ashe
American Society of Health Economists

Newsletter of the
American Society of Health Economists

Lifetime Contribution Award Named for Victor R. Fuchs

In the 1960s, long before the number of health economists worldwide could be counted in the thousands, Victor Fuchs arguably became the first economist to focus his research on health. His interest in health grew out of work on productivity at the NBER. Many of Fuchs' early papers emphasized the importance of individual behaviors, such as diet and exercise, in determining health and health expenditures. "Perhaps Victor's most important contribution to health economics has been to emphasize that the field

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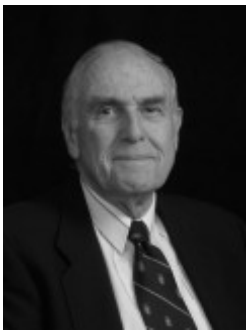

Victor Fuchs is the Henry J. Kaiser, Jr., Professor Emeritus, Stanford University, and Research Associate, NBER.

Interview with Mike Grossman

Winner of first Victor Fuchs Lifetime Contribution Award

Q: The notion that people can choose their level of health was quite controversial when you first proposed it. Do you still encounter some resistance?

Mike: I deal primarily with Ph.D candidates but of course I also have professional dealings, and I think that over time people have become more accustomed to basically viewing people as having a fair amount of say over their health and what determines their health. The idea that health is a commodity that people choose wasn't my idea. It really goes back to Bentham who wrote in 1789

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More Inside This Issue

Michael Grossman is a Distinguished Professor of Economics at the City University of New York Graduate Center and Program Director of Health Economics at NBER.

Trick or Treatment? Estimating treatment effects models where there are multiple treatments

by Partha Deb

Health economists routinely estimate models of treatment effects in observational or quasi-experimental situations in which selection into treatment cannot be ruled out. When treatment is continuous or binary, there is a well-known set of treatment effects estimators from which to choose, although there is ongoing debate on the relative merits of alternative approaches. There are many cases, however, in which the scenario involves multiple treatment and/or control groups, examples of which I will provide below. In such instances, health economists are often confronted with a dilemma. Should one combine treatment groups to accommodate the use of standard econometric techniques? Should one attempt to argue away selection on unobservables, perhaps by saturating the model with observable characteristics? Or should one attempt to use a technique designed for multiple treatments? It is my casual observation that we engage in both of the first two types of "tricks", with the first approach being more popular. Indeed, I'm willing to bet that there is a substantial "computational bias" (a term I've concocted to complement the notions of "publication bias") in some

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ASHE Newsletter

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Editor's Note

The second ASHE conference is almost here! To help inspire you, we have an intriguing article by Partha Deb on the state-of-the-art in measuring treatment effects when there are multiple treatments and multiple controls. Partha will also be co-teaching one of the pre-conference workshops. To find out more, you can go to the workshops page on the ASHE website (http://healtheconomics.us/conference/2008/workshops.html). I want to thank Agnes Rupp for contributing a column on supported research in mental health at NIH/NIMH. ASHE President Jody Sindelar and Executive Director Dick Arnould have news for members about ASHE and the upcoming conference in their columns. Our Dear Ashley is on vacation but hopes to see you in Durham in June where she will be gathering input for future columns. I hope that anyone who is interested in writing for the newsletter or just giving me an earful of "constructive" criticism (or compliments, we take those too) will find me at the conference. Until then, I wish you well in the mad scramble to finish those slides and read the articles you are discussing.

Best,

Melayne Morgan McInnes, *University of South Carolina*

Mission Statement

The mission of the newsletter will be to develop the social capital of the health economics profession by providing a forum for community building and networking among health economics faculty, researchers, and students. This newsletter will be published thrice yearly and is not intended to engage in advocacy or to provide information already available in other newsletters.

News from ASHE President Jody Sindelar

Plan to Attend Duke Conference!

