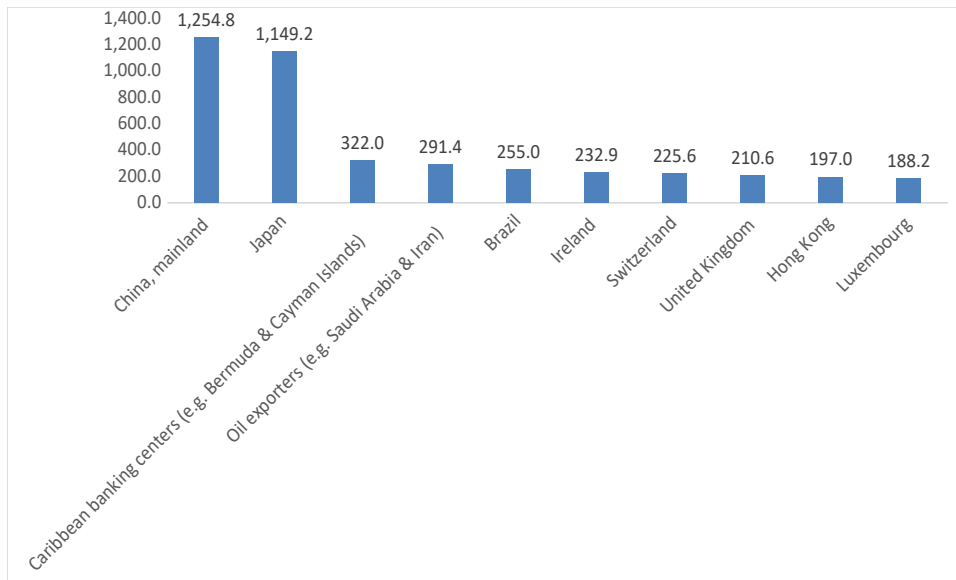


On economic issues Republicans are very conservative whereas Democrats and Moderates are mixed.

