Demand: Thinking Like a Buyer

Scientists have identified a part of the brain that fires up every time you evaluate a possible buying decision. Think about how busy that part of your brain must be. Every time you look at a menu, a price tag, or an advertisement, it fires up, asking: Is this a good deal? Should I buy? If so, how many? Sometimes the answer is no, you shouldn’t buy. Sometimes the answer is yes, and you’ll make a purchase—perhaps a $1 cookie. And sometimes you’ll make a life-changing decision such as choosing to buy a car or a house. But collectively, even the small decisions add up to a big deal—they’re a large chunk of the millions of dollars you will probably spend over your lifetime.

In this chapter, we’ll develop a deeper understanding of demand—the decisions that we make as buyers. We’ll start by studying individual demand, zooming in and focusing on the decisions that you make as an individual consumer trying to decide how much of a product to buy. We’ll apply the core principles of economics that we developed in Chapter 1 to guide you toward making better buying decisions.

Next we’ll pan back and analyze market demand, which managers use to project how much of a product the market as a whole will buy at each price. Because total market-wide demand is simply the sum of the individual demand choices made by millions of buyers, you’ll find that your deeper understanding of individual demand will help you better understand market demand. We’ll then explore how changing market conditions shift market demand.

By the end of this chapter, you’ll understand the key factors that drive the millions of purchasing decisions that underpin much of our economy. Let’s get started.
2.1 Individual Demand: What You Want, at Each Price

Learning Objective Discover the shape of your individual demand curve.

It’s Monday morning, and Darren is driving to the office. He notices his gas tank is nearly empty. The nearby gas station typically offers the best prices, and right now, its sign says $3 per gallon. So Darren faces a decision: How much gas should he buy?

You face decisions like this every day. At your favorite clothing store, jeans might be on sale, and you have to decide whether to buy another pair or make do with your existing jeans. On your way to class, you probably walked past a coffee shop and had to decide whether to buy a cup of coffee or save your money for other uses. Every time you see a price tag, you face the same question: At this price, what quantity should you buy?

Let’s dig deeper into Darren’s purchases of gas. Darren was recently surveyed about his consumption of gas, and Figure 1 shows both the survey form and Darren’s responses (in purple).

An Individual Demand Curve

You know the old saying: “A picture is worth a thousand words”? Well, this is one of those cases. You can plot Darren’s answers in the table above so that you turn those numbers into a picture that summarizes his buying plans. This graph is called his individual demand curve, and it plots the quantity that he plans to buy at each price. This chapter will use graphs to understand and summarize demand. If your graphing skills are a bit rusty, don’t worry; we’ll proceed slowly. (You may also find it useful to read the Graphing Review.)

The line in Figure 2 illustrates Darren’s individual demand curve for gas. Each dot corresponds with one of Darren’s responses to the gas survey shown in Figure 1. For instance, Darren said that if the price of gas is $5 per gallon, he plans to buy 1 gallon per week. This point is plotted in the top left of Figure 2; simply look across from the price of $5 (on the vertical axis) to the quantity of 1 gallon of gas (on the horizontal axis), and you can see this first response, graphed as the first point. Likewise, Darren said that if the price of gas is $4 per gallon, he plans to buy 2 gallons of gas per week, and this is the next point plotted on Figure 2. You can see each of his responses plotted as a point in Figure 2.

There are also many different prices that Darren wasn’t asked about. For instance, he wasn’t asked how he would respond to a gas price of $2.50. A straight line between the $2 and $3 dots provides a reasonable estimate, suggesting that he would buy 4 gallons. This line connecting the dots is Darren’s individual demand curve, showing the quantity he will demand at each price.

You can remember what an individual demand curve is just by analyzing the words. “Individual” means we are referring to one person, “demand” means it’s about buying decisions, and “curve” means we are graphing it (and sometimes these curves are straight lines). That’s it: Your individual demand curve is a graph summarizing your buying plans, and how they vary with the price.
**CHAPTER 2 Demand: Thinking Like a Buyer**

**Darren’s Individual Demand Curve**

*How much gasoline is he willing to buy at each price?*

A **Price** is on the vertical axis, and **quantity demanded** is on the horizontal axis.

B When the price is **$5 per gallon**, Darren will purchase just **1 gallon** of gas per week. An individual demand curve also illustrates how the quantity demanded changes as the price changes. If the price falls to **$4 per gallon**, the quantity he demands will rise to **2 gallons** per week. At a price of **$3**, he will buy **3 gallons**, and so on.

C The **individual demand curve** shows the quantity of gas per week that Darren is willing to buy, at each price. The individual demand curve is downward-sloping: The lower the price, the higher the quantity demanded.

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**Figure 2 Graphing an Individual Demand Curve**

**Graphing conventions.** Be careful to always use the same conventions when graphing demand curves. Price always goes on the vertical axis, and the quantity demanded goes on the horizontal axis. (I remember this as “P’s before Q’s,” so that as I look from left to right, or from top to bottom, I label P’s—the price—before labeling Q’s—the quantity.) Don’t forget to label the units on both axes. In this case, the price of gas is measured in dollars per gallon. The quantity of gas demanded is measured in gallons per week.

Some students ask why price goes on the vertical axis and quantity goes on the horizontal axis. There’s no good answer—it’s because economists have graphed demand curves in this way for so long that it’s now a convention that everyone follows. By following these established conventions, we can all speak the same, consistent language.

**An individual demand curve holds other things constant.** The demand curve shown in Figure 2 plots Darren’s buying plans, given current economic conditions. But if something important were to change—say, if he lost his job—then his buying plans would change, and so his individual demand curve would change, too. In order to acknowledge this, economists say that a particular demand curve is graphed, “**holding other things constant**.” We know that things other than price can influence your demand—your demand for gas might change if you bought a more fuel-efficient car—and the **interdependence principle** reminds us not to forget these connections! But first, we want to consider what happens when the price—and only the price—changes. So when we “hold other things constant,” we’re really just pushing aside changes in those other factors for now, so that we can focus on understanding how demand is affected by the price.

**The individual demand curve is downward-sloping.** Notice that Darren’s individual demand curve is downward-sloping: It starts high on the left, and as you move to the right, it heads downward. Downward-sloping demand means that as the price gets
lower, the quantity demanded gets larger. When gas costs less, people buy more of it. Or you think about it the other way around: If gas costs more, people buy less of it.

**Discover your individual demand curve.** Whenever you see a price tag and pause to decide whether to make a purchase and, if so, how many items to buy, you are considering the quantity you will demand at that price. If you graphed these thoughts, you would plot your individual demand curve. Let’s delve into this idea in a bit more detail, and explore your individual demand curve for jeans.

**Do the Economics**

Executives at Levi’s want to understand their customers better. So they’ve asked their marketing team to figure out the individual demand curve for jeans of customers like you.

Marketing executives often run surveys to learn about demand for their product, and the Levi’s jeans survey, in Panel A of Figure 3, is an example. Go ahead and take the survey. Next, turn to Panel B below and plot your responses. When you’re done, you’ve just discovered your individual demand curve for jeans.

**Figure 3 | Discover Your Individual Demand Curve**

Panel A:
Levi’s is interested in understanding how many pairs of jeans you will buy over the next five years. Holding other things constant, how many pairs of jeans do you expect to purchase:

<table>
<thead>
<tr>
<th>Price of jeans ($ per pair)</th>
<th>Quantity of jeans</th>
</tr>
</thead>
<tbody>
<tr>
<td>If jeans cost $150?</td>
<td></td>
</tr>
<tr>
<td>If jeans cost $125?</td>
<td></td>
</tr>
<tr>
<td>If jeans cost $100?</td>
<td></td>
</tr>
<tr>
<td>If jeans cost $75?</td>
<td></td>
</tr>
<tr>
<td>If jeans cost $50?</td>
<td></td>
</tr>
<tr>
<td>If jeans cost $25?</td>
<td></td>
</tr>
</tbody>
</table>

Panel B: Your Individual Demand Curve

*How many pairs of jeans do you expect to purchase at each price?*
To graph your individual demand curve, plot the data from your responses to the Levi’s jeans survey.

