

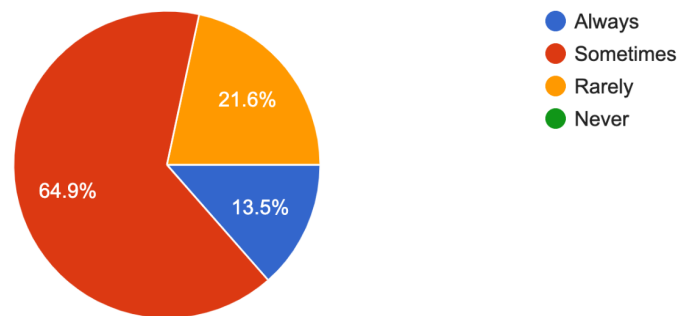
Data Analysis

1. How often do you eat potato chips?

Class	Frequency	Relative Frequency
Always	5	$5/37 = 0.14$
Sometimes	24	$24/37 = 0.65$
Rarely	8	$8/37 = 0.22$
Never	0	$0/37 = 0$

How often do you eat potato chips?

37 responses



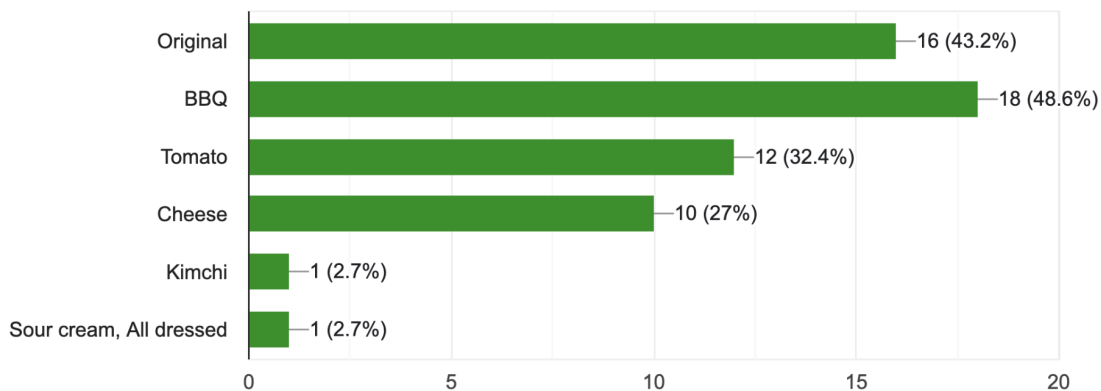
The pie graph shows the frequency of potato chips eaten by teenagers. It is clear that the largest proportion of people chose "Sometimes", no one chose "Never", which is a stark contrast.

2. What is your favourite flavour of chips? (You may choose more than one)

Class	Frequency	Relative Frequency
Original	16	$16/58 = 0.28$
BBQ	18	$18/58 = 0.31$
Tomato	12	$12/58 = 0.21$
Cheese	10	$10/58 = 0.17$
Others	2	$2/58 = 0.03$

What is your favourite flavour of chips?

37 responses



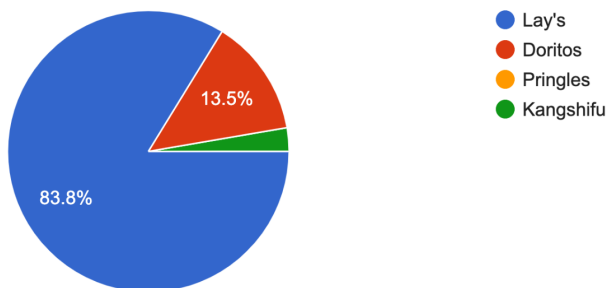
This question was a survey about personal taste preferences, and we can tell that the largest group is people who like barbecue flavour. However, only 2 people suggested 2 other flavours.

3. What brand of potato chips do you buy most often?

Class	Frequency	Relative Frequency
Lay's	31	$31/37 = 0.84$
Doritos	5	$5/37 = 0.14$
Pringles	0	$0/37 = 0$
Others	1	$1/37 = 0.03$

What brand of potato chips do you buy most often?

