Special Focus III. Are Health Behaviors Driven by Information?

by

Donald Kenkel, Cornell University

Some people might choose unhealthy behaviors because they lack complete information about the health consequences of their choices. If so, the provision of information should be an effective approach, and might be a cost-effective approach, to encourage healthier behaviors and promote public health. Empirical health economics research on the role of health information provides several instructive lessons.

Perhaps the most compelling lesson that information can lead to healthier behaviours comes from tobacco control. Over the last half of the 20th century, adult smoking prevalence fell dramatically in the United States and many other OECD countries. In the United States, the prevalence of adult smoking fell from nearly 50% in the 1940s to its current rate of around 20%. Just after scientific research on the health hazards of smoking began to be published in scientific journals in the 1950s, less than half (about 44%) of the US public agreed that smoking was a cause of lung cancer. Today, virtually all consumers recognise the links between smoking and lung cancer, heart disease, and other serious illnesses (Kenkel and Chen, 2000; Cheng *et al.*, 2009).

A series of econometric studies provide quantitative estimates of the causal impact of changes in health information on smoking (Hamilton, 1972; Lewit *et al.*, 1981; Schneider *et al.*, 1981; Blaine and Reed, 1994). These studies exploit information "shocks", including the 1964 Surgeon General's Report on smoking and health and the anti-smoking messages broadcast on US television during the Fairness Doctrine era (1968-70). Kenkel and Chen (2000) review additional studies that suggest that similar information shocks also reduced smoking in a number of other countries.

Smoking is not the only example of strong consumer responses to new health information. Although over the last few decades the United States has experienced increases in overweight and obesity, there have also been important dietary improvements. Health economics research suggests that at

least part of these healthier dietary behaviors can again be traced back to improved consumer information. In the mid-1980s, the US regulatory environment changed, making it easier for firms to advertise the link between diet and disease. In a series of studies Ippolito and Mathios (1990, 1995, 1996) explore the impact of the resulting health information shocks. In the cereals market, producer claims about the health benefits of adding dietary fiber appear to have been an important information source for consumers, leading to substantial increases in fiber consumption (Ippolito and Mathios, 1990). Similarly, individual food consumption data and food production data show that consumption of fats, saturated fats, and cholesterol fell from 1977 to 1985, but fell more rapidly between 1985 and 1990 after producer health claims became more common (Ippolito and Mathios, 1995, 1996).

The US Department of Health and Human Services (2000, pp. 12-19) notes that as dietary fat consumption fell, average (age-adjusted) blood cholesterol levels in adults dropped from 213 mg/dL in 1978 to 203 mg/dL in 1991. Improvements in diet and increased use of cholesterollowering medications continued through the 1990s and 2000s, and the United States has already met the goal set for population cholesterol levels in the Healthy People 2010 initiative (US Department of Health and Human Services, 2000, pp. 12-14).

Another lesson from health economics research is that private profits and public health can sometimes go hand-in-hand. Efforts by the tobacco industry to provide misleading information have attracted a great deal of attention both from researchers and regulators. Some critics tend to place food industry advertisements in the same light as tobacco industry advertisements. However, manufacturers also have strong profit incentives to introduce and advertise healthy products. Ippolito and Mathios (1995) report that after the ban on health claims in food advertisements was lifted, the introduction of high fiber cereals jumped from about 1.5 per year to almost 7 per year.

Avery *et al*. (2007) study the private sector market for products such as nicotine gum that help smokers quit. In recent years the pharmaceutical industry has spent between USD 100 to USD 200 million annually advertising smoking cessation products. The potential public health benefits of this advertising have not been overlooked. For example, in 1996 the American Cancer Society's Great American Smoke Out included an advertising campaign that was jointly sponsored with a manufacturer of a cessation product. Avery *et al*. (2007) estimate that when smokers see more magazine advertisements for smoking cessation products, they are more likely to attempt and succeed in quitting. Looking towards the future, Cawley (2004, p. 123) points out: "The enormous profit incentive to develop reduced calorie foods and efficient and enjoyable exercise equipment is a reason for optimism that private markets can help consumers achieve their goals with respect to exercise, nutrition, and weight."

