Commentary—Response to Richard Kronick

Jack Hadley and Timothy Waidmann

It is encouraging that the debate appears to be shifting from the question of whether having health insurance has any impact on health to the question of the magnitude of its positive effect on health. Moreover, a healthy dose of skepticism to peer-reviewed evidence is both appropriate and necessary for the research process to advance. Research findings should be tested against other evidence before they become the basis for making policy.

In that spirit, we welcome the debate about the strengths and weaknesses of the evidence we present and would like to address some of the issues and observations raised by Richard Kronick in an accompanying commentary. The main thrust of the commentary is that our estimate of the impact of health insurance on health is too large. In responding, we wish to raise the question of why earlier estimates may have been too small.

The commentary argues that earlier studies (Franks, Clancy, and Gold 1993; Sorlie et al. 1994) suggest a considerably smaller estimated impact of having health insurance on mortality. We believe that the difference between our study and the earlier work may be because of a combination of differences in the populations studied—our population is older and sicker—and differences in methods that caused downward bias in the earlier studies.

The populations for both of the earlier studies included adults as young as 25. Almost half of the sample in Franks, Clancy, and Gold (1993) was between 25 and 44 years old, and over 70 percent was under age 55. Our population was 55–61 at baseline and was followed to age 63 or 64. Consequently, our population has a higher prevalence of health conditions that are both life-threatening and amenable to successful treatment, especially when diagnosed early. Thus one would expect that lack of health insurance would have a bigger impact on mortality than in a younger and healthier population.

To illustrate this point, we turn to data from the 2000 to 2002 Medical Panel Expenditure Surveys to compare younger adults aged 25–54 years to the near-elderly, i.e., 55–64-year olds. Near-elderly respondents experienced

much higher rates of diabetes (11.2 versus 3.3 percent), high blood pressure (40.4 versus 14.9 percent), stroke (3.5 versus 0.8 percent), heart conditions (10.6 versus 2.3 percent), arthritis (35.3 versus 12.5 percent), and cancer (5.3 versus 1.6 percent). They were also much more likely to rate their overall health status as poor (6.3 versus 2.6 percent). Other research (cf. Institute of Medicine 2002; Hadley 2003) has demonstrated that the people without insurance are much less likely to be screened for these conditions, are more likely to be diagnosed at a more advanced disease stage, receive less therapeutic care, and experience higher mortality rates.

It is also important to point out that in comparing the results of our analysis with the earlier studies, the adjusted hazard ratio of death for an uninsured person of 1.25 (from Franks, Clancy, and Gold 1993) is not the same metric as the ratio of mortality rates by baseline insurance status.¹ In that study, 9.6 percent of the people who were insured *at baseline* died by the end of the observation period, compared with 18.4 percent of the people who were uninsured *at baseline*, a two-fold difference, not 25 percent as suggested by the commentary. In our sample 6.2 percent of those insured at baseline died by the end of the observation period (which was shorter than in the Franks, Clancy, and Gold 1993 study), compared with 10.8 percent of those uninsured at baseline—a difference that is less than twofold.

This last observation leads to an important methodological difference between our study and the earlier studies, neither of which adjusted for people gaining or losing health insurance. Thus, their results probably understate the mortality difference between a *continuously* insured population and a population that is uninsured over all or part of the observation period.²

The second and probably more contentious methodological difference between our study and the earlier work is our use of instrumental variable (IV) analysis to adjust for the bias that may be caused by the effects of unobserved health on insurance coverage. For example, 12 percent of our near-elderly sample obtained Medicare or Medicaid coverage, which occurs primarily because of either disability or end-stage renal disease, *after the initial baseline interview*. Similarly, people in less than excellent health may be more likely to stay on the job to keep their health insurance coverage rather than retire early, while people who consider their health prospects to be very good may be more willing to risk going without health insurance. If sicker people are more

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likely to have coverage and healthier people more likely to go without, then the observed effect of health insurance on health will be biased toward zero because unobserved health influences both insurance coverage and health outcomes. It is also possible that sicker people will have more trouble obtaining insurance, which would bias the result in the other direction. Which effect is stronger is an empirical question and, in either case, it is important to try to control for this potential source of bias.

The goal of IV analysis is to replace the variation in insurance coverage because of unobserved health by variation caused by factors that are arguably independent of health through the use of the so-called instruments. While there are statistical tests that indicate whether the instruments satisfy the necessary assumptions, it still remains that these are not sufficient. Good instruments must also pass muster in terms of plausibility.

The commentary questions the plausibility of using involuntary job loss, foreign birth, and years in the U.S. if foreign born as instruments. While we cannot prove the validity of our underlying assumption, although these instruments do pass the statistical tests, we can offer the following observations. First, poor health is *another and separate* response option to the survey question about leaving one's job. Although poor health is a major reason given for leaving work, only 4.3 percent of the cases we classified as involuntary job losers also cited poor health as a factor. Second, the immigrants in our sample actually have better baseline health than U.S.-born respondents. Moreover, our first-stage model suggests that the negative effect of immigration on insurance coverage dissipates the longer an immigrant is in the U.S. This would not be the case if immigrants were in poor or declining health, which would make it difficult for them to obtain coverage.