Even though I haven’t seen your graph, I’m willing to bet that you just plotted a downward-sloping individual demand curve!
The Law of Demand

Okay, so we’ve figured out that your individual demand curve for jeans is downward-sloping. And Darren’s individual demand curve for gasoline was also downward-sloping. If we repeat the same exercise for other goods, you’ll quickly discover that your individual demand curve for gas, ice cream, concert tickets—or just about anything else—is also downward-sloping.

Economists have asked similar questions about thousands of goods over hundreds of years, and we keep seeing the same pattern: The quantity demanded is higher when the price is lower. You’ve probably seen the same pattern in your daily life: If something is cheaper, you buy more of it. And if it’s more expensive, you buy less of it (holding other things—like quality!—constant). This is such a pervasive pattern that economists call the tendency for the quantity demanded to be higher when the price is lower the law of demand.

That’s it—we’ve figured out your individual demand curve. It’s simply a graph that describes the quantity you will demand at each price. It’s useful, because it allows businesses to forecast how customers like you will respond to different prices. And since the law of demand suggests that you’ll demand a larger quantity when the price is low, your demand curve is downward-sloping.

Now that you know how to construct your individual demand curve, let’s explore how you can apply the core principles of economics to make better demand decisions.

2.2 Your Decisions and Your Demand Curve

Learning Objective  Apply the core principles of economics to make good demand decisions.

So far, we’ve focused on the actual buying decisions that people make. Let’s turn to the harder question: What are the best buying choices you can make? The core principles of economics can provide useful guidance. As we go through each principle, you’ll get a deeper sense of the various factors that shape individual demand curves.

Choosing the Best Quantity to Buy

Let’s start by exploring what’s behind Darren’s individual demand curve. In a follow-up interview, he provided some insight into his preferences. Darren starts by thinking about all of the possible uses he has for a gallon of gas and prioritizes them. He does this by thinking about the benefits he gets from each alternative use. Because dollars is the measuring stick by which we assess benefits, he puts a dollar value on these benefits that summarizes how much he’s willing to pay for each possible use of a gallon of gas. Figure 4 gives his explanations for how he’ll use each gallon of gas and the benefit each use has for him.

Focus on your marginal benefits. Each row shows one of Darren’s uses for each additional gallon of gas. He’s listed them in order of his priority—from the uses that deliver the largest benefit to him to those that deliver the least benefit. When he thinks about these benefits, he’s not just thinking about the dollars involved. He’s thinking about his benefits broadly, such as the benefits of saving time, of seeing his parents, or of taking a relaxing drive to unwind. And in each case, he’s comparing them to his next best alternative.

Darren is thinking about the additional benefit of one more gallon of gas—that is, the marginal benefit. When Darren thinks about the different ways he can use an extra
A third gallon of gas allows me to visit my parents more often. I could call them instead, but I prefer seeing them. There’s no financial benefit to this, but there’s a benefit nonetheless, because I love my parents. Putting a number on this is hard, but I’m willing to pay up to $3 for the gallon of gas required for this visit.

If I buy only one gallon of gas per week, I’ll use it to do my weekly shopping at the Walmart two towns over. The alternative is to shop at my neighborhood supermarket, which is more expensive. Going to Walmart instead saves me $5 each week.

If I buy a second gallon of gas, I’ll also drive two miles to work every day. I prefer this to catching the bus. The time and money saved add up to a $4 benefit.

A fifth gallon allows me to drive to the gym twice a week. But I could jog there instead, which is a good warm-up. Saving time is useful, but given that I have to warm up anyway, the benefit of driving to the gym is worth only $2.

If I buy a sixth gallon of gas, I’ll use it to do my weekly errands. But I’m nearly as happy just walking around town to do these errands. The benefit of driving to do errands is only $1.50.

If I buy a seventh gallon, I’ll use it to take a scenic drive when I need some quiet time. But I’m nearly as happy taking quiet time at home, so the benefit of this option is pretty low. Perhaps this gallon yields a benefit as small as $1.

Darren’s thoughts

<table>
<thead>
<tr>
<th>Priority</th>
<th>Darren’s thoughts</th>
<th>Marginal benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (Highest Priority)</td>
<td>If I buy only one gallon of gas per week, I'll use it to do my weekly shopping at the Walmart two towns over. The alternative is to shop at my neighborhood supermarket, which is more expensive. Going to Walmart instead saves me $5 each week.</td>
<td>$5.00</td>
</tr>
<tr>
<td>2</td>
<td>If I buy a second gallon of gas, I'll also drive two miles to work every day. I prefer this to catching the bus. The time and money saved add up to a $4 benefit.</td>
<td>$4.00</td>
</tr>
<tr>
<td>3</td>
<td>A third gallon of gas allows me to visit my parents more often. I could call them instead, but I prefer seeing them. There’s no financial benefit to this, but there’s a benefit nonetheless, because I love my parents. Putting a number on this is hard, but I’m willing to pay up to $3 for the gallon of gas required for this visit.</td>
<td>$3.00</td>
</tr>
<tr>
<td>4</td>
<td>With a fourth gallon of gas, I can drive to hang out with my friends during the weekend. I could get a ride instead, since all of my buddies live nearby, but it’s nice to have the flexibility that driving gives me. I get about $2.50 in benefit from this.</td>
<td>$2.50</td>
</tr>
<tr>
<td>5</td>
<td>A fifth gallon allows me to drive to the gym twice a week. But I could jog there instead, which is a good warm-up. Saving time is useful, but given that I have to warm up anyway, the benefit of driving to the gym is worth only $2.</td>
<td>$2.00</td>
</tr>
<tr>
<td>6</td>
<td>If I buy a sixth gallon of gas, I’ll use it to do my weekly errands. But I’m nearly as happy just walking around town to do these errands. The benefit of driving to do errands is only $1.50.</td>
<td>$1.50</td>
</tr>
<tr>
<td>7 (Lowest Priority)</td>
<td>If I buy a seventh gallon, I’ll use it to take a scenic drive when I need some quiet time. But I’m nearly as happy taking quiet time at home, so the benefit of this option is pretty low. Perhaps this gallon yields a benefit as small as $1.</td>
<td>$1.00</td>
</tr>
</tbody>
</table>

Darren should buy three gallons of gas.

OK, so gas is never exactly $3 per gallon, he’s really thinking about the marginal benefit he gets from each gallon of gas, and this is shown in the final column of Figure 4, “Marginal benefit.”

Do the Economics

Let’s return to Darren as he was driving toward the gas station. He noticed that gas is selling for $3 per gallon (well, actually for $2.99) and he’s trying to decide how much to buy. What is your advice?

- **Should he buy a first gallon of gas?**
  Yes. According to Figure 4, Darren will use this gallon to shop at Walmart, which yields him a marginal benefit of $5, which is greater than the $3 it will cost him.

- **OK, so continue: Should he buy a second gallon of gas at $3? (Hint: You should ask: What are the benefits? What will this cost?)**
  The second gallon of gas yields a $4 marginal benefit, which is greater than the marginal cost of $3. Sounds like a good deal.

- **And should he buy a third gallon?**
  The third gallon is a close call. It yields $3 of marginal benefits, which is slightly more than the marginal cost (which is actually $2.99). But the marginal benefit exceeds the marginal cost, so Darren should buy this third gallon.

- **What about a fourth gallon?**
  The fourth gallons yields a $2.50 marginal benefit, and it’s not worth spending $3 to get a $2.50 marginal benefit.

- **And a fifth? A sixth?**
  Similar logic suggests that Darren shouldn’t buy a fifth or sixth gallon either. In each case they yield a marginal benefit less than the $3 marginal cost of a gallon of gas.

- **Bottom line: What quantity of gas should he buy at $2.99?**
  Darren should buy three gallons of gas.
Notice that your advice is based solely on comparing the price of a gallon of gas with the marginal benefit that Darren gets from it. In fact, whenever you need to figure out your demand for any good, you should follow the same logic, comparing the price with your marginal benefit. This is why economists say that understanding demand is all about understanding marginal benefits.

Apply the core principles to make good buying decisions. Darren’s approach to buying gas seems pretty sensible. In fact, he’s implicitly relying on the core principles of economics. You’ll want to apply the same logic when you’re making your own demand decisions, whether you’re deciding how many pairs of jeans to purchase, how many shares of Google to invest in, or how many workers to hire. Let’s see how.