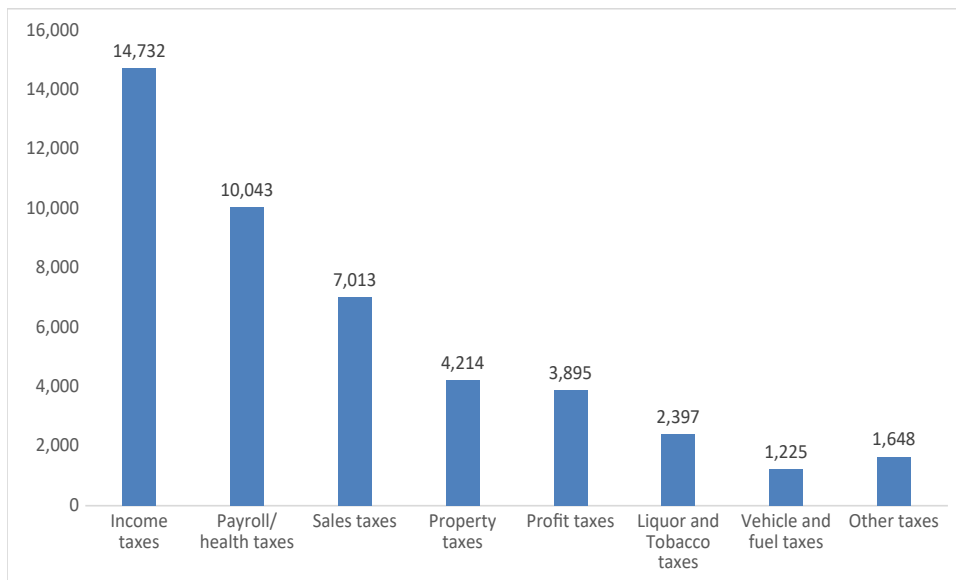
2.55



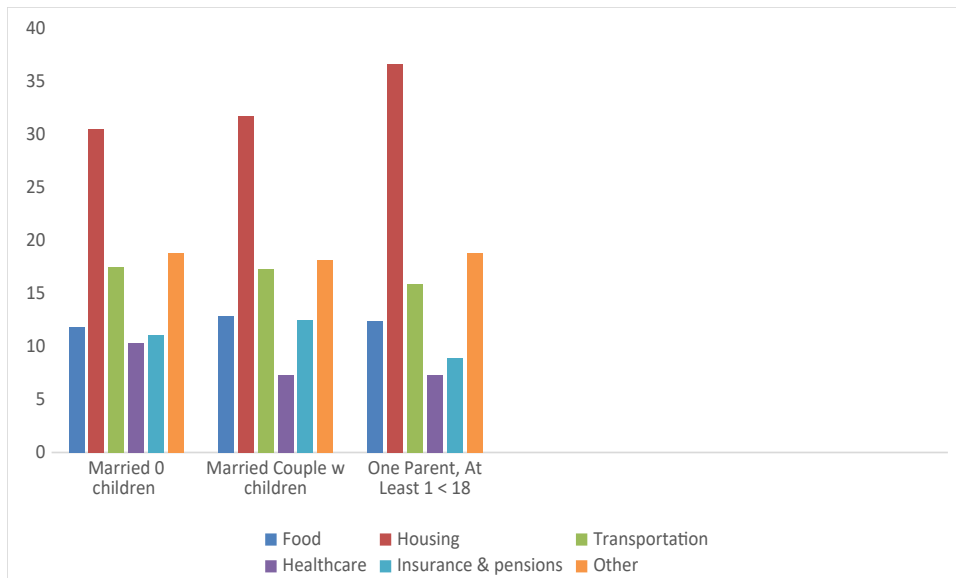
2.56



2.57

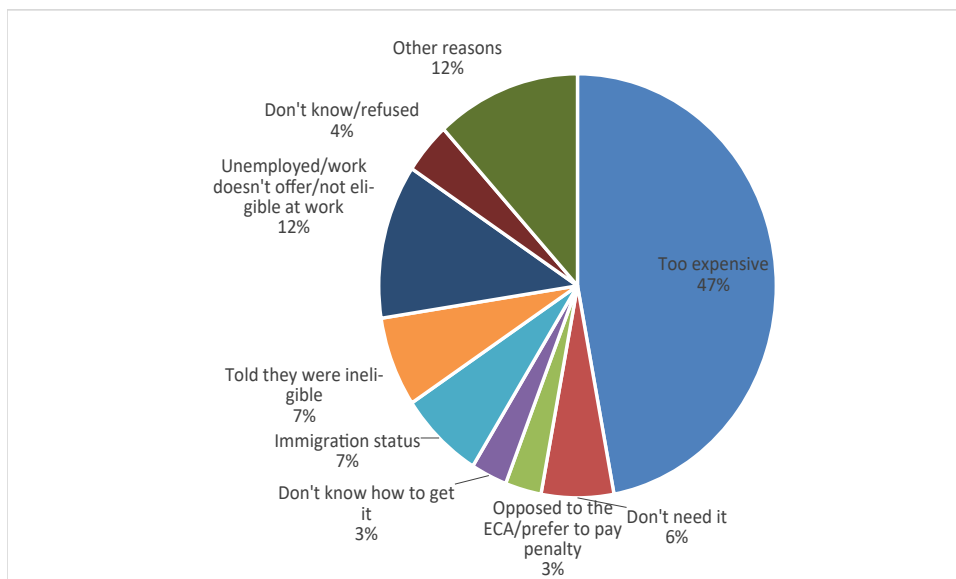


2.58

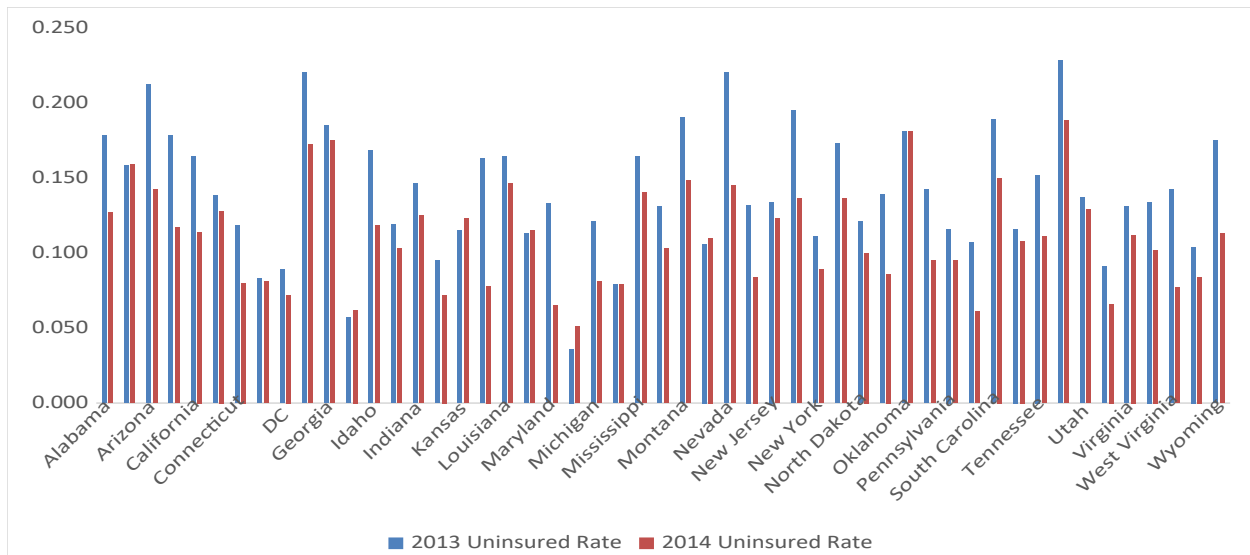


The pattern is about the same for the three households.

