

# Ellis College

of New York Institute of Technology

## Economics for Managers

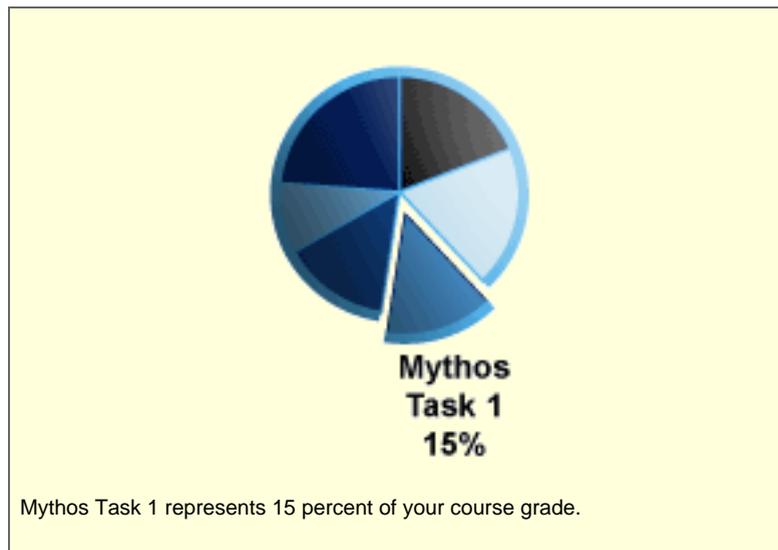
Mythos Task 1

These course materials are designed around real-world business problems. Consequently, they reference the names and publicly available information of certain companies, products, and organizations. Any use of such name or such information about a company is solely for educational purposes. Ellis College is an academic division of the New York Institute of Technology ("NYIT") and any such reference to such other companies, products and organizations is not intended to imply any endorsement by or of such other companies, products or organizations. Although all referenced information was taken from publicly available sources, no representation is made regarding the accuracy or completeness of this information.

The course may also use fictitious events, scenarios, and characters. Any similarity between such fictional characters and actual persons, living or dead, is also unintentional and purely coincidental. Information contained in the course materials may appear in publications external to Ellis College courses. A bibliographical citation or other attribution indicates use by Ellis College of the contributor's work either as a publicly available reference and research resource or under an agreement with the owner of the work and constitutes material distinct and separate from that originally created by or for Ellis College. No copyright is claimed in such works in and of themselves.

The information contained in this course is academic in nature and is not intended to constitute legal, financial or other advice on specific issues or fact patterns or otherwise. A competent professional should be consulted whenever legal services or other professional assistance is required.

## Mythos Task 1 Overview



### Pricing with Market Power

For your first project as a corporate strategy analyst, you have been asked to find ways to improve the profitability of Clear Blue Sky Airlines, Mythos Travel Enterprise's regional airline business.

Brian Usher, the vice president of corporate strategy at Mythos, would like you to study the current pricing strategy of the market that is the least profitable and, therefore, needs the most attention: flights on the Raleigh-Durham to Chicago route.

**Tip:** Need to brush up on microeconomics? Review the Microeconomics Reference Resource located in Tools.

After you analyze the current pricing strategy, Brian would like you to consider a broader plan. He wants you to determine whether the company can use price discrimination effectively and, if so, to recommend a plan to implement price discrimination. Before you begin, read the e-mail from Brian Usher that explains this project in more detail.

Please view [E-mail from Brian Usher on Clear Blue Sky](#) on page 53

### Rationale

In this task, you will explore pricing strategies in situations where a firm has some market power. In addition, you will examine the potential for price-discrimination strategies to increase profits.

## Your Deliverable

Write a 700- to 1,000-word report to Brian Usher analyzing current and proposed pricing strategies and their profitability.

- Include an assessment of whether the current fare maximizes profits. If not, identify the fare that should be charged. Give evidence that it is the best fare by showing that profits are highest if this fare is charged.
- Create a spreadsheet for Clear Blue Sky showing revenues, costs, and profits.
- Discuss whether fuel costs should be used as a basis for pricing.
- Comment on the suggestion that the company could use price-discrimination strategies to improve profitability.
- Discuss the requirements for effective price discrimination, and describe how Clear Blue Sky satisfies these requirements.
- Identify and describe each group of travelers according to their price sensitivity. Analyze the price elasticity of demand for each group.
- Recommend a pricing plan that effectively separates each group of consumers. Providing actual prices is not necessary, but your plan should clearly indicate the level of pricing for each group.

Download the templates provided:



Mythos Task 1 Report Template



Mythos Task 1 Spreadsheet Template

## Suggested Approach

- For an introduction to the theory of demand, read the Demand Curves and Consumer Surplus learning resource and pages 21-3 and 123-7 in *Microeconomics*.
- For a deeper understanding of how firms should set prices, read the Pricing with Market Power learning resource and pages 328-44 in *Microeconomics*.
- Analyze the e-mail from the Marketing Department, which describes customer demand, costs, the current pricing strategy, and proposed fare increase.
- To learn how firms charge different prices to different consumers, read the Price Discrimination learning resource and pages 370-81 in *Microeconomics*.
- For a detailed examination of third-degree pricing strategies, read the Group Pricing learning resource and pages 375-81 in *Microeconomics*.
- For an introduction to the concept of elasticity, read the Price Elasticity of Demand learning resource and pages 30-2 and 117-9 in *Microeconomics*.
- Review the remaining project materials: E-mail on Estimates of Price

Elasticity and E-mail from Brian Usher on Proposed Fare Restrictions.

When you have completed Mythos Task 1, go on to Mythos Task 2:  
Analyzing Pricing Strategies.

**Mythos Task 1**

## **Project Materials**

The following materials will help you work on Mythos Task 1.

[Marketing Department's E-mail on Customer Demand, Costs, and Current Pricing](#)

[Marketing Department's E-mail on Price Elasticity Estimates](#)

[Brian Usher's E-mail on Proposed Fare Restrictions](#)

## Demand Curves and Consumer Surplus

The demand for a product or service measures the number of units of the product or service consumers are willing to purchase at many possible prices. For example, the demand for cranberry juice measures the number of gallons of cranberry juice consumers will purchase at several possible prices. Such information tells cranberry juice producers how consumers will alter their purchases as the price of cranberry juice increases or decreases. The number of gallons of cranberry juice actually purchased at a specific price is referred to as the quantity demanded at that price.

### Determinants of Demand

The demand for any product or service is likely to be influenced by several factors:

- Price of the product
- Income of consumers
- Consumer taste
- Price of related goods
- Brand quality or reputation of the product
- Seasonal factors



[Other Factors that Affect Demand](#)  
(page33 )

The price of a product—the price retailers charge consumers—is the single most important determinant of demand for that product. Consumers will likely buy more gallons of cranberry juice if the price falls and fewer gallons if the price rises. The inverse relationship between the amount of a product demanded, in this case the number of gallons of cranberry juice, and the price, in this case the price of cranberry juice, is referred to as the "law of demand." Of course, at any given time, the demand for cranberry juice also depends on other factors, such as consumer taste, consumer income, price of related goods, and so on.

This inverse relationship between the price of cranberry juice and the number of gallons demanded persists because consumers can choose substitutes if the price of cranberry juice increases. If the price decreases, consumers can choose to buy more cranberry juice.

The table below indicates how much cranberry juice might be purchased at different prices during a month.

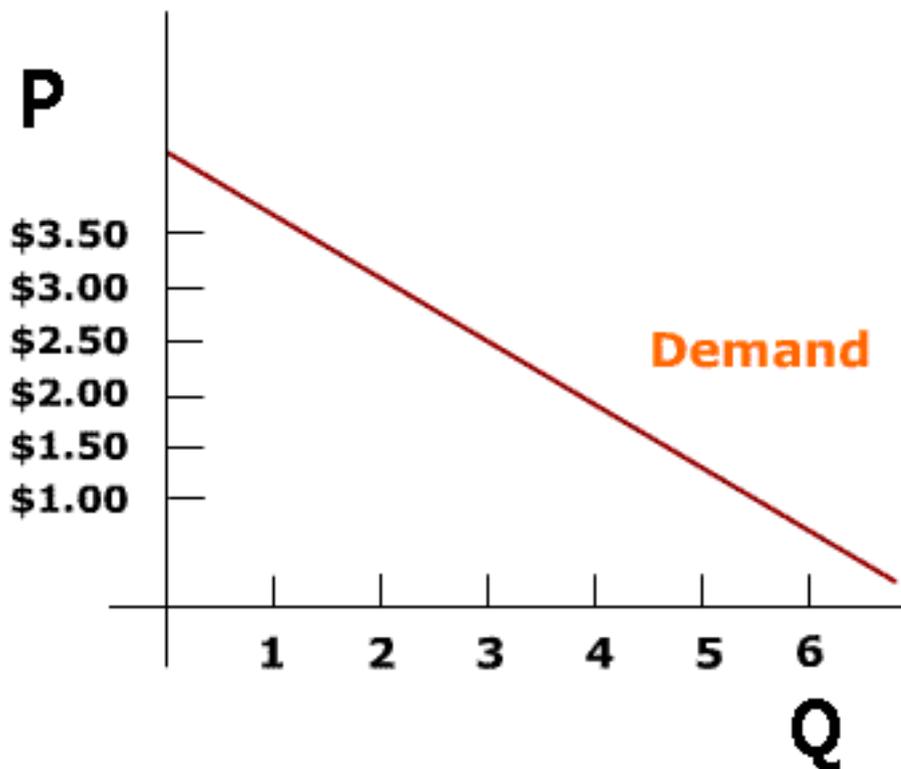
### Amount of Cranberry Juice Purchased Per Month

**Quantity    Price**

**Demanded (\$ per  
(thousands gallon)  
of  
gallons)**

1	3.50
2	3.00
3	2.50
4	2.00
5	1.50
6	1.00

To plot the demand curve for cranberry juice, put quantity (thousands of gallons of cranberry juice) along the horizontal axis and price (dollars per gallon) along the vertical axis. The demand curve is show below.



