

## CHAPTER 2

### Utility and Health

#### Chapter Outline

How to Think about Health Care

Health as a Durable Good

The Production of Health

Health Through the Lifecycle

A Model of Consumption and Health

A More Detailed Look at Consumption and Health

*Summary*

*Related Chapter in Handbook of Health Economics*

*Problems*

#### Teaching Tips from the Author

The first half of this chapter provides an excellent basis for reinforcing basic economic concepts that the students should have acquired in Intermediate Microeconomics (which I require as a prerequisite class when I teach this material). The guiding light here, of course, is Michael Grossman, who created the way of thinking about health as a durable good, which in turn stems from his own PhD thesis advisor, Nobel Laureate Gary Becker, who (along with Kelvin Lancaster) virtually created the “household production” way of thinking about economic behavior.

I view it as essential that students come away from this discussion understanding how indifference curves “work” when the utility function has “Health” as one argument (i.e.,  $U = U(X, H)$ ). One could quibble, of course, with this definition, since there’s a stock/flow issue lurking here, but I don’t think it impeded the train of thought. (Health— $H$ —is really a stock, and the flow of “services” from that stock is what really creates the utility, of course. So if you want to be picky, add some multiplier ( $k$ ) to the stock to show the flow rate from the stock.) But this work using production functions and indifference curves (mostly the latter) is central to what comes in Chapters 3 and 4.

The second half of Chapter 2 is mostly new material beginning with the 4<sup>th</sup> edition. I provide a much more detailed discussion of how lifestyle affects health than in previous editions. While the age-specific causes of death provide good “hints” about the effects of lifestyle on health outcomes, Table 2.6 gives dramatic and direct evidence on the issue: the “real causes of death”

are lifestyle choices in a large part. We all owe a debt to McGinnis and Foege for their pathbreaking work in their original study on this topic.

I find it important to remind my students of the goals of this analysis. I do not intend these discussions as a moralistic “thou shalt not...” rant. After all, the presumptive goal is utility maximization, not maximization of life expectancy. Some of the things that harm one’s health are very enjoyable!<sup>1</sup>

I particularly found it fascinating to learn about the nuanced effects of education on lifestyle choices. In *every* facet of lifestyle I delved into—smoking, obesity, alcohol use—I found solid evidence that education affected people’s life style choices in a positive way. More education leads to less “self-destructive” behavior. The effect stands out most clearly in the consumption of tobacco. The education gradient with smoking is very steep. The effects of education on alcohol use are particularly complex. More education leads to more “participation” in alcohol consumption (see Figure 2.7) but less binge drinking and less heavy drinking (the latter of which are more health-harmful). Even the choice of alcoholic beverage has a unique educational twist: more highly educated people drink more wine and less distilled spirits, the latter of which are more health-harmful. (Sorry, but I could not find any data on education and *red* wine drinking choices.)

This all leads to the wonderfully complex question of how education has all of these effects. Does the higher education give people more reason to “protect their investment” in human capital? Does the education itself allow people to acquire more information about the effects of lifestyle choices (and hence modify their behavior)? Or (as Victor Fuchs originally suggested), does some unmeasured difference in time preference across individuals affect both educational attainment and health habit choices? The puzzle, of course, is that people with low discount rates (long time horizons) would have propensities both to invest in more education and to avoid health-harming behaviors. But since we really don’t understand how discount rates are formed, we must leave this set of issues to discussion and conjecture.

I should also point out here a section of material on genetic influences on health that we had to delete to keep within the page constraints imposed by the publisher. This material on “Genes and Health” appears on the publisher’s web site for this book—<http://www.aw-bc.com/phelps>—and might make for an interesting discussion in class.

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<sup>1</sup> A person once said to me that humans are happiest when something is entering or leaving their body. Think about it in the context of the lifestyle choice discussion!

