ORIE 5355: People, Data, & Systems
Pricing Ethics Discussion

Nikhil Garg

Course webpage: https://orie5355.github.io/Fall_2021/

Announcements

- Extended TA Office Hours today, 7-9pm

- **No** office hours this Wednesday 10/20

- **No** class Monday 10/25
  - "make-up" virtual only guest lecture TBA in early November

- **Virtual only** class Wednesday 10/27

- HW4 released next week

Fill out attendance form here: <u>https://bit.ly/pricingattendance</u>

Plan for today: In class discussion

Pricing ethics

Survey background

The survey was based on a classic pricing ethics paper, "Fairness as a Constraint on Profit Seeking: Entitlements in the Market" from 1986

- What are perceived reasons that a price is unfair?
    - Need/price gouging in emergencies
    - "Reference transactions" – raising prices is worse than not giving discounts
    - "Reason" for increase – passing on costs or 'just because'
    - Use of "market power"
- These reasons all also matter for algorithmic pricing
- Algorithmic pricing has brought up other issues as well

Discussion Norms

- Participate! (Raise your hand and wait to be called)
- Put your hand down and listen when someone else is talking
- Make your point respectfully
  - Disagree with ideas, not people
  - There is substantive disagreement here, and rarely any "right" answers
- I hope there is some back and forth between people, but I'll also try to move the conversation along and let others jump in
- Be mindful of your words; don't resort to stereotypes
- Don't attribute people's opinions to outside the classroom

Question 1

A convenience store has been selling bottled water packs for $10. The morning after a hurricane in which many people lost indoor plumbing, the store raises the price to $20.

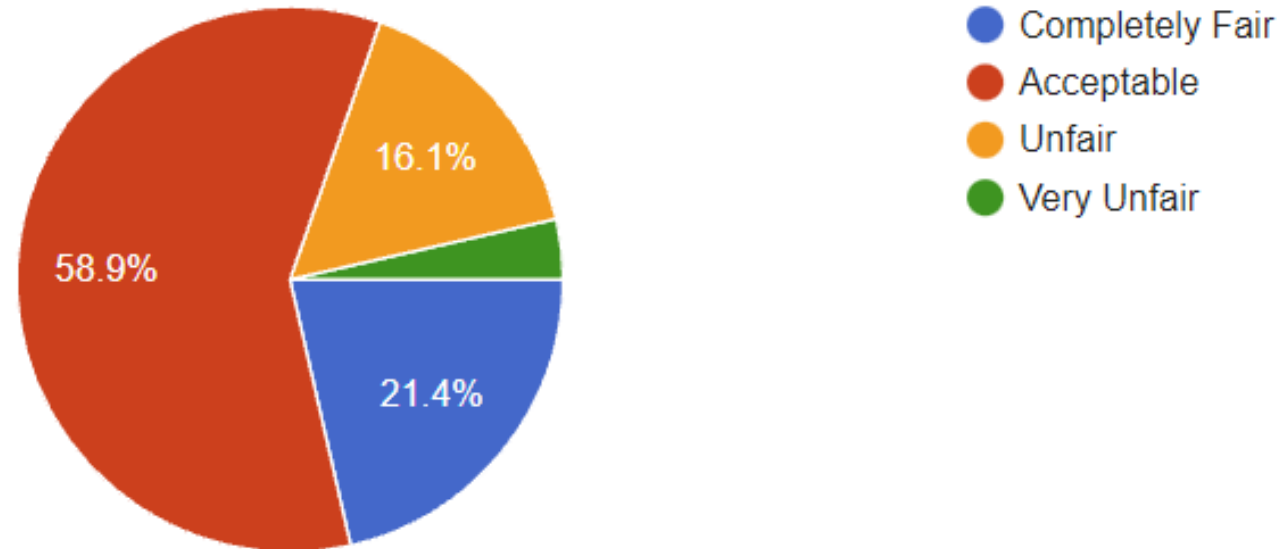# Question 1

A convenience store has been selling bottled water packs for $10. The morning after a hurricane in which many people lost indoor plumbing, the store raises the price to $20.

Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair

48.2%
30.4%
17.9%
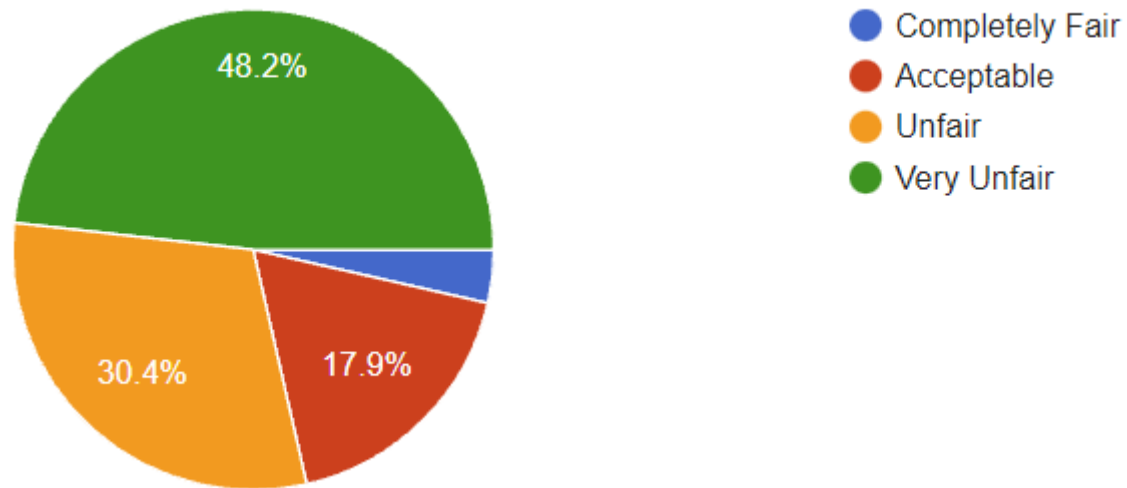
Question 2

A convenience store has been selling umbrellas for $5. Whenever it starts raining, the store raises the price to $8.

Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair

58.9%
16.1%
21.4%

Question 5

Suppose that, due to a supply chain issue, there is a local shortage of lettuce and the wholesale price has increased. A local grocer has bought the usual quantity of lettuce at a price that is 30 cents per head higher than normal. The grocer raises the price of lettuce to customers by 30 cents per head.
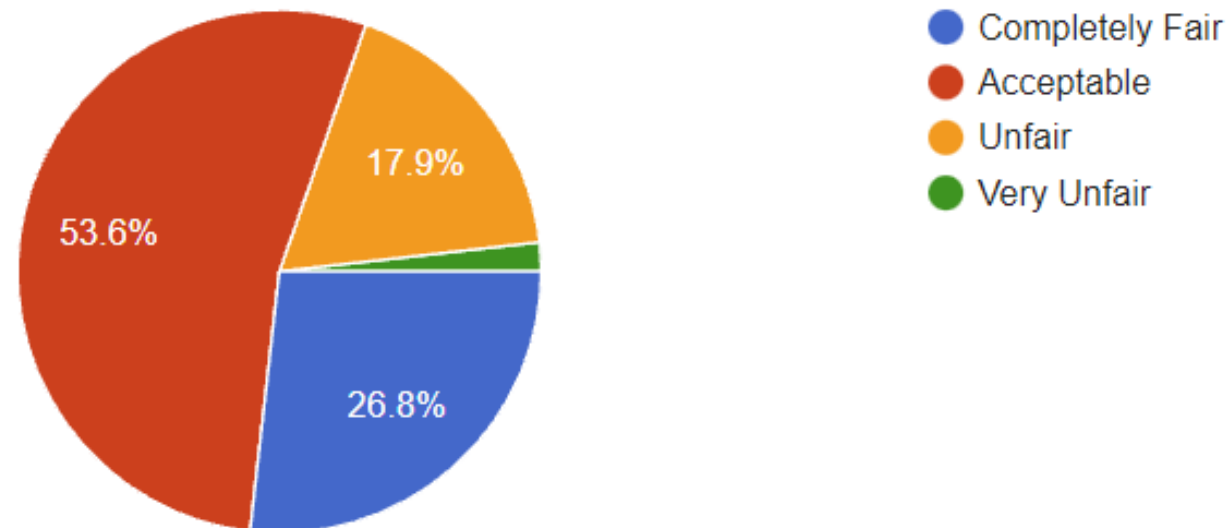
Question 5

Suppose that, due to a supply chain issue, there is a local shortage of lettuce and the wholesale price has increased. A local grocer has bought the usual quantity of lettuce at a price that is 30 cents per head higher than normal. The grocer raises the price of lettuce to customers by 30 cents per head.