Our biennial conference at Duke is designed to be a first-rate academic conference with a community of scholars engaged in discussing topics of importance to the field of health economics. The stimulating agenda will provoke animated exchange on critical methodological, substantive and policy topics. It will be wonderful to have so many economists presenting their work, discussing each other's work, and providing individual insights on a variety of different issues. Please plan to attend and not only learn from the presentations but also enjoy the opportunity to interact with others in the field of health economics.

Inaugural recipient of the new Victor R. Fuchs Lifetime Achievement Award. A new lifetime award has been established by ASHE to honor lifetime achievements and contributions. I had the pleasure of calling Victor Fuchs to ask him if he would accept the honor of having the ASHE lifetime award named after him. He, of course, graciously agreed, thanked all and proposed that he join us via a video feed from Stanford University when we announce the first recipient. One award recipient will be selected at each conference. Please plan to attend the conference to congratulate the inaugural recipient. Many thanks to the awards committee for establishing this award and making such a good - although not surprising- selection of the inaugural lifetime recipient.

ASHE fund-raising and independence. The Board of ASHE and the Duke Planning committee are hard at work securing grants from NIH and foundations, and sponsorships from pharmaceuticals and other companies to keep down the costs of the conference for members. This will also help to ensure we have enough resources to host a high-level, quality conference. We are having success and will be able to announce and thank funders at the conference. If you have any leads, please contact Dick Arnould, Executive Director.

Fund-raising also brings the goal of making ASHE an independent organization closer to reality. The goal of independence by 2010 was established in our charter and is being encouraged by iHEA. While independence is a long-term goal, iHEA was and is critical to our current success. Without iHEA, it would have been very difficult to start ASHE. Currently, in our efforts to establish independence, finance and administration are key issues to address.

Business meeting at ASHE. For those of you who would like to participate in the ASHE business meeting, it is open to all and will be held during the conference on Tuesday at noon. This is your opportunity to provide suggestions and comments in person to the Officers, the Board, and the Executive Director. The room will be announced on the conference schedule.

Change of ASHE leadership. At the conference, Michael Grossman will take his position as our new President as I step down. Randy Ellis will become President-elect. ASHE

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News from Ashe President
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is fortunate to have such esteemed new leadership.

As President and as President elect, I have helped to organize the Madison and Duke conferences. Seeing all of our efforts come to fruition at the Madison conference was a wonderful experience. Frank Sloan, Edward Norton, Dick Arnould and the planning team have been working toward an equal, if not greater, conference at Duke. I hope that you will attend and add to the success of the conference.

Jody Sindelar,

President of ASHE

Award Named for Victor Fuchs
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needs to be concerned with health, not just medical care services," wrote Joe Newhouse in his 1992 tribute to Fuchs in the *Journal of Economic Literature*.

Fuchs later went on to write in many other areas of health economics, including schooling and health, supplier-induced demand, and within-family choices over the life cycle. Although his methods were decidedly low-tech by today's standards, they were still persuasive. Newhouse described Fuchs' gift as, "an ability to ask questions that are usually based on simple theory, but which nonetheless in his hands seem novel, and then proceed to answer those questions with simple, straightforward data analysis that is all the more powerful for its simplicity."

Fuchs was also able to communicate to a broader audience than academic economists. His 1974 book Who Shall Live? illustrated how the basic economics concepts of scarcity and tradeoffs mattered in health and health care. On a personal note, it was this book that helped inspire me to study health economics.

Victor Fuchs, the Henry J. Kaiser, Jr., Professor of Economics and of Health Research and Policy, Emeritus, at Stanford University, was a pioneer in the field of health economics. It is appropriate that the AHSE Awards Committee decided to name the new lifetime award after him. This summer at the ASHE conference, the first honoree will receive the Victor R. Fuchs Award for lifetime contributions to the field of health economics.

Edward C. Norton

View from the Program Office by Agnes Rupp

We asked Agnes Rupp, Chief of the Financing and Managed Care Research Program at NIMH/NIH, to tell us about their research program in the economics of mental health.