The marginal principle says that you should break “how many” questions into a series of smaller marginal choices. Darren’s clearly thinking this way, considering each additional, or marginal, gallon of gas separately, and how he would use it. It means that he’s ready to analyze the simpler question of whether to buy just one more gallon of gas. And indeed, we just evaluated whether to buy a first, then a second, then a third and a fourth gallon of gas when the price was $3.

For each of these marginal decisions, Darren’s best choice depends on the cost-benefit principle, which says: Yes, he should buy that additional gallon of gas if its benefit exceeds the cost. The cost of an additional gallon of gas is simply its price. The benefit of an additional gallon is called its marginal benefit.

And notice that when Darren evaluates his marginal benefits, he applies the opportunity cost principle, asking: “Or what?” He doesn’t just ask about the benefits of driving to Walmart; he compares it to the next best alternative, which is doing his shopping nearby. It’s only by comparing driving to Walmart with the next best alternative that he figured out that the marginal benefit of the first gallon of gas is $5. He does something similar in each row of Figure 4. Here’s a chance to test yourself: Go back and underline the “or what?”—the next best alternative that he identifies on each row. (Answer: It’s the second sentence of each row.)

The Rational Rule for Buyers

Working systematically through the core principles—as shown in Figure 5—leads to the conclusion that Darren should keep buying additional gallons of gas as long as the marginal benefit is greater than (or equal to) the price.

Figure 5 | Rational Rule for Buyers

We’ve uncovered a pretty powerful rule, which you can apply to any buying decision:

The Rational Rule for Buyers: Buy more of an item if the marginal benefit of one more is greater than (or equal to) the price.

The Rational Rule for Buyers puts together the advice from three of the four core principles in one sentence. You should think at the margin, comparing the marginal benefit of one more item with the marginal cost (in this case, the price), and evaluate these costs and benefits relative to your next best alternative. You can apply this rule to your real-world buying decisions. For instance, it says to Darren: You should buy another gallon of gas if it yields a marginal benefit greater than or equal to its price.
You might be wondering what role the *interdependence principle* plays in all this. It’s already there in Darren’s reasoning: His decisions depend on the availability of the bus, his desire to go to the gym, and even his love for his parents! For now, we’re focusing only on the effects of different prices, holding these other things constant. But when we return to the *interdependence principle* later in this chapter, we’ll see that if these other things were to change, so would his plans.

**Follow the Rational Rule for Buyers to maximize your economic surplus.** The *Rational Rule for Buyers* is good advice. Why? If buying one more gallon of gas yields marginal benefits for Darren that exceed the price he pays, then he is better off. That is, he’ll enjoy greater economic surplus—which is the difference between his total benefits and total costs—because this purchase will boost his total benefits by more than it boosts his total costs. And that’s the reason why you’ll want to follow this rule in your own life.

In fact, you want to take *every* opportunity to make those purchases that will make you better off, and take a pass on any purchases that will make you worse off. If you relentlessly follow the *Rational Rule for Buyers* and buy more gas (and more food and more clothes and so on) for as long as the marginal benefits are at least as large as the price, then by taking every opportunity to boost your economic surplus, you’ll succeed at maximizing your economic surplus.

(You might wonder why this rule says its marginal benefit is *exactly equal* to the price. Truth is, this decision doesn’t make a difference, because buying that last item will make you neither better off nor worse off. Still, I say you should continue to buy up to, *and including*, the point when marginal benefit equals price, because it’ll make the rest of your analysis a bit simpler.)

**Keep buying until price equals marginal benefit.** If you follow the *Rational Rule for Buyers*, you’ll keep buying more gas until the marginal benefit of the last gallon you buy is *equal* to the price. Why? The rule suggests you keep buying gallons of gas as long as the marginal benefit of each gallon is at least as high as the price. Consequently, you will stop buying more gas just before the marginal benefit of the next gallon falls below the price—which occurs when the *marginal benefit equals price*.

You might recognize this insight. Recall the *Rational Rule* from Chapter 1, which said: “If something is worth doing, keep doing it until your marginal benefits equal your marginal costs.” We’re simply adapting this rule to when you’re buying stuff, and so the marginal cost of an extra gallon of gas or pair of jeans is simply the price. As such, adapting the *Rational Rule* to your role as a buyer says you should keep buying until:

\[
\text{Price} = \text{Marginal benefit}
\]

**Your demand curve is also your marginal benefit curve.** Hopefully you can now see why economists say that understanding demand requires remembering just one phrase: *Price equals marginal benefit*.

This reveals a new perspective for thinking about demand: Your demand curve is also your marginal benefit curve. Think about it: Your demand curve illustrates the *price* at which you will buy each quantity of gas. If you keep buying until *price equals marginal benefit*, then the same curve illustrates the *marginal benefit* of each gallon of gas.

**Your demand curve reveals your marginal benefits.** This yields an important insight for managers. It’s likely that you’ll want to know how much your customers benefit from your products. You could commission an expensive survey to find out. But there’s a cheaper way to do this: Your customers’ demand curves are also their marginal benefit curves, and so you can also learn about their marginal benefits by just observing their buying patterns. For instance, if Darren buys two gallons of gas when the price is $4 per gallon, then you can infer that the marginal benefit to Darren of that second gallon is $4.
Let’s summarize. Demand is all about marginal benefits. Indeed, your demand curve is your marginal benefit curve. Consequently, understanding demand is really about understanding marginal benefits.

**Diminishing marginal benefit explains why your demand curve is downward-sloping.** Economists have studied the marginal benefits of many different items, and discovered a general tendency toward diminishing marginal benefit. That is, the marginal benefit of each additional item is smaller than the marginal benefit of the previous item.

Let’s get delicious about this, and focus on ice cream. (Yum!) One or two scoops are scrumptious. A third scoop still tastes pretty good. By the fourth, you’re getting tired of all that sugar. And a fifth scoop will make you feel sick. (Believe me.) As you eat more ice cream, the marginal benefit of another scoop keeps getting smaller.

And a similar pattern follows for other goods. Take Darren’s demand for gas. He planned to use his first gallon of gas for his high marginal benefit activities (shopping), his second gallon would go to a slightly lower benefit activity (driving to work), and each successive gallon is used for a lower priority trip. As a result, each extra gallon yields a successively lower marginal benefit.

If you think about most of the things you buy in a year, I bet you’ll agree that you get diminishing marginal benefits from not just extra scoops of ice cream, or gallons of gas, but also pairs of jeans, concert tickets, pairs of headphones, and just about everything you buy. (If you want to point out that there are exceptions to this rule—for instance, your second shoe yields a larger marginal benefit than your first shoe—I’ll agree, as long as you agree that these exceptions are rare.)

Diminishing marginal benefits is an important phenomenon because it means that each extra purchase yields a lower marginal benefit, and hence your marginal benefit curve is downward-sloping. And since your marginal benefit curve is also your demand curve, this means that your demand curve is downward-sloping. That is, if extra scoops of ice cream, gallons of gas, or pairs of jeans yield a lower marginal benefit, you’ll only buy them if the price is lower. And that’s why your individual demand curve is downward-sloping.

**Recap: Individual demand reflects marginal benefits.** We’ve covered a lot of ground, so let’s take a breather and recap. So far, we’ve been focused on individual demand—the buying decisions that you as an individual will make. We began with the individual demand curve, which summarizes the quantity you demand at each price.

We then turned to the more difficult question: What are the best buying choices you can make? This led us to the **Rational Rule for Buyers**, which says to keep buying more of an item as long as the marginal benefit of one more is greater than (or equal to) its price. This process helps us see why people, like Darren, are willing to pay less for each additional item, like each additional gallon of gas, since the marginal benefit from each additional item is declining. As a result, we saw that individual demand curves are downward-sloping.