Research on health disparities provides another, and somewhat more complicated, set of lessons about information and health behaviors. The strong gradient between schooling and health behaviors provides more evidence that health information plays an important role. While the empirical association between schooling and health is well-documented, establishing the nature of the link has been more difficult and controversial. A set of recent studies that use schooling reforms as instrumental variables provide new evidence that more schooling causes better health (for a review, see Grossman, 2006). One of the causal channels appears to be through consumer information.

Cutler and Lleras-Muney (2009) estimate that differences in health information account for about 10% of the schooling gradient with smoking and drinking, confirming the earlier estimates of Kenkel (1991). Even though information differences do not explain the majority of the link between schooling and health behaviors, this line of research corroborates research on the impact of information shocks on health behaviors. If people with different levels of schooling learn about and react to information shocks differently, it is not surprising that cross-sectional differences in health behaviors persist for some time after the initial shocks.

The cross-sectional differences or disparities in health behaviors associated with schooling complicate the lessons to be learned. In recent years social scientists have realised that health disparities can be an unintended consequence of scientific progress. In an influential paper, Link and Phelan (1995) urge medical sociologists and social epidemiologists to study social conditions that are the fundamental causes of disease. By their terminology, a defining feature of fundamental causes is that they "involve access to resources that can be used to avoid risks or to minimise the consequences of diseases…", where resources are defined broadly and include knowledge. Link and Phelan further note that: "An additional condition that must obtain for fundamental causes to emerge is change over time in the diseases afflicting humans, the risks of those diseases, knowledge about risks, or the effectiveness of treatments for diseases."

As scientific advances provide new information about health behaviors, it may be difficult to avoid at least temporary increases in health disparities. A more puzzling, and more troubling, pattern is when disparities persist or even widen long after the initial information shocks. For example, 50 years after research on the health consequences of smoking began to emerge, the schooling-smoking gradient is stronger than ever (Cheng *et al*., 2009).

Some public health advocates suggest that the history of tobacco control provides important lessons to reduce the prevalence of overweight and obesity. There are clear parallels between these behaviors. For example, both smoking and overweight/obesity are among the leading causes of serious

chronic diseases and death. Both behaviors show marked disparities associated with schooling and other aspects of socio-economic status. Yet there are also important differences between these unhealthy behaviors.

Compared to smoking and tobacco control, weight-related behaviors involve a more complex information problem and require more subtle policy response. For smoking the message is fairly simple – smoking kills – and in most countries cigarette packages are required to carry a warning label to that effect. Tobacco control advocates at least imagine a world where no one smokes. For maintaining proper weight, the basic message is almost as simple – do not eat too much or exercise too little – and most consumers understand this basic information. It is not rocket science. However, implementing the dietary advice requires more detailed information about the caloric and nutrient values of foods. And the public health ideal is not a world where no one eats, but a world where diets are moderate and balanced by exercise.

The United States and many other countries require food packages to carry labels with nutrition information. Research suggests that the labels required by the US Nutrition Labeling and Education Act (NLEA) had both intended and unintended consequences. While in his study of the salad dressing market Mathios (2000) finds evidence that the NLEA helped improve dietary choices, in his study of the cooking oils market Mathios (1998) finds evidence that the NLEA may have had the unintended consequence of increasing consumption of saturated fat. Variyam and Cawley (2006) findings suggest that overall the NLEA helped certain population groups to control their weight.

The last lesson from economics is basic but bears repeating: Policies that maximise health do not necessarily maximise individual utility or social welfare. Whether it is possible to be "fat and healthy" is a question for medical science, not economics. The economic approach to human behavior calls attention to another question, however: Is it possible to be "fat and happy"? Given the tradeoffs involved, it does not seem unreasonable that some perfectly well informed consumers will decide that some healthier dietary behaviors aren't worth it.