37 responses



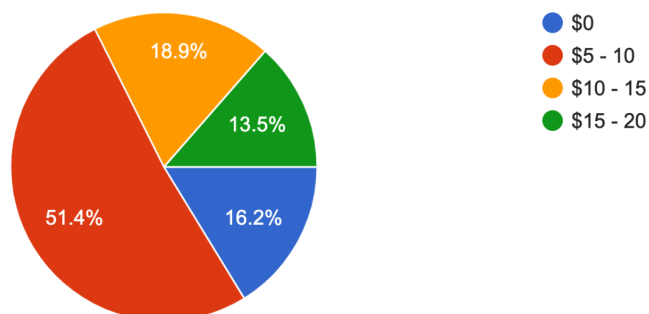
Lay's brand accounted for the most data, followed by Doritos. Whereas, none of them were willing to buy Pringles.

4. How much do you spend on average per week on potato chips?

Class	Frequency	Relative Frequency
\$0	6	$6/37 = 0.16$
\$5 - 10	19	$19/37 = 0.51$
\$10 - 15	7	$7/37 = 0.19$
\$15 - 20	5	$5/37 = 0.14$
Others	0	$0/37 = 0$

How much do you spend on average per week for potato chips?

37 responses



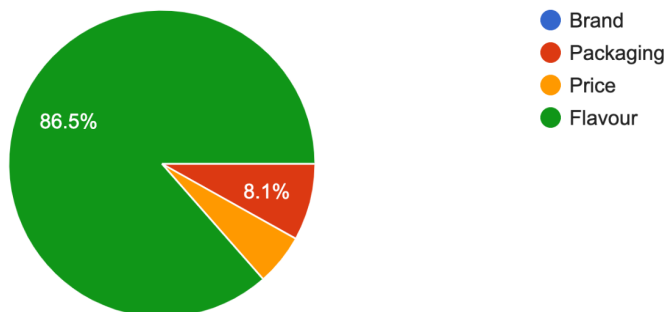
This question examined the level of consumption of the individuals who buy potato chips. Half of the people spend the most money on \$5-10 per week, followed by \$10-15 and \$0. There were only 5 people spending \$15-20 per week.

5. What reason will influence your choice of potato chips?

Class	Frequency	Relative Frequency
Brand	0	$0/37 = 0$
Packaging	3	$3/37 = 0.08$
Price	2	$2/37 = 0.05$

Flavour	32	$32/37 = 0.86$
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What reason will influence your choice of potato chips?
37 responses

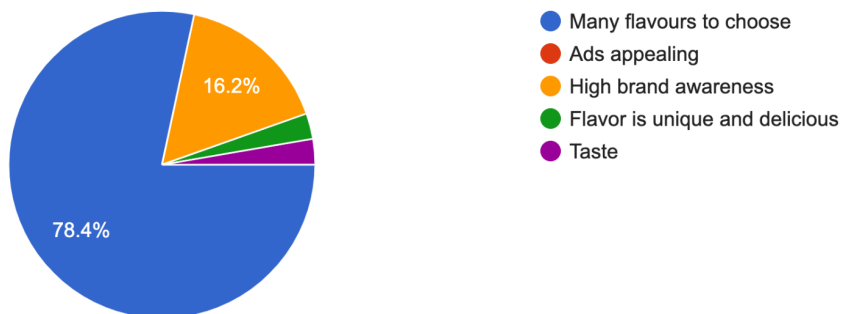


The graph shows the reason that most influences people's choice of potato chips is its flavour. The brand is the least addictive reason for teenagers.

6. What are your reasons for buying a particular brand of potato chips?

Class	Frequency	Relative Frequency
Many flavours to choose	29	$29/37 = 0.78$
Ads appealing	0	$0/37 = 0$
High brand awareness	6	$6/37 = 0.16$
Others	2	$2/37 = 0.05$

What is your reason for buying a particular brand of potato chips?
37 responses



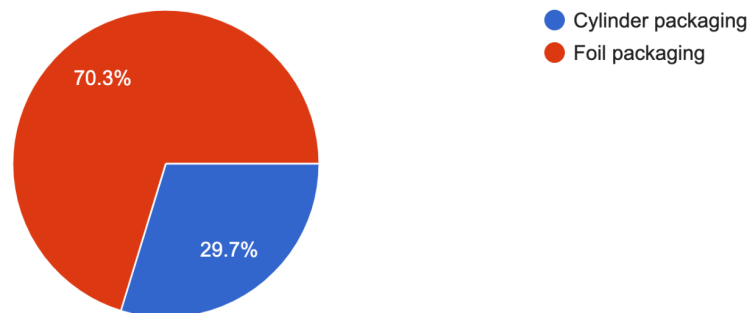
"Many flavours to choose" was the main reason that people buy a particular brand. However, there were no people who chose to buy a particular brand due to "Ads appealing". As a result, we can see that the diversity of potato chip flavours was the most important factor for the survey respondents.

