

## Lesson Plan

### The Rising Cost of Health Care: *Is there an explanation?*

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#### Overview:

In this lesson, students will explore rising health care costs and the Law of Diminishing Marginal Utility<sup>1</sup>. Students will participate in an activity that demonstrates the Law of Diminishing Marginal Utility, actively read the May 27, 2005 Economic Letter, and complete a student handout.

#### Economic Concepts Covered in the Lesson Plan:

- Law of Diminishing Marginal Utility
- Opportunity Cost
- Utility

#### Student Objectives:

Students will be able to:

- Define opportunity cost, utility, and the Law of Diminishing Marginal Utility.
- Apply the concept of diminishing marginal utility to the health care industry.
- Utilize the concept of trade-offs and utility to explain the rising cost of health care.

#### Time:

One class period

#### Materials:

- Treats: a bag of small candies, donut holes, or a healthier alternative (no hard candies as these items must be quickly consumed)
- White board/chalk board
- 1 calculator
- 1 copy of the data collection table
- Student handout (1 copy per student)
- May 27, 2005 *Economic Letter*: More Life vs. More Goods: Explaining Rising Health Expenditures. (1 copy per student)

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<sup>1</sup> Please note: The *Economic Letter* uses the term “marginal returns.” For the purposes of this exercise “marginal utility” and “marginal returns” are interchangeable.

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#### Procedures:

1. Conduct the following discussion:
  - a. Today, we are going to learn about two important economic concepts (write these concepts on the board; they will be defined later in the activity).
    - i. **Utility** (the total satisfaction derived from the consumption of goods or services<sup>2</sup>). This definition will include:
      1. The distinction between utility and **marginal utility** (the additional or extra satisfaction yielded from consuming one additional unit of a commodity).
      2. **Law of Diminishing Marginal Utility** (states that as more and more of any one commodity is consumed its marginal utility declines).
    - ii. **Opportunity Cost** (whatever must be given up to obtain some item<sup>3</sup>).
  - b. I will need five volunteers to demonstrate this concept who are willing to consume small pieces of candy (show an example of the candy item to the class). I will also need a scribe to collect and record data.
2. Select the five volunteers and the scribe. Ask them to join you in front of the room and to bring along a piece of paper and pen/pencil.
3. Instruct the rest of the class to locate a pen and paper. They will also participate in this part of the demonstration.
4. Give the calculator and the data collection sheet to the scribe.
5. Discuss the following:
  - a. On your paper, you will rate the benefit of consuming a piece of candy based on a scale of 1-10. In economics terminology, this benefit gained from consuming a good or service is called **utility**. 1 represents the lowest utility and 10 the highest utility. Those of you in the audience will also conduct your own "virtual" rating as you imagine your level of utility of consuming the piece of candy.
  - b. Our scribe will collect the ratings from our five volunteers.
6. Distribute one piece of candy to each of the five volunteers and give the following instructions:
  - a. Consume the piece of candy and once you have finished please record your level of utility, based on a scale of 1-10, on your paper. I'd like the audience to conduct their own "virtual" rating as well and record that information on your paper.
  - b. Our scribe will now quickly record the volunteer ratings.

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<sup>2</sup> Definitions of utility, marginal utility, and the Law of Diminishing Marginal Utility are from Samuelson and Nordhaus, 1998 "Economics."

<sup>3</sup> Definition from Mankiw, 2004 "Principles of Macroeconomics."