Nevertheless, given the uneasiness that always seems to accompany an IV analysis, researchers should, to the extent possible, explore the sensitivity of their results to alternative combinations of instruments. We note that in our study the IV coefficient estimate of the health insurance variable does fluctuate with the combination of exogenous instruments used in the first-stage insurance equation, and that these alternative estimates bracket the value we report in Table 4 and use in the subsequent spending simulation.

We also note, however, that all of the IV estimates are larger in magnitude than the ordinary least squares (OLS) coefficient estimate. Moreover, our use of IV analysis is responsible for only 35 percent of the predicted reduction in mortality associated with complete insurance coverage. The observational analysis, which reflects the differences between continuous and intermittent or no coverage and between the poorer health of our population

and those of earlier studies, accounts for the other 65 percent, i.e., the reduction in predicted mortality from 6.7 to 4.9 percent. While the search for better instruments is always desirable, we doubt that alternative instruments would have a dramatic effect on the insurance variable's final coefficient value.

Another possible source of upward bias in our analysis is the omission of income, which we excluded from the model on the grounds that it is endogenous with respect to health. We re-estimated our models including baseline household income and net worth as additional control variables in both the first-stage insurance and second-stage health models. The revised IV estimate of the insurance coefficient is 2.80 ($p < .01$), compared with the value of 2.67 without income and wealth in the models. Thus, it would appear that in a longitudinal sample baseline controls for education, health, race, and ethnicity adequately capture the effects of income and wealth on health.³

The final methodological point we wish to make is to caution against judging the magnitude of the insurance effect from its coefficient in the first-stage linear model used to test the statistical properties of the instruments. That model treats both baseline and exit health status, which are categorical variables, as continuous variables because the statistical tests are only well defined for linear models. However, the linear model is inappropriate for making statements about marginal effects of baseline health status on final health status. Using the ordered logistic model to simulate the effect of being in excellent health at baseline with no chronic conditions compared with being in the worst possible health state with all of the chronic conditions shows that the predicted mortality rate increases from 0.7 to 56.6 percent—clearly much larger than the estimated impact of not having insurance.

With regard to policy implications, we agree with Kronick that the case for expanding health insurance coverage should not be based on the argument that it will pay for itself by reducing overall health spending. Other research (Hadley and Holahan 2003; Institute of Medicine 2003; Holahan, Bovbjerg, and Hadley 2004) clearly indicates that covering the uninsured will increase their health spending. (This research also suggests that the incremental resource cost of covering the uninsured is fairly modest, a 3–5 percent increase in total health spending.)

Our simulation makes a much more limited point, i.e., with a static technology and delivery structure, a healthier cohort of new Medicare beneficiaries should spend less on medical care than a sicker cohort in the short term, even though the healthier cohort is larger because of increased survival to age 65. Some believe that even if expanding health insurance reduces mortality, the number of people in poor health will increase and Medicare

spending will increase. Our simulation suggests that this may not be an inevitable outcome.

We also agree that the primary case for expanding health insurance coverage is that it will improve health and that good health is highly valued. In spite of the difficulty of deriving precise estimates, studies by the Institute of Medicine (2003), Cutler (2004), and Nordhaus (2002) all suggest that Americans place a high value on good health and that this value probably exceeds the cost of covering the uninsured.

Kronick is also undoubtedly correct in asserting that the politics of health insurance expansion and the inevitable income transfers that would accompany major changes to our current system are the primary obstacles to covering the uninsured. However, even though one of us proposed the idea for a randomized trial to provide insurance for previously uninsured people in an earlier paper (Hadley 2003), we do not share Kronick's belief that more research will produce substantively different results for this population. Ours is not the first study to suggest that having health insurance improves the health of the near elderly. We believe that our analysis, along with the prior health and retirement survey (HRS) studies we cite, provide ample evidence that expanding insurance coverage among the near-elderly will result in a significant health improvement in this population. While it would be useful to know more about the dynamics of health insurance coverage and health, and to have studies of other near-elderly populations to pin down a more precise point estimate of the magnitude of the health insurance coefficient, whether it is somewhat smaller, or possibly somewhat larger than our estimate is a second-order issue.

Our policy recommendation is that Medicare coverage be available at age 55 for people to purchase like any other insurance on an actuarially sound, age-related basis, but with income-related subsidies to make coverage affordable for low-income people. The potential for improved health in this population is substantial, and we believe that the value of that health improvement would justify the subsidies that would be required. At this point, the primary goals for both research and policy should be to identify the financing and organizational reforms that will lead to a more cost-effective and quality-effective health care system, which will make insurance coverage for the uninsured affordable.

NOTES

1. Sorlie et al. (1994) estimated adjusted hazard ratios of 0.8 (not significant) for black women, 1.2 for white men, and 1.5 for white women and black men.

2. Franks, Clancy, and Gold (1993, p. 740) make this point in the comment on their findings.
3. We also note that income was not statistically significant in Franks, Clancy, and Gold (1993).

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