

regional variations are lost. One example is the impact of the variable immigration, which reflects the socioeconomic distribution of the population, itself a factor that profoundly affects major public health outcomes. Is it meaningful to compare and rank California, a state with great annual immigration, with New Hampshire on a criterion like childhood poverty rate? Intergenerational improvements generally occur in this variable, and one wonders whether an Ellis Island effect can be observed in regions where, despite efforts to reduce child poverty, immigration obscures improvements that occur over time. Many people arriving in California, Florida, New York, and at least six other states undergoing the transition to a new American demography eventually migrate to other regions of the nation as their socioeconomic level improves. Frequently, public health status improves concomitantly. A similar problem arises with respect to spending criteria: does the report card incorporate the considerable variation that exists across states with respect to cost of living, per capita income, and cost of service delivery?

Another problem appears to be the selection of criteria for inclusion and their apparent equal weighting. It is doubtful that fluoridated water, as vital as it may be to preventive dental care, should be equal in the ranking scale to smoking rate or violent crime rate. The resultant preventable morbidity and mortality are much greater, both in human and economic costs, for some of these criteria than for others. One category (healthy neighborhoods) is based on eight items whereas another is based on only three items (community health service). The composite scores are the averaged ranks for an item; thus not only does fluoridated water count equally with pollution standard index or smoking rate (both elements of a four-item category), but it counts twice as much as childhood poverty or violent crime rate (elements of an eight-item category).

States may have ranked quite well on variables of relatively low public health import and scored poorly on those of great significance to yield the same quartile as a state with the opposite pattern. Can these states be truly considered equal as regards the status of public health? The use of the lowest score for missing data is highly questionable and not a standard statistical methodology except to ensure against understating the worst case scenario. Equal emphasis on government health spending per capita as an indicator is also puzzling, since many proponents of US health care

reform, including APHA, have articulated the view that the nation already spends more than any other industrialized nation and is getting less in terms of better health outcomes. It is becoming increasingly clear that government spending on health is not necessarily correlated with improved public health. Perhaps spending on preventive health services as opposed to tertiary medical care would be more germane to the objectives of the report card. Some items have too many data missing to be representative and meaningful. An example is work-related injury, for which one fifth of the states had not reported any data.

America's Public Health Report Card was a visionary and ambitious undertaking, and APHA is to be commended for this effort. However, the evaluative complexity involved seems to have been somewhat underestimated and thus lessens the utility of the document to public health practitioners. These and other methodological issues need to be addressed before the next report is generated. □

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Reference

1. *America's Public Health Report Card: A State-by-State Report on the Health of the Public*. Washington DC: American Public Health Association; November 1992.

Lashof and Colleagues Respond

Although Gellert and Maxwell raise a number of appropriate concerns relating to the methodology used in preparing *America's Public Health Report Card*, he misses one of the key purposes of the report card, namely, to get the issue of the broader determinants of health on the nation's agenda. Our goal was to make clear to policy-makers and the public that dealing only with financial access to medical care will neither solve the marked disparities in health status that exist in this country nor successfully deal with many public health problems.

In response to some of the specific methodological issues raised we offer the following comments. The lack of comparability of the degree of problems that states are dealing with is quite valid. But we hope states will look inward, analyze their own indicators, and see what progress they are making. Indeed, many states

are now using the report card as a model for analyzing the differences within their states. The weighting of criteria is a problem to which we gave a great deal of thought. Ultimately we decided to rank states only by quartile within each category and not give an overall ranking. Further ideas on how to deal with this problem are welcome. The use of the lowest score when data were missing, although problematic, at least made the point that obtaining data is important. The item on government spending per capita did not include spending for tertiary care, rather it was based on spending for outpatient preventive services and public health activities, including environmental protection.

The use of the report card format undoubtedly presents some scientific methodological issues that are difficult to address. Nevertheless, we chose this format as a vehicle for focusing public and media attention on our overall message. We welcome further suggestions on how to improve this effort in the future. □

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Editor's Note. See related 1992 Presidential address (p 1222) in this issue.

Drug Users' Self-Reported False-Positive HIV Status

McCusker, Stoddard, and McCarthy¹ report that three of 30 human immunodeficiency virus-1 (HIV-1) test results from injection drug users were reported by the subjects as being positive but were in fact negative. Six of 243 negative reports were false negatives. We conducted interviews with and serological testing of blood blots from injection drug users in Brisbane, Melbourne, and Perth, Australia, in 1989 and a further sample in Sydney in 1990. We used a combination of structured interview and, for the self-report of previous HIV test results and sexual history, written questionnaire response from the subject. Details of the study and methods are published elsewhere.^{2,3}

In our 1989 data, 1264 subjects volunteered for HIV-1 testing and provided elutable blood blots, and 22 (1.7%) were antibody positive according to Western blot analysis. Of these, 17 indicated in the

questionnaire that they were HIV positive, yet their serological tests were negative. In our 1990 Sydney data, 210 subjects volunteered for HIV-1 testing and provided elutable blood blots, and 7 (3.3%) were antibody positive according to Western blot. Six subjects indicated in the questionnaire that they were HIV positive yet had negative serological tests. Paper-absorbed fingerstick blood blots have been demonstrated to have accuracy equivalent to serum samples.⁴ The number of respondents who reported themselves to be HIV antibody negative but whose serological tests were positive was 2 in the 1989 sample and 0 in the 1990 sample.