**See the Connections**

Follow the **Rational Rule for Buyers**

Price = Marginal benefit

(The Rational Rule, applied to buyers)

Your demand curve is your marginal benefit curve

Your demand curve is downward-sloping because of diminishing marginal benefits

**How Realistic Is This Theory of Demand?**

By this point you might be thinking: *Is this realistic? Does anyone really act this way?* And maybe it is a bit unrealistic to say that when you’re shopping, you’re actually thinking deeply about your marginal benefits. Good point. But these are still important ideas, for two reasons.
Thinking through the core principles provides useful advice and helpful forecasts. First, the Rational Rule for Buyers provides useful advice to you. As you learn to apply this rule to your everyday buying decisions, you’ll find yourself making better decisions.

Second, these rules will often provide a useful way for you to understand, and even predict, how other people will act. This is the “someone else’s shoes” technique discussed in Chapter 1. If you want to know how someone else will act, put yourself in their shoes and ask: What would you do if you were in their shoes? Presumably, you would try to make the best decisions possible, so you would try to follow the Rational Rule for Buyers. In fact, store owners have long known that diminishing marginal benefits is an important factor in determining sales—that is one reason you often see specials like: “Buy one, get the second half-off.”

As buyers experiment, they may come to act as if they follow the core principles. Still, it’s likely that people don’t act exactly as this theory suggests. But people generally do (and should!) buy more of those goods with higher marginal benefits and lower prices. And even though most people aren’t thinking through the exact calculations that we’ve outlined, they may follow a different process to the same outcome.

People move closer and closer to making their very best decisions as they gain more experience. Perhaps you got overexcited when you visited Sam’s Club for the first time and bought a 64-ounce jar of mayonnaise, only to see it spoil. But next time you hit the store you’ll make savvier choices. Through the process of experimenting—buying different goods and different amounts of goods—people find out what works best for them. As a result, people will often end up making choices as if they made the calculations that our theories predict they should make. This is going to be a really useful insight, as we now turn to analyzing how buyers—as a group—combine to make up market demand.

2.3 Market Demand: What the Market Wants

Learning Objective Add up individual demand to discover market demand.

We’ve focused so far on the buying decisions of individuals. Now it’s time to pan back and take a broad view, analyzing market demand—the purchasing decisions of all buyers taken as a whole. As a manager, you’ll find this broad view useful because it’s total market demand that tells you how much business is up for grabs. And of course, it’s not just businesses that need to know market demand: Nonprofits seeking donations, universities seeking applicants, and YouTube wanna-be stars seeking subscribers all benefit from being able to estimate market demand for what they’re selling. In each case, you’re interested in assessing the total quantity demanded—across all people—at each price. The market demand curve provides exactly this information: It plots the total quantity of a good demanded by the market (that is, across all potential buyers), at each price.

From Individual Demand to Market Demand

Let’s explore how real-world managers estimate the market demand curve for their products. As we’ll see, individual demand curves are the building blocks of market demand.

Market demand is the sum of the quantity demanded by each person. For each price, the market demand curve illustrates the total quantity demanded by the market. This means you’ll need to figure out the total quantity demanded when the price is $1, then $2, then $3, and so on. At each specific price, the total quantity of gas demanded is simply the sum of the quantity that each potential consumer will demand at that price.
Managers use survey data to figure out their market demand curves. One way to get this information is to survey your potential customers. In fact, there’s a simple four-step process that many managers follow to estimate the market demand curve for their products.

Step one: Survey your customers, asking each person the quantity they will buy at each price. When Darren was surveyed about his gas-purchasing behavior (in Figure 1), it was as part of a broader survey that was sent to a representative sample of 300 potential customers, asking each of them about the quantity of gas they plan to buy at each price. Their responses are shown in Panel A, on the left of Figure 6, with each person’s response shown in a different column. I’ve only shown you the responses of the first two people to respond—Darren and Brooklyn—but in the full spreadsheet, there are another 298 columns.

Figure 6 From Individual Demand to Total Market Demand

<table>
<thead>
<tr>
<th>Panel A: Individual Demand</th>
<th>Panel B: Total Market Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Step 1: Run a survey</strong></td>
<td><strong>Step 2</strong></td>
</tr>
<tr>
<td>Price ($ per gallon)</td>
<td><strong>Step 3</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Projection</strong></td>
</tr>
<tr>
<td>$1</td>
<td>Total demand across 300</td>
</tr>
<tr>
<td></td>
<td>people</td>
</tr>
<tr>
<td></td>
<td>Scale up to</td>
</tr>
<tr>
<td></td>
<td>represent 300 million</td>
</tr>
<tr>
<td></td>
<td>people</td>
</tr>
<tr>
<td>$2</td>
<td>Total market demand</td>
</tr>
<tr>
<td>$3</td>
<td>= 2,800 gallons × one million</td>
</tr>
<tr>
<td>$4</td>
<td>= 2.4 billion gallons</td>
</tr>
<tr>
<td>$5</td>
<td>= 1.6 billion gallons</td>
</tr>
<tr>
<td></td>
<td>= 1.2 billion gallons</td>
</tr>
</tbody>
</table>

Step two: For each price, add up the total quantity demanded by your customers. For each price, you should add up the quantity demanded by each person in the survey. The top row shows that when the price is $1 per gallon, Darren demands 7 gallons, Brooklyn demands 4 gallons, and you also need to add up the quantities demanded by each of the other 298 potential customers who were surveyed. This is calculated on the full spreadsheet, and it adds up to 2,800 gallons.

I repeated these calculations for each price from $1 to $5—one for each row—and the results are shown in the first column of Panel B, presented on the right of Figure 5. This is where you can see that at a price of $1 per gallon, the survey respondents would collectively buy 2,800 gallons of gas, and at $2 per gallon, this would fall to 2,400 gallons.

Step three: Scale up the quantities demanded by the survey respondents so that they represent the whole market. If the total market for gas consisted of just the 300 people we surveyed, then these numbers would represent the market demand. But in reality, there are around 300 million potential customers in the United States. The idea of market research is that our survey of 300 people is intended to be representative of those 300 million potential customers. This means that the total quantity demanded by the entire population will be one million times larger than the total quantity demanded by the 300 survey respondents. Thus, you need to scale up the quantities so that they represent the whole market. (This works well if the 300 people in your survey are representative of the broader population of 300 million Americans.)

In practice, this means that when the price of gas is $1 per gallon, and the 300 people surveyed collectively say that they would buy a total of 2,800 gallons of gas, you can project that the entire market of 300 million consumers would buy 2,800 million gallons of gas (that is, 2.8 billion gallons) per week. Consequently, the projected market demand at each price, shown in the final column of Figure 6, is one million times the total quantity demanded by our survey respondents.
The market demand curve plots the total quantity demanded by the market at each price. Okay, now that we’ve figured out the total quantity demanded by the market, at each price, all that remains is to draw the market demand curve.

**Step four:** Plot the total quantity demanded by the market at each price, yielding the market demand curve. The graphing conventions for market demand curves are the same as when graphing individual demand curves: Price is on the vertical axis, and quantity on the horizontal axis. For each price listed in the first column in Figure 6, you plot the corresponding total quantity demanded by the market, which is listed in the last column. Each row in the table is represented by a purple dot in Figure 7. We then connect these dots to arrive at our estimate of the market demand curve for gasoline in the United States. In fact, this figure is quite similar to the statistical estimates of demand curves that major gasoline executives actually rely on.

### Figure 7 | Estimating Market Demand

To calculate the market demand curve for the entire United States:

1. **Step 1:** Survey a representative sample of the market, asking each person the quantity they will buy at each price. (Shown in Figure 6).
2. **Step 2:** For each price, add up the total quantity demanded by the people surveyed.
3. **Step 3:** To make projections about the total quantity demanded by the entire market, scale up the quantities demanded by the survey respondents so that they represent the whole market. We have 300 survey respondents representing 300 million consumers, and so we project that the quantity demanded by the entire population will be one million times larger.
4. **Step 4:** Plot the total quantity demanded by the entire market at each price to get the market demand curve.

