Worksheet – Consumer and producer surplus

Related news article: [Some Uber and Lyft drivers have learned they can make more money if they're pickier about whom they serve](#) (Business Insider, November 22, 2023)

Summary: This worksheet could be used for in-class or homework practice. Students will be asked to read a short article about the decisions Uber drivers make, and most importantly, the decision whether to accept or cancel a ride. The article explains that Uber drivers prioritize rides that pay at least $0.80 to $1 per mile, rides to and from the airport, and rides for which the driver is more likely to find a customer for the ride back. The advantages of a low and high acceptance rate are also discussed. Then, students will be asked to estimate consumer surplus (CS) and producer surplus (PS), and changes in CS and PS in real-world scenarios. Answers are provided at the end of this document.

Learning objectives:

At the end of this worksheet, students will be able to:

- o Recognize real-world examples of incentives;
- o Calculate consumer and producer surplus;
- o Analyze changes in consumer and producer surplus;
- o Discuss Uber drivers' opportunity cost of accepting a ride.

Economics concepts: Consumer surplus, Producer surplus, Incentives, Opportunity cost, Profit

Suggested excerpts:

"Drivers face endless decisions, including what time of day to work, what type of vehicle to use, how to net tips from customers, and how to best track their earnings. One driver's optimal strategy can vary from another's based on their markets."

"But one of drivers' most important decisions is when to accept a ride that pops up on their driving apps."

"While he [Ken, a Uber and Lyft driver in Houston, who also works as a full-time analyst] accepts most rides, he says, he prioritizes trips that pay at least $0.80 to $1 a mile, excluding vehicle expenses — a ride's base pay and distance are displayed on the app. He says he also tries to avoid trips that take him too far out of Houston because he worries he won't be able to find trips for the ride back. He calls these "empty miles.""

"... [Ken] says he tries to prioritize rides to and from the airport whenever possible because those customers are more likely to tip."

"Throughout his years driving for Uber, he's [Bill, a part-time Uber driver in North Carolina who started driving after he retired] accepted less than 10% of his rides and canceled over 30% of them..."

"... he says, he does whatever he can to avoid "one-way rides" that take him to remote areas — where he is less likely to find another ride heading in his preferred direction."

"But his approach comes with some risks. Uber lists refusing or canceling a trip based on the driver's destination as something that could cause a driver to lose access to their account."

"Fred [a Uber driver in Virginia] says his main strategy as a driver is accepting nearly every ride — his lifetime acceptance rate is about 84%. He says doing this gives him the best chance to retain his Uber "diamond status," which offers various benefits, such as savings at select gas stations, through a rewards system. Fred says the best perk of his status is the dedicated customer support he receives. "When I call Uber support, my call or messaging is handled promptly and professionally," he said."

Questions

1. Which of the following is a decision that Uber drivers make?

    a. What type of car to drive.
    b. Whether to accept or reject a ride that appears on their driving app.
    c. What time of day to work.
    d. All of the above.

2. True or false? The optimal strategies related to accepting rides, managing earnings, and choosing the number of hours per week to drive are the same for all Uber drivers.

3. Ken, a Uber driver mentioned in the article, is considering two possible rides:

    - A 20-mile trip that pays $1 per mile, but Ken thinks that he is unlikely to find a customer for the ride back, so the ride back would add what he calls "empty miles";
    - A 20-mile trip to the airport that pays $0.90 per mile, but Ken is almost certain that he would be able to find a customer who would pay $0.85 per mile for the ride back.

Suppose also that Ken's gas and vehicle expenses are approximately $0.70 per mile, and he expects a very generous 40% tip from the first possible ride, 25% tip from the ride to the airport, and 20% tip from the ride back from the airport. Which of the two options does Ken expect to be more profitable?

4. Based on the excerpts from the article, what are some recommendations about the rides Uber drivers should prioritize?

5. The article provides an example of a Uber driver in North Carolina who "spend[s] a lot of time saying no," and accepts only "rides that are worth his time." Expecting that a possible ride would generate a loss for a driver is a(n) _____ for this driver to cancel the trip.

    a. Opportunity cost.
    b. Utility.

c. Sunk cost.
d. Incentive.

6. According to the article, what is a potential risk of "refusing or canceling a trip based on the driver's destination"?

7. According to the article, what is one of the benefits from retaining Uber "diamond status" by "accepting nearly every ride"?

a. The "diamond status" allows drivers to take paid time off.
b. Uber drivers keep their access to their Uber account only if they have "diamond status."
c. The "diamond status" offers benefits such as savings at some gas stations.
d. Only drivers with "diamond status" receive Uber customer support.

8. Suppose that the minimum price at which a Uber driver would accept a requested 10-mile ride is $7. If a customer pays $10 plus a 20% tip for this ride, how much producer surplus would this ride generate for the driver?

a. $5.
b. $7.
c. $12.
d. $13.

9. Suppose that a Uber driver expects that a customer would give a $2 tip, but instead, the customer gives a $10 tip. Which of the following statements is correct?

a. The trip generated a consumer surplus of $8.
b. The trip generated a producer surplus $8 lower than the driver expected.
c. The trip generated a producer surplus $8 higher than the driver expected.
d. The trip did not generate any consumer or producer surplus.

10. Suppose that a CEO is late for an important meeting with a client. He is willing to pay up to $100 for a 10-mile Uber ride to the location of the meeting.