## Classroom Projects

### A. Life style and longevity.

Have every class member write down (if they can) the age of their grandparents, and (if deceased) years of age at death and if known, the cause of death. Have them record what they know about the smoking habits of each grandparent. Compile the information into simple 2x2 tables such as (alive / dead) vs. (smoker / non-smoker/ former smoker). This may be something where a call home the weekend before will help.

### B. Obesity and exercise.

Have the students write down their best-estimate of how much they weighed when they entered college as freshmen, and their current weight. (The average freshman student gains about 10 pounds.) Have them calculate their Body Mass Index (BMI) using the entering freshman weight and the current weight. College deans report a “freshman 15” weight effect – students gain a lot of weight in their first year of college and access to relatively unlimited food supplies in collegiate cafeterias. Google the phrase “freshman 15” and you’ll be amazed at the number of web sites devoted to this topic. An a capella singing group (at Northwestern University) has even been named after the phenomenon.

Aggregate these data (anonymously) and report the results back to the class.

## Answers to End-of-Chapter Questions

*\*Starred answers appear on the Companion Website.*

**\*1.** The leading causes of death are all “violence” related – homicide, suicide, vehicle crashes, other accidents. The health care system can only “patch up” the consequences of these events, not prevent them.

**\*2.** The leading causes of death for those over age 65 are heart disease, cancer, stroke, chronic obstructive pulmonary disease (emphysema). These are all related to lifestyle choices, including most prominently tobacco use, obesity and lack of exercise.

**3.** The leading causes of death before WW II were mostly infections, and with the advent of antibiotics and vaccines to prevent infectious diseases, life expectancy rose dramatically. The adverse effects of lifestyle choices (tobacco, obesity, alcohol, etc.) have probably reduced our life expectancy compared to what it would be if we were more prudent in these dimensions of choice. The Japanese, for example, have a markedly higher life expectancy than do US citizens, in part related to common dietary practices.

4. If you wanted to pick one life style choice to remove, it would probably be smoking currently, but smoking is on the decline now and obesity is on the rise. A forward-looking answer would probably focus on obesity.

What can change obesity? Obviously, education about the issues. But many states and cities are considering rules that limit “fast food” chains near schools, requirements for restaurants to put caloric content of meals on menus, and the like. Some legislators have considered a “fat tax.”

Would this improve overall happiness? Perhaps, perhaps not. Why do people eat? They enjoy it! Limiting access to certain foods may reduce weight, but also reduce utility overall. A carefully considered health policy should include not only the effects on obesity but also on overall happiness.

\*5. General education (e.g. a college degree instead of stopping with a high school degree) improves people’s ability to assimilate information. It also provides more income in general, which in turn can lead to healthier life style choices (e.g., cleaner air, more tennis courts in the neighborhood). Education may also alter people’s time horizon. If you have a lot of human capital in your head (more education), it makes more sense to preserve the value of that by remaining healthy. Higher education seems to lead to healthier life style choice in many areas, including tobacco use, alcohol use, and obesity (as measured by BMI).

\*6. Probably worse off, but it’s not a clear-cut case. Higher gasoline prices lead to more use of public transportation, which in turn both increases the amount of walking people do and also reduces smog (probably in only very small ways, but it will reduce smog). These make people better off. But the direct costs of higher gasoline have their own direct consequences in terms of lost consumer surplus and transfers (through payment to oil producers) that reduce consumer well being directly. No careful study has balanced all of these off yet.

**BONUS QUESTION (relating to genetic effects, material on the supplemental information page for this textbook at [http://wps.aw.com/aw\\_phelps\\_healthecon\\_4/](http://wps.aw.com/aw_phelps_healthecon_4/)). Discuss at least three examples you know of where genetic makeup of individuals affects their health in ways linked to lifestyle choices.**

a) Many diseases have direct genetic links, including “traditional” inherited diseases such as Tay-Sachs, muscular dystrophy, some types of breast cancer, and many neurological diseases (just to name a few of the many of such diseases).