<table>
<thead>
<tr>
<th>Price ($ per gallon)</th>
<th>Total quantity demanded by 300 survey respondents (gallons per week)</th>
<th>Projection: Total market demand by 300 million consumers (gallons per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5</td>
<td>1,200</td>
<td>$5 × one million = 1.2 billion</td>
</tr>
<tr>
<td>$4</td>
<td>1,600</td>
<td>$4 × one million = 1.6 billion</td>
</tr>
<tr>
<td>$3</td>
<td>2,000</td>
<td>$3 × one million = 2.0 billion</td>
</tr>
<tr>
<td>$2</td>
<td>2,400</td>
<td>$2 × one million = 2.4 billion</td>
</tr>
<tr>
<td>$1</td>
<td>2,800</td>
<td>$1 × one million = 2.8 billion</td>
</tr>
</tbody>
</table>

**At a price of $5 per gallon:**

- Total quantity demanded = 1.2 billion gallons per week

**Market demand curve**

We’ve seen (in Figure 7) that the market demand curve in the gas industry is downward-sloping. Executives in virtually every industry have estimated the market demand curves for their products, and time and again, they have found that the total quantity demanded by the market tends to be higher when the price is lower. That is, market demand curves obey the law of demand: The total quantity demanded is higher when the price is lower.

Your understanding of this market-wide phenomenon follows directly from your understanding of individual demand curves. The market demand curve is built by adding up individual demand at each price, and so it inherits many of the characteristics of those individual demand curves. In particular, since lower gas prices induce most people to increase the quantity of gas they demand, lower prices lead the total quantity demanded by the market—that is, the sum of the quantities demanded across all individuals—to increase.
Prices change demand for both new and old customers. Gas station owners report that there are two reasons why lower prices yield an increase in market demand. First, when prices are low, their current customers buy more gas. Second, gas station owners report that lower prices help them get new customers, as the lower cost of driving encourages some people to buy a car. These two aspects of demand—changing demand among existing customers and extra demand from new customers—are important parts of market demand for most goods.

This is why you have to consider the demand of all potential customers when estimating demand, rather than just looking at current customers, since changes in price can change who your customers are.

Movements Along the Demand Curve

Managers find the market demand curve to be useful, because it shows them how the market price shapes the total quantity demanded across all buyers. To forecast the total quantity demanded, simply locate the price on the vertical axis, look straight across until you hit the demand curve, and then look straight down to the quantity axis for your answer. Figure 7 shows that at a price of $4, the total quantity of gas demanded by the market is 1.6 billion gallons per week. To figure out what will happen if the price falls to $2, find the new price on the vertical axis, this time looking across from a price of $2 until you hit a new point on the demand curve. Then look down to the quantity axis, which says that the new quantity of gas demanded is 2.4 billion gallons of gas. Just as the law of demand suggests, a fall in price led to a rise in the quantity demanded, from 1.6 billion to 2.4 billion gallons per week.

Did you notice that the price change led the market to move from one point on the demand curve, to another point along the same curve? In fact, whenever you’re assessing the consequences of a price change—when nothing else is changing (recall we are holding other things constant)—you’ll always compare different points along the same demand curve. That is, price changes cause movement along a fixed demand curve. After all, the demand curve summarizes the entire relationship between price and the quantity demanded. We will use very specific language to make what we are talking about clear: A change in price causes a movement along the demand curve, yielding a change in the quantity demanded. Yes, I know this sounds unwieldy, but it will help keep things straight. Trust me.

2.4 What Shifts Demand Curves?

Learning Objective Understand what factors shift demand curves.

So far, we’ve analyzed how the quantity demanded varies with the price of a good, holding other things constant. We’ve used three of the four core principles—the opportunity cost principle, the cost-benefit principle, and the marginal principle—to uncover some powerful ideas about demand, such as the Rational Rule for Buyers.

But what happens when factors other than the price change? For that, we’re going to need to bring in the fourth principle.

The Interdependence Principle and Shifting Demand Curves

The interdependence principle reminds you that a buyer’s best choice also depends on many other factors beyond price, and when these other factors change, so might their demand decisions. For instance, the quantity of gas you’ll buy (at any given price) might change when you get a pay raise, the amount of traffic increases, or the price of alternatives...
**shift in the demand curve** A movement of the demand curve itself.

**increase in demand** A shift of the demand curve to the right.

**decrease in demand** A shift of the demand curve to the left.

such as catching the bus falls. When you’re no longer holding these other things constant, the demand curve may shift. When the demand curve itself moves, we refer to it as a **shift in the demand curve**. Because your demand curve is also your marginal benefit curve, any factor that changes your marginal benefits will shift your demand curve.

As Figure 8 illustrates, a rightward shift is an **increase in demand**, because at each and every price, the quantity demanded is higher. A leftward shift is a **decrease in demand**, because the quantity demanded is lower at each and every price.

**Figure 8** Shifts in the Demand Curve

![Shifts in the Demand Curve](image)

**Six Factors Shifting the Demand Curve**

The **interdependence principle** reminds you that buying choices depend on many other factors, and when those other factors shift, so will people’s buying plans, thereby shifting the demand curve. But what are these other factors? They are:

1. Income
2. Preferences
3. Prices of related goods
4. Expectations
5. Congestion and network effects
6. The type and number of buyers

Changes in any of the first five of these factors shift individual demand curves, and because the market demand curve is built up from individual demand curves, they shift the market demand curve. The final factor—the type and number of buyers—only shifts market demand curves.

Let’s now evaluate how each of these six factors can lead to a shift in demand.

**Demand shifter one: Income.** All of your individual choices are interdependent, since you only have a limited amount of income to spend. Money you spend on gas is
money that you can’t spend on clothes. But when your income is higher, you can afford to buy a larger quantity of both. Thus, at each and every price level, you can buy a larger quantity of gas (and clothes), causing your demand curve to shift to the right—which we call an increase in demand. If your income were to fall, then you would probably choose to buy less gas at each and every price, shifting your demand curve to the left—and that’s called a decrease in demand.

If your demand for a good increases when your income is higher, we call it a normal good. Most goods are normal goods. But there are also exceptions, called inferior goods, where demand decreases when income rises. “Inferior” goods aren’t bad; they’re simply those goods you buy less of when your income is higher. For instance, when you’re in college and struggling with a limited income, you might take the bus a lot, but when you get your first full-time job, you might buy your own car. Since the higher income in your first job reduced your demand for bus rides, we conclude that bus rides are an inferior good. Typically, inferior goods are those where you’re “making do,” and when your income rises, you’ll switch to a higher-quality but more expensive alternative, instead.

Can you think of other examples of normal and inferior goods? One simple trick is to think about how your buying patterns will change when you start earning a lot more money. Try it; it’s fun! Personally, I’ve noticed that as my income has risen, I eat more restaurant meals but less fast food; I take more vacations using airplanes and fewer vacations using my car; and leather jackets have replaced hoodies in my wardrobe. Hence, for me restaurant meals, air travel, and leather jackets are normal goods, but fast food, driving vacations, and hoodies are inferior.

**Which retailers do well in a recession?**

The distinction between normal and inferior goods can be pretty useful in practice. For instance, economists studying retail stores have found that rising income led to more purchases at Target and fewer at Walmart. Somewhat cheekily (but entirely accurately) they concluded that “shopping at Target is perfectly normal, but shopping at Walmart is not.”

The fact that Walmart sells inferior goods (in the economist’s sense) is not necessarily bad news for Walmart: During the 2008–2009 recession, average income fell. This boosted demand for goods from Walmart because Walmart sells a lot of inferior goods. Meanwhile, Target, which sells mainly normal goods, experienced a decrease in demand. Figure 9 shows that the recession, which increased the demand for Walmart’s goods, led its stock price to rise, while the decrease in demand for Target’s goods led the value of its stock to fall by about 40%.

**Normal and Inferior Goods**

- A. In 2007, Target’s stock price was much higher than Walmart’s.
- B. The U.S. economy entered a recession in December 2007, and average incomes fell.
- C. Walmart sells inferior goods, so a decline in average income raised its sales, and so its stock price rose.
- D. Target sells normal goods, so falling average income led to a decrease in demand, and so its stock price fell.

![Image of a red hoodie representing an inferior good that provides superior comfort.](image-url)
Demand shifter two: Your preferences. Changes in your preferences can shift your demand curve. What if Darren had a baby? His entire consumption bundle might change as he considered his new needs. Would he want to drive to work more so that he could rush home if the baby got sick? Or would he take the bus more so that he could enjoy a few minutes of rest? In fact, there are large numbers of marketers trying to figure out how to take advantage of the changes in people’s demand due to life events like getting married or having a baby.