- Completely Fair
- Acceptable
- Unfair
- Very Unfair

16.1%

82.1%
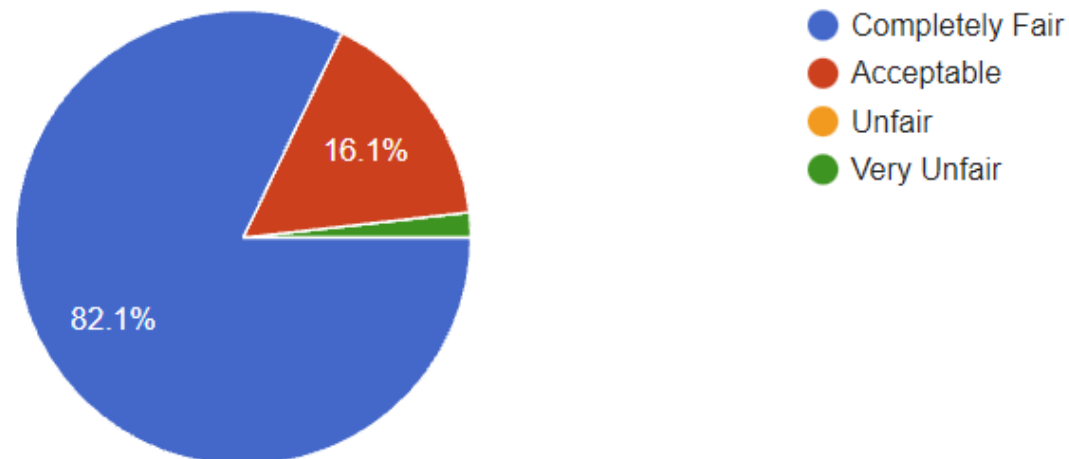
Question 6

A grocery store has several months supply of peanut butter in stock which it has on the shelves and in the storeroom. The owner hears that the whole-sale price of peanut butter has increased and immediately raises the price on the current stock of peanut butter.
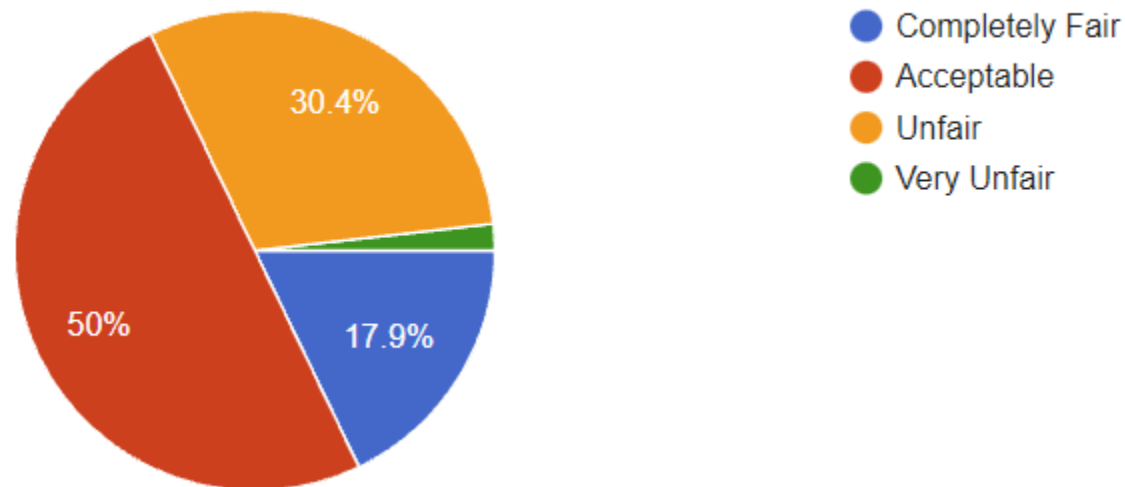
Question 8

A grocery chain has stores in many communities. Most of them face competition from other groceries. In one community the chain has no competition. Although its costs and volume of sales are the same there as elsewhere, the chain sets prices that average 5 percent higher than in other communities. The community without competition is not any different socio-economically than the other communities.

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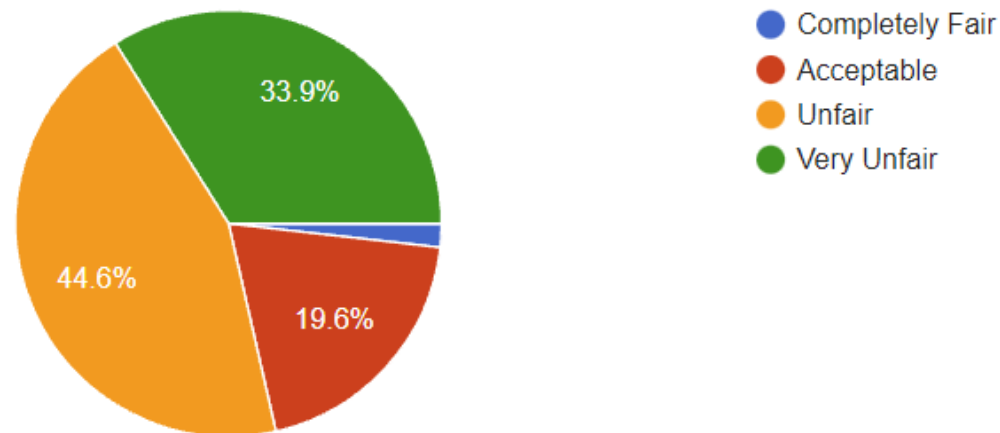
Question 9

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- Completely Fair
- Acceptable
- Unfair
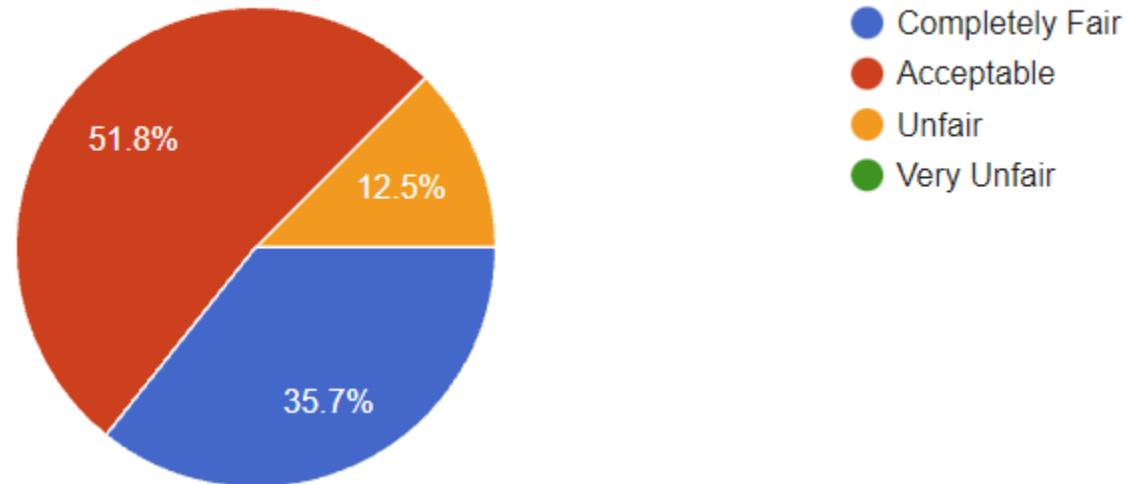- Very Unfair

33.9%

44.6%

19.6%

Question 10

A landlord rents out a small house. When the lease is due for renewal, the landlord learns that local rents for comparable properties are higher than they previously thought. The landlord raises the rent $40 per month more than they were planning to do.