Professor Heal discusses the purpose of pricing policies.  
You can find the [transcript](#) of this video on page .

## Consumer Surplus

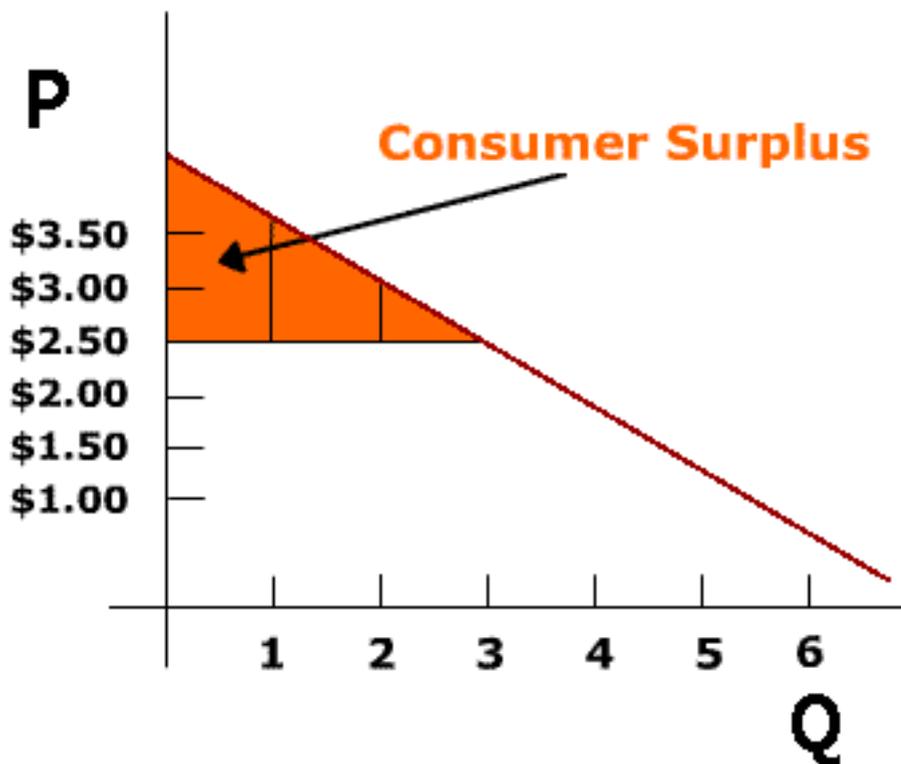
In addition to measuring the number of units of a product or service that

consumers are willing to purchase at various prices, the demand curve reflects consumers' willingness to pay. The demand curve measures the maximum price consumers will pay for a given number of units.

In the example above, you saw that if the price of cranberry juice is \$3.50, consumers will buy 1,000 gallons of juice. There is another way of interpreting this information: if only 1,000 gallons of cranberry juice are available for sale, consumers will pay as much as \$3.50 per gallon for that 1,000 gallons of juice. Now, the demand curve is measuring the consumers' willingness to pay for a product or service. If 2,000 gallons of cranberry juice are available, the maximum price consumers will be willing to pay is \$3 per gallon. Willingness to pay is a measure of the value that consumers derive from using a product.

Suppose that the market price of cranberry juice is \$2.50 per gallon. The demand curve shows that consumers purchase 3,000 gallons of the juice at a price of \$2.50 each. Consider the first thousand gallons; consumers are willing to pay \$3.50 per gallon for the first thousand gallons. But because they are paying \$2.50, consumers realize a surplus of \$1 per gallon, or \$1,000 in total. Similarly, consumers realize a surplus of \$0.50 per gallon on the second thousand gallons of juice, or a total surplus of \$500. On the third thousand gallons, consumers do not realize a surplus, because the price they are paying is equal to the price they are willing to pay. The total surplus to consumers from the purchase of 3,000 gallons of cranberry juice is \$1,500. This surplus, the difference between willingness to pay and the actual price, added across all gallons purchased, is called "consumer surplus."

Consumer surplus can also be represented by the triangle below the demand curve and above the price. See the figure below.



To see the economic logic behind demand curves and consumer surplus, watch the animation below.



Please read the animation transcript for [Demand Curves and Consumer Surplus](#) on page 27

**Self-assessment:** To check your understanding of demand curves and consumer surplus, try this [self-assessment](#) .. (page39)

## Readings

The following sections from your textbook provide more information on demand curves and consumer surplus.

- Pindyck and Rubinfeld, *Microeconomics*, pp. 21-3 and 123-7.

## Pricing With Market Power

A firm has [market power](#) if it can successfully raise the price of its product above the marginal cost of producing the product. Microsoft (the maker of Windows operating systems) and Intel (a maker of computer chips) are firms with substantial market power—they sell their products at prices higher than marginal costs. In a pure monopoly, a single firm, such as many public utilities (gas, electric and water), cable companies, or public transportation companies, serves a market.

Companies with market power, such as Ford Motor Company, use smart pricing strategies to increase revenues and profits. To learn more, read this *Business Week*

To view **article** you must be online.

## Relationship between Marginal Revenue and Price

[Marginal revenue](#) refers to the additional revenue a firm earns from selling one additional unit of its output. The table below illustrates how marginal revenue would be computed from the demand and revenue data for a fictional monopolist.

Price per Unit	Quantity	Total Revenue = P×Q	Marginal Revenue
\$10	0	\$0	*NA
\$9	1	\$9	\$9
\$8	2	\$16	\$7
\$7	3	\$21	\$5
\$6	4	\$24	\$3
\$5	5	\$25	\$1
\$4	6	\$24	−\$1
\$3	7	\$21	−\$3
\$2	8	\$16	−\$5
\$1	9	\$9	−\$7

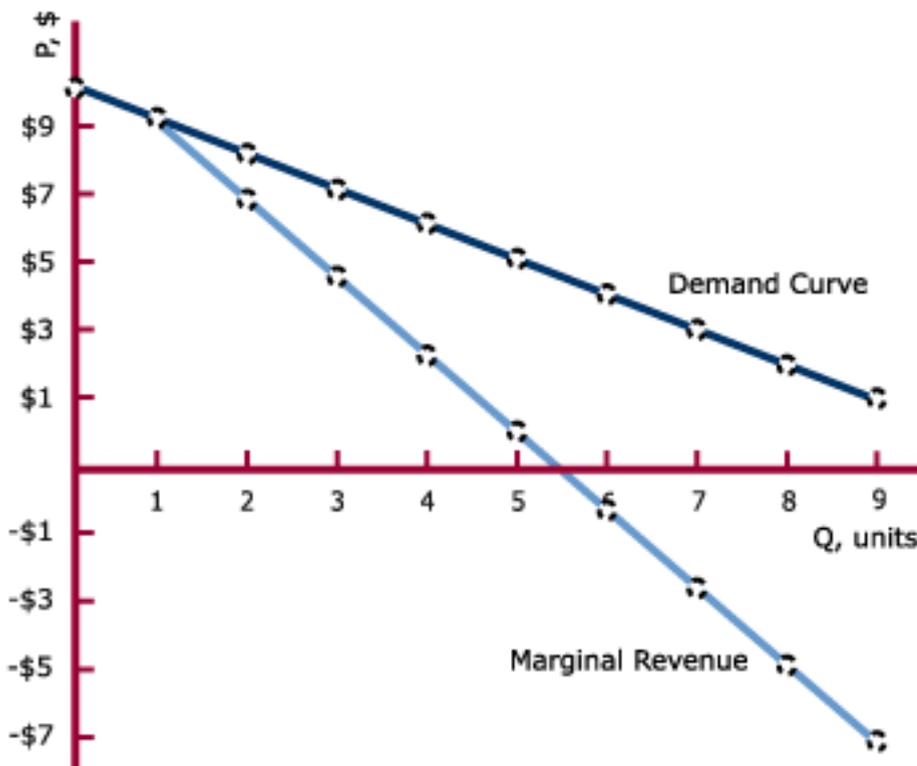
\*NA = not applicable.