2.59

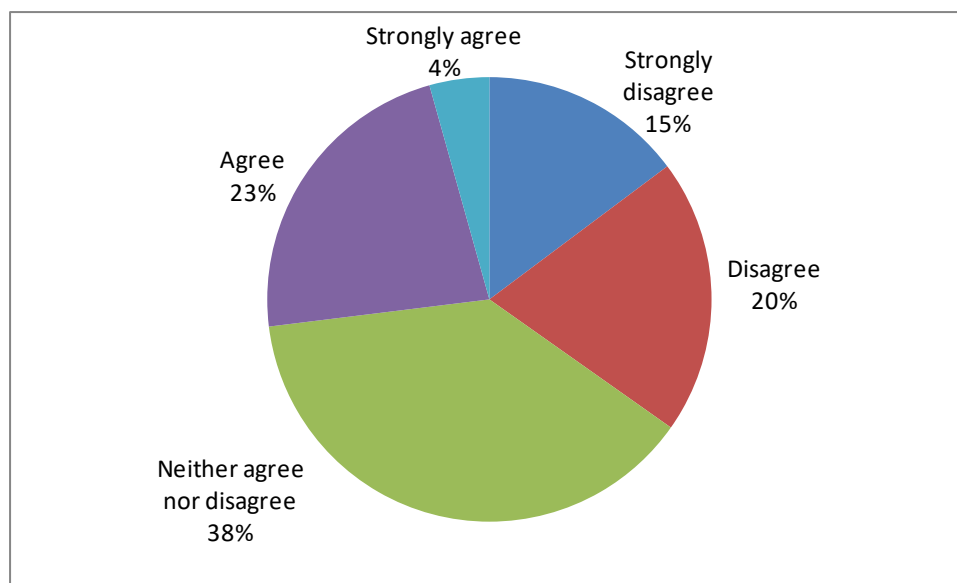


2.60



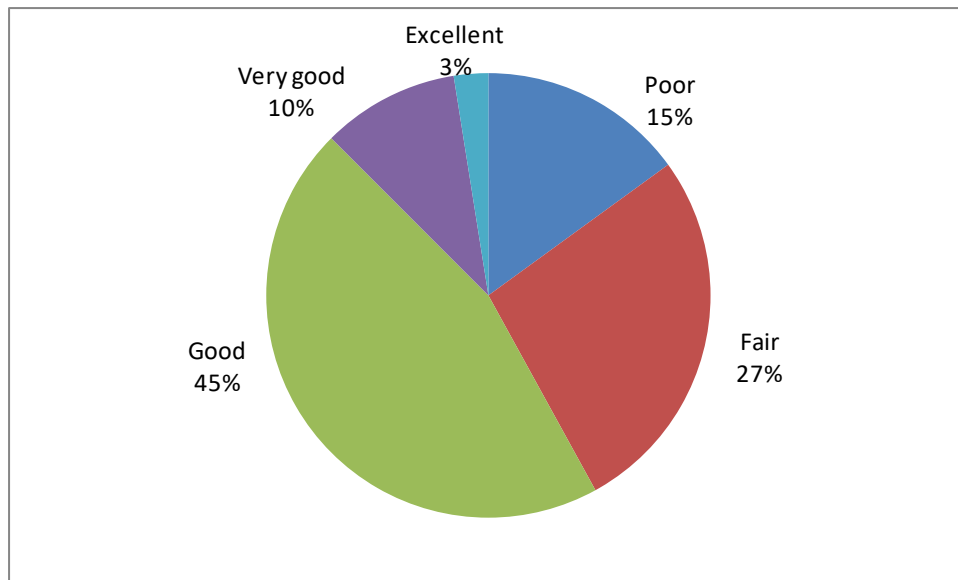
There are decreases in almost every state. However, there are many Americans without health insurance.

2.61



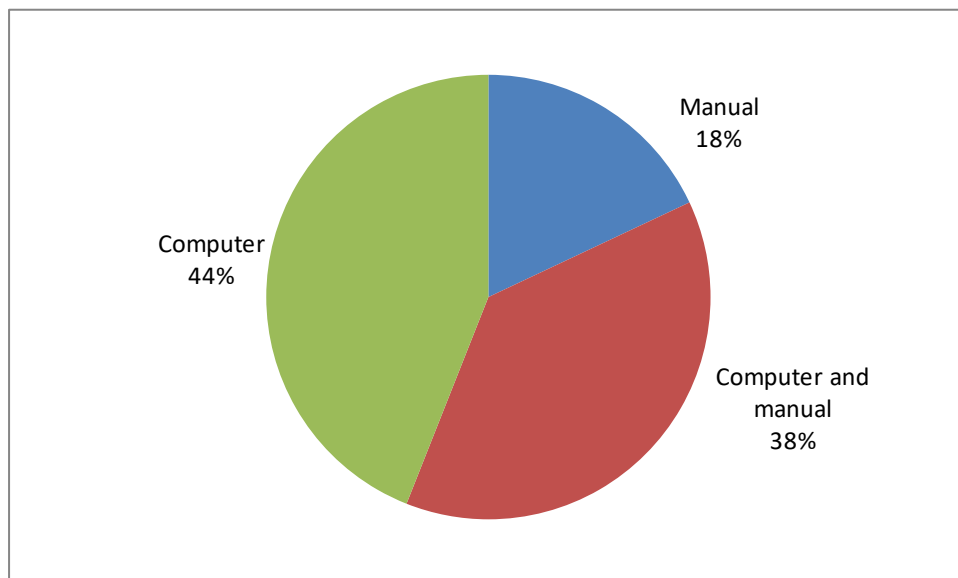
More students disagree than agree.

2.62

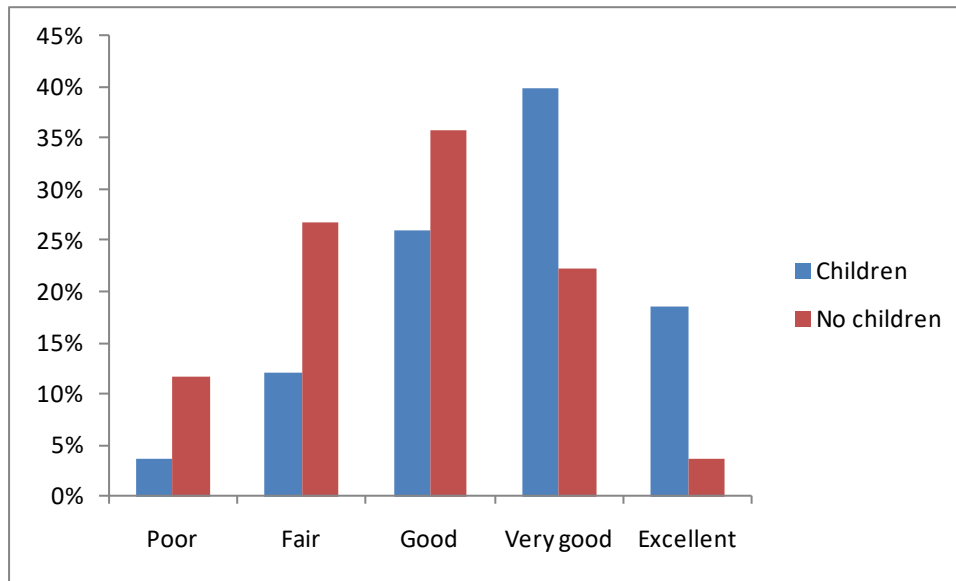


More than 40% rate the food as less than good.

