

Worksheet 5CD

Frequency of a category: number of data values in that category

Relative frequency: fraction or percentage of the category over the total

Cumulative frequency: number of data values in the category and all preceding categories

Binning data: a method to categorize data into different ranges of values

Data can be visualized by graphs/charts: bar charts, line charts, pie charts, multiple bar graphs, multiple line charts, stack plot, ...

1) Final grades of 30 students in a math class:

A A A A A A B B B B B B C C C C C C C C C C D D D D D F F F

Make a frequency table including columns for relative and cumulative frequency for the data set.

2) Use the 5-point bins (95 to 99, 90 to 94, etc.) to make a frequency table including columns for relative and cumulative frequency for the following data set:

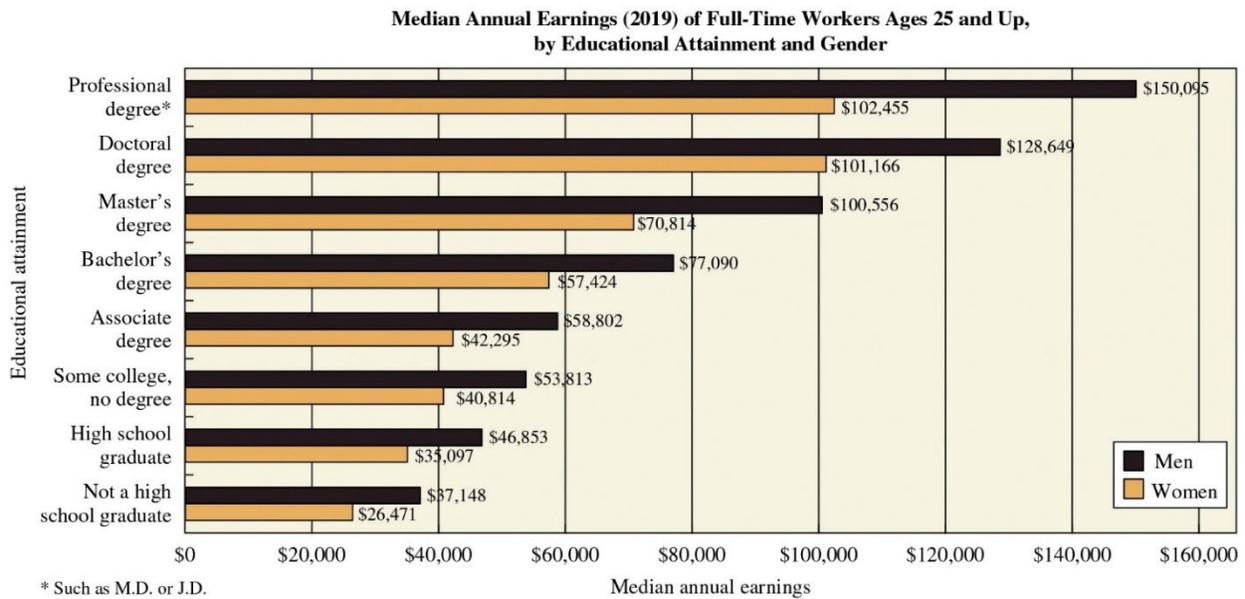
89, 67, 78, 75, 64, 70, 83, 95, 69, 84, 77, 88, 98, 90, 92, 68, 86, 79, 60, 96

3) The following table shows beef production of the six largest beef producers in the world (2020 data from the USDA). Make a bar graph for these data, with the bars in descending order.

Beef producer	Amount of beef (million metric tons)
United States	12.4
Brazil	10.1
European Union	7.8
China	6.6
India	3.7
Argentina	3.2

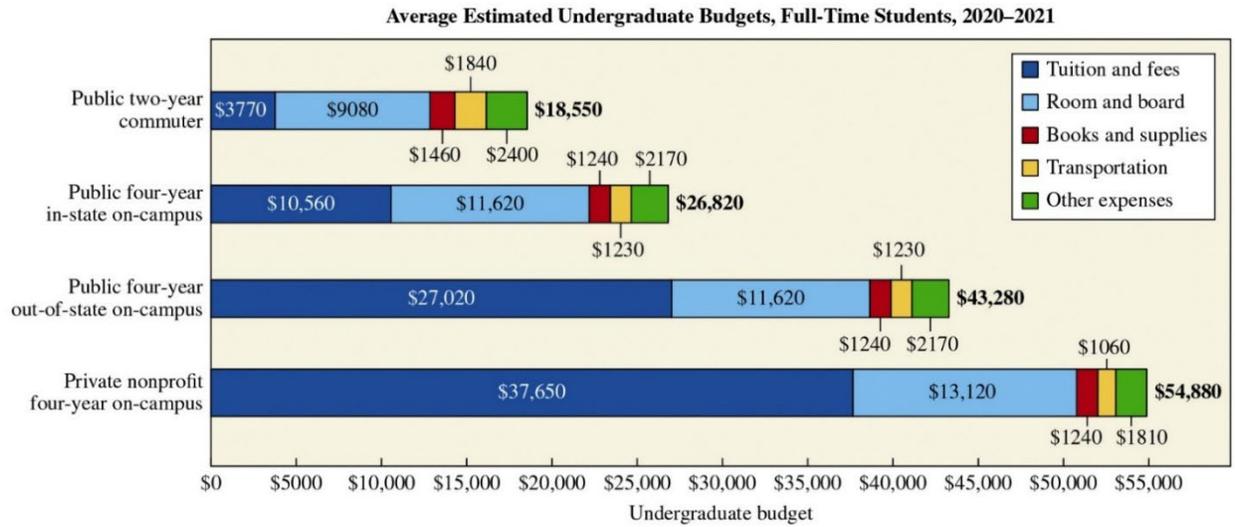
4) Among the registered voters in a certain county, 25% are Democrats, 25% are Republicans, 40% are Independents, and 10% are non-affiliated. Construct a pie chart to represent the party affiliations.

5) Use the double bar graph below to answer the following questions:



- What is the percentage difference in earnings for men with a bachelor's degree compared to women with a bachelor's degree?
- What is the percentage difference in earnings for men with a professional degree (such as an M.D. or J.D.) compared to women with a professional degree?
- What is the percentage difference in earnings for women with a professional degree (such as an M.D. or J.D.) compared to women with a bachelor's degree?
- What is the percentage difference in earnings for men with a professional degree compared to men with a bachelor's degree?

6) See the picture below.



(a) What type of data representation is used in this picture?

(b) What percentage of the total cost is for tuition for each type of school?

7) The table shows the number of subscriptions (in millions) of two different streaming services (Service A and Service B) over five years.

Year	Service A	Service B
2018	20	25
2019	30	35
2020	55	50
2021	70	60
2022	65	80

(a) Create a double bar chart comparing Service A and Service B subscriptions for each year.

(b) Create a stack plot using the same data.

(c) In which year did Service B overtake Service A?

(d) Describe the overall growth pattern of both services.

(e) In which year was the total number of subscriptions highest?

(f) Between which two years did total subscriptions increase the most?

(g) What interesting change do you notice in 2022 compared to 2021?