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Legend:
- Completely Fair (blue)
- Acceptable (red)
- Unfair (orange)
- Very Unfair (green)

Pie chart values:
- 51.8% (Acceptable)
- 35.7% (Completely Fair)
- 12.5% (Unfair)

Question 11

A landlord rents out a small house. When the lease is due for renewal, the landlord learns that the tenant has taken a job very close to the house and is therefore unlikely to move. The landlord raises the rent $40 per month more than they were planning to do.

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Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair

Pie chart values: 67.9%, 16.1%
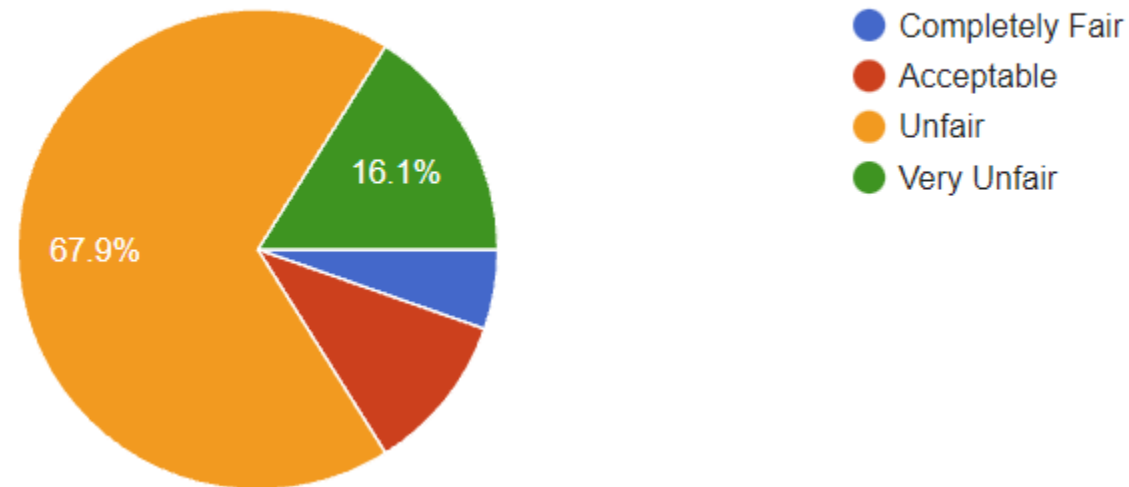
Question 12

A business in a community with high unemployment needs to hire a new computer programmer. Four candidates are judged to be completely qualified for the job. The manager asks the candidates to state the lowest salary they would be willing to accept, and then hires the one who demands the lowest salary.