He manages to find a Uber ride for $27. How much consumer surplus does this ride generate for the CEO?

a. $73.
b. $100.
c. $27.
d. $$270.

11. What is a driver's opportunity cost of accepting a Uber ride that appears on his driving app? Is the opportunity cost the same for all drivers?

Answer Key

1. Which of the following is a decision that Uber drivers make?

    a. What type of car to drive.
    b. Whether to accept or reject a ride that appears on their driving app.
    c. What time of day to work.
    d. All of the above.

Answer: D.

2. True or false? The optimal strategies related to accepting rides, managing earnings, and choosing the number of hours per week to drive are the same for all Uber drivers.

Answer: False. According to the article, "one driver's optimal strategy can vary from another's based on their markets."

3. Ken, a Uber driver mentioned in the article, is considering two possible rides:

    - A 20-mile trip that pays $1 per mile, but Ken thinks that he is unlikely to find a customer for the ride back, so the ride back would add what he calls "empty miles";
    - A 20-mile trip to the airport that pays $0.90 per mile, but Ken is almost certain that he would be able to find a customer who would pay $0.85 per mile for the ride back.

Suppose also that Ken's gas and vehicle expenses are approximately $0.70 per mile, and he expects a very generous 40% tip from the first possible ride, 25% tip from the ride to the airport, and 20% tip from the ride back from the airport. Which of the two options does Ken expect to be more profitable?

Answer: Ken's expected profit from the first possible trip is 1.40*20miles*$1 – 40 miles*$0.70 = $28 - $28 = $0.

His expected profit from the second option (two trips) is 1.25*20miles*$0.90 + 1.20*20miles*$0.85 – 40miles*$0.70 = $22.5 + $20.4 - $28 = $14.9.

Therefore, Ken expects that the second option would be more profitable.

4. Based on the excerpts from the article, what are some recommendations about the rides Uber drivers should prioritize?

Answer: Answers will vary. The article suggests that Uber drivers should prioritize trips "that pay at least $0.80 to $1 a mile, excluding vehicle expenses," trips to and from the airport "because those customers are more likely to tip," trips that are not too far from where the driver is located in case he is not able to "find trips for the ride back," trips that are worth their time, etc. A driver should "avoid "one-way rides" that take him to remote areas — where he is less likely to find another ride heading in his preferred direction."

5. The article provides an example of a Uber driver in North Carolina who "spend[s] a lot of time saying no," and accepts only "rides that are worth his time." Expecting that a possible ride would generate a loss for a driver is a(n) _____ for this driver to cancel the trip.

    a. Opportunity cost.
    b. Utility.
    c. Sunk cost.
    d. Incentive.

Answer: D.

6. According to the article, what is a potential risk of "refusing or canceling a trip based on the driver's destination"?

Answer: The driver might lose his access to his Uber account.

7. According to the article, what is one of the benefits from retaining Uber "diamond status" by "accepting nearly every ride"?

    a. The "diamond status" allows drivers to take paid time off.
    b. Uber drivers keep their access to their Uber account only if they have "diamond status."
    c. The "diamond status" offers benefits such as savings at some gas stations.

d. Only drivers with "diamond status" receive Uber customer support.

Answer: C.

8. Suppose that the minimum price at which a Uber driver would accept a requested 10-mile ride is $7. If a customer pays $10 plus a 20% tip for this ride, how much producer surplus would this ride generate for the driver?

    a. $5.
    b. $7.
    c. $12.
    d. $13.

Answer: A. The producer surplus is the price the Uber driver receives minus the minimum amount he is willing to provide the service for. In this example, the customer pays $10 + 20%*$10 = $12. The Uber driver is willing to make the trip for a minimum of $7. Therefore, accepting the ride would make the driver $12 - $7 = $5 better off.

9. Suppose that a Uber driver expects that a customer would give a $2 tip, but instead, the customer gives a $10 tip. Which of the following statements is correct?

    a. The trip generated a consumer surplus of $8.
    b. The trip generated a producer surplus $8 lower than the driver expected.
    c. The trip generated a producer surplus $8 higher than the driver expected.
    d. The trip did not generate any consumer or producer surplus.

Answer: C. The producer surplus (PS) is the difference between the price the driver was paid for the ride and the minimum amount he was willing to provide the service for. In this example, the Uber driver was paid $8 more than expected, so his PS was $8 higher than he thought it would be.

10. Suppose that a CEO is late for an important meeting with a client. He is willing to pay up to $100 for a 10-mile Uber ride to the location of the meeting. He manages to find a Uber ride for $27. How much consumer surplus does this ride generate for the CEO?

a. $73.
    b. $100.
    c. $27.
    d. $$270.

Answer: A. The consumer surplus (CS) is the maximum price a consumer is willing to pay minus the price he actually pays. In this example, the CEO is willing to pay $100 and he pays $27. This implies that his CS is $100 - $27 = $73.

11. What is a driver's opportunity cost of accepting a Uber ride that appears on his driving app? Is the opportunity cost the same for all drivers?

Answer: Answers will vary. The opportunity cost is the highest valued alternative a Uber driver must give up to make the ride. It might be the forgone wage from an alternative job, the forgone value of the time the driver could spend with his family, and so on. The opportunity cost varies between Uber drivers.