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7. Distribute the second piece of candy, have the volunteers rate their utility, ask the scribe to record the ratings. The audience will also rate the second piece. Explain the difference between utility and **marginal utility**.
8. Distribute the third piece of candy following the same procedure as above.
9. With each additional piece of candy, the marginal utility should get smaller and smaller, which is the result we want to demonstrate. You can, of course, proceed to a fourth or fifth candy depending on time and the interest level of the class.
10. Thank the volunteers and ask them to return to their desks. The scribe will remain and record the data on the board.
11. Discuss the following:
  - a. What do you notice about the data? (Declining marginal utility ratings.)
  - b. How do these numbers compare with your own individual ratings? (Answers will vary but should be consistent with a decline.)
  - c. Those of you that were volunteers, did your marginal utility rating decline as you consumed the second and third candy? (This should generally be a yes response.)
  - d. Why do you suppose the marginal utility ratings declined? (As a person becomes satisfied with an item [the candy in this case], additional consumption of the same item does not yield as high a marginal utility.)
  - e. At what point did the marginal utility of consuming begin to decline? (Anything after the first candy.)
  - f. This decline in marginal utility is an important economic concept called the **Law of Diminishing Marginal Utility** (point to the phrase written on the board). This law states that as more and more of any one commodity is consumed its marginal utility declines.
  - g. Is it possible that this same decline in marginal utility would occur for other items that we consume? How about a t-shirt? What do you predict would happen to the marginal utility ratings for the second, third and fourth for the exact same t-shirt? (Rating would decline as the individual satisfaction is fulfilled.)
  - h. Can you think of an example when the Law of Diminishing Marginal Utility would not hold true, where an individual's satisfaction or benefit would continue to increase? (Answers will vary.)
  - i. You will now have an opportunity to explore this Law of Diminishing Marginal Utility in a case that involves the health care industry.
  - j. Lastly, another vocabulary word I would like to draw to your attention is "consumption" (write the term "Consumption" on the board). In our demonstration, we watched our five volunteers consume candy. In the article, the authors will use the word "consumption" to include much more than eating. In the article, consumption includes buying a variety of goods and services. The *Economic Letter* compares consumption of health care with the consumption of all other goods and services.

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12. Distribute a copy of the *Economic Letter* and the student handout, one per student.
13. Direct students to read the *Economic Letter*, complete the discussion guide, and be prepared to discuss their answers.

### **Extension Activities:**

- Find examples of opportunity cost, consumption, utility, and the Law of Diminishing Marginal Utility in the news. Students may present their findings in writing or give oral reports to the class.
- Try this [Tennis Balls in Economics](#) exercise with your class.

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#### Student Handout

**Directions:** With your copy of the “*More Life vs. More Goods*” *Economic Letter*, please respond to the following questions in preparation for class discussion.

1. Cite one statistic that suggests that health care costs are on the rise.
2. What is the significance of the study which shows that virtually all industrialized nations have been spending an increasing share of Gross Domestic Product (GDP) on health care?
3. List five possible causes for the rising cost of health care.
4. What does the *Economic Letter* suggest is the primary cause of the rising cost of health care?
5. Use the article to define the term opportunity cost. Find an example of an opportunity cost (or tradeoff) in the article. Using this example, share a potential opportunity cost of participating in the candy exercise. Share a potential opportunity cost of coming to school today.
6. Explain the sentence, “The additional utility that one gets by increasing consumption falls as consumption rises.”
7. How does the Law of Diminishing Marginal Utility apply to the consumption of non-health-related goods? How does it apply to health care spending (assuming that the buyer is adding additional years to his or her life)?
8. Do you predict that health care expenditures will continue to increase in the future? Why or why not?

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#### Student Handout Answer Key

**Directions:** With your copy of the “More Life vs. More Goods” Economic Letter, please respond to the following questions in preparation for class discussion.

1. Cite one statistic that suggests that health care costs are on the rise.

*According to a survey conducted by the Kaiser Family Foundation (2004), health insurance premiums for employer sponsored plans increased by 11.2% between the spring of 2003 and the spring of 2004, the fourth consecutive year of double-digit increases.*

*In 1960, the share of U.S. GDP spent on health care costs was only 5%, but by 2002, it had climbed to more than 14%.*

2. What is the significance of the study which shows that virtually all industrialized nations have been spending an increasing share of Gross Domestic Product (GDP) on health care?