 [How to Calculate Marginal Revenue with Linear Demand](#)  
(page34 )

The total revenue data in column 3 are obtained by multiplying the price and quantity data in columns 1 and 2. The marginal revenue data in column 4 are obtained by computing the change in total revenue as the monopolist expands production by one unit. Hence, the marginal revenue from the first unit of production is \$9 (\$9 – \$0). The marginal revenue from the second unit of production is \$7 (\$16 – \$9), and so forth.

Professor Heal discusses how the Internet has affected pricing policies. You can find the [transcript](#) of this video on page .

The relationship between price and marginal revenue for the monopolist in the example above is shown in the figure below.



Notice that marginal revenue is always less than price (P) when the firm is producing two units of output (Q) or more. Why is this true? Suppose the monopolist is currently selling one unit of output. Because the price per unit is \$9, the firm is earning \$9 from selling this unit. Now suppose that the firm decides to produce and sell an additional unit of output. To sell the additional unit of output, the firm must reduce its price from \$9 to \$8 because consumers will buy additional units only if the price per unit is lower. So the firm earns \$8 by selling the second unit. However, because the firm must sell all units for the same price, the first unit is now priced at \$8 instead of \$9.

Therefore, on the first unit, the firm loses \$1 because of the price reduction. The net increase in the firm's revenue—the marginal revenue

of the second unit—is only  $\$8 - \$1 = \$7$ , which is less than the price of  $\$8$ . In general, marginal revenue is less than price because in selling an additional unit of output, a firm has to reduce prices on all earlier units as well.

Marginal analysis applies to *any* firm that seeks to maximize profits. The difference for a firm that faces competition is that its marginal revenue depends on the firm-specific demand curve for its product and not the market demand curve that a monopolist faces.

## How the Monopolist Chooses its Price and Output

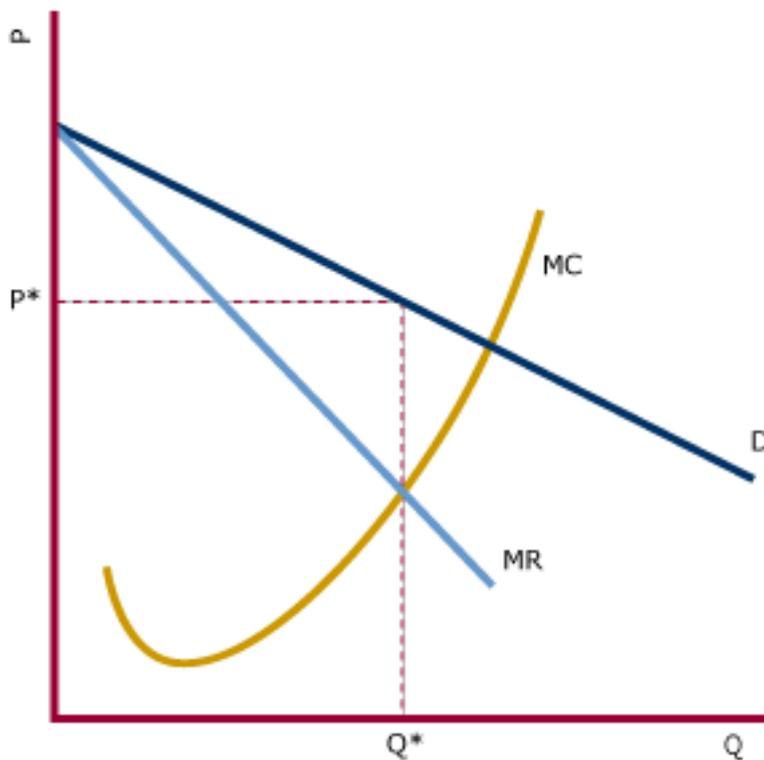
A monopolist's profit is the difference between its total revenue and its total cost. The challenge is to identify the pricing and output decisions that will maximize profits. To determine exactly how many units of output to produce, and what price to charge, a monopolist uses the principle of marginal analysis.

**i** [How Common Are Single-Fare Airlines?](#)  
(page35)

According to this principle, in deciding whether to produce an additional unit of output, the monopolist must compare its marginal revenue (MR) with its marginal cost (MC). Specifically, the monopolist should continue to expand output until  $MR = MC$ .

This course focuses primarily on the case of a pure monopolist. Many firms are not pure monopolists but do have some market power. Pricing issues are more complex for these firms; thus, the topic is outside the scope of this course. For an introduction to these topics, read chapters 12 and 13 of Pindyck and Rubinfeld.

The profit-maximizing output for a monopolistic firm is shown in the graph below. To the left of the profit-maximizing output  $Q^*$ ,  $MR > MC$ ; therefore, the firm should expand output. On the other hand, to the right of  $Q^*$ ,  $MR < MC$ ; therefore, having reached the output level  $Q^*$ , the firm should not expand output.



Why is this true? If  $MR > MC$ , the additional revenue generated from the sale of  $Q+1$  is greater than the additional cost of producing  $Q+1$ . Thus, it is profitable for the firm to produce and sell this additional unit of output. If, on the other hand,  $MR < MC$ , then producing and selling this additional unit of output loses money for the firm and should not be produced.

**Self-assessment:** To check your understanding of pricing with market power, try this [self-assessment](#) .. (page40)

## Readings

The following sections from your textbook provide more information on the pricing with monopoly power.

- Pindyck and Rubinfeld, *Microeconomics*, pp. 328-30, 333-5, and 339-44.

## Price Discrimination

To learn more about personalized marketing and pricing strategies aimed at diners, read this *Business Week*

To view **article** you must be online.

.

When businesses practice price discrimination, they sell the same product or service to different customers at different prices. Economists recognize three major types of price discrimination.

Professor Heal provides examples of industries well-suited to personalized pricing.  
You can find the [transcript](#) of this video on page .

### Personalized Pricing: First-Degree Price Discrimination

First-degree price discrimination refers to the practice of charging prices to each customer based on maximum willingness to pay. The most common form of first-degree price discrimination is the personalized pricing strategy, where companies set different prices for customers based on the personal information they have about the customers. Businesses recognize that buyers value any given product or service differently. In other words, consumers are willing to pay different prices for the same product. If companies were to sell their products to all customers at one price, they would lose the extra revenue from consumers who are willing to pay more. By establishing highly personalized prices, companies reap the maximum amount of revenue.

Many companies use personalized pricing. Read here for specific [cases](#)  
. (page31 )

Wealthier consumers often pay higher prices for services than less affluent people. The most common examples of such pricing practices occur in medical and legal services. Colleges and universities also practice income-based pricing by tailoring financial aid packages to each student's ability to pay.

Professor Heal discusses versioning.  
You can find the [transcript](#) of this video on page .

### Versioning: Second-Degree Price Discrimination

In second-degree price discrimination, firms typically offer a menu of different prices to consumers, allowing the consumers to self-select. In

versioning pricing strategies, companies sell variations of a product or service, at different prices, to different groups of customers. Ideally, companies want to charge what consumers are willing to pay, thereby maximizing company revenues. But it is difficult to know precisely how much each person is willing to pay, so companies create versions of a product to appeal to different types of buyers. Customers then choose the version that best meets their needs.

Read here for more [cases](#) of how companies use versioning. (page32 )

Businesses often distribute a physically identical product under different brand names, charging lower prices for the lesser known brand name. For example, the Gap Company sells its products with the Gap label at its own stores as well as with other labels at other retail stores.

Pricing tee times for golf by day of week and time of day is an effective price-discrimination strategy. To learn more, read this *Fortune*

To view **article** you must be online.

## Group Pricing: Third-Degree Price Discrimination

Third-degree price discrimination refers to the practice of charging different prices to different classes, or groups, of customers. In many cases, companies do not have enough information about the maximum price that an individual will pay for a product or service. However, companies do know that different groups of people value the same commodity in different ways. If a firm is able to identify particular groups of consumers, it can adjust its prices to reflect the groups' willingness to pay. Although this strategy does not increase profits as much as personalized pricing might, it does allow the firm to extract more consumer surplus (and profits) than it would by charging a single price.

For example, newspapers often quote lower prices to new customers and higher prices to established customers. Academic journals often quote higher prices to libraries and universities than they do to individual subscribers.