The economics of mental health research program, currently called Financing and Managed Care Research Program, plans, stimulates, and supports policy-oriented scientific research on the role of economic factors in the delivery, accessibility, and the use of mental health services. Objectives of the program are to promote the growth of scientific knowledge and assist in the development of improved mental health care financing.

Research topics addressed by this applied health economic research program within the Division of Services and Intervention Research of NIMH/NIH include, but are not limited to: cost-effectiveness evaluations of innovative treatment and financing programs, analyses of insurance benefits for mental health services, including insurance parity; and studies of the financing of public and private mental health service delivery systems.

Since its establishment in 1979, when knowledge of the economics of mental health was limited largely to a scattering of studies on the cost of mental illness, the program has supported a growing number of health economists working on an array of mental health topics. Currently the program supports about 20 research grants. Scientific information about these grants is available through the Computer Retrieval of Information on Scientific Projects (CRISP) NIH public data base at http://crisp.cit.nih.gov. At this time there is a strong emphasis to support new investigators who

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Executive Director Notes

There are two items I want to bring to your attention.

First, the **Second Biennial Conference at Duke** is coming up fast. Two great plenary sessions have been planned. The speaker at the Sunday evening event will be **Mark McClellan**, immediate past director of CMS and former head of FDA. This will be followed by a social reception. Nobel Laureate **Gary Becker,** University of Chicago, will speak at the Tuesday evening event, which will be followed with a real southern barbeque. Over 500 abstracts have been approved by the Scientific Committee for oral presentation along with 100 plus posters. The program has been posted on the ASHE website. Discussants currently are being assigned to the open call papers. Please help us out if you are called upon. The ASHE Medal and Graduate Student Paper awards will be announced and presented along with the newly approved Lifetime Achievement Award. Every aspect is taking shape to make this both bigger and better than the Inaugural Conference in Madison. While tornados are not common in Durham in June, I am certain the Local Organizing Committee with come up with an equally surprising and exciting event. (For those of you who missed the conference at Madison, the weather was superb until the last moment, when a tornado was spotted nearby.) You will find this to be an outstanding and informative conference as well as an excellent place to network with fellow health economists.

If you have not yet registered, please do so soon as registration fees increase as we get closer to the conference. The rooms at the David Thomas Center and Washington Duke Hotels are filling up, but there are plenty of other hotels in good proximity to the main venue, which is the combined David Thomas Center/Fuqua School. Please check the ASHE conference website for information about other hotels. If you need more assistance please email Chris Martin at: christopher.martin@healtheconomics.org.

Second, a committee was formed at the board meeting in New Orleans to propose a plan for the **separation of ASHE from iHEA**. The committee consists of past (**Joe Newhouse**), present (**Jody Sindelar**) and future presidents (**President Elect Mike Grossman** and, as of June 2008, **President Elect Randy Ellis**) of ASHE and **me**. The formal agreement with iHEA is for this separation to take place by 2010. ASHE currently operates under the legal structure of iHEA. A separate tax exempt corporation will be formed. The committee discussions include finance, the organization and structure of 'management,' the nature of operations and the important issue of timing. These discussions also include the consideration of someone to replace me. I have informed the Board that I wish to turn this over to someone else by 2010 or earlier if a replacement is found. If you have suggestions please notify Jody, current president, or me.

Again, if you have not registered for the Duke conference, I urge you to do so. You do not want to miss this great conference. If you have registered, take a look at the program on the ASHE website. Also, if you have ideas about the future operation of ASHE please let Jody or me know. These are exciting times in the development of ASHE. The committee and board make every effort to keep you, our members, informed.

See you in Durham.

Dick Arnould, Executive Director

View from the Program Office
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submit their first R01 research application to NIMH/NIH.