2.63

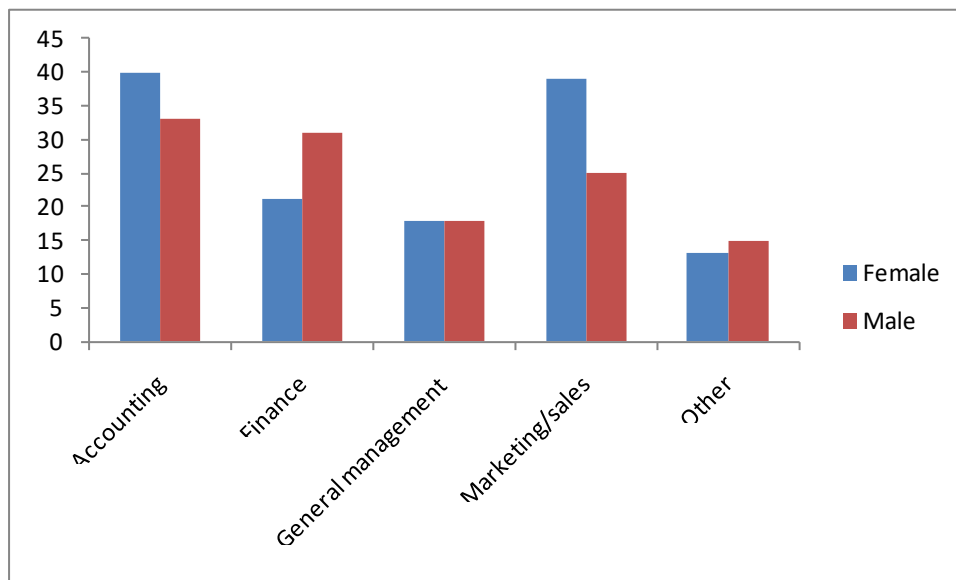


2.64



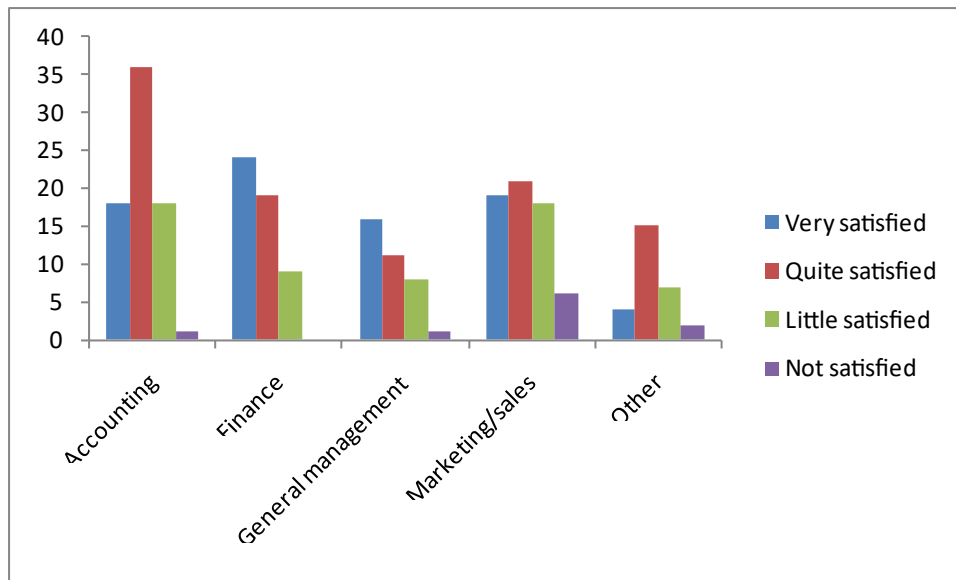
Customers with children rated the restaurant more highly than did customers with no children.

2.65



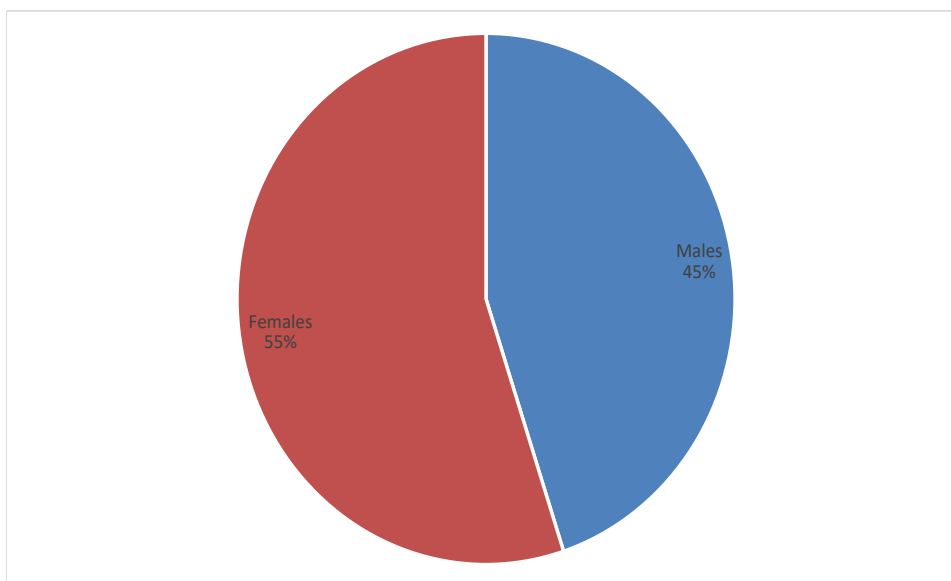
Males and females differ in their areas of employment. Females tend to choose accounting marketing/sales and males opt for finance.