7. What kinds of packaging designs would you prefer?

Class	Frequency	Relative Frequency
Cylinder packaging	11	$11/37 = 0.30$
Foil packaging	26	$26/37 = 0.70$

What kinds of packaging designs would you prefer?

37 responses



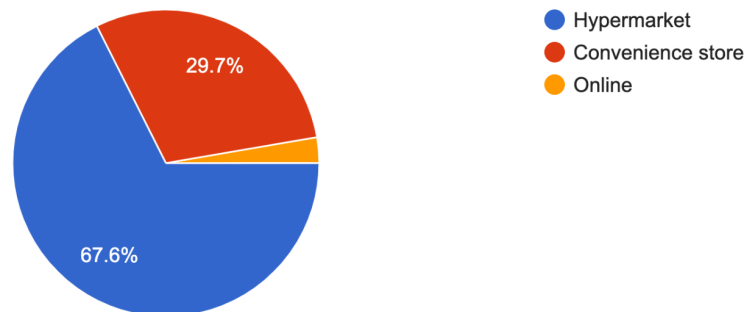
As we can see, more than 2/3 of people prefer "Foil Packaging" This shows that people like "Foil Packaging" much more than "Cylinder packaging".

8. Where do you usually buy potato chips?

Class	Frequency	Relative Frequency
Hypermarket	25	$25/37 = 0.68$
Convenience Store	11	$11/37 = 0.30$
Online	1	$1/37 = 0.03$

Where do you usually buy potato chips?