Integral to the program's dissemination and research development activities is the NIMH sponsored biennial research conferences on the economics of mental health. The 13th biennial conference was held in 2006, when Susan Ettner of UCLA and Agnes Rupp of NIMH served as the co-chairs. The conference focused on pharmacoeconomics. The only invited presentation of these meetings is the Carl Taube Lecture, a tribute to the legacy of the pioneering intellectual leadership of the late Dr. Taube in the economics of mental health.

For more information about the program's activities and research priorities please, visit:

http://www.nimh.nih.gov/dsir/82-se.cfm

For more information about the grants process please, visit:

http://www.nimh.nih.gov/research-funding/grants/index.shtml

Agnes Rupp, Ph.D.
Chief, Financing and Managed Care Research Program, NIMH/NIH

that there were fifteen basic pleasures, and he listed among them knowledge, reputation and health. So it really was an old idea in the literature. I also had a lot help in developing my dissertation and my NBER monograph from a real smart person named Gary Becker. He really pushed the notion that there are these basic objects of choice that people care about which enter the utility function and that health is one of them. I was fortunate in that he wasn't really thought of as a health economist when I was doing my dissertation, so I got a lot of credit for ideas that were to a large extent due to him.

Q: *So how did you decide to focus on health in your dissertation?*

Mike: It was solely based on monetary considerations! I like to tell the story of how I started off at Columbia University and I thought I was going to specialize in public finance since the undergraduate teacher who really got me interested in economics was in that field. Then I met Gary Becker and decided to specialize in anything that interested him, and he was doing a lot of work in labor economics and human capital. When I was in my second year of Columbia and had passed all my core exams, the only thing I had left was my dissertation. But I was also thinking of getting married, and I didn't have much money. I was also looking for a summer job, and, at that time, the only office of the NBER was in Manhattan. It was a big office on Madison Avenue and 39th street, and most of the research associates were Columbia faculty and most of the research assistants were Ph.D. candidates from Columbia. Victor Fuchs, who at that time was not on the Columbia faculty and was full time with the Bureau, was looking for a research assistant. I worked for him in the summer, but I wasn't working on health. He has a well-known book on the service economy, and I worked on one or two of the chapters of that book. Victor got interested in health through his interest in the service sector. Health is obviously a big part of the service sector, and it was getting bigger and bigger even at that time which goes back to 1966. Victor basically made me an offer: If I did a dissertation in health, then I could go on working for him half time and have office space in the Bureau to work on my dissertation for the other half. And that's how I got interested in health. It really was solely a monetary consideration. I took that job and got married in September of 1966. Then I talked to Gary about a dissertation topic. To start off with, he really wasn't that interested in supervising something in health. But then he started to think about it a little bit more about it, and he came up with this idea which I developed. So that's how I got interested in health. I also like to say that in 1966 an investment in health economics paid the best interest.

Q: You've had some great students. Do you know how many students you've had?

Mike: That's something I'm very proud of. You can take all my publications back, but I've been the supervisor of ninety-three dissertations and I've also served on a lot more committees as the second or third reader. That is partly because I teach in a small Ph.D. program. It is not small in terms of students, but it's small in terms of full time faculty. The way the City University of New York Graduate Center is organized is that there are central appointments like me, who only teach at the Graduate Center, and then there are faculty who teach in one of the senior colleges within the City University, like Hunter, Queens or Baruch, and they'll do some teaching at the center. Since there are large physical distances between some of these colleges and the center, college-based faculty typically don't spend all that much time at the graduate center. In the early 70's, when I first started to teach in the Graduate Center (I got my full time appointment here in the fall of 1974. For the two the years before that, I was a visiting assistant professor in 72 -73 and an adjunct assistant professor in 73 and 74.), there were six central appointments in economics and five of them were in labor, human resources, and health. These were pretty well-known people (Finis Welch, Bob Willis, Jim Smith, Bill Landes, Mel Reder) who taught at the Graduate Center for about 3 years, but they all ended up leaving. There also were other people, like Victor Fuchs, who weren't full time but who also left at the same time. Anyhow, when I first started to teach full time in 1974, there were a lot of students who had courses in labor, health, and human resources, but all of the people they had courses with left. So they kind of got stuck with me by default. And I've always like supervising theses. It has given me a good way to pick the colleagues I work with. Again, in all the years I've taught full time, there have never been more than three central appointments and the other two people were in very different areas. So it's been a way for me to get colleagues to work with, and number of people have stayed in the area, people like Sara Markowitz. She wrote a dissertation with me and then got a job at Rutgers, and she and I continued working together. There are a lot of people like that in that they got jobs in the New York area and even some people who didn't that I've continued to work with.