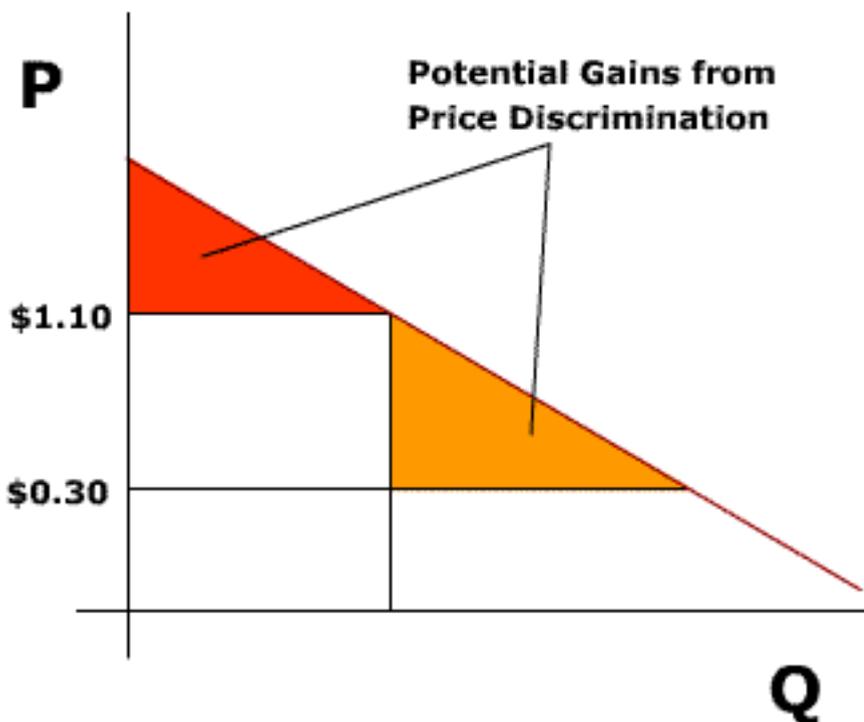
Internet service providers are seeing an increase in opportunities for price discrimination as they learn more about the types of services their customers value. To learn more, read this *Business Week*

To view **article** you must be online.

## Why Do Companies Price Discriminate?

Suppose that a pastry shop makes chocolate chip cookies that its customers like better than those of any other bakery in the area. Also suppose that the marginal cost of baking and selling a cookie is \$0.30. The loyalty of the company's customers allows it to decide what price it can charge. The owner of the pastry shop has determined that the profit-maximizing price for each cookie is \$1.10.

In selling its cookie at a single price, however, the shop loses in two ways. First, some customers would be willing to pay more than \$1.10 for a cookie. By charging \$1.10, the company loses a chance to get more revenue from these customers. Second, the company does not sell to customers who are willing to pay more than \$0.30 but less than \$1.10. This is illustrated in the graphic below:



By charging such customers a different price, the company could profitably sell to a much larger customer base.

Airlines typically make tickets nontransferable to prevent resale between market segments. This is an important requirement for effective price discrimination. To learn more, read this *Fortune*

To view **article** you must be online.

For a company to price discriminate successfully, three factors are critical:

- A company must have some degree of market power. For example, if the pastry shop cannot set the price of cookies, it cannot establish multiple prices.
- A company must be able to prevent arbitrage. Arbitrage is the practice of buying a good at one price and reselling it at a higher price. The pastry shop cannot use price discrimination successfully if customers buy cookies at the lowest available price, then resell them at a higher price.
- A company must obtain information about its customers tastes and preferences. By monitoring its sales, the pastry shop might learn that some of its customers value cookies with extra chocolate. The shop can then sell a cookie with double the chocolate chips at a considerably higher price to some regular customers.

## Readings

The following section from your textbook provides more information on price-discrimination strategies.

- Pindyck and Rubinfeld, *Microeconomics*, pp. 370-81.

## Group Pricing

Group pricing is a form of what economists call "third-degree price discrimination." Third-degree price discrimination is based on the premise that businesses sometimes do not have enough information about the maximum amount a person will pay for a specific commodity—that is, they do not know the reservation price of buyers. Therefore, they are not able to use personal pricing to get the maximum revenue from buyers. By using group-pricing strategies, firms are able to extract additional surplus from groups of consumers, even when they don't know buyers' reservation prices.

For example, if you live in Los Angeles and want to vacation for a few days in San Diego, you have the option of taking a leisurely drive or flying. However, if you need to go to San Diego on business your options might be slightly different. For example, say you have a business meeting in San Diego on Wednesday evening but need to be back in Los Angeles to attend an early morning meeting on Thursday. In this case, you are most likely to fly into San Diego and back. You could, of course, drive, but it is not likely to be a very good option for you.

Because your needs in these two different circumstances are different, the value that you place on saving time by flying is also different. As a consequence, your willingness to pay for a flight from Los Angeles to San Diego and back will also be different. Businesses exploit such differences in preference and values placed on a good and service by charging different prices for different types of travelers.

To implement third-degree price discrimination, a business must first identify the most appropriate characteristic(s) of the consumer groups—such as age, time, information, and so on—so that the different groups can be distinguished. The next step for the business is to choose a price for each group of consumers that will maximize the profits of the business. With third-degree price discrimination, one assumes that the business is able to sort its customers into groups so that those who can pay a higher price for the product cannot purchase the product at a lower price.

## Common Examples of Group Pricing

Following are some common examples of third-degree price discrimination.

 [More Examples of Group Pricing](#)  
(page36 )

## Pricing across countries

Businesses often charge different prices to consumers in different

countries. For instance, automobile manufacturers generally charge higher prices in Japan than they do in the United States. The 2000 Toyota Camry, for instance, has a U.S. list price of \$19,900 but is sold in Japan for as much as \$40,000.

### **Airline pricing**

Airlines routinely charge higher prices for those travelers who want to make a return trip without staying over on a Saturday than they do for travelers who will stay over on a Saturday. For instance, the fare on a two-day round trip ticket from Chicago to New York—departing Chicago at 9 a.m. Wednesday and departing New York on Friday at 5 p.m.—was quoted at \$1,420. The fare for a four-day round trip ticket from Chicago to New York—departing Chicago at 9 a.m. Wednesday and departing New York on Sunday at 9 a.m.—was \$409.

### **Pricing of services by lawyers, doctors and accountants**

Service providers like doctors, lawyers, and accountants often charge different prices for different groups of customers. In many countries—such as the United States, India, and Brazil—doctors and lawyers often do not charge their poorest customers while charging their wealthy customers a relatively high price for more or less the same service.

## **Distinguishing among Groups**

As the above examples demonstrate, the characteristics businesses use to distinguish among groups of consumers include the following.

### **Geographic location**

Segmenting markets by geographic location is generally easy. Businesses routinely charge higher prices to residents of some geographic areas while charging lower prices to residents of other geographic areas. Indeed, businesses have now become so adept at making these distinctions that it is not uncommon to observe retailers charging higher prices in some suburbs while maintaining lower prices in adjacent suburbs.

### **Time**

Airlines, hotels, and department stores regularly segment consumers by time of use or purchase. The lowest prices are generally offered to those who are willing to stay over a Saturday and those who are willing to wait till the end of the fashion season.

## Age

Segmenting markets by the age of customers is relatively easy to implement. All that is required to distinguish between customer groups is an identification (ID) card—such as a student ID card or a senior citizens ID card. Those who can demonstrate that they belong to a specific age group are quoted the lower price; those do not belong to the specific age group are quoted a higher price.

## Income

Businesses have become adept at distinguishing among consumer groups on the basis of income. For instance, retailers such as the Gap and Old Navy may carry similar products, but the two chains have very different price structures because their customers are typically from different income demographics.

To see the economic logic of group pricing, watch the animation below:



Please read the animation transcript for [Group Pricing](#) on page 29

**Self-assessment:** To check your understanding of group pricing, try this [self-assessment](#) .. (page41 )

## Readings

The following section from your textbook provides more information on group pricing.

- Pindyck and Rubinfeld, *Microeconomics*, 5th ed., pp. 375-81.

## Price Elasticity of Demand

In 1999, Dell Computer Corporation overtook Compaq Computer Corporation as the sales leader in the U.S. personal computer market. Suppose that the managers at Compaq wanted to respond with an across-the-board price cut to regain the prestigious top spot. How much of an increase in sales could they elicit by a 5 percent price cut? By a 10 percent price cut? The answers to these questions depend on the price elasticity of demand.

Professor Heal discusses how prices should be chosen.  
You can find the [transcript](#) of this video on page .

The [law of demand](#) explains the inverse relationship between the price of a product and the number of units demanded. For example, as the price of a product is reduced, the number of units demanded increases. Businesses, however, are interested in knowing precisely *how much* the quantity demanded increases or decreases as the price of the product is reduced or increased. To obtain a measure of the sensitivity of quantity demand to changes in price, businesses rely on the [price elasticity of demand](#).

Professor Heal discusses other factors to consider when forming pricing policies.  
You can find the [transcript](#) of this video on page .

