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The Behavioral Risk Factor Surveillance System: Information, Relationships, and Influence

James S. Marks, MD, MPH^{1,2,3,*}, Ali H. Mokdad, PhD⁴, Machell Town, PhD⁵

¹CDC Foundation, Atlanta, Georgia

²University of Illinois, Chicago School of Public Health, Chicago, Illinois

³University of Michigan School of Public Health, Ann Arbor, Michigan

⁴Institute for Health Metrics and Evaluation, University of Washington, Seattle, Washington

⁵Population Health Surveillance Branch, Division of Population Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia

“What gets measured gets done.”

Mason Haire, as quoted in *In Search of Excellence* 1982

The indicators a society chooses to report to itself about itself are surprisingly powerful. They reflect collective values and inform collective decisions. A nation that keeps a watchful eye on its salmon runs or the safety of its streets makes different choices than does a nation that is only paying attention to its GNP. The idea of citizens choosing their own indicators is something new under the sun—something intensely democratic.

Donella Meadows, as published in *The Global Citizen* May 20, 1993

It has been 35 years since this issue from the archive article, *The Behavioral Risk Factor Surveys: State-Specific Prevalence Estimates of Behavioral Risk Factors*, and its companion papers on the then Behavioral Risk Factor Surveys were published in the November 1985 *American Journal of Preventive Medicine*.^{1–3} The Centers for Disease Control and Prevention (CDC) had only recently formed the Center for Health Promotion and Education. Several years later, CDC would combine that center with some other programs (e.g., Diabetes) to form the National Center for Chronic Disease Prevention and Health Promotion.

In 1981, several CDC programs’ cooperative agreements (Hypertension, Health Education, Fluoridation, and others) were consolidated into the Preventive Health and Health Services Block Grant.⁴ The flexibility that comes with block grant funding also meant little or no

Address correspondence to: James S. Marks, MD, MPH, 709 North 5th Avenue, Ann Arbor MI 48104. santiagoa3158@gmail.com. 0749-3797/\$36.00.

*Author Marks was formerly employed with Robert Wood Johnson Foundation, Princeton, New Jersey, and the Centers for Disease Control and Prevention, Atlanta, Georgia.

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requirement for reporting on the effectiveness of state efforts on issues such as hypertension screening and detection. Around this same time, the newly developed *Healthy People 1990: Promoting Health/Preventing Disease: Objectives for the Nation* was published, and it highlighted the need for data to track the progress in reaching the objectives and also urged state and local health departments to adopt/adapt the objectives for their jurisdictions so that they would contribute to the accomplishment of these objectives.⁵ Within this context, CDC began to work with individual states to carry out onetime surveys of behavioral risks—the Behavioral Risk Factor Surveys is how they were referred to in the early papers in the *American Journal of Preventive Medicine* and elsewhere. What was important from the beginning was the value of the results for state officials and especially for their mostly small chronic disease prevention and health promotion programs. The results of the first surveys received substantial local visibility in the press, and many states wanted additional surveys to detect progress, if any. The result was the initiation of the formal yearly Behavioral Risk Factor Surveillance System (BRFSS) in 1984 as the successor to the early one-time surveys.

There is much that warrants comment, but we have chosen 3 themes to emphasize.

FOCUS ON STATES

From the beginning, the surveys were intentionally designed to be practical and useful primarily for the individual states. This required flexibility in the questionnaire design, sampling methodology, and statistical weighting across and within states. However, earlier on, efforts were also put in place to ensure that the different BRFSS state surveys were both comparable with each other and could be combined to generate nationwide estimates. This latter issue was important in the first few years for the acceptance of the BRFSS approach more generally.

Flexibility was built into the sampling design to allow regional stratifications of various types within each state, when desired.⁶ The state-specific stratifications required a larger sample size and hence more telephone calls. However, this early attention to state utility and interests led to the strong engagement of state leadership in future decisions about the BRFSS.

Interviewer training, sampling, editing, weighting, statistical support, and some financial assistance were offered by CDC. There was a strong interest from states that had participated in the one-time surveys to continue and from other states to be included. Questions from national surveys were recommended when applicable for the comparability of the BRFSS state results with other survey results. These same questions (later called core questions) with a few others came to be asked routinely, and gradually, more and more state-specific questions were developed and used. The definitions used in calculating the prevalence of risks and behaviors were the same across states to improve the comparability of results.⁶

To make the early findings more valuable and comparable with national surveys, CDC commissioned a wraparound survey in the 21 states that had not completed a one-time survey in the initial wave. The results confirmed that the approach of state-based BRFSS

surveys compared well, in aggregate, with that of national surveys that used the same question.² These findings also helped to confirm that the results would be useful for the states to track trends in their jurisdictions. With the growing demand for more state-specific data, more states joined; therefore, future wraparound surveys were unnecessary.