Companies spend billions of dollars each year attempting to influence our preferences through advertising. If Pepsi somehow convinces you that it’s better than Coke, this will increase your demand for Pepsi and decrease your demand for Coke. Social pressure can also shift your demand curve. For instance, rising environmental awareness has decreased demand for gas-guzzlers (farewell, Hummer), shifting the demand curve to the left. Preferences are also affected by fashion cycles, such as the fads that increased demand for Ugg boots and Crocs in the early 2000s, thereby shifting demand curves to the right. Of course when people came to their senses and these fads ended, demand fell, and the curve shifted to the left!

Demand shifter three: Prices of related goods. Your choices are also interdependent across different goods. For instance, your demand for hot dogs is closely related to your demand for hot dog buns. If the price of hot dog buns rises, you’ll buy fewer hot dog buns and fewer hot dogs. Consequently, the higher cost of hot dog buns causes a decrease in your demand for hot dogs, shifting your demand curve for hot dogs to the left. When the higher price of one good decreases your demand for another good, we call them complementary goods. Typically, complementary goods “go well together.” That is, a hot dog bun is a complement to a hot dog, just like a new case is a complement to your new smartphone. Similarly, cars are a complement to gas because you need both gas and a car to drive, and so cheaper cars lead more people to drive, and this increases the demand for gas, shifting the demand curve to the right.

In contrast, substitute goods replace each other. Walking, cycling, ride-sharing, or catching the bus are all substitutes for driving. If the price of bus tickets doubles, you might start driving to work instead of catching the bus, increasing your demand for gas. Your demand for any good will increase if the price of its substitutes rises. (And your demand will decrease if the price of substitutes falls.)

How you can have an influence—indirectly

If you think about substitutes and complements, you sometimes can influence things that are otherwise out of your direct control. For instance, your parents might want you to spend more time studying, but feel powerless to make you do this. However, crafty parents encourage studying by encouraging complements to studying and discouraging substitutes. And so parents often help their kids pay for textbooks, laptops, and desk chairs (complements to studying), but not parties or video games (which are substitutes for study).

Likewise, employers want their workers to focus at work, so they strategically provide free coffee, which is a complement to focused work, and they often block access to Facebook, which is a substitute.

Or think about gifts between significant others on Valentine’s Day. Fancy dinners are a common gift, but a membership to an online dating site is less common. Think you can explain this in terms of complements and substitutes? ■

Demand shifter four: Expectations. As a consumer, you get to choose not only what to buy, but also when to buy it. Your choices are linked through time. This simple insight can help you save money, and along the way, shift your demand curves. Think about your reaction when you drive past a gas station charging exorbitantly high prices. If you believe that this high price is only
temporary, you might put off filling your tank for a few days, decreasing today’s demand for gas. Conversely, if you believe gas prices are going to rise further, you should probably fill up right away, increasing today’s demand. That is, your expectations about future gas prices can shift your demand curve to the left or to the right.

This insight is really an example of the logic of substitutes: Gas purchased tomorrow is a substitute for gas purchased today, and a higher price for this substitute increases demand for gas purchased today, while a lower price decreases it.

**EVERYDAY Economics**

**How thinking about the future saves you money**

Uber’s surge-pricing feature generates a lot of controversy. It automatically boosts the price of a ride so that it’ll be two or three times higher during peak hours, as an incentive to get more drivers on the road. Some riders work around this and save some money by planning their day a bit more carefully. Instead of calling for a ride during a peak period—say, straight after a concert gets out—you could hang out with your friends for a bit and get a ride home an hour later, when the rush is over and the price has returned to normal.

Notice what’s happening here: Your expectations about a lower price later tonight leads to a decline in your demand for Ubers right now. That’s because a ride home later tonight is a substitute for a ride home right now, and a lower price of the substitute decreases your demand. It’s an example of a more general idea: You can save a few bucks by making sure you think about future prices before you buy.

**Demand shifter five: Congestion and network effects.** The usefulness of some products—and hence your demand for them—is also shaped by the choices that other people make. Think about social-networking websites. Many American college students use Facebook, Instagram, or Snapchat, but in China, WeChat is the most popular social media platform. This is an example of a network effect—where a product or service becomes more useful to you as more people use it. If a product is more useful, it yields greater marginal benefits, increasing your demand. Network effects have important business implications: Signing up a few early adopters makes your product more valuable to other customers, increasing the demand for your product, leading more customers to adopt the product, and making it even more valuable again. In these markets, winning the early rounds of competition is critical to your business’s long-run success.

By contrast, some products become less valuable when more people use them, and this reverse case is called a congestion effect. For example, your demand for driving on a particular road declines if many others are also using that road, since more cars create congestion and traffic. Likewise, your demand for a particular formal dress might decrease if someone else is wearing it.

**EVERYDAY Economics**

**What determines the language we speak, the computer programs we use, and the cars we drive?**

Network and congestion effects are everywhere. For instance, while you have probably complained about Microsoft Word, many college students still use it, mainly to ensure that they can share files with others. Or think about the demand for learning languages. Most American schools teach English rather than Portuguese. This isn’t because English is the more beautiful language; it is simply the most useful language, given that most people in the United States speak English. In Brazil, the reverse occurs.
The types of cars that people buy are also interdependent. City-dwellers sometimes buy SUVs, but not because they plan to go off-road driving. Instead, they worry that because there are so many other large cars on the road, they now need to drive a large car to stand a reasonable chance of surviving an accident. Thus, the choices made by other people in the United States increase your demand for Facebook, Microsoft Word, large cars, and learning English, but decrease your demand for WeChat, Open Office, learning Portuguese, and compact cars.

**Demand shifter six: Type and number of buyers.** So far, we have analyzed the five factors that shift individual demand curves. Because market demand is the sum of individual demand, each of the factors that shift individual demand also shift market demand. In addition, if the composition of the market changes through demographic composition or type of buyers in the market, then market demand will also change. For instance, the baby boom that followed World War II initially led to an increase in the demand for baby clothes. As this cohort progressed through their lives, there was an increase in the demand for schoolbooks, then for college education, and subsequently for houses, cars, and child care. Over the next decade, these aging Baby Boomers will cause demand for health care and nursing homes to rise. But there’s also another sizable cohort—the “Millennials” who are in their 20s and 30s and just starting their careers and their preferences and life stages will shape market demand in the United States.

Additionally, market demand is shaped by the number of buyers. If the number of potential buyers rises then there are more individual demand curves to add up when calculating market demand. Thus, an increase in the number of potential buyers shifts the market demand curve to the right. Over short periods of time, increases in population are relatively unimportant, as the U.S. population grows by only about 1% each year. But over longer periods, this can add up. The U.S. population has more than doubled since 1950, and this alone has doubled the quantity demanded in most markets. The U.S. population is expected to increase by nearly a third between 2016 and 2060. The dependence of demand curves on market size partly explains why many business owners are in favor of increased immigration: More people means increased demand for their firm’s products.

Another critical factor increasing market size is international trade and the opening of new foreign markets. For instance, the opening of the Chinese economy means that there are now more than one billion Chinese consumers for exporters to serve, which potentially represents an enormous shift in demand.

**Recap: When things other than price change, your demand curve may shift.** To recap, changes in market conditions affect your demand decisions. These changes reflect the *interdependence principle* at work: Your best choices depend on many factors, and when these factors change, so will your best buying decisions. The five factors that shift individual demand curves—your income, your preferences, the prices of other goods, your expectations, and network and congestion effects—are all factors that can change your marginal benefit. Because your marginal benefit curve is your demand curve, shifts in these factors can shift your demand curve. Keep these factors in mind as we now turn to reviewing the distinction between movements along the demand curve versus shifts of the demand curve.
2.5 Shifts versus Movements Along Demand Curves

**Learning Objective** Distinguish between movements along a demand curve and shifts in demand curves.

It can be tricky to figure out when to look for movements along the demand curve versus shifts in that curve. But it’s essential if you are going to correctly forecast the consequences of changing economic conditions. Here’s a simple rule of thumb: *If the only thing that’s changing is the price, then you’re thinking about a movement along the demand curve. But when other market conditions change, you need to think about shifts in the demand curve.*

**Movements Along the Demand Curve**

To see why changes in price are different from changes in other factors, let’s revisit Darren after the price of gas changes. This price change won’t lead Darren to change his answers to the survey in Figure 1. That survey already described his plans to change the quantity of gas he uses if the price changes. Likewise, his individual demand curve—which simply plotted his answers to that survey—will be unchanged. And if individual demand curves don’t shift following a price change, then neither will the market demand curve. The logic is simply this: A demand curve is a plan for how to respond to different prices, and if buyers’ plans haven’t shifted, then the market demand curve hasn’t shifted.