## Using Price Elasticity

At an intuitive level, the price elasticity of demand for a product is simply the ratio of the percentage change in the quantity demanded to the percentage change in the price. Economists use the symbol  $e$  to show the price elasticity of demand as follows:

$$\frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

$$\frac{\text{Percentage change in quantity demanded}}{\text{Percentage change in price}}$$

Or, using symbols:

$$e = \frac{\Delta Q / Q}{\Delta P / P}$$

The symbol

$\Delta$

(the Greek letter delta) indicates change, so

$$\Delta Q$$

indicates the change in quantity demanded and

$$\Delta Q / Q$$

is the percentage change in quantity demanded. Similarly,

$$\Delta P$$

indicates the percentage change in price and

$$\Delta P / P$$

is the percentage change in price.

Suppose that your local hardware store has a sale on vacuum cleaners. If the price of a vacuum cleaner decreases by 10 percent and, in response, quantity demanded for vacuum cleaners increases by 20 percent, the price elasticity of demand for vacuum cleaners is as follows:

$$\frac{+20\%}{-10\%} = \frac{+0.2}{-0.1} = -2.0$$

The price elasticity of demand for vacuum cleaners is  $-2$ . Thus, the hardware store knows that for every 1 percent increase in the price of vacuum cleaners, it can expect a 2 percent decrease in the quantity demanded. Notice that, in general,  $e$  will be a negative number because the law of demand states that demand curves are negatively sloped.

In general, because  $e$  varies with  $P$  and  $Q$ , elasticity can change as you move up or down along a demand curve. This is especially true of linear demand curves. To see how elasticity varies along a linear demand curve, participate in the activity below.



Please visit the course on-line to view the Elasticity Along a Demand Curve interactive activity.

i

[Estimates of Elasticity for Actual Products](#)  
(page37 )

## Interpreting Price Elasticity

When demand for a product or service has a price elasticity less than  $-1$

(i.e.,  $e < -1$ , or  $e$  is "more negative" than  $-1$ ), demand is described as elastic. For such products, a 1 percent increase in price leads to decrease in quantity demanded of greater than 1 percent—; in other words, demand is relatively sensitive to price changes.

When the price elasticity of demand is between  $-1$  and  $0$  (i.e.,  $0 > e > -1$ ), demand is described as inelastic. A price elasticity of  $-0.5$ , say for cigarettes, implies that for every 1 percent increase in the price, the quantity demanded will fall by 0.5 percent —; in other words, demand is relatively insensitive to price changes.

A price elasticity of  $-1.0$  is [unitary elastic](#). For example, for every 1 percent increase in the price of shirts, firms can expect a 1 percent decrease in demand.

For more on demand curves and elasticity, including the extreme cases of [perfectly elastic](#) and [perfectly inelastic demand](#), watch the animation below.



Please read the animation transcript for [Elasticity](#) on page 30

Professor Heal discusses pharmaceutical pricing.  
You can find the [transcript](#) of this video on page .

## Determinants of Price Elasticity

The price elasticity of demand for any product or service depends on many factors. The most important ones are the availability of [substitutes](#), product cost as a percentage of the buyer's budget, and time horizon.

### Substitutes

Substitutes affect price elasticity because they give buyers alternatives. For example, the demand for apples of a particular type is relatively elastic because of the easy availability of other types of apples and other types of fruit more generally. In contrast, consumers who smoke cigarettes, a habit-forming product, have relatively few substitutes. Increases in the price of cigarettes cause relatively small decreases in quantity demanded, because smokers cannot easily find a suitable substitute for cigarettes.

### Product cost

Naturally, consumers think more about price when they are making large purchases than when they are making small purchases. The price of shoelaces, for example, may vary by as much as 80 percent, but a typical buyer does not give the purchase much thought. The price of shoes, however, is of more interest to most consumers. Similarly, consumers are more sensitive to price changes in goods purchased frequently (e.g., milk

or cheese) than in goods purchased infrequently (e.g., gourmet mustard).

### Time horizon

The time horizon, or the amount of time over which consumers can analyze the effects of a price change, can affect the price elasticity of demand. For instance, the price elasticity of demand for gasoline is much greater over the long run than over the short run. In the short run, it might be difficult to find alternatives to gasoline. After all, most people own cars that run on gasoline, and most people do not live within walking distance of their workplace. Because it is difficult to find substitutes for products such as gasoline in the short run, such goods tend to have a lower price elasticity of demand. In the long run, people might be able to find a substitute: They purchase more fuel-efficient cars that use less gasoline.

On the other hand, for **durable goods** such as automobiles, the price elasticity of demand is higher in the short run than in the long run. In the short run, consumers can postpone the purchase of an automobile by simply continuing to use their old one for another year or two. But eventually, durable goods wear out entirely, forcing consumers to replace them. Thus, consumers tend to have less elastic demand for durable goods in the long run.

### Firm versus Market Elasticity

Contrast the price elasticity of demand for automobiles in general with the price elasticity of demand for a specific type of automobile. The demand for automobiles as a whole is relatively price inelastic, as consumers need autos as a form of transportation. Indeed, economists have estimated the *market* elasticity of demand for automobiles in the range of  $-1$  to  $-1.5$ . However, the demand for a specific model is much more price elastic because consumers can easily substitute one model for another. In the following table, the demand elasticities for specific models range from about  $-6.5$  for a Nissan Sentra to  $-3.1$  for a Lexus LS400.

### Estimates of Demand Elasticities for Various Automobile Models, 1990

Model	Price	Estimated $e$
Nissan Sentra	\$5,039	$-6.528$
Ford Escort	\$5,663	$-6.031$
Chevrolet Cavalier	\$5,797	$-6.433$
Honda	\$9,292	$-4.798$

Accord		
Ford Taurus	\$9,671	-4.220
Nissan Maxima	\$13,695	-4.845
Cadillac Seville	\$24,544	-3.973
Lexus LS400	\$27,544	-3.085
BMW 735i	\$37,491	-3.515

In general, consumers will be much more sensitive to changes in price for narrowly defined products (such as for a Honda Accord or Ford Taurus) than for broadly defined products (such as automobiles).

**Self-assessment:** To check your understanding of price elasticity of demand, try this [self-assessment](#) .. (page42 )

## Readings

The following sections from your textbook provide more information on the price elasticity of demand.

- Pindyck and Rubinfeld, *Microeconomics*, pp. 30-2 and 117-9.

### Sources

Berry, Steve, Jim Levinsohn, and Ariel Pakes. "Automobile Prices in Market Equilibrium." *Econometrica* 63 (July 1995): 841-90.

Besanko, David, and Ronald Braeutigam. *Microeconomics: An Integrated Approach*. New York: Wiley, 2002.

## Demand Curves and Consumer Surplus: Animation Transcript

### Demand Curves and Consumer Surplus

As you go about your daily routine, you won't go very far without seeing many people using cell phones. Companies like cell-phone providers spend a great deal of time and effort to find the demand curve for such a product or service.

The demand for any product or service depends on the value that it would provide to a potential customer. High-value customers are willing to pay much more than low-value customers.

Consider how much different consumers would be willing to pay for cell-phone service. Suppose that you know the most that each potential customer would be willing to pay.

One consumer is a saleswoman who is frequently out of the office meeting with customers. She depends on a cell phone to keep in touch with her office and customers and to coordinate her personal life. She places a high value on cell-phone service; she would be willing to pay quite a bit for it—say, \$200 a month.

Another consumer has a son in high school. She lends her son the cell phone to keep track of him when he is away from home.

While the cell phone isn't a necessity of life, it is a nice convenience for mother and son. Compared with the saleswoman, however, the mother and son place a low value on cell-phone service. The most they would be willing to pay is only \$30 a month.

Now imagine several other consumers, each having a different value for the cell-phone service. If you sort them by value, you can construct a demand curve. Notice the staircase shape of the resulting demand curve.

Once a company has the demand curve for a product or service, it can analyze its pricing strategy and identify consumers who do and do not benefit from its current strategy.

Suppose that the cell-phone provider charges a single price of \$50 a month for service. Any consumer who values cell-phone service at or above the price of \$50 a month (such as the saleswoman) would purchase this service. On the other hand, the mother of the teenage son would not purchase the service.

Companies study demand and analyze their pricing strategy for a product or service for a critical purpose. They want to use the information to obtain more revenue.

Consider the saleswoman who values cell-phone service at \$200 a month. Her individual benefit is her maximum willingness to pay (\$200) minus the price that she has to pay (\$50), that is, \$150.

If you perform this simple calculation for each consumer and add up the individual benefits, you can determine the total benefit from purchasing this cell-phone service. This concept of total benefit is called "consumer surplus." For the cell-phone service example, the consumer surplus is \$300. It is represented

by the area under the staircase and above the price.