In our analysis of the interviews (which contained the question, "What do you think your chance is of catching the AIDS virus [HIV]?") matched with the respective questionnaires (which asked, "Have you ever received a positive test result?," subsequent to "Have you had an AIDS [HIV] test?"), we found discrepancies. Of those with negative serology tests who reported on the questionnaire that they were HIV positive, 13 of the 17 in the 1989 data and 3 of the 6 in 1990 had indicated in the interview that they were not already infected (one of the response options to the question about the chance of contracting HIV).

If those subjects who gave discrepant responses between interview and questionnaire are reclassified on the basis of their interview response, the two data sets give the predictive value of a positive HIV test as 87% (1989) and 73% (1990), lower than the values provided by McCusker et al. However, we had the opportunity to reinterview one of the subjects who reported a positive test result but who had a negative serological result. He indicated that he had understood a "positive" result to mean a good result, that is, no evidence of HIV infection, in the sense of colloquial English rather than serology. The high number of our subjects who indicated that they had a "positive" test result while negative on serology suggests that this misunderstanding may be the source of significant inaccuracy in self-report. Although this is of uncertain relevance to the results of McCusker et al (the wording of their questions was not reported), researchers' checks on the understanding of the meaning of questions (and, in particular, on the use of the term "infected with HIV (the AIDS virus)" rather than "HIV positive") may eliminate some of these apparent false-positive results. Neverthe-

less from a behavioral and public health perspective, what is important is *perceived* HIV serostatus and its impact on the individual's behavior. □

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1. McCusker J, Stoddard AM, McCarthy E. The validity of self-reported HIV antibody test results. *Am J Public Health*. 1992;82:567-569.
2. Ross MW, Gold J, Wodak A, Miller ME. Sexually transmissible diseases in injecting drug users. *Genitourin Med*. 1991;67:32-36.
3. Ross MW, Wodak A, Gold J, Miller ME. Differences across sexual orientation on HIV risk behaviours in injecting drug users. *AIDS Care*. 1992;4:139-148.
4. Steger KA, Craven DE, Shea BF, Fitzgerald BR, Scherzler M, Seage GR, Hoff R. Use of paper-absorbed fingerstick blood samples

for studies of antibody to Human Immunodeficiency Virus type 1 in intravenous drug users. *J Infect Dis*. 1990;162:964-967.

McCusker and Stoddard Respond

We computed the sensitivity, specificity, and positive predictive value of self-reported human immunodeficiency virus (HIV) status from the data provided by Ross et al., first for the original self-reports and then for the reclassified self-reports (Table 1). (Reclassification increases the predictive value and specificity by reducing the number of false-positives.) The overall positive predictive value of their reclassified self-report was 79.4%, which is lower than the 90% that we reported from injection drug users in Massachusetts.¹ Their overall values for the sensitivity and specificity of the reclassified report are somewhat higher than ours: 93.1% vs 81.8% for sensitivity, and 99.5% vs 98.8% for specificity. The main contributing factor in their data's lower positive predictive value is the lower HIV seroprevalence²: 2% vs 12.1% in our study population.

Ross's comments regarding the wording of questions on HIV status are a timely reminder of the need to carefully pretest survey questions, as study subjects may interpret questions differently from the investigator. □

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TABLE 1—Sensitivity, Specificity, and Positive Predictive Value of Original and Reclassified Self-Reported HIV Status

	Western Blot Result			Sensitivity, %	Specificity, %	Positive Predictive Value, %
	+	-	Total			
1989 data set						
No. subjects	22	1242	1264			
Original serostatus self-report				90.9	98.6	54.1
Positive	20	17	37			
Negative	2	1225	1227			
Reclassified serostatus self-report				90.9	99.7	83.3
Positive	20	4	24			
Negative	2	1238	1240			
1990 data set						
No. subjects	7	203	210			
Original serostatus self-report				100	97.0	53.8
Positive	7	6	13			
Negative	0	197	197			
Reclassified serostatus self-report				100	98.5	70.0
Positive	7	3	10			
Negative	0	200	200			
1989 and 1990 data combined						
No. subjects	29	1445	1474			
Reclassified serostatus self-report				93.1	99.5	79.4
Positive	27	7	34			
Negative	2	1438	1440			