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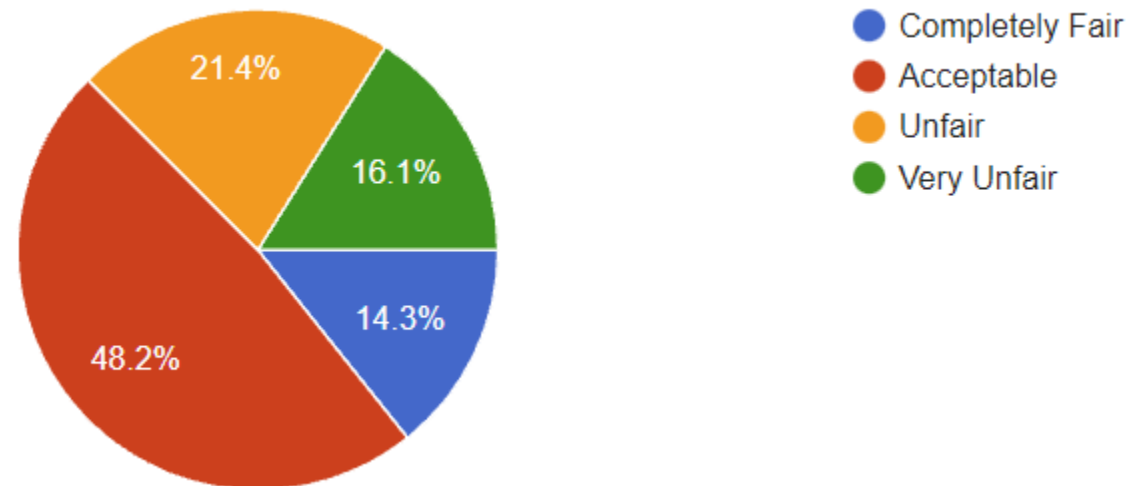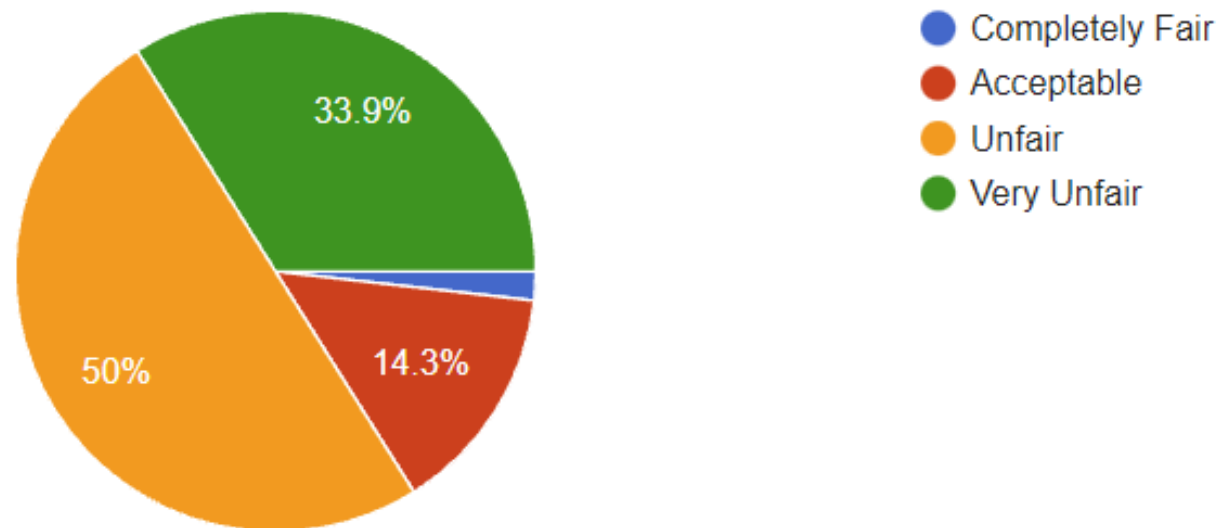
Question 13

An algorithm is being used to price an essential item (for example, school supplies) for an online retailer. It learns that people from a certain neighborhood (via their IP address) are willing to pay higher prices, and so it sets higher prices for them. The neighborhood is a socio-economically disadvantaged neighborhood.
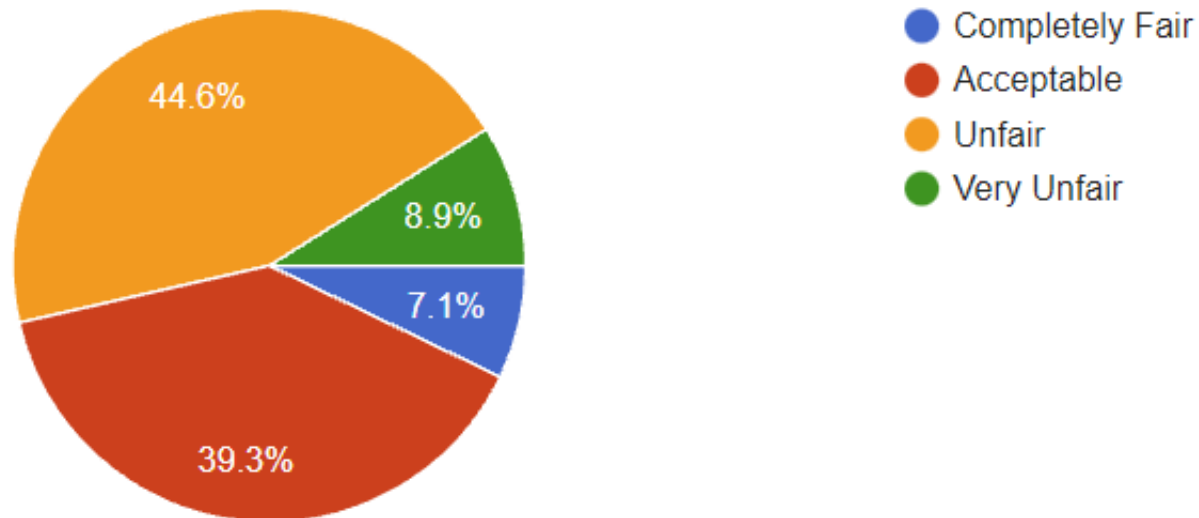
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Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair

33.9%
50%
14.3%

Question 14

An algorithm is being used to price an essential item (for example, school supplies) for an online retailer. It learns that people from a certain neighborhood (via their IP address) are willing to pay higher prices, and so it sets higher prices for them. The neighborhood is a socio-economically privileged (rich) neighborhood.

- Completely Fair
- Acceptable
- Unfair
- Very Unfair

44.6%

8.9%

7.1%

39.3%

Question 15

An algorithm is being used to price a luxury good (for example, expensive clothing) for an online retailer. It learns that people from a certain neighborhood (via their IP address) are willing to pay higher prices, and so it sets higher prices for them.

Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair
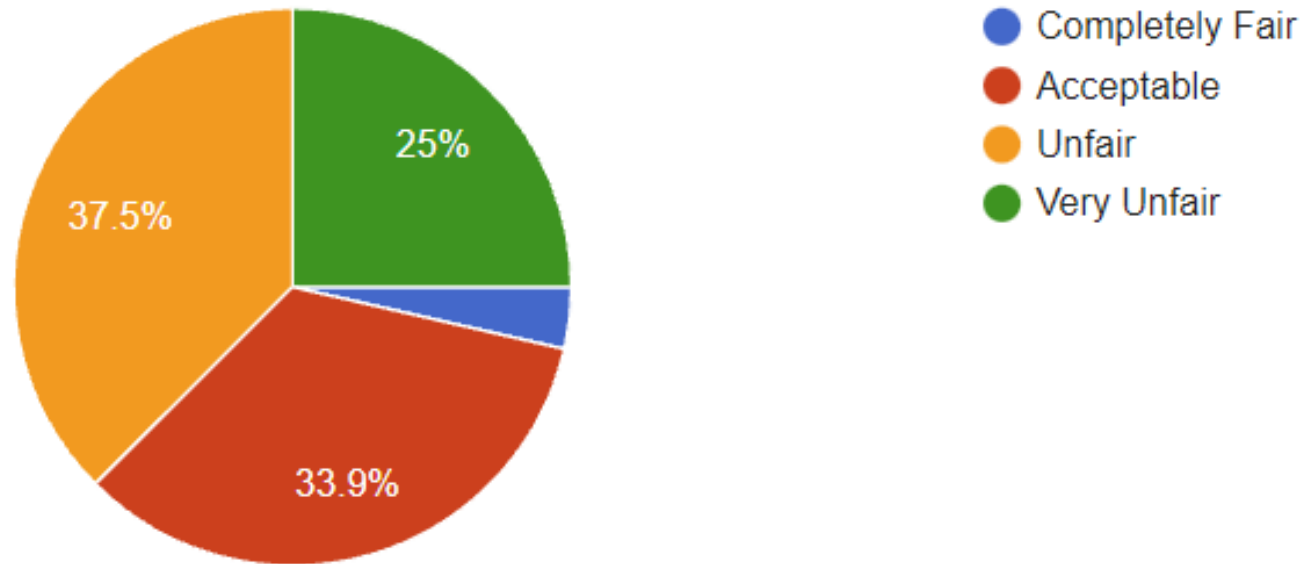
Pie chart values: 50%, 28.6%, 16.1%
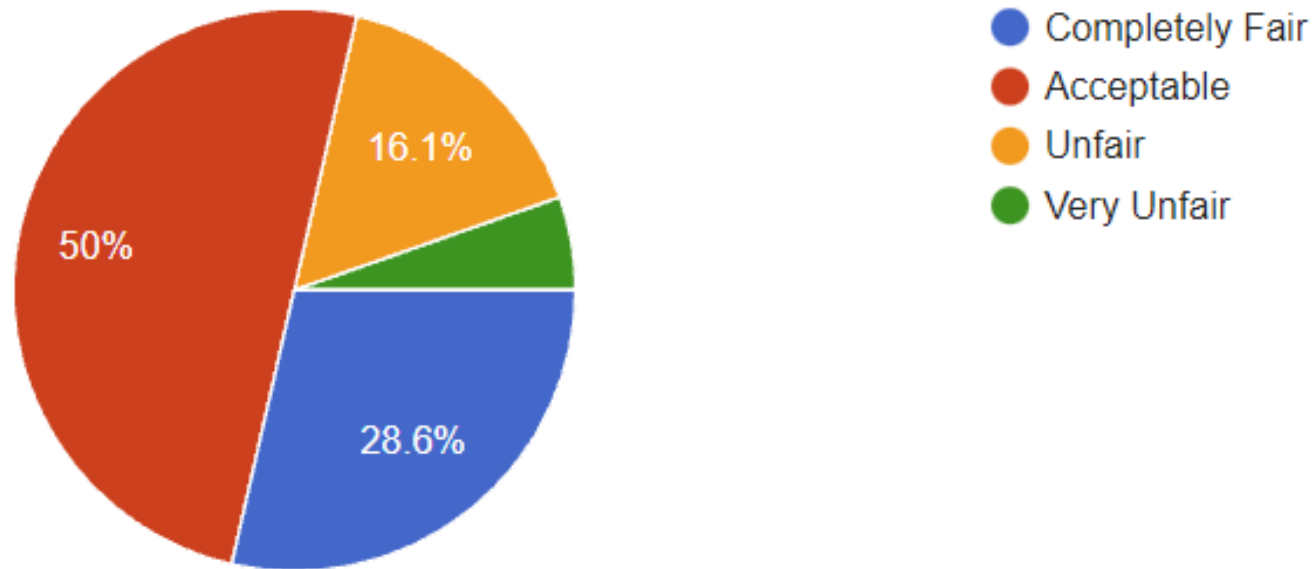
Question 16

On Uber/Lyft, drivers have to drive longer to pick up the passengers in certain suburbs or neighborhoods, because they tend to be farther away. Is it acceptable for them to NOT pay drivers more for these trips?