From the company's point of view, consumer surplus represents more revenue than it could obtain if it used another pricing strategy.

The cell-phone provider's strategy of charging a single price of \$50 would capture \$200 in revenue from four customers. But each of these customers is willing to pay more than \$50. By charging customers the most they are willing to pay, the cell-phone provider could have earned an additional \$300.

## Group Pricing: Animation Transcript

### Group Pricing

To understand the challenges posed by group pricing and how businesses might approach these challenges, consider the case of an automobile dealer that is selling its cars in two distinct markets.

Suppose that consumers in the first market, market 1, are wealthy, while consumers in the second market, market 2, belong to the middle class. The dealer knows that the wealthy consumers in market 1 are far less sensitive to price increases than the middle-class consumers in market 2.

Now suppose that the dealer has already procured  $Q^*$  cars from the manufacturer and is deciding how the  $Q^*$  units should be apportioned across the two markets. The dealer's goal is to sell the  $Q^*$  units in the two markets so as to maximize total revenue (and total profit since all costs are sunk).

To determine the number of units to sell in each market, the dealer must decide (1) whether to charge the same price in each market or a different price, [and] (2) which market should receive the lower price.

To answer these two questions, consider figures 1 and 2. The demand functions (labeled  $D_1$  and  $D_2$ ) and the marginal revenue functions (labeled  $MR_1$  and  $MR_2$ ) in the two markets are shown. Now suppose that the dealer charges a uniform price of  $P^*$  in the two markets. Quite clearly, the dealer can now sell a maximum of  $Q1^*$  cars in market 1 and a maximum of  $Q2^*$  cars in market 2.

The demand function in market 1 is steeper than the demand function in market 2, which indicates that the customer in market 1 is less sensitive to price changes than the customer in market 2. Therefore, the marginal revenue to the dealer from the sale of the last unit in market 1 is less than the marginal revenue from the sale of the last unit in market 2. This implies that the auto dealer can increase revenue by selling fewer units in market 1 and more units in market 2. Stated differently, the auto dealer should charge higher prices to customers in market 1 than customers in market 2.

But how is the auto dealer to infer the number of units that should be allocated to each market? Given that marginal revenue in market 2 is greater than marginal revenue in market 1 when a common price is quoted for each market, the dealer should continue to allocate cars to market 2—and away from market 1. By doing so, the dealer is allocating more cars into the market where the marginal or additional revenue is larger. This, in turn, contributes to increasing the dealer's total revenue.

The dealer should continue reallocating cars from market 1 to market 2 until the marginal revenue in market 1 is equal to the marginal revenue in market 2. Why? Once this occurs, there are no additional gains in revenue to the dealer from reallocating cars from one market to another.

As you can see, when marginal revenues in markets 1 and 2 are equal, or equal to  $MRe$ , the dealer is able to sell  $Q1e$  in market 1 and  $Q2e$  in market 2. But as is also clear, the price charged in market 1,  $P1e$  is higher than the price charged in market 2,  $P2e$ . This is intuitively sensible since the customer in market 1 is willing to pay a higher price than the customer in market 2.

## Price Elasticity of Demand: Animation Transcript

### Elasticity

The price elasticity of demand measures the relative change in quantity demanded resulting from a change in price.

In the extreme case, if consumers show no change in quantity demanded when price changes, demand is said to be perfectly inelastic.

For example, price is not usually a factor when an important medical service, like a heart transplant, is needed. Fuel is another example. Even if the price goes up, you still need it for your home or vehicle. On a graph, a perfectly inelastic demand curve is a vertical line at the quantity demanded by consumers.

At the opposite extreme, if a very small change in price leads to a very large change in quantity demanded, demand is said to be elastic and appears as a nearly horizontal line on a graph.

Perfectly elastic demand is common with commodity goods, where there is very little product differentiation. For example, three companies sell wheat at the market price. If one company decides to raise its price, wheat buyers will stop purchasing wheat from that company and, instead, buy from the other two companies.

In general, a demand curve that is relatively steep will be more price inelastic than a demand curve that is relatively flat.

## Price Discrimination: Case

### How Companies Use Personalized Pricing

Personalized pricing is a pricing strategy that sets different prices and/or products to different buyers based on the information the seller has about the buyer. Many businesses offer different products and often personalized deals to customers by extracting their personal information. Some well-known examples include the following.

Online retailer Amazon.com only asks for your name when you register at its website, but it carefully tracks what you have purchased and collects personal information about your buying habits. Amazon.com uses this information in different ways. Once you make a purchase at Amazon.com, you are presented with recommendations based on previous purchases. Personalization helps Amazon.com because it helps it identify consumers' interests and willingness to pay. When it was discovered that Amazon.com was selling the same digital video disk (DVD) at different prices to different customers, Amazon.com claimed it was only "price testing."

Car dealers are the most prominent practitioners of personal pricing. They recognize that every consumer who is shopping for a car has a different reservation price, that is, the maximum price that he or she is willing to pay. By engaging in conversations with buyers, the car salesperson gains valuable information about consumers' willingness to pay. This allows the salesperson to decide whether to quote the sticker price or a price that is closer to the dealer price. Buyers with a higher willingness to pay generally pay higher prices and those with a lower willingness to pay generally pay lower prices.

Travel sites such as Expedia.com, Travelocity.com, and UAL.com send out special offers to destinations in which customers have indicated an interest. This is one of the easiest ways to personalize prices on the Internet. For example, if customers request information on flights to London, the travel sites improve their chances of selling these customers a plane ticket to London by sending them a special offer on those flights.

Websites such as MP3.com, a digital music site, and NYTimes.com, the online face of *The New York Times*, use cookies that store information about the identity of users on their computers so they can identify these users when they visit. These sites can track all the things users view online: the information they look up, the games they play, and the purchases they make.

Colleges often use personalization to attract students. The net price (or cost) to a potential student is the total cost of going to a particular college minus any financial aid he or she receives. Financial aid officers at universities often ask students to provide information such as family income, the number of colleges students have applied to, scholarship offers from other colleges, and so on, to assess how much financial aid needs to be offered to entice the student to attend a given university. Thus, the net price paid by the student will vary according to the circumstances surrounding a student's application to attend a given college.

## Price Discrimination: Case

### How Companies Use Versioning

Versioning is a pricing strategy in which companies target different versions of a product to different "types" of buyers. Ideally, companies want to charge what buyers are willing to pay because it will maximize their revenues. Since it's difficult to know what each person is willing to pay, companies can create versions of their product that might appeal to different groups of buyers. Buyers then choose, or self-select, the version that best meets their needs. The main difference between versioning and group pricing is that under versioning, sellers cannot explicitly distinguish between different groups (or types) of consumers. Following are some common examples of versioning.

Movie studios sometimes release special editions of movies. For instance, the DVD version of *Shakespeare in Love* includes additional features such as director and actor interviews, deleted scenes, a wide-screen edition, and closed captioning for \$32.99, whereas the VHS version has no bonus materials and costs \$14.99.

Intuit, a software company, offers TurboTax for \$29.95 and Turbo Tax Deluxe, which includes additional features including "more money saving advice" and Internal Revenue Service publications for \$39.95.

Health clubs often charge less for memberships with restricted hours. People who agree to use the club during off hours or on certain days of the week pay less than those with full memberships who can visit the club whenever they please.

Long-distance telephone companies charge more for calling plans that allow low-rate calls during the day and less for plans that only offer low rates on weekends or late in the evening.

Internet companies and photography studios sell different versions of their products by offering varying levels of resolution. For instance, Real.com lets users download its basic player for free, but the Real Player 8 Plus, which provides higher-quality audio and video content, costs \$29.99. PhotoDisk, an online photography library, charges users according to the resolution level of the images they access. A 600K version costs \$19.95, whereas a 10Mb image costs \$49.95. Professional users who need a reproducible image for commercial publications are willing to pay for the higher resolution, whereas more casual users prefer the cheaper images.

## **Demand Curves and Consumer Surplus: Info**

### **Income of Buyers**

Increases in consumers' income can translate into higher demand at any price for many products and services.

### **Tastes**

When consumers' tastes shift toward a product, they demand more of that product at every price level.

### **Price of Related Goods**

The price of one good can affect the quantity demanded of another if the goods are related to each other, that is, if they are complements or substitutes.

Goods that are used together are considered complements: a decrease in the price of one good leads to an increase in demand for the other good. For example, if consumers always mix cranberry juice with sparkling water, then these two goods are complements. Thus, a decrease in the price of sparkling water will lead consumers to buy more cranberry juice and sparkling water at every price level.

Goods are considered to be substitutes if buyers consider them interchangeable. For example, orange, grapefruit, and other fruit juices are substitutes for cranberry juice. If the price of orange juice decreases, consumers are likely to divert some of their purchases away from cranberry juice to the cheaper substitute. Consumers will now demand a smaller quantity of cranberry juice at every price level. If two goods are substitutes, an increase in the price of one leads to an increase in demand for the other.