Over time, the state-CDC interaction became more formalized, leading to an annual stakeholder meeting to discuss methods, challenges, and new questionnaire content. There was always a strong focus on utility for individual states (e.g., was the risk or behavior common enough to provide meaningful, useful data for an individual state?). If not, that question or module was highly unlikely to be included. A major outcome of this partnership process was that the states provided increasingly influential leadership to the system as a whole.

FOCUS ON BEHAVIORS

The decision to focus on behaviors was explicit. Knowledge and attitudes were important, largely because of how they were expected to influence behaviors. This also helped efforts to keep the duration of the interview short so that the telephone respondents would stay engaged. However, over the years, the behaviors and conditions the BRFSS asked about expanded substantially. This has led to some questions, previously asked annually, to shift to every other year. The new content increased the ability to assess more issues of public health responsibility. The optional modules gave the states the ability to target specific health issues that might be of lesser priority to other states (e.g., smokeless tobacco and sun exposure). Gradually, as new questionnaire modules developed, a repository of previously used questions and modules was established so that other states could readily view and use previously tested questions.⁷

A high point occurred when a state official, presenting to CDC leadership, stated that his state found the BRFSS to be so useful that it would be a difficult decision if he had to choose between it and vital statistics.

BEHAVIORAL RISK FACTOR SURVEILLANCE SYSTEM INFLUENCE

The BRFSS has had a substantial influence on the field of public health surveillance in general and with regard to specific topic areas. With the success of the states in using BRFSS, in 1987, CDC began the Pregnancy Risk Assessment Monitoring System.⁸ This surveillance system focused on women who had recently delivered a baby and asked them about risk behaviors during their pregnancy and during the first few months of their baby's life. A few years later, the then new Division of Adolescent and School Health began a school-based Youth Risk Behavior Surveillance System. Both Pregnancy Risk Assessment Monitoring System and Youth Risk Behavior Surveillance System, like the BRFSS, retained both state utility and behaviors as central elements in their implementation.

The success of BRFSS and these other systems was that state surveillance of risk behaviors became accepted, and substantial state variations, although often suspected, were confirmed. One example is an analysis of drinking and driving behaviors where BRFSS showed a 6-fold variation between individual states in prevalence estimates.⁹ Another report evaluated a

policy shift, showing that mammography use was higher in states with mandates for health insurance to cover it.¹⁰ BRFSS uses such as these enabled the states to base policy and program decisions on their own data and situations and track trends in their effects.

Over time, prevalence differences that were more regional and important temporal changes became prominent. One of the most compelling was an article on the trend of increasing obesity prevalence estimates across all the states, with lower estimates in the western region and higher ones in southern states.¹¹ This article received tremendous press attention and was important in galvanizing interest in tackling the growing obesity epidemic. Later, as state sample sizes increased, data could be aggregated and modeled to yield city- and county-specific estimates, highlighting geographic variation within states. This BRFSS data later contributed substantially to the University of Wisconsin's annual County Health Rankings and Roadmaps report to the nation and CDC and the Robert Wood Johnson Foundation 500 Cities Project. As further evidence of its influence, other countries have begun to conduct behavioral risk surveillance modeled after the BRFSS.¹²

CLOSING

This commentary led off with 2 quotes. The first, "What gets measured, gets done," has become well known in epidemiology and public health, framing succinctly why measures are needed for issues of importance to health. Although that quote was not part of our early thinking, in essence, it frames the purpose of BRFSS, that is, to enable the states and now local health agencies, which together have so much responsibility to protect, promote, and preserve the public's health; track changes in behaviors; and assess progress toward improvements in health and prevention of premature deaths. The growth in BRFSS sample sizes and content flexibility has enabled local officials to have data directly relevant to their jurisdictions and has helped empower them to take actions. Although not thought of early, the variability among local jurisdictions and the need for city and county data have become a central utility of BRFSS as sample size has grown.

Donella Meadows' quote is less well known and is almost a more proactive version of the first quote. She opens up the idea that we, in public health, need to measure more of the root causes and those issues that reflect directly where we want to go as a society. To a degree, the BRFSS has evolved toward that. The measurement of healthy days is 1 example. Another is that some states are using BRFSS to obtain estimates of the adverse childhood experiences that were the subject of an earlier retrospective in this journal.¹³ Other newer modules include cognitive decline, emotional support, e-cigarette and marijuana use, and intimate partner violence, just to mention a few issues for which state-specific data were often unavailable before BRFSS. The willingness of individual states and CDC to experiment and try to measure public health concerns at the state and local levels has helped public health practice become more oriented to the importance of the social and structural determinants that underlie so many individual conditions and risks. This ongoing adaptation of BRFSS to address underlying conditions that affect racial and ethnic disparity in health or other social determinants of health is likely to become an even more important contribution to public health's leadership role in the future than solely the measurement of specific risks or conditions.

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