



Worksheet – Price discrimination, Oligopoly

Related news article: [PG&E monthly bills could jump for many customers due to new state law](#) (SiliconValley.com, April 13, 2023)

Summary: This worksheet could be used for in-class or homework practice. Students will be asked to read a short article about a proposed change in the electric charges in California. Specifically, the three major electricity providers are planning to introduce a monthly fee based on income. Students will have to identify the market structure electric companies operate in, but the worksheet primarily focuses on price discrimination. It will ask students to analyze the Californian utilities' pricing strategy and other scenarios to recognize different types of price discrimination. Finally, students will have to analyze the connection between price discrimination and welfare. **Answers are provided at the end of this document.**

Learning objectives:

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

- o Identify the market structure electric companies in California operate in;
- o Recognize examples of price discrimination;
- o Distinguish between real-world examples of first-degree, second-degree, and third-degree price discrimination;
- o Evaluate the proposal of the three major electricity providers in California to identify the winners and the losers from the proposed changes;
- o Analyze when a company is able to price discriminate;
- o Identify the association between price discrimination and consumer surplus and producer surplus;
- o Apply the supply and demand model to identify a scenario that could increase the demand for electric cars.

Economics concepts: Oligopoly, Competition, Price discrimination, First-degree/ Second-degree/ Third-degree price discrimination, Elasticity, Consumer surplus, Producer surplus

Suggested excerpts:

"Customer monthly bills will include a fixed charge based on income"

“Customers for California’s three major power companies — including PG&E ratepayers — can expect to see some big changes in their monthly electricity bills in the coming years...”

“PG&E, Southern California Edison and San Diego Gas & Electric, the three major California utilities whose services include electricity, have filed a joint proposal with the state Public Utilities Commission that sketches out proposed changes in monthly bills.”

“At present, those bills are primarily based on how much electricity and gas customers consume.”

“The tradeoff: The three utilities are proposing a reduction of 33% in electricity rates, which means it’s possible that segment of the bill could be less expensive. Put another way, customers would be able to reduce a portion of their bill if they can control their electricity usage.”

“The primary effect could be to help reduce monthly bills for low-income customers, according to PG&E. But the shift could mean jumps in monthly bills for some customers.”

“The monthly bills of the future would have two components: the fixed charge based on household income levels and the electricity charge at a reduced rate that would fluctuate based on monthly energy consumption.”

Questions

1. There are three major power companies in California: PG&E, Southern California Edison, and San Diego Gas & Electric. What market structure does the electricity market in California provide an example of?
 - a. Perfect competition.
 - b. Monopolistic competition.
 - c. Oligopoly.
 - d. Monopoly.
2. The article suggests that the electric bill of Californians would include a fixed monthly charge based on household income in addition to the charge based on the amount of electricity consumed. What term best describes this pricing strategy?
 - a. Price discrimination.
 - b. Competitive pricing.
 - c. Penetration pricing.
 - d. Mark-up (cost plus) pricing.
3. Match each type of price discrimination (in Column A) with an example (in Column B).

Column A: Types of price discrimination	Column B: Examples
First-degree (perfect) price discrimination	A restaurant that offers a 15% discount for students.
Second-degree price discrimination (menu pricing)	An astronomy enthusiast who bids on the price of a telescope he likes on eBay.
Third-degree price discrimination (group pricing)	An airline that offers lower fares to frequent travelers who have traveled more than a given number of miles.

4. The article explains that “a new proposal would add a fixed monthly charge [to the electric bill] that would be based on the household income levels of the respective customers.” Which type of price discrimination specified in Question 3 does the fore-mentioned proposed pricing strategy provide an example of?
5. True or false? If the new proposal gets approved, electricity rates would decrease by 33%, so consumers could reduce the part of the electric bill that is based on the amount of electricity consumed; however, the electric bill of the more affluent customers might increase because of the new, additional income-based charge.

6. Suppose that electric companies in California were operating in a market with perfect competition. Do you think that they would be able to employ the new pricing strategy specified in the article? Justify your answer.
7. What is the expected effect of price discrimination on producer surplus?
8. Which of the following statements about price discrimination is correct?
- a. If all consumers of a good or service have the same price elasticities of demand, a company that produces that good or service could successfully employ third-degree price discrimination.
 - b. Third-degree price discrimination reduces consumer surplus.
 - c. If a company practices third-degree price discrimination, all consumers would pay a lower price.
 - d. A company can always price discriminate.
9. The article states that California “intends to phase out gasoline-powered vehicles in a shift to electric cars.” Which of the following scenarios could increase the demand for electric cars?
- a. An increase in the supply of gasoline-powered vehicles.
 - b. A decrease in the price of electric cars.
 - c. An increase in the price of gasoline-powered vehicles.
 - d. A decrease in the costs of production of electric cars.