Q: So it is ninety-three students and counting. How many students do you have now?

Mike: I have seven people writing dissertations with me currently, and I'd like to top it off at 100. I'm like Barry Bonds before last summer. I'm shooting for a magic number, but I'm not there yet.

Q: Have most of your students ended up in academia? Where else have your students gone? Any trends in health economics placements?

Mike: First of all, not everyone who wrote with me wrote in health economics. I've supervised dissertations in topics ranging from the effects of bad news on the stock market to the market for

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carpets in the US, both of which I really know a lot about. And in some cases they were people who didn't really have much choice, but they felt comfortable writing with me. In some cases I didn't really know much about the topic, but I would read and make comments on it. Now in terms of people who have done health dissertations for me, some people have gone into academics. People coming out of the Graduate Center into the academic market don't have the easiest time in the world because the center does not have the national reputation of a Harvard, Yale, MIT, Chicago and so on. But I don't like to knock the reputation of an organization I've taught in for 35 years, and there are a number of people who've done really, really well and gotten good academic positions. In terms of the academic market, the people who have done the best are the sixteen people who are now members of the NBER Health Economics Program. They all have academic appointments and pretty good ones too. They have all people published in the literature and have done very, very well. In the past, a number of people went to the federal government or in some cases the local government. There are a number of people who went to AHRQ (Phil Cooper, for example, is still there). Alan Monheit also spent a lot time at AHRQ (he was actually the second person to write a dissertation with me). Avi Dor was also at AHRQ for some time. But it has been harder and harder to get hired by the Federal government. One trend that I've noticed is that the Feds have cut back some at least for people coming out of the Graduate Center. In terms of the private sector, there is a trend that I've seen in terms of a big demand for people in pharmaceutical economics both in schools of pharmacy and schools of public health and in the private sector. I never really got involved in that area and no one has written a dissertation with me in that area, but I do have at least two former students who did get involved in pharmaceutical economics after they left the Graduate Center.

Q: What made you want to get involved in ASHE? Did they twist your arm?

Mike: Joe Newhouse called me up and asked me and I didn't know how to say no. I certainly didn't volunteer. I'm at a stage in my career where I would like to allocate more time to getting a better tennis serve and learning how to parallel ski. But I thought that ASHE was a good idea and gives a real forum for Health Economics in the US. It's a nice complement to IHEA, so I thought I'd do it for a couple of years.

Q: You were at the first conference and you are helping to plan the second one for summer. How do you see ASHE growing and changing as it matures? What would you like to see a mature American Health Economics Society Conference look like?

Mike: That's a hard thing to answer. I thought the first conference was very, very good. There were a lot of people, and there were good papers. Most of the senior people doing health economics kind of stuff were there, and there were a lot of good junior people. So I think that if ASHE can hold the type of conference that it held in Wisconsin at Duke, that will be a real accomplishment. I would also like to see an increasing number of people at these conferences every other year with good papers, and that, by itself, will be a major accomplishment and a real service to the Health Economics community in the U.S. And after all, the U.S. has the largest number of health economists, so having a bi-annual conference for them to participate in will be a real valuable service.

Q: Thinking a little bit about your research and all the different things your work has encompassed, I was trying to identify some themes. One theme is the health decisions of young people in the crucial years for the onset of smoking, drinking and other risky behaviors.