### **Brand Quality or Reputation**

Improvements in quality or reputation increase the quantity demanded of a good at any given price. For example, if medical evidence indicates that cranberry juice reduces the incidence of flu, the demand for cranberry juice will increase.

### **Seasonal Factors**

Consumers purchase more of some products during certain times of the year. For instance, the demand for children's toys is higher during the winter season than during other times of the year.

## Pricing With Market Power: Info

Marginal revenue is defined as the revenue obtained from producing one additional unit. In mathematical terms, marginal revenue can be expressed as the first derivative of total revenue.

Total revenue is calculated by multiplying price times quantity. A linear demand curve has the form  $P = a - bQ$ . So total revenue is given below:

$$TR = P \times Q = (a - bQ) \times Q = aQ - bQ^2$$

Recall that the first derivative of a function in the form of  $x^n$  equals  $nx^{n-1}$ .

Thus, taking the first derivative yields marginal revenue, as shown below:

$$MR = TR' = 1 \times aQ^{1-1} - 2 \times bQ^{2-1} = aQ^0 - 2bQ^1 = a - 2bQ$$

## Pricing With Market Power: Info

Many U.S. and foreign airlines use complex pricing strategies in which the price of an airline ticket depends on such things as the identity of the traveler, the destination, the number of days between the day of reservation and the day of travel, the day and time of departure, the day and time of return, and so on.

But some airlines have also made it a point to advertise their uncomplicated pricing strategies. JetBlue Airways, whose main hub is New York's Kennedy Airport, presents itself as the stylish, low-cost way of flying to places such as Fort Lauderdale, Florida; Rochester, New York; Oakland, California; and Long Beach, California. Passengers on JetBlue pay the same low-cost fares regardless of whether they stay over on Saturday, and they are able to purchase their tickets for low fares as late as one day before departure. For instance, a one-way fare from Newark to Oakland on Continental Airlines can cost as much as \$1,128.50, whereas a one-way ticket on JetBlue from New York City to Oakland costs \$252.50. Round-trip tickets from New York City to Florida cost as little as \$49 if bought with the standard seven-day advance notice and \$99 if purchased minutes before departure.

Airlines in foreign countries also generally do not charge different prices for different passengers within the same seat class. For instance, Jet Airways, one of India's leading domestic airlines, charges all economy passengers the same fare regardless of when they purchase the ticket.

## Group Pricing: Info

### Pricing of Journals

Publishing companies often charge higher prices to universities, corporations, and public libraries than to individual subscribers. Elsevier North Holland—one of the most prominent publishers of academic journals in the world—generally charges universities, corporations, and public libraries a price that is often between 3 and 10 times greater than the price it charges individuals. For instance, in 2002, the price quoted to individuals for a year's subscription to the *Journal of International Economics* was \$125, whereas the price quoted to businesses for the same year-long subscription was \$1,049.

### Pricing for Tourists versus Locals

It is not uncommon for businesses that sell items like apparel and souvenirs to quote higher prices to tourists than they do to locals. For example, an amusement park in Los Angeles might ask people purchasing tickets to show proof of residency before they are allowed to buy tickets at the price quoted for locals.

### Pricing for Students versus Nonstudents

Universities sometimes charge lower prices to students than nonstudents for specific services. For instance, the University of North Carolina—whose basketball team, the Tar Heels, is typically very popular—charges University of North Carolina students \$12 per game and nonstudents \$50 per game.

## Price Elasticity of Demand: Info

Demand elasticities vary widely across different products. Cigarettes, for example, seem to have a relatively inelastic demand curve. The table below shows that  $e = -0.107$  for cigarettes. Thus, a 1 percent increase in the price of cigarettes will lead to only a 0.107 percent drop in quantity demanded. Because this is a *market* elasticity of demand, this only applies if the prices of *all* varieties of cigarettes increased by 1 percent (perhaps because of a new tax).

On the other hand, the table indicates that demand for leisure airline travel is relatively elastic:  $e = -1.52$ . Business travelers, however, need to travel on much shorter notice and are less able to drive to their destination, so the table shows that demand for business airline travel is less elastic (or more inelastic) than demand for leisure airline travel. However, because  $e = -1.15$ , demand for business airline travel is still relatively elastic on the whole.

## Estimates of Demand Elasticities for Various Products

Product	Estimated $e$
Airline travel, leisure	-1.52
Airline travel, business	-1.15
Cheese	-.595
Ice cream	-.349
Beer and malt beverages	-.283
Bread and bakery products	-.220
Cookies and crackers	-.188
Roasted coffee	-.120
Cigarettes	-.107
Pet food	-.031

### Sources

Pagoulatos, Emilio, and Robert Sorensen. "What Determines the Elasticity of Industry Demand." *International Journal of Industrial Organization* 4 (1986): 237-50.

Oum, Tae Hoon, W.G. Waters II, and Jong-Say Yong. "Concepts of Price Elasticities of Transport Demand and Recent Empirical Estimates." *Journal of Transport Economics and Policy*, (May 1992), 139-54.

## **Demand Curves and Consumer Surplus: Self Assessment**

### **Demand Curves and Consumer Surplus**

This interactive content is available online only.

## **Pricing With Market Power: Self Assessment**

### **Pricing with Market Power**

This interactive content is available online only.

## Group Pricing: Self Assessment

### Group Pricing

This interactive content is available online only.

## **Price Elasticity of Demand: Self Assessment**

### **Price Elasticity of Demand**

This interactive content is available online only.

## Demand Curves and Consumer Surplus: Video Transcript

### Professor Heal Discusses the Purpose of Pricing Policies

Ultimately, pricing policy, of course, is one of the policies we use to increase the firm's profits, profitability. And what you really want to do in setting prices is to find out what people are willing to pay for your product and then tailor the price that you charge them as close as you can to what they're willing to pay. Here a concept called "consumer surplus" is important.

Consumer surplus is the difference between what you actually pay for a product and what you're willing to pay for a product. Often you get a product for less than you are, on principal, willing to pay for it. And so if I get a product for say \$30, and I was actually willing to pay \$40, I've got a consumer surplus of 10. One of the real aims of pricing policy is to minimize consumer surplus—to make certain that whenever people buy our products, you're charging them as close as you possibly can to what they're really willing to pay. And obviously if different groups of people are willing to pay different amounts, then this means that you've somehow got to charge, tailor the prices that you charge, to what different groups are willing to pay. This is where the interesting and the complicated aspects of pricing policy emerge.

## Pricing With Market Power: Video Transcript

### Professor Heal Discusses How the Internet Has Affected Pricing Policies

The Internet's had an interesting sort of effect on pricing. Of course, one of the things it's done is make information more readily available so buyers can comparison-shop, and they can look around to try to find the best price. At the same time, it's also made some forms of price discrimination easier than before.

Specifically, one of the classic forms of price discrimination is actually to use an auction. In an auction when you auction similar items repeatedly, it's natural that different people will pay different amounts. And in an auction we have a competition between buyers. The price will naturally go up to a level which depends upon what people are willing to pay and, in particular, what those who most want the commodity are willing to pay for it. And what the Internet has done is make auctions much more straightforward than they were before.

Prior to the Internet you had to collect people in one physical place for an auction—which only made sense for really high-value items like works of art. Nowadays you can hold an auction on the Internet for something that costs \$100 or even \$50. People can bid for it electronically. So one of the things we see as the result of the Internet is rampant growth in auction markets and companies based on auctioning over the Internet, and that is a growth of price discrimination for the Internet.

## Price Discrimination: Video Transcript

### **Professor Heal Discusses Industries Well-suited to Personalized Pricing**

The ideal in price discrimination would be to charge every customer a different price. Now, of course, if you've got millions and millions of customers that's probably just not practical. But you do achieve that ideal in many, for example, capital goods industries where you've got a small number of customers who were buying each a small number of really high-value items.

So if you're selling, for example, generating equipment to electric utilities, so you're selling mainframe computers to large corporations, you're talking about items that have multimillion dollar price tickets. And you've got a small number of customers and each one makes just occasional purchases. It's often quite common in that type of business that you don't have a price list at all, and that the prices are tailored to the specific customer.

So the way that type of business often operates is that a sales rep will go to the potential buyer and try to see what they want and why they want it and how much they want it on the basis of that will come back with a proposal. But they'll very rarely operate on a price list in businesses like that. And that absence of a price list leaves you free to charge different prices to different buyers.

## Price Discrimination: Video Transcript

### Professor Heal Discusses Versioning

Versioning is the name we use for selling essentially the same product to different groups at different prices. There's lots of different ways in which this occurs. For example, some clothing companies can take essentially the same garment, put different labels on it, sell it through different stores at quite different prices. And when they do that, then they usually have labels that have different associations with them. Some of them are upmarket labels, some of them are midmarket labels, some of them have other lower-price items, but there are certainly examples of clothing companies that sell basically the same physical garments, with different labels, through stores that have different associations in customers' minds. That's one version of versioning.