b



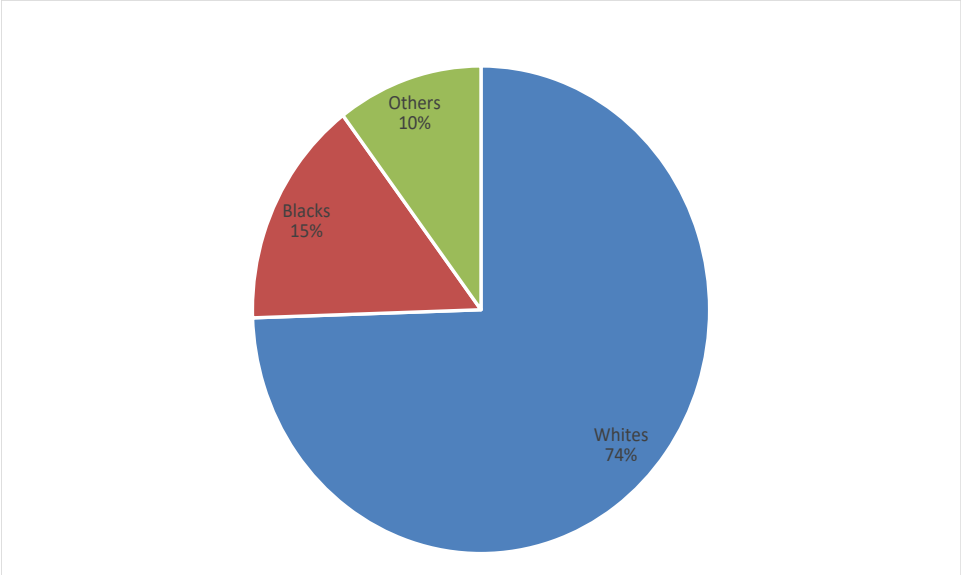
Area and job satisfaction are related. Graduates who work in finance and general management appear to be more satisfied than those in accounting, marketing/sales, and others.

2.66



The survey oversampled women slightly.

2.67

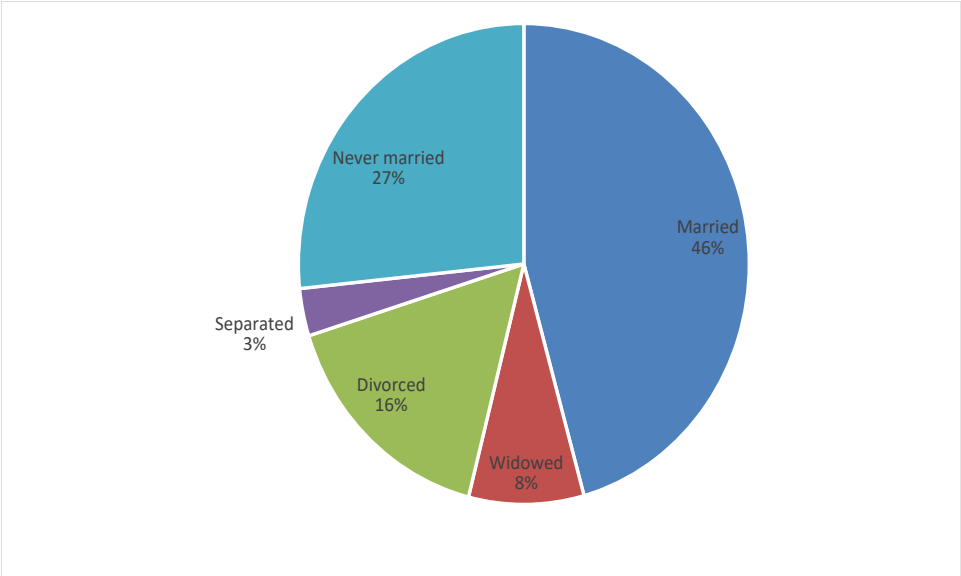


2.68a

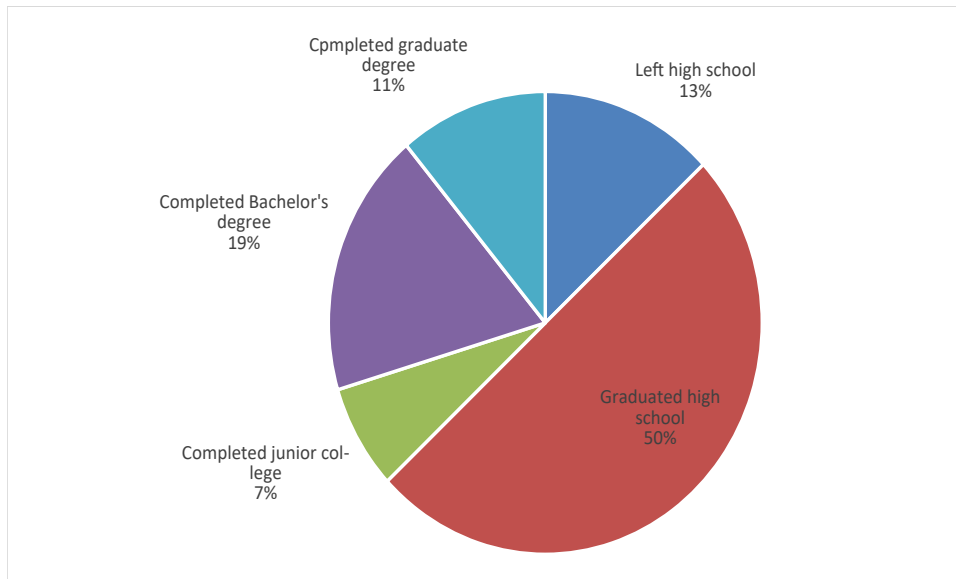
Married	1158
Widowed	209
Divorced	411
Separated	81
Never married	675