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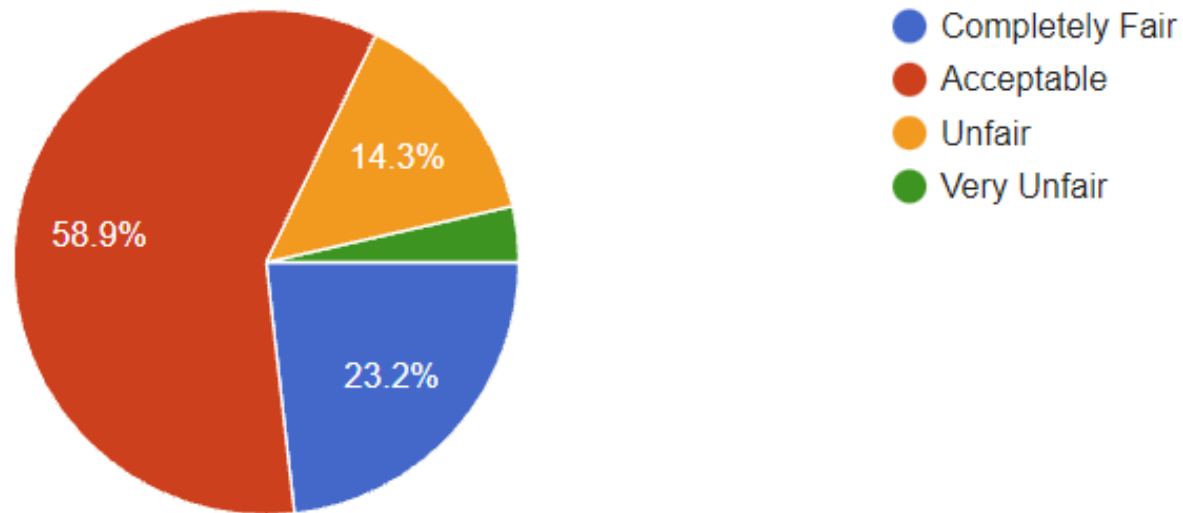
Pie chart values: 25%, 37.5%, 33.9%

Question 17

On Uber/Lyft, drivers have to drive longer to pick up the passengers in certain suburbs or neighborhoods, because they tend to be farther away. Is it acceptable for them to charge more to passengers from these neighborhoods?

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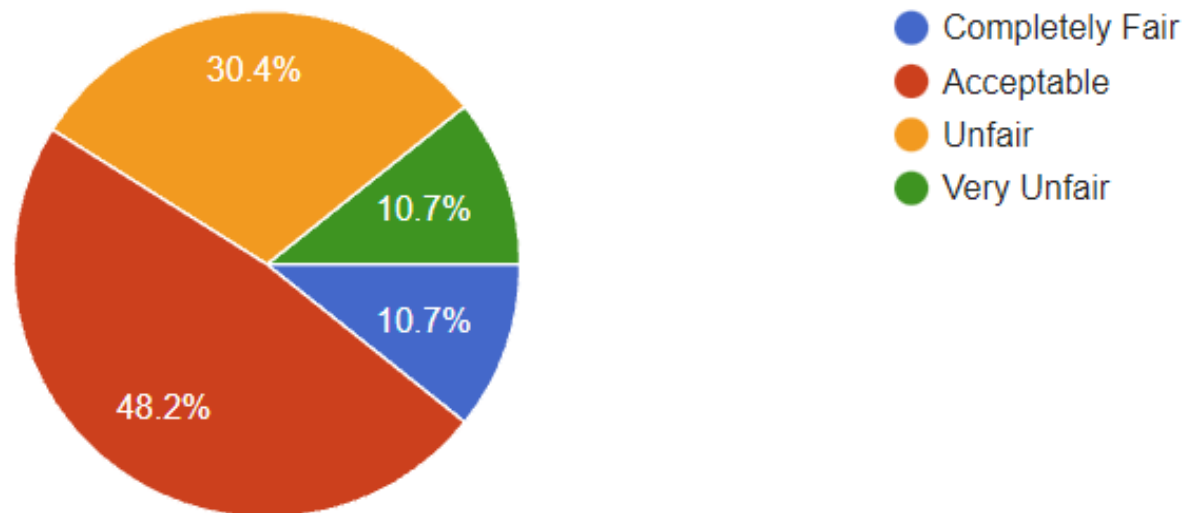
Question 18

On Uber/Lyft, drivers have to drive longer to pick up the passengers in certain suburbs or neighborhoods, because they tend to be farther away. Is it acceptable for them to charge more to passengers from these neighborhoods, if these neighborhoods tend to be socioeconomically disadvantaged historically?

Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair

Pie chart values:
- 30.4%
- 10.7%
- 10.7%
- 48.2%

Question 19

An algorithm that makes decisions for whether to give someone a loan learns that race/ethnicity correlates with how often a loan is repaid. It partially bases its decisions on a "race/ethnicity" covariate for each user.
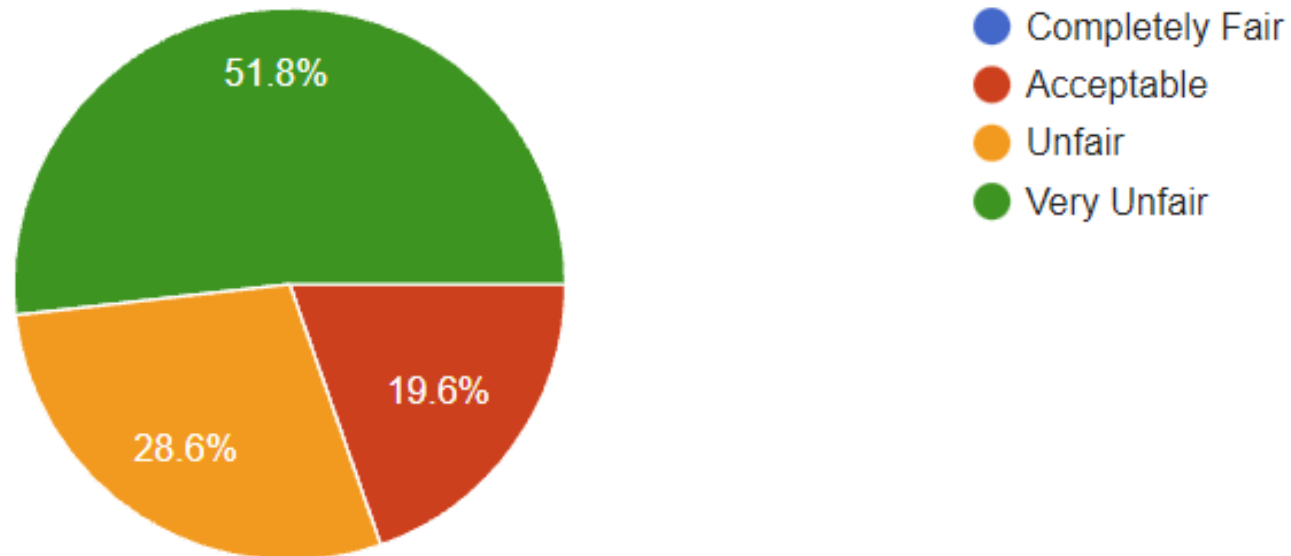
Question 19

An algorithm that makes decisions for whether to give someone a loan learns that race/ethnicity correlates with how often a loan is repaid. It partially bases its decisions on a "race/ethnicity" covariate for each user.

Legend:
- Completely Fair
- Acceptable
- Unfair
- Very Unfair

Pie chart values: 51.8%, 19.6%, 28.6%

Question 20

An algorithm makes decisions for whether to give someone a loan. It does not have access to a race/ethnicity covariate. However, it learns that variables that correlate with race/ethnicity (like neighborhood) also correlate with how often loans are repaid. It partially bases its decisions on this other data.

- Completely Fair
- Acceptable
- Unfair
- Very Unfair

35.7%

35.7%

26.8%
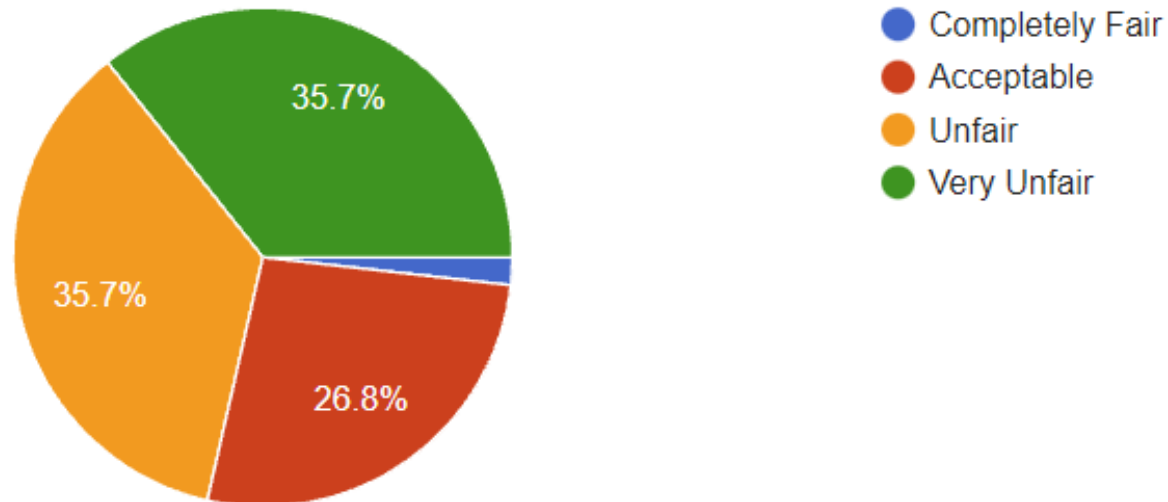
Parting thoughts

"Optimal" pricing

In previous lectures, we've showed how many things "should" affect prices if pricing "optimally" (to maximize revenue)

- Demand at each price

- Capacity constraints
  - Are there other potential buyers for the same good?

- Demand for *other* items

- Personalized demand

- Competition from other sellers

Other dimensions also matter in (perceived) ethics

- What you're selling
- Who you're selling it to
- "Need" and ability to pay
- "Why" raising prices
  - Lack of competition vs increased costs vs increased demand …
- Level of personalization
- *How* personalization is implemented
  - *Remember: All data science is stereotyping*
  - Disparate impact vs Disparate treatment

Much more to say about algorithmic fairness

- When to include demographic features, when to exclude them
- How to audit for fairness (hard problem)
- Intersects with other hard problems: causal inference (in a few weeks), algorithmic explainability
- Many open legal questions

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