Mike: I've had an interest in kids and aspects of kid's health for a long time, but of course that's not the only thing about health I'm interested in. I got interested in it when I started work on smoking. Most people who start to smoke begin to smoke when they are teens. If an individual who doesn't start to smoke by age 21, the odds are that he will never smoke. So given the public health consequences and the health consequences, I guess thought it was worthwhile to focus on teenagers. I didn't want to focus just on the general determinants of teenage smoking. Because I'm an economist, I wanted to give some economic insights and see whether teenagers respond to cigarette prices and taxes. I guess before that I had been working on the general area of children's health and had been working on that area with Linda Edwards who was a Ph.D. candidate with me at Columbia and was at that time teaching at Queens College and doing some teaching at the Graduate Center in the Ph.D. program. Our work on children's health had basically focused on the effects of parents' schooling and the home environment. It was kind of general, but from that I got interested in really looking at the effects of hard economic variables. I started out looking at the effect of price on teenage smoking and alcohol consumption with Doug Coate and Gene Lewit, both of whom had Ph.D.s from the Grad Center. Gene had written a dissertation with me, and I was Doug's second reader. At that time there was a lot of variation in the drinking ages among states, so in our work on alcohol, we focused on alcohol beverage prices and taxes, on the one hand, and the legal drinking age on the other. We decided to focus not only on teenage alcohol consumption but also motor vehicle accidents and mortality because that was (and still is) the leading cause of death among teenagers. From that I moved into other sorts of negative health behaviors that develop fairly early on and that may be related to excessive alcohol use. The work with Sara Markowitz has also focused on these issues. She did a dissertation in that area which was actually part of a research grant I had, though she did most of it on her own. Then we started to work on other adverse consequences of alcohol abuse. This is sort of a long way to say that I've really focused on the non-medical care determinants of health. I've always had an interest in the

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determinants of health and going beyond that to the non-medical care determinants and some of these are behaviors that start very early on. So that's really what led me to my interest in kids and kids' health behaviors. I haven't only focused on kids but have done a fair amount in this area.

Q: Have you ever had an interest in becoming more directly involved in policy making?

Mike: I've never been interested in that stuff. I have always thought I had enough to do with my teaching, my research, and my family and beyond that I've never really had much interest. I also never really thought I was the most effective person to do that kind of stuff and thought I had a comparative advantage in doing research and doing teaching, particularly supervising Ph.D dissertations. Some of what I've done is policy relevant and I think it gets across. My work hasn't been widely cited by policy people, but once in a while when people talk about the benefits of raising cigarette taxes they do refer to stuff that I've done and other people have done about the effects of tax hikes on smoking and alcohol consumption. Really the bottom line is that I've never been interested in going to Washington. The NBER doesn't get involved in making policy recommendations but the work has implications for public policy. I've always thought that the policy making community can use my research in whatever manner they desire to use it.

Q: So what's on your research horizon?