b. Pie chart

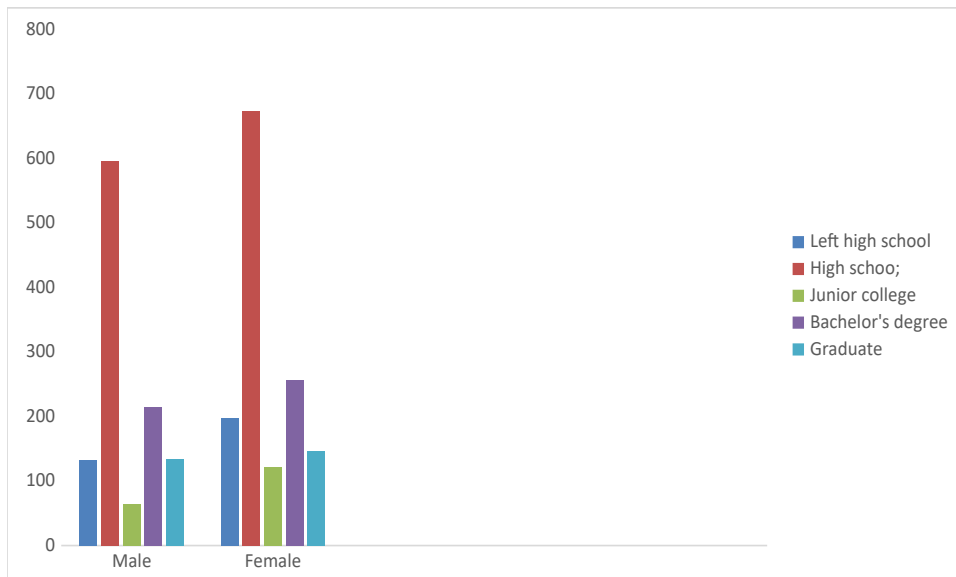
c.



2.69

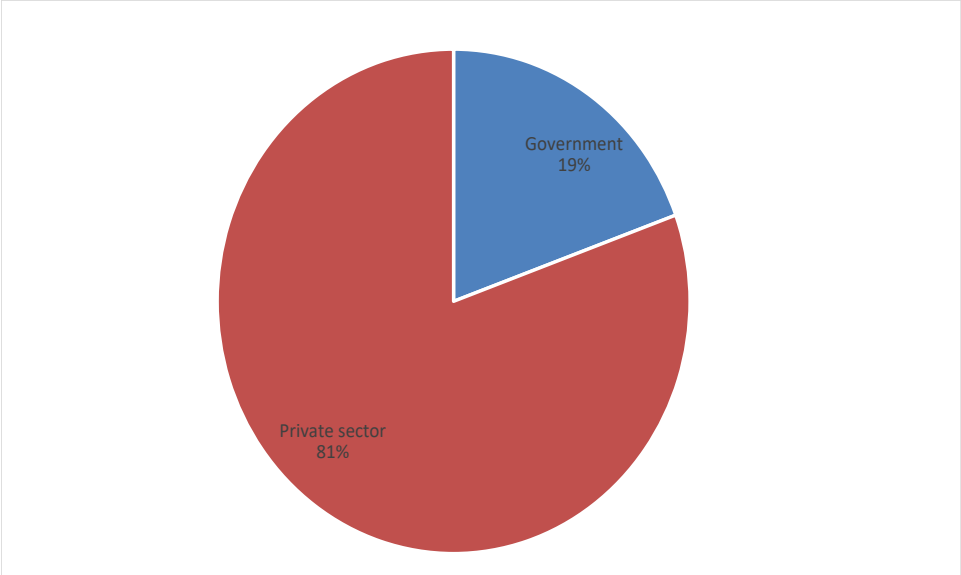


2.70

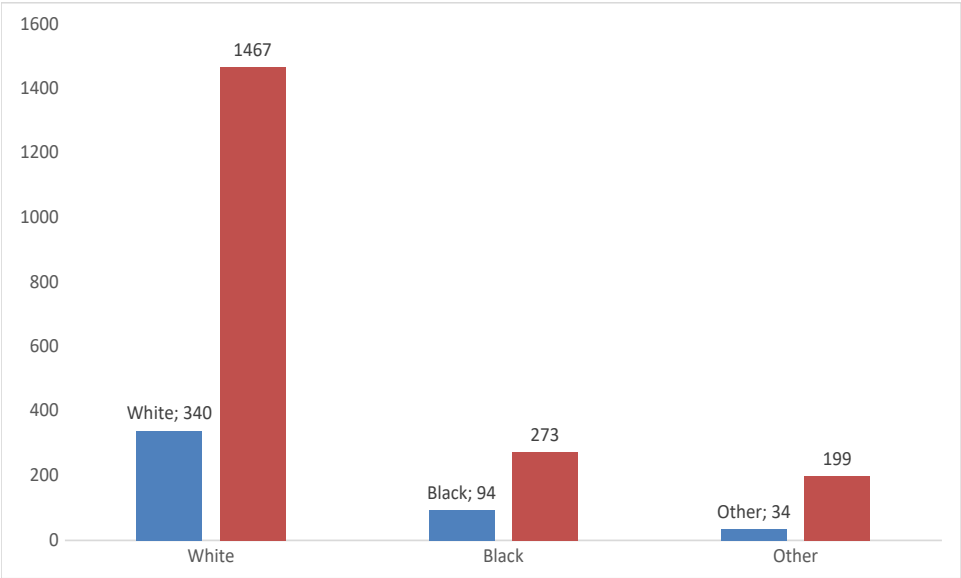


The patterns are similar.