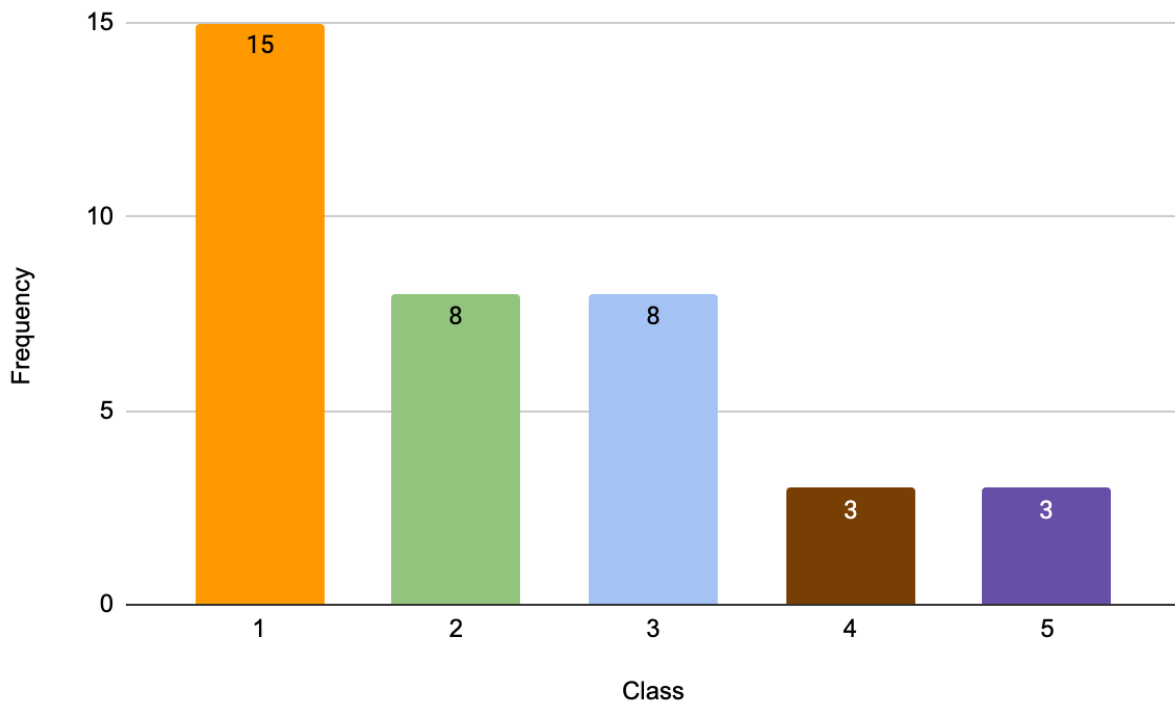
37 responses



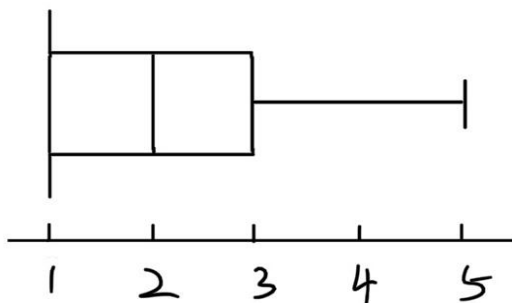
It is clear that "Hypermarket" and "Convenience Store" account for most of the data, and online shopping is the least popular choice.

9. Do you consider calories when you buy chips? (Rate it on the scale of 1-5, 1=Don't care, 2=rarely, 3=Sometimes, 4=a little concerned, 5= Very concerned)

Class	Frequency	Relative Frequency
1	15	$15/37 = 0.41$
2	8	$8/37 = 0.22$
3	8	$8/37 = 0.22$
4	3	$3/37 = 0.08$
5	3	$3/37 = 0.08$



- Mean: $(1 \times 15 + 2 \times 8 + 3 \times 8 + 4 \times 3 + 5 \times 3) \div 37 = 2.2$
- Mode: 1
- Median: 2
- Q1: 1
- Q3: 3
- IQR: $3 - 1 = 2$
- Range: $5 - 1 = 4$
- Five Figure Summary: 1, 1, 2, 3, 5
- Lower Tolerance Value = $1 - 1.5 \times 2 = -2$
- Upper Tolerance Value = $3 + 1.5 \times 2 = 6$
- Box-and-Whisker Plot:



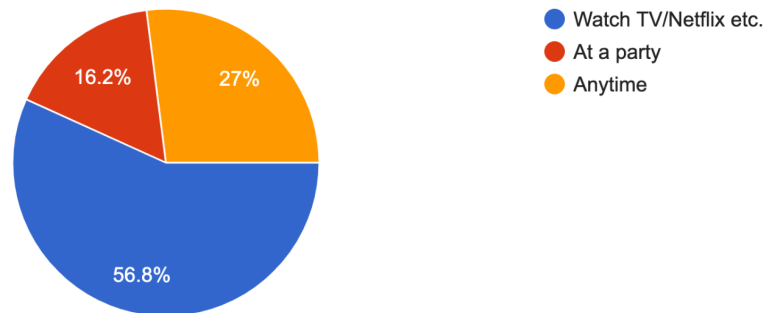
From the data, we can learn that the biggest majority of people do not consider calorie intake when buying potato chips. Surprisingly, scale 2&3 and scale 4&5 have the same response rate respectively.

10. When do you eat potato chips most frequently?

Class	Frequency	Relative Frequency
Watch TV/Netflix etc.	21	$21/37 = 0.57$
At a party	6	$6/37 = 0.16$
Anytime	10	$10/37 = 0.27$

When do you eat potato chips most frequently?

37 responses



More than half of people choose to eat potato chips while doing leisure activities such as watching Netflix, followed by "anytime" and third when people are socializing, such as at a party.

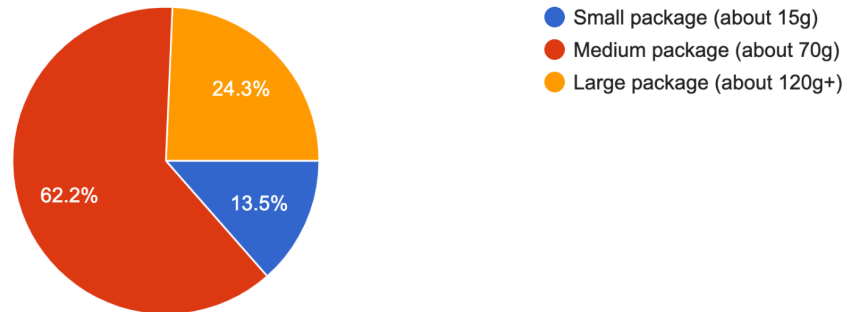
11. How many grams do you usually buy potato chips?