Mike: In the past couple years, I've sort of been involved in all things Taiwan and that's work with Shin-Yi Chou who wrote a dissertation with Frank Sloan. Shin-Yi now teaches at Lehigh which is a good academic appointment and is also about 80 miles from Manhattan. So she comes into NBER about once a week. When she first came to New York, she was teaching at the New Jersey Institute of Technology, which is in Newark and very near to Manhattan but doesn't have an Economics depart. Frank Sloan told me about her and was concerned that she didn't have a good research center in that department. So I got her involved in the NBER. I had this project on economic aspects of obesity and weight outcome with Henry Saffer and was looking for someone else to work on it with me. So she started to work on that with me and then she had some ideas of what to do with two sort of quasi-natural experiments in Taiwan. The first one developed into a research project on the effects of parents' schooling on kids' health in Taiwan. The quasi natural experiment there was that in 1968, the amount of compulsory schooling increased from 6 years to 9 years and, at the same time, there were a lot of new junior high schools that opened and they opened up at differential rates among areas. We have been using that natural experiment to try to tease out whether parents schooling has a causal impact on kids' health. We take a cohort of women who in 1968 were ages under one to 20 years old, and those who were under age 13 were exposed to compulsory schooling reform while the older kids were not. We are basically using that together with the fact that there was variation in the number of new junior high schools that opened to form an instrument for schooling. We then go to birth certificate data for this cohort of women for the period 1978 to 1999 and look at the impact on birth outcomes (low birth weight, neonatal mortality, post-neonatal mortality), where we use compulsory school reform as the instrument for mother's schooling and also for father's schooling. What we are finding there is that schooling does cause health. The IV effects are about the same as the OLS effects, so we don't have evidence that the OLS effects are biased. We also have an instrument that has a lot of good predictive power. This paper is also with Jin-Tan Liu who has a Ph.D. from Vanderbilt and teaches at National Taiwan University. He's the one who had access to the birth certificate data. Ted Joyce has also worked on this with us. So that's part of the Taiwanese projects where we have some estimates. The second one is somewhat less far along, and it deals with the introduction of national health insurance in Taiwan on kids' health. It is a sort of quasi natural experiment because in 1995 national health insurance was introduced. Before that, there was an employer-based system where government sector workers had coverage for their dependents but private sector workers did not have coverage for their dependents. There was almost no private market for health insurance. So, before 1995, there was a situation where about 30 to 40% of the population did not have health insurance, and they were basically kids and women. We formed treatment and control groups where the treatment group is the private sector workers and the control group is the government sector workers. We have the same kind of birth certificate data as for the other project, and we compare outcomes before 1995 and after 1995 to measure the effects of the introduction of national health insurance in this setting. The results of this study are much more preliminary, but so far we really aren't finding that much in the way of effects.

Q: Is there anything on the distant horizon that you want to work on next?

Mike: Sara and I have recently gotten a research grant from NIAAA. She's the PI and I'm the co-PI. This deals with effects of alcohol regulatory variables on child abuse. That is what she did her dissertation on, but the dissertation was based on self-reported survey data while this paper is based on state reports of child abuse and child neglect. Here we have much harder, more objective measures of these outcomes. We just got these data a couple of months ago, and that's what I'll be focusing on some for the next two years. I also have another project on smoking by teenagers and young adults that I'm not the PI on but I'm pretty heavily involved with but that hasn't been funded yet. It is with Sara Markowitz and John Tauras who is at University of Illinois at Chicago. John is actually my "grand student" because he wrote his dissertation for Frank Chaloupka who wrote a dissertation for me! Frank is

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Interview with Mike Grossman
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also involved in this. John would be the PI if it is funded, and it basically deals with transitions into and out of smoking states – the transition from light to heavy smoking, the transition from non-daily smoking to everyday smoking, etc. We are going to focus on prices and taxes and also Clean Indoor Air Act effects to tease out the effects on outcomes. There's been some work in this area but not much. I'd really like to work on this but so far it hasn't been funded, and I don't like to work on things that haven't been funded.

Trick or Treat
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areas of health economics where "ideal" study designs are corrupted in order to be able to take available econometric methods to data.

Consider, for example, a study of the effects of managed care on the utilization of health services. Since managed care occurs in a variety of flavors, it should be important to distinguish among them. At a minimum, one might categorize health insurance plans as either fee-for-service, preferred provider organizations, or health maintenance organizations. But even with this crude categorization, the researcher is confronted with the issue of having to estimate a treatment effects model with multiple treatments. What should the researcher do?