2.71

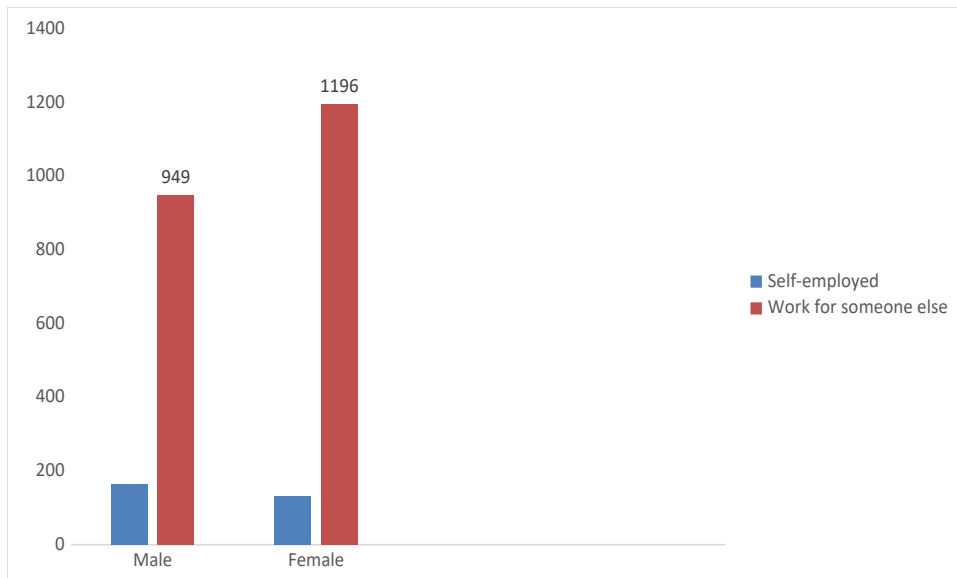


2.72



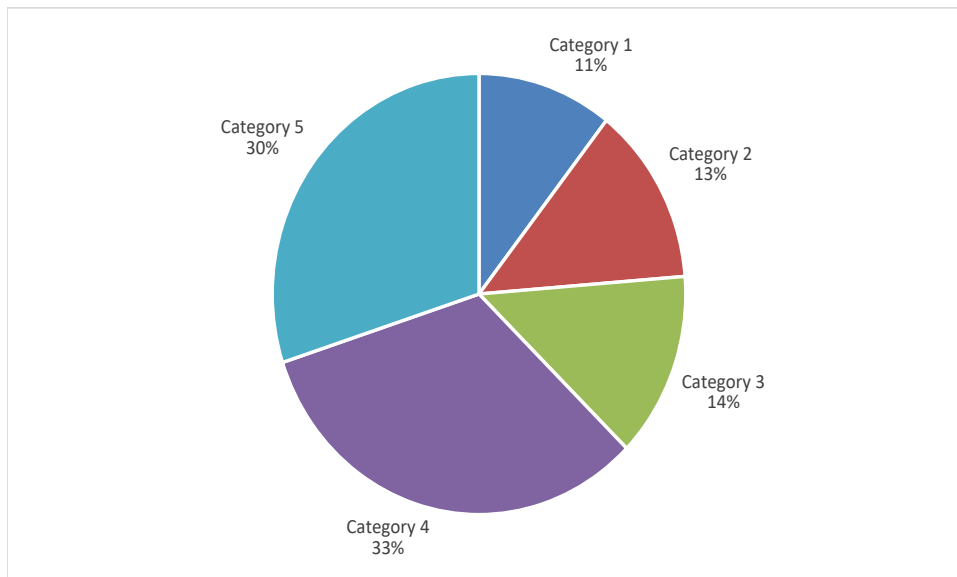
The patterns are similar.

2.73



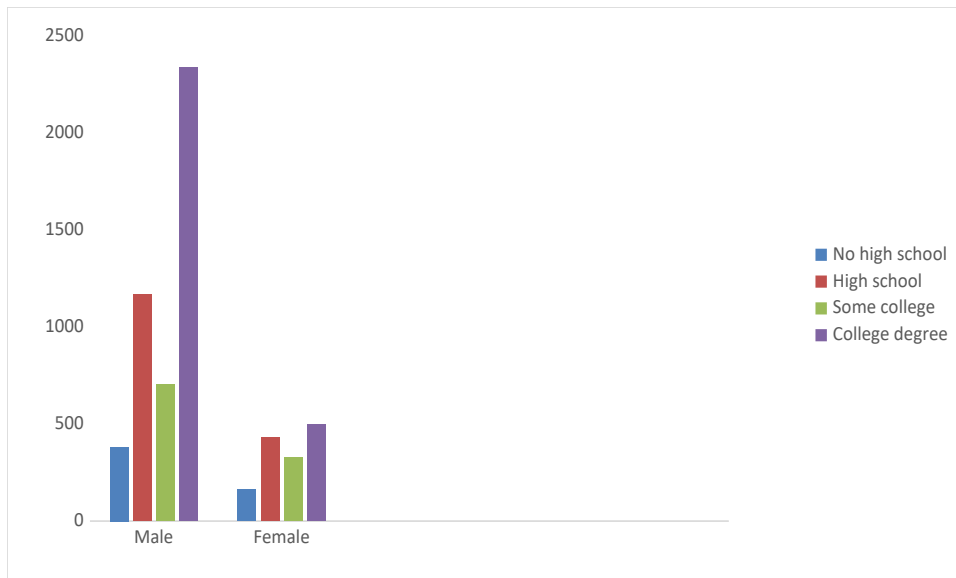
Males are slightly more likely to be self-employed than females.