And again, software companies go in for versioning when they have a basic version of a product and a deluxe version of a product and maybe an academic or an educational version of a product. Those probably all have essentially the same code. In fact, they may all have exactly the same code with some of the lower-price versions having certain functions disabled. And they're tailored to different buyers. They're tailored to the professional buyer, the amateur buyer, the educational buyer. That's another way in which you can version. There are really many, many different ways of doing this that are almost as diverse as the different industries you can think of.

## Price Elasticity of Demand: Video Transcript

### Professor Heal Discusses How Prices Should Be Chosen

Choosing a price is really one of the most important decisions that a business makes for a particular product line. And, strangely enough, although it's a really important decision, they often don't focus on it very hard. So it's well worth thinking carefully about pricing policy.

Suppose that you've got an existing product on the market, and you feel that it's underperforming and you want to make more profit from it, so you are reviewing the pricing policy. You've got a choice: you can raise the price or lower the price. Now lots of people would think, the way to make more money is to raise the price. But in fact, when you change the price, it's not always clear which direction profits will respond in. So if you raise the price, obviously you'll make more money on each unit that you sell. But on the other hand, you'll sell fewer units. Those two things go in opposite directions. And you've got to look very carefully at the tradeoff between them.

And, conversely, if you lower the price, then obviously on each unit that you sell you'll make less money. But presumably your sales will increase and that will tend to increase your profits. So the first thing to realize is that it's not always obvious which way you should move the price—up or down—when you're deciding that you need to increase your profitability. And clearly, that tradeoff between, for example in the case of an increased price, the tradeoff between more money per unit sold versus fewer units sold is going to be controlled by the demand elasticity. So that's clearly going to be a key variable in pricing policy.

## Price Elasticity of Demand: Video Transcript

### Professor Heal Discusses Other Factors in Forming Pricing Policies

The second issue that you do think about is that often just simply charging one price is not the right response. We can ask, "If we are going to charge one price, should it be a higher or a lower price than the present one?" But often the best response to an inquiry about pricing policy will be to stop charging a single price and charge several different prices to different groups of customers. Or to charge a more complicated price, which consists of several components. And these are all the issues that we're going to get into in our discussion of price and policy.

## Price Elasticity of Demand: Video Transcript

### Professor Heal Discusses Pharmaceutical Pricing

Pricing of pharmaceutical products has been a very controversial issue, politically, in the last few years. One of the things that has generated controversy here is the observation that you can often buy pharmaceuticals for lower prices outside of the U.S. than you would pay for the same things here in the U.S. Why are drug companies doing that?

It's basically a form of price discrimination. They know that one of the main things that drives willingness to pay is income. People who are richer usually are willing to pay more and able to pay more than people who are poor. And if you look across countries, you will see that the prices of drugs are usually correlated with income levels and that our drug prices are lower in Europe than they are in the U.S. and income levels are somewhat lower and they're lower again in the developing countries.

The concern that drug companies have about setting up really low prices, in the very poor countries, those concerns are twofold. One is they're worried about the drugs finding their way back into other markets. So, for example, if you sell a drug at a really low price in an African country, is there a risk that it will find its way back into Europe or the U.S. and undercut your products being sold at higher prices there. And the second thing is they're worried about the political response. The observation that these things are going much more cheaply in other countries. They think it will undermine their ability to maintain the kind of price level they're used to here in the U.S., which they see as being important for funding their research and development.

## Project Materials: Marketing Department's E-mail on Customer Demand, Costs, and Current Pricing

**To:** Corporate  
Strategy  
Analyst

**From:** Marketing  
Department

**Subject:** Customer  
Demand,  
Costs, and  
Current  
Pricing for  
Raleigh-Durham  
to Chicago  
Flights

---

Here is the information you requested about the Raleigh-Durham to Chicago route, a distance of 680 miles.

The maximum capacity of our planes flying this route is 125 passengers.

Based on data from customer purchases and marketing surveys, we estimate demand for passenger tickets on this route as follows. Note that demand is a linear relationship between price and quantity:

$$\text{Price} = 1,250 - (8 \times \text{Quantity})$$

Our fixed costs include salaries of pilots and flight attendants and fuel. For a one-way flight, current total fixed costs amount to \$25,000.

Our variable is \$50 per passenger. This figure is constant whether the person is the first or 125th passenger aboard the flight. Variable costs include the expense of additional fuel requirements for bearing another passenger and associated luggage, and the costs of food and beverage service, ticket processing, and baggage handling.

Fuel costs are a primary component of our flight expenses. In Clear Blue Sky's current fare structure, we establish a price that is a multiple of the average market price for the kerosene-based jet aviation fuel used in our fleet. For example, given current fuel prices, the one-way fare charged in the Raleigh-Durham to Chicago market is \$850.

Fuel costs are expected to rise. Therefore, I propose a fare increase from \$850 to \$890 in the Raleigh-Durham to Chicago route. This recommendation is based on our proprietary fuel-to-fare factor.

Basing ticket prices on the fuel prices allows us to minimize the risk of changing fuel prices. By passing on the increase in fuel prices to our customers, I believe we will be able to maintain the level of profitability on this route.

I hope this is useful.

## Project Materials: Marketing Department's E-mail on Price Elasticity Estimates

**To:** Corporate  
Strategy  
Analyst

**From:** Marketing  
Department

**Subject:** Estimates  
of Price  
Elasticities

---

We've examined data on our customers from the past several years, and we've also looked at several industry-wide reports. Based on our research, we believe our market contains four identifiable customer market segments: business, government, student, and leisure travelers.

Our estimates of price sensitivity are below.

Business travelers =  $-1.1$

Government travelers =  $-1.3$

Student travelers =  $-2.6$

Leisure travelers =  $-3.2$

There has also been some discussion about whether other academic/university travelers (e.g., professors and staff) form a distinct group. However, we have not been able to distinguish this group from our data, because of the difficulty in identifying these travelers. Our best estimate is that this group would fall somewhere between government and student travelers in terms of price sensitivity.

I hope you find this information useful!

## Project Materials: Brian Usher's E-mail on Proposed Fare Restrictions

**To:** Corporate  
Strategy  
Analyst

**From:** Brian  
Usher

**Subject:** Proposed  
Fare  
Restrictions

---

In examining the feasibility of using price discrimination strategies at Clear Blue Sky, we uncovered data about our competitors that may help us. Competing airlines apply several fare restrictions:

- *Advance purchase requirement:* Travelers must purchase their ticket 14 days or 21 days in advance of their departure date.
- *Nonchangeable ticket:* Travelers may not change their travel itineraries once purchased.
- *Nonrefundable ticket:* Travelers may not receive refunds on tickets.
- *Saturday night stay:* Travelers' itineraries must include a Saturday night stayover.
- *Proof of identification or age:* To qualify for certain fares, photo identification may be required (e.g., university, government, or military ID or driver's license).

Please consider these fare restrictions in designing an appropriate price discrimination strategy for Clear Blue Sky.

Thanks,  
Brian

## Mythos Task 1 Overview: Other Resource

**To:** Corporate  
Strategy  
Analyst

**From:** Brian  
Usher

**Subject:** Pricing  
Strategies  
at Clear  
Blue Sky  
Airlines

---

Hi, I hope you're getting acquainted and settling in. I have an important project for you. I need you to look at an underperforming market at Clear Blue Sky Airlines. The Raleigh-Durham to Chicago route is less profitable than our other routes. I need you to figure out what's going wrong and how to fix it.

Some background information on the route: For flights during certain times of the day, Clear Blue Sky is the only airline flying from Raleigh-Durham to Chicago. At the most competitive times of the day, only two other carriers serve this market. Clear Blue Sky Airlines is doing relatively well with our current pricing strategies, but we can do better. In addition, there is considerable pressure from Wall Street financial analysts and the shareholders to improve profitability. One immediate concern is the rising price of kerosene, which is the primary ingredient in the aviation jet fuel that we use.

Clear Blue Sky's current pricing strategy is to charge a single fare, based on fuel prices, to everyone on the same flight. Fares may differ from flight to flight, however.

Anticipating that fuel prices will rise, a working theory in the airline's marketing department is that Clear Blue Sky should raise its fares to improve profitability. I've had Tom Caldwell, a marketing analyst at Clear Blue Sky, take a look at this problem. He has given me some suggestions, but I want your perspective on this.

I'd also like you to examine the possibility of charging more than one price for this route. Some Wall Street analysts have been telling us that we should implement a price-discrimination strategy. I want you to evaluate this idea and determine if it's feasible.

I'll make sure that you have all the information you need to prepare a memo for me. I appreciate your assistance with this project.

Let me know what you've come up with.

Thanks,  
Brian