Answer Key

1. There are three major power companies in California: PG&E, Southern California Edison, and San Diego Gas & Electric. What market structure does the electricity market in California provide an example of?

- a. Perfect competition.
- b. Monopolistic competition.
- c. Oligopoly.
- d. Monopoly.

Answer: C. There are three major electricity providers in California which suggests that electricity is supplied in an oligopoly.

2. The article suggests that the electric bill of Californians would include a fixed monthly charge based on household income in addition to the charge based on the amount of electricity consumed. What term best describes this pricing strategy?

- a. Price discrimination.
- b. Competitive pricing.
- c. Penetration pricing.
- d. Mark-up (cost plus) pricing.

Answer: A. Price discrimination is a pricing strategy that charges different consumers or groups of consumers different prices for the same good or service. Competitive pricing is a pricing strategy that involves setting a price based on the prices chosen by the competitors. Penetration pricing is a pricing strategy that involves setting a low price to enter a market and increasing the price later. Cost plus pricing means that the company sets a price equal to the production costs plus a markup.

3. Match each type of price discrimination (in Column A) with an example (in Column B).

Column A: Types of price discrimination	Column B: Examples
First-degree (perfect) price discrimination	A restaurant that offers a 15% discount for students.
Second-degree price discrimination (menu pricing)	An astronomy enthusiast who bids on the price of a telescope he likes on eBay.
Third-degree price discrimination (group pricing)	An airline that offers lower fares to frequent travelers who have traveled more than a given number of miles.

Answer: First-degree (perfect) price discrimination refers to the situation when a company charges each consumer the maximum price he/she is willing to pay for a good or service. Second-degree price discrimination means that a company charges different prices depending on the quantity a consumer buys. Third-degree price discrimination occurs when a company charges different groups of consumers different prices.

Column A: Types of price discrimination	Column B: Examples
First-degree (perfect) price discrimination	An astronomy enthusiast who bids on the price of a telescope he likes on eBay.
Second-degree price discrimination (menu pricing)	An airline that offers lower fares to frequent travelers who have traveled more than a given number of miles.
Third-degree price discrimination (group pricing)	A restaurant that offers a 15% discount for students.

4. The article explains that “a new proposal would add a fixed monthly charge [to the electric bill] that would be based on the household income levels of the respective customers.” Which type of price discrimination specified in Question 3 does the fore-mentioned proposed pricing strategy provide an example of?

Answer: If electric companies in California distinguish between consumer segments and charge different prices based on consumers’ household income level, they practice third-degree price discrimination. The article specifies the fixed charges: \$15 per month for 4-person households with incomes below \$28,000; \$30 for households with an annual income between \$28,000 and \$69,000; \$51 for income levels between \$69,000 and \$180,000; and \$92 for households whose annual income exceeds \$180,000.

5. True or false? If the new proposal gets approved, electricity rates would decrease by 33%, so consumers could reduce the part of the electric bill that is based on the amount of electricity consumed; however, the electric bill of the more affluent customers might increase because of the new, additional income-based charge.

Answer: True.

6. Suppose that electric companies in California were operating in a market with perfect competition. Do you think that they would be able to employ the new pricing strategy specified in the article? Justify your answer.

Answer: No, in order for companies to be able to price discriminate, they should be able to set prices. They should have some degree of market power.

7. What is the expected effect of price discrimination on producer surplus?

Answer: Price discrimination increases producer surplus. In a first-degree price discrimination, all consumer surplus is transferred to the producers, i.e., becomes producer surplus.

8. Which of the following statements about price discrimination is correct?

- a. If all consumers of a good or service have the same price elasticities of demand, a company that produces that good or service could successfully employ third-degree price discrimination.
- b. Third-degree price discrimination reduces consumer surplus.
- c. If a company practices third-degree price discrimination, all consumers would pay a lower price.
- d. A company can always price discriminate.

Answer: B. To employ third-degree price discrimination, consumers have to have different price elasticities of demand. If a company practices third-degree price discrimination, some consumers would pay a lower price while others would pay a higher price. In order for a company to be able to price discriminate, it has to have some market power, should be able to prevent reselling, and should be able to distinguish between customers with different price elasticities of demand.

9. The article states that California “intends to phase out gasoline-powered vehicles in a shift to electric cars.” Which of the following scenarios could increase the demand for electric cars?

- a. An increase in the supply of gasoline-powered vehicles.
- b. A decrease in the price of electric cars.
- c. An increase in the price of gasoline-powered vehicles.
- d. A decrease in the costs of production of electric cars.

Answer: C. Electric cars and gasoline-powered cars are substitutes. If the price of gasoline-powered vehicles increases, the demand for the substitutes would increase, so the demand for electric cars would increase.