Indeed, managers find the demand curve to be useful precisely because they can use it to assess the consequences of a price change. For instance, Panel A in Figure 10 shows

**Figure 10** Movement Along the Demand Curve versus Shifts in the Demand Curve

**Panel A—When the Price Changes:**

- **Movement Along the Demand Curve**
  - A change in price, from $4 to $2 per gallon, causes a movement along the demand curve.
  - Leading to a change in the quantity demanded, raising the quantity demanded from 1.6 to 2.4 billion gallons per week.

**Panel B—When Other Factors Change:**

- **Shifts in the Demand Curve**
  - A decrease in demand shifts the demand curve to the left, decreasing the quantity at each and every price.
  - An increase in demand shifts the demand curve to the right, increasing the quantity at each and every price.
that when the price of gas is $4, the total quantity demanded will be 1.6 billion gallons per week, and when the price of gas falls to $2, the quantity demanded will rise to 2.4 billion gallons. As you can see, this price change leads to a movement along the demand curve. And this analysis shows that a lower price leads to a decline in the quantity demanded.

**Shifts in Demand**

But if other factors change—factors other than the price—then Darren might revise his buying plans. For instance, changes in things like Darren’s income, his preference for driving, the price of alternatives such as Uber, his expectations about future gas prices, or the number of other drivers creating traffic could all lead him to decide to change how much gas he’ll buy even if the price doesn’t change. When these factors change the quantity that Darren demands at a given price, they lead to a shift in his demand curve.

To figure out whether a change in market conditions will shift the demand curve, ask yourself: Has something changed that would cause you to give different answers to a survey about the quantity you’ll demand at each price? If so, then this will shift your demand curve. The right-hand panel of Figure 10 illustrates an increase in demand, which causes the demand curve to shift to the right, and also a decrease in demand, which causes it to shift to the left.

Of course, not every change in market conditions will cause the demand curve to shift. To figure out which ones will matter, apply the interdependence principle. If something is unconnected to your buying decisions, then it won’t change your buying plans—which is the quantity you demand at a given price—and so it won’t shift your individual demand curve. Put simply, if your answers to the survey about your demand plans haven’t changed, then your demand hasn’t shifted. But if they do change, then it is connected, and this dependence may change things. To make it easy to think about what could shift the demand curve, remember the six demand shifters: Income, Preferences, Prices of related goods, Expectations, Congestion and network effects, and the Type and number of buyers. Finally, let me give you a hint that’ll help you memorize these six factors: Rearrange the first letter of each of them, and it’ll spell out PEPTIC, which should make this lesson a bit easier to digest.

**Tying It Together**

We have studied demand from two perspectives. We started with the individual demand decisions that you make, and then considered total market demand for a product, across all buyers. These two perspectives are each important, although for different reasons. Managers want to know how much people will buy at each price. This is exactly what the market demand curve reveals. Consumers want to know how to make the best choices given their limited income, and this is what our study of individual demand addresses. Because these individual demand curves are the building blocks of the market demand curve, these questions are fundamentally intertwined.

**Individual Demand**

The most common question you’ll face as a buyer is: “How much should I buy?” The **Rational Rule for Buyers** distills the core economic principles down to one simple piece of advice: Buy more of an item if the marginal benefit of one more is greater than (or equal to) the price. Follow this advice consistently, and you’ll keep buying until your marginal benefit equals the price. In turn, your individual demand curve is your marginal benefit curve. And the tendency toward diminishing marginal benefits means that your marginal benefit curve—and hence your demand curve—is downward-sloping. You can see why economists say that understanding demand is all about understanding marginal benefits.
There’s also a more general idea at work here. In Chapter 1, we introduced the Rational Rule, which simply says: If something is worth doing, keep doing it until the marginal benefit equals the marginal cost. The Rational Rule for Buyers is just the application of this rule to your buying decisions, where the marginal cost of buying something is the price. Throughout your study of economics, we’ll discover that whenever you are trying to figure out how to make optimal choices—whether in your role as a buyer, seller, worker, boss, entrepreneur, investor, or anything else—the relevant rule will turn out to be an application of the Rational Rule. That’s the advantage of our principles-based approach: It highlights the similarities of good decision making across very different contexts. Stay tuned; we’ll see more of this in future chapters.

**Market Demand**

Managers find the market demand curve to be useful because it allows them to forecast how changing economic conditions will affect the quantity they will sell. When the price changes, this causes a movement along the market demand curve, and hence changes in the total quantity demanded. Because the demand curve is downward-sloping, a lower price will raise the total quantity demanded, and a higher price will reduce the total quantity demanded.

But there are also several factors that shift your demand curve. An increase in demand is a rightward shift of the demand curve at each and every price, while a decrease in demand is a leftward shift.

The interdependence principle leads us to six key factors that shift demand curves. These include changes in:

- **Income**: Higher income increases the demand for normal goods, but decreases the demand for inferior goods.
- **Preferences**: Demand for particular goods can increase or decrease as your desire for those goods change. Preferences can be changed by trends, advertising, changing lifestyles, and countless other factors. Advertisers will try to increase your demand for their products. Social pressure can also shift demand curves.
- **Prices of related goods**: Demand will increase if the price of substitute goods rises, or the price of complementary goods falls. Demand will decrease if the price of substitute goods falls, or the price of complementary goods rises.
- **Expectations**: If prices are expected to rise, today’s demand will increase; if prices are expected to fall, today’s demand will decrease.
- **Congestion and network effects**: If a good with network effects becomes more popular, demand will increase. If a good with congestion effects becomes more popular, demand will decrease.
- **Type and number of buyers**: Demand will increase due to population growth, immigration, or access to new international markets. Demographic change can also shift demand. This factor only affects market demand curves, not individual demand.

This chapter focused on consumers and how marginal benefits shape demand. In the next chapter, we’ll turn our focus to businesses, and how the marginal costs of production affect supply.
Chapter at a Glance

An Individual Demand Curve

- Shows the quantity demanded at each price.

- The first few items yield a high marginal benefit, and so you would buy even at a high price.

- But at a higher quantity, each extra item yields a low marginal benefit, and so you would only buy at a low price.

- The demand curve is your marginal benefit curve.

- Your demand curve is downward sloping because of diminishing marginal benefits.

The Rational Rule for Buyers

- Buy more of an item if its marginal benefit is greater than (or equal to) the price.

- Your demand curve is your marginal benefit curve.

Market Demand Curves

1. Survey a representative sample of the market, asking people the quantity they will buy at each price.
2. For each price, add up the total quantity demanded by the people surveyed.
3. Scale up the quantities demanded by the people surveyed, so that they represent the entire market.
4. Plot the total quantity demanded by the market, against price.

When the Price Changes:

Movement Along the Demand Curve

- A price cut causes a rise in quantity demanded.
- A price rise causes a decline in quantity demanded.

When Other Factors Change:

Shifts in the Demand Curve

- An increase in demand may reflect:
  1. Income (if normal) or income (if inferior)
  2. Preferences shift to this good
  3. Price of complements or price of substitutes
  4. Expected future price
  5. Congestion or network effects
  6. Types of buyers changes or in number of buyers

The acronym PEPTIC can help you remember these six shifters.
Key Concepts

change in the quantity demanded, 47  
complementary goods, 50  
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"holding other things constant," 37  
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movement along the demand curve, 47  
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normal good, 49  
The Rational Rule for Buyers, 41  
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substitute goods, 50

Discussion and Review Questions

Learning Objective 2.1 Discover the shape of your individual demand curve.