Bibliography

Avery, R., D.S. Kenkel, D.R. Lillard and A.D. Mathios (2007b), "Private Profits and Public Health: Does Advertising Smoking Cessation Products Encourage Smokers to Quit?", *Journal of Political Economy,* Vol. 115, No. 3, pp. 447-481.

Blaine, T.W. and M.R. Reed (1994), "US Cigarette Smoking and Health Warnings: New Evidence from Post World War II Data", *Journal of Agricultural and Applied Economics*, Vol. 26, No. 2, pp. 535-544.

Cawley, J. (2004), "An Economic Framework for Understanding Physical Activity and Eating Behaviors", *American Journal of Preventive Medicine*, Vol. 27, No. 3S, pp. 117-125.

Cheng, K.W., D.S. Kenkel and F. Liu (2009), "The Evolution of the Schooling-Smoking Gradient", Working Paper, Department of Policy Analysis and Management, Cornell University.

Cutler, D. and A. Lleras-Muney (2009), "Understanding Differences in Health Behaviors by Education", *Journal of Health Economics,* forthcoming.

Grossman, M. (2006), "Education and Nonmarket Outcomes," in E. Hanushek and F. Welch (eds.), *Handbook of the Economics of Education,* Amsterdam: North-Holland, an imprint of Elsevier Science.

Hamilton, J.L. (1972), "The Demand for Cigarettes: Advertising, the Health Scare, and the Cigarette Advertising Ban", *Review of Economics and Statistics*, Vol. 54, pp. 401-411.

Ippolito, P. and A. Mathios (1990), "Information, Advertising and Health: A Study of the Cereal Market?", *Rand Journal of Economics*, Vol. 21, No. 3, pp. 459-480.

Ippolito, P. and A. Mathios (1995), "Information and Advertising: The Case of Fat Consumption in the United States?", *American Economic Review: Papers and Proceedings*, Vol. 85, No. 2, pp. 91-95.

Ippolito, P. and A. Mathios (1996). *Information and Advertising Policy: A Study of Fat and Cholesterol Consumption in the United States, 1977-1990,* Bureau of Economics Staff Report, Federal Trade Commission, Washington DC.

Kenkel, D.S. (1991), "Health Behavior, Health Knowledge, and Schooling", *Journal of Political Economy*, Vol. 99, No. 2, pp. 287-305.

Kenkel, D.S. and L. Chen (2000), "Consumer Information and Tobacco Use", in P. Jha and F.J. Chaloupka (eds.), *Tobacco Control in Developing Countries*. Oxford University Press, pp. 177-214.

Lewit, E., D. Coate and M. Grossman (1981), "The Effects of Government Regulation on Teenage Smoking", *Journal of Law and Economics*, Vol. 24, No. 3, pp. 545-569.

Link, B.G. and J. Phelan (1995), "Social Conditions as Fundamental Causes of Disease", *Journal of Health and Social Behavior* (Extra Issue), pp. 80-94.

Mathios, A. (1998), "The Importance of Nutrition Labeling and Health Claim Regulations on Product Choice: An Analysis of the Cooking Oil Market", *Agricultural and Resource Economics Review*, Vol. 27, No. 2.

Mathios, A. (2000), "The Impact of Mandatory Disclosure Laws on Product Choices: An Analysis of the Salad Dressing Market", *Journal of Law and Economics*, Vol. 43, No. 2, pp. 651-678.

Schneider, L., B. Klein and K.M. Murphy (1981), "Governmental Regulation of Cigarette Health Information", *Journal of Law and Economics*, Vol. 24, No. 3, pp. 575-612.

US Department of Health and Human Services (2000), *Healthy People 2010,* 2nd ed. with *Understanding and Improving Health and Objectives for Improving Health*, 2 Vols., US Government Printing Office, Washington DC, November.

US Department of Health and Human Services (2007), *Mid Course Review: Healthy People 2010,* US Government Printing Office, Washington DC.

Variyam, J. and J. Cawley (2006), "Nutrition Labels and Obesity", NBER Working Paper No. 11956, Cambridge, MA.