2.74



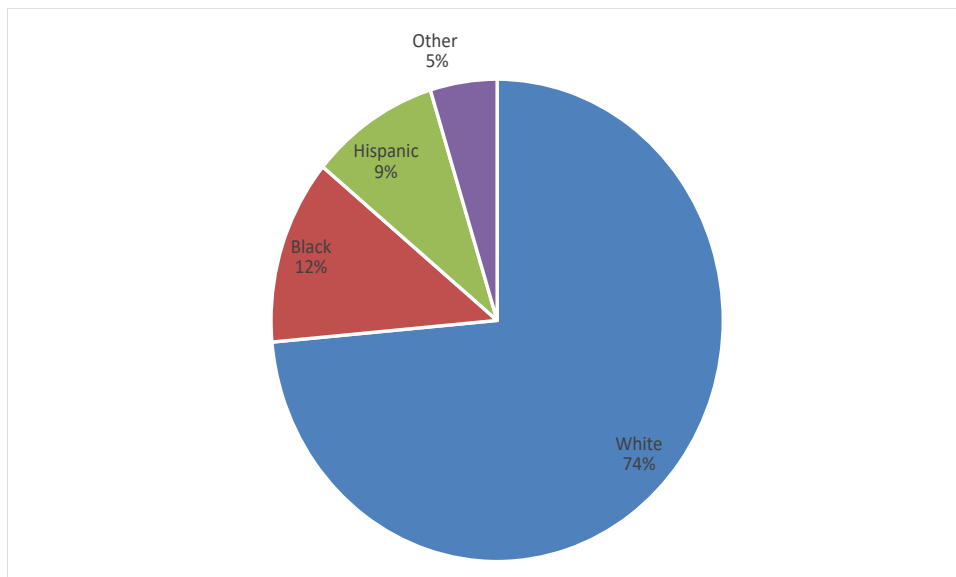
The "married" categories (4 and 5) make up more than 60% of the households.

2.75



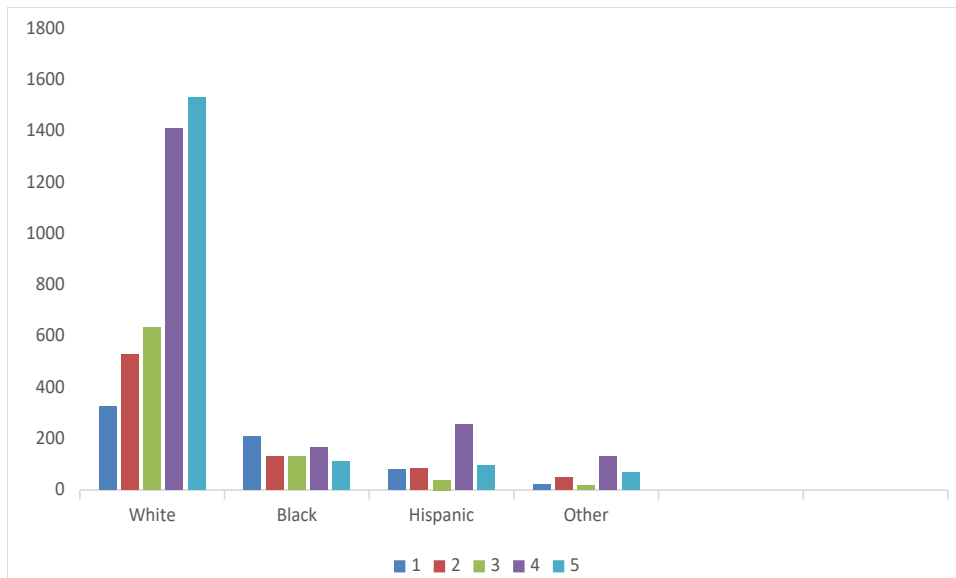
There are large differences between male and female heads of households.

2.76



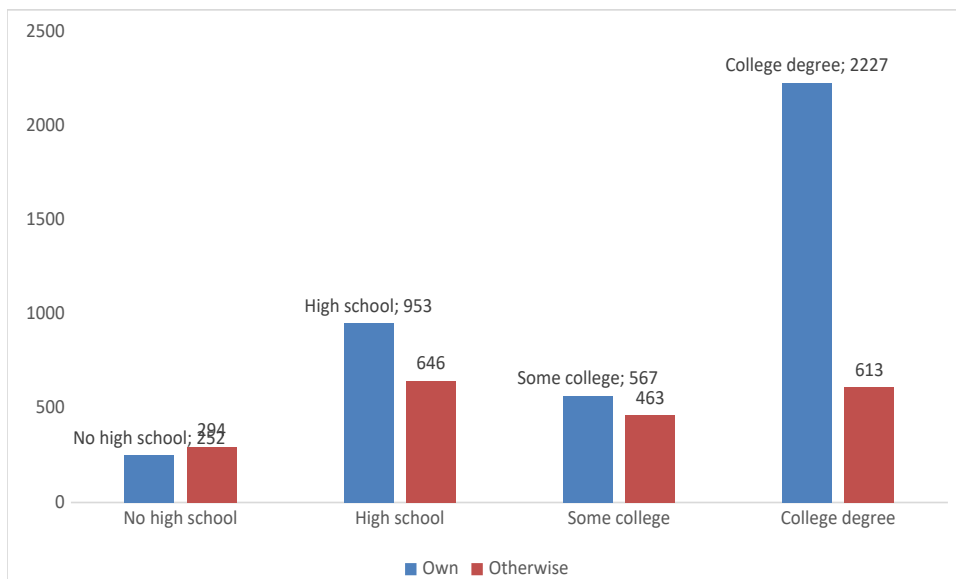
Whites make up three quarters of the survey.

2.77



There are large differences between the four races in terms of family structure.

2.78



College degree holders are much more likely to own their homes.