*It suggests that the rising share of health care spending in U.S. GDP is not driven solely by factors specific to this country, such as changes in U.S. government policy or particular features of U.S. health insurance. Instead, the fact that health care spending shares are rising in many countries suggests that something more fundamental is going on that needs to be explained.*

3. List five possible causes for the rising cost of health care.

- *Waste and fraud in the health care system*
- *The natural course of economic growth: as we get richer and richer, one of the most valuable and productive opportunities for our spending is to purchase better health and longer lives*
- *Country-specific factors, such as changes in government policy or particular health insurance features*
- *The aging of the population*
- *The rising cost of health insurance*
- *The discovery and use of new, expensive medical technologies*

4. What does the *Economic Letter* suggest is the primary cause of the rising cost of health care?

*The rising share of health care expenditures reflects the natural course of economic growth: as we get richer and richer, one of the most valuable and productive opportunities for our spending is to purchase better health and longer lives.*

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#### Student Handout Answer Key (continued)

5. Use the article to define the term opportunity cost. Find an example of an opportunity cost (or tradeoff) in the article. Using this example, share a potential opportunity cost of participating in the candy exercise. Share a potential opportunity cost of coming to school today.

Define the term opportunity cost.

*The cost of something in terms of opportunity foregone (what you have to give up in order to get something else).*

*Hall and Jones (2004) developed a model of optimal health care spending, where individuals faced a tradeoff. "They can spend their income on the consumption of nonhealth goods, or they can spend their income on health. By spending on consumption, people increase the flow of utility they receive at a point in time. By spending on health, people increase their life expectancy, that is, the number of periods they expect to live. Put simply, people face a choice between adding additional months of life versus adding additional consumption during a current month."*

*"As we get richer and richer, which is more valuable: a third car, yet another television, more clothing—or an extra year of life?"*

Using this example, share a potential opportunity cost of participating in the candy exercise.

*Time spent on the candy exercise may have meant time not spent taking notes on a class lecture about opportunity costs, watching a video, giving a presentation, etc.*

*The opportunity cost of eating one candy may have been chewing a piece of gum.*

Share a potential opportunity cost of coming to school today.

*Time spent at school may have meant time not spent with family, earning money, watching TV, going to the mall, etc.*

6. Explain the sentence "The additional utility that one gets by increasing consumption falls as consumption rises."

*This sentence is an instance of the Law of Diminishing Marginal Utility. The article describes a society that is getting richer over time, and is therefore consuming more goods and services. Consistent with the law, each additional unit of the good or service becomes less valuable to the individual.*

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#### Student Handout Answer Key (continued)

7. How does the Law of Diminishing Marginal Utility apply to the consumption of non-health-related goods?

*Consumption of non-health-related goods is consistent with the Law of Diminishing Marginal Utility. Each additional unit consumed is less valuable than the last.*

How does it apply to health care spending (assuming that the buyer is adding additional years to his or her life)?

*The Law of Diminishing Marginal Utility may not be applicable when it comes to health care spending. Each additional unit of life may be as valuable as the last.*

8. Do you predict that health care expenditures will continue to increase in the future? Why or why not?

*Yes – Adding additional years to life will never be valued less than it is today.*

*No – It is possible that if humans lived long enough, they could reach a point where additional years of life are less valuable.*

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#### Handout or Diagram for the Classroom:

##### Utility Rating Sheet

##### *More Life vs. More Goods: Explaining Rising Health Expenditures*

	<b>Marginal Utility Ratings (raw data) Sample Diagram</b>				
<b>Candies</b>	<b>Person 1</b>	<b>Person 2</b>	<b>Person 3</b>	<b>Person 4</b>	<b>Person 5</b>
First candy	10	9	10	8	9
Second candy	8	7	9	6	7
Third candy	6	6	8	5	5

	<b>Marginal Utility Ratings (raw data)</b>				
<b>Candies</b>	<b>Person 1</b>	<b>Person 2</b>	<b>Person 3</b>	<b>Person 4</b>	<b>Person 5</b>
First candy					
Second candy					
Third candy					