1. You just took an Uber from home to campus for the first time and were willing to pay $13 for the trip. It was so much easier than driving yourself that you are willing to pay $21 for the same trip tomorrow. Have you violated the law of demand? Why or why not?

Learning Objective 2.2 Apply the core principles of economics to make good demand decisions.

2. Do you use water for things that are beyond what is necessary to sustain life? What if the price of water in your home tripled? How would you respond? Are there activities that you would change or stop doing? Briefly explain. Does your demand for water obey the law of demand?

Learning Objective 2.3 Add up individual demand to discover market demand.

3. A team of analysts at Amazon is researching the viability of producing a smart watch. How might they estimate potential demand for their smart watch? What kinds of factors would the analysts want to keep in mind to create the most accurate estimates?

Learning Objective 2.4 Understand what factors shift demand curves.

4. For each of the following goods or services, indicate whether you think they are normal or inferior goods for most consumers. Briefly explain your reasoning.
   a. The newest iPhone
   b. 10-year-old used cars
   c. Dental services

5. When Sony released the PlayStation 4, it was reported that it was taking a loss of $60 on every console. However, Sony expected to make this up with sales of online play subscriptions (PS+) and increased royalties from video games. Use the concepts described in this chapter to help explain this strategy.

Learning Objective 2.5 Distinguish between movements along a demand curve and shifts in demand curves.

6. Find the flaw in reasoning in the following statement: "An increase in the cost of oil will cause the price of a plane ticket to increase. This increase in price will cause a decrease in demand for airline travel and a leftward shift in the demand curve."

Study Problems

Learning Objective 2.1 Discover the shape of your individual demand curve.

1. GrubHub, a food delivery service, has recently expanded to your area. The accompanying table contains the number of deliveries per month that you demand at various delivery prices. Use this information to plot your individual demand curve. Describe the slope of your individual demand curve.

<table>
<thead>
<tr>
<th>Price</th>
<th>Deliveries</th>
</tr>
</thead>
<tbody>
<tr>
<td>$10</td>
<td>2</td>
</tr>
<tr>
<td>$7</td>
<td>4</td>
</tr>
<tr>
<td>$5</td>
<td>6</td>
</tr>
<tr>
<td>$4</td>
<td>8</td>
</tr>
<tr>
<td>$2</td>
<td>10</td>
</tr>
<tr>
<td>$1</td>
<td>12</td>
</tr>
</tbody>
</table>

Learning Objective 2.2 Apply the core principles of economics to make good demand decisions.

2. Consider Ron’s demand for after school care for his children. The marginal benefit Ron receives for every hour of child care is provided in the accompanying table. Using the Rational Rule for Buyers, if an hour of child care costs $24, how many hours would Ron purchase each day? What about for $18 per hour? Draw Ron’s marginal benefit curve and his demand curve.
3. Kathy is attending school in Philadelphia. Each year she returns home to visit her family and friends in New York City. Kathy’s annual demand curve for train tickets from Philadelphia to New York is provided in the accompanying graph. How much benefit does Kathy receive from each trip home? If the price of a round-trip ticket is $230, how many trips should Kathy take?

<table>
<thead>
<tr>
<th>Hours of after school child care</th>
<th>Marginal benefit (per hour)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$32</td>
</tr>
<tr>
<td>2</td>
<td>$30</td>
</tr>
<tr>
<td>3</td>
<td>$20</td>
</tr>
<tr>
<td>4</td>
<td>$14</td>
</tr>
</tbody>
</table>

4. The marginal benefit received for each gallon of gasoline consumed per week for Ang, Tony, and Gianna is provided in the accompanying table. On the same graph, plot each of their individual demand curves. Assuming these are the only people in the market, graph the market demand curve for gasoline.

<table>
<thead>
<tr>
<th>Gallons consumed per week</th>
<th>Ang’s marginal benefit</th>
<th>Tony’s marginal benefit</th>
<th>Gianna’s marginal benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>$7</td>
<td>$4</td>
<td>$8</td>
</tr>
<tr>
<td>2</td>
<td>$5</td>
<td>$3</td>
<td>$6</td>
</tr>
<tr>
<td>3</td>
<td>$3</td>
<td>$2</td>
<td>$4</td>
</tr>
<tr>
<td>4</td>
<td>$1</td>
<td>$1</td>
<td>$2</td>
</tr>
</tbody>
</table>

Learning Objective 2.3 Add up individual demand to discover market demand.

5. You own the only pharmacy in the small town of Jackson City, which has 40,000 residents. You would like to get a sense of what the local demand is for seasonal allergy medicine so you can determine how many packages to keep in stock and what price to charge. You conduct a survey of four residents of Jackson City, asking them about the quantity of allergy medicine they would buy each allergy season at various prices. Their responses are shown in the accompanying table. Estimate and graph the demand for the entire town of Jackson City.

<table>
<thead>
<tr>
<th>Price (per round-trip ticket)</th>
<th>Lee</th>
<th>June</th>
<th>Carlotta</th>
<th>Eric</th>
</tr>
</thead>
<tbody>
<tr>
<td>$8</td>
<td>8</td>
<td>5</td>
<td>6</td>
<td>9</td>
</tr>
<tr>
<td>$10</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>$12</td>
<td>4</td>
<td>3</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>$14</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>$18</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Learning Objective 2.4 Understand what factors shift demand curves.

6. For each of the following pairs of goods, identify if they are substitutes or complements and use a graph to illustrate how the change described impacts the markets for both goods or services.
   b. Taking a train or plane between NYC and Washington, DC: The price of airfare increases.
   c. A smartphone and a Verizon data plan: The price of a monthly data plan increases.

7. Consider the market demand curve for the Samsung Galaxy smartphone. For each of the following, assess whether it would cause a rightward shift in the demand curve, a leftward shift in the demand curve, or no change in the demand curve.
   a. Batteries in Samsung smartphones begin to spontaneously combust.
   b. Apple decides to increase the price of the newest iPhone by 10%.
   c. Samsung increases the price of the Galaxy by 10%.

8. According to a 2018 article in the Wall Street Journal, proposed tariffs on imported steel could cause the price to consumers of new cars to increase by as much as $300. Use a graph to illustrate the impact of this on the current demand curve for new cars in the United States.

9. As part of the marketing team at Delta airlines, you must develop a strategy to increase demand for flights between Kansas City and Detroit. You examine the data from previous flights and determine that the existing demand for
flights between the two cities is as given in the following table.

<table>
<thead>
<tr>
<th>Price per flight</th>
<th>Quantity demanded per day</th>
</tr>
</thead>
<tbody>
<tr>
<td>$200</td>
<td>1,200</td>
</tr>
<tr>
<td>$300</td>
<td>1,100</td>
</tr>
<tr>
<td>$400</td>
<td>1,000</td>
</tr>
<tr>
<td>$500</td>
<td>900</td>
</tr>
<tr>
<td>$600</td>
<td>800</td>
</tr>
<tr>
<td>$700</td>
<td>700</td>
</tr>
</tbody>
</table>

a. However, your team launches a viral advertising campaign that is so successful that all existing consumers increase their willingness to pay by $100, and 50 new customers demand flights at every price. Fill in the following table to show the new quantity demanded at each price following the advertising campaign.

<table>
<thead>
<tr>
<th>Price per flight</th>
<th>Quantity demanded per day after the advertising campaign</th>
</tr>
</thead>
<tbody>
<tr>
<td>$200</td>
<td>1,350</td>
</tr>
<tr>
<td>$300</td>
<td></td>
</tr>
<tr>
<td>$400</td>
<td></td>
</tr>
<tr>
<td>$500</td>
<td></td>
</tr>
<tr>
<td>$600</td>
<td></td>
</tr>
<tr>
<td>$700</td>
<td></td>
</tr>
</tbody>
</table>

b. Use a graph to illustrate both the initial demand curve and the new demand curve from part (a).

Learning Objective 2.5 Distinguish between movements along a demand curve and shifts in demand curves.

10. Illustrate graphically how each of the following events will impact the demand for cups of coffee and explain why demand changes.
   a. Average hourly wages increase in the United States.
   b. The state of California requires all coffee houses to post warnings to consumers of the cancer-causing components of coffee.
   c. Coffee houses increase the price of coffee in order to pay their baristas more.