Similar issues arise in the economics of hospital and post hospitalization care. For example, a recent question of some policy importance asked if there were differences in costs and outcomes between various modes of post acute hospitalization rehabilitation care? Such care is typically provided in one of three settings, inpatient rehabilitation facilities, skilled nursing facilities, and at home via home-health care providers, thus necessitating the use of a statistical model of multiple treatments. Another strand of the health economics literature has asked if the ownership structure of hospitals (for profit, private not-for profit, public) affects outcomes. Again, in these situations treatment cannot be described using either a continuous or binary indicator. In the economics of mental health, there is much interest in understanding the relative efficacies and cost-effectiveness of alternative health care providers (e.g., psychologist, social worker, GP, psychiatrist) and treatment protocols (individual therapy, group therapy, therapy + pharmaceuticals). On the behavioral end of the spectrum of studies, understanding the implications of mothers' work on children's educational, cognitive and health (obesity) outcomes are of great policy interest. In such models, it is usually important to distinguish between full-time and part-time work in addition to unemployment and being out of the labor force. In each of these scenarios, the researcher is once again confronted with multiple treatments.

Such situations are not just limited to observational studies in health economics. In clinical trials with multi armed treatment, issues of compliance and defiance introduce issues of selection. The estimation of treatment effects in such models may benefit from an explicit accounting of selection via treatment effects models. Also, although the examples above have emphasized multiple treatments, the same issues arise if one considers situations in which there are multiple, distinct, control groups.

So what should an applied researcher do? Arguably, in some situations, one might reasonably be able to abstract away from the notion of multiple treatments and/or multiple controls. In general, one expects this approach to be costly, either because substantive information is lost in aggregation, or because aggregation leads to measurement error biases.

A simple approach that does not sacrifice substantive information, i.e., models multiple treatments, and one that is growing in popularity, is known as the control function method. An appealing feature of this approach is its computational simplicity. It involves estimating a set of equations for treatments, e.g., a multinomial logit, and then including the residuals (more generally functions of residuals) from those equations in a second-stage model of the outcome equation. This approach does not require specialized software or programs as canned routines are usually available to estimate treatment and outcome equations separately. It is also quite general and can be given a semi-parametric justification. Inference in the outcome equation is complicated by the inclusion of estimated variables, but this is a relatively easy hurdle to overcome. One disadvantage of this approach is that the quality of the estimates depends crucially on either nonlinearity of the residuals or the existence of strong instruments. In addition, such estimates are likely to be quite inefficient. Furthermore, in many nonlinear contexts including the multinomial treatment in focus here, it is not clear how one calculates a residual; often the literature describes multiple measures. Parameter estimates and treatment effects are usually sensitive to how the residuals are defined.

A second, more computationally complex approach, develops a joint parametric model of treatments and outcomes. It is typically true that investigators have good a priori reasons for choos-

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ing particular (and uncontroversial) marginal models for treatments and conditional (on treatments) models for outcomes. For example, one would typically use a multinomial logit or probit to model selection into treatments. If one had a binary outcome, a probit or logit would be appropriate. A negative binomial regression might be appropriate if the outcome was integer-valued. But, the transition from marginal and conditional distributions to a joint model for treatments and outcome is difficult because analytically tractable and appropriate multivariate distributions often do not exist. But if latent factors are incorporated into the treatment and outcome equations to allow for common unobserved heterogeneity between treatment and outcome equations, a combination of appropriate conditional and marginal distributions into a joint distribution is feasible. If the distribution of the latent factors is taken to be discrete, evaluation of the resulting likelihood is straightforward; it involves a weighted average of standard likelihood function evaluations. If the distribution of latent factors is continuous, the resulting likelihood is more complex but can be approximated using simulation techniques. These methods are, indeed, computationally complex and there are pros and cons to the discrete and continuous factor approaches, but the general approach is well worth the effort in the types of situations described above. There is considerable recent development work in this area and easy-to-use packages are being developed and improved.

The control function method for addressing issues of endogeneity originated with a paper by Newey, et al. (1999). Blundell and Powell (2004), Heckman and Navarro (2004) and Lee (2007), among others, have developed control function methods in a variety of settings. A parametric model for multinomial treatment and integer-valued outcome is developed in Deb and Trivedi (2006a) with Stata software for its estimation described in Deb and Trivedi (2006). With luck, that software will be extended soon to allow for continuous outcomes with a variety of distributions, and binary outcomes.

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