Class	Frequency	Relative Frequency
Small package (about 15g)	5	$5/37 = 0.14$
Medium package (about 70g)	23	$23/37 = 0.62$

Large package (about 120g+)	9	$9/37 = 0.24$
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How many grams do you usually buy potato chips?

37 responses



We can see that the data of the medium-sized potato chip package is outstanding, to avoid the situation of buying a small package that is not enough to eat or buying a large package that can not finish.

12. Do you think the current flavour of potato chips is enough? (Answer with Yes or No, If no then what flavour of chips would you like to add?)

Class	Frequency	Relative Frequency
Yes	34	$34/37 = 0.92$
No	3	$3/37 = 0.08$

Over 90 percent of people chose enough. However, people who chose “not enough” are because “I would appreciate more exotic flavours that are derived from other cuisines, such as Chinese crispy chicken flavoured, Mexican pulled pork flavoured, kimchi flavoured, etc.” Although individual taste differences, most people's demand for potato chips' taste is enough.

Conclusion

The purpose of my investigation was to find out whether teenagers' consumption of potato chips was influenced by food packaging or other factors etc. and what's the main

reason that influences teenagers to buy different potato chips. In this survey, the sampling method is Voluntary-Response Sampling, which I sent to approximately 50 people and I got 38 responses. The survey was conducted among young people aged from 15 to 18 years old, the control factor, with a total of 38 participants, but only 37 valid responses. People's answers in this survey are recorded completely anonymously.

From the survey, we can conclude that the consumption of potato chips by teenagers is mainly about the flavour of potato chips based on questions 5 and 6. I started the survey with five main categories of questions, which are, frequency and time of eating chips (questions 1 and 10), flavour preference (questions 2, 5, 9 and 12), consumption preference (questions 4, 5 and 8), product brand choice (questions 3, 5 and 6) and packaging preference (questions 5, 7 and 11).

In the data analysis, I have not only created tables for the responses to each question but also analyzed the frequency and probability in the table. In question 9, I used the knowledge I learned in Unit 3 to calculate the mean (mean is the average, in question 9 represents the average scale that people care about calories), median (median is the middle value of an ordered data set), mode (mode is the most frequent value in a data set), Five Figure Summary (five figure summary of a data set presents the minimum value, lower quartile, median, upper quartile, and maximum value.), IQR (IQR stands for "Interquartile Range", the formula to calculate IQR is "Q3(Upper quartile) – Q1(Lower quartile)") etc. by using formulas. I have also created a Box-and-Whisker Plot based on these data.

However, there are three kinds of bias that existed in the survey. The first is gender bias, about two-thirds of those who participated in the statistics were men since I had more male friends and less data for females, which would lead to an imbalance in the ratio of gender. Secondly, there is a national bias. In this survey, most of the participants are Chinese. There was also a Canadian, an American and a Malaysian among 37 participants. Different countries represent different cultures, which means that the results might be inaccurate to represent potato chips preferences in the western culture.

The last type of bias is a response bias, that is, some people did not answer the question seriously. Here are some examples. The first example: I invited 38 people to participate in the survey, but there were only 37 valid results. The reason is that one of them did not answer seriously on question 10. The question was "When do you eat potato chips most frequently?" He chose "Others", but answered with "." as the answer. Another example is, in the last question "Do you think the current flavour of potato chips is enough? (Answer with Yes or No, If no then what flavour of chips would you like to add?)", there were 2 people who answered with "No" but did not explain.

There are two areas I can improve in this survey. First of all, for the problem of unequal data between gender and different countries' citizens, I can intentionally select the same number of male and female participants and only choose the same nationality participants in the survey. Secondly, I can ask the participants' opinions before the questionnaire starts, and if they agree they will answer seriously, then I can better ensure the truthfulness of the answers.