STATISTICAL SIGNIFICANCE

Statisticians design studies and analyze and interpret data that empowers health policy stakeholders to draw conclusions and make decisions about the most effective and efficient treatments, caregivers, health care systems, and health care policies. Statisticians contribute to providing more and better information for a spectrum of decisionmakers—those at the kitchen table and those in the private sector, government, hospitals, and doctors' offices.

Health Policy

RATING HOSPITALS: Government agencies publish online report cards that allow consumers to compare health providers for various quality and cost indicators. These metrics must account for the different environments in which these health providers operate. For example, an urban public hospital will typically serve patients with much lower incomes, less preventive care, and different risk factors than a private suburban hospital. Sophisticated statistical models that simultaneously account for the different hospital, clinical, and patient characteristics provide the adjustments necessary to avoid an urban hospital being penalized for the sicker patients it tends to treat.

INFORMING POLICY CHANGE: The ability to estimate a range of costs and benefits associated with policy change is an enormous help to policymakers. Statisticians have helped develop several models that do just that. One such model, in use by government and private institutes, incorporates individual disease histories to simulate the effect of a policy change on the action of individuals (e.g., initiating cancer screening at a particular age).

COMPARING EFFECTIVENESS: As a response to studies about medical decisions made without rigorous scientific support, governmental organizations in different countries now sponsor systematic reviews that evaluate the evidence supporting (or not supporting) the basis for the effectiveness and efficiency of medical care. The direct comparison of the relative merits of different modalities for different patients, "comparative effectiveness," relies on statistical techniques. As one example, a recent meta-analysis compared the effects of 12 new-generation antidepressants and identified which were most effective, allowing health providers to provide better care.

TRACKING THE NATION'S HEALTH: Statistical methods are used extensively to monitor the health of the U.S. population. Specially designed surveys highlight trends and the health status of the population, including important sub-populations such as the elderly and children. Statisticians have also developed indicators of health care that are measured through national and regional assessments to identify emerging health problems and epidemics. Accurate measurements are essential to keeping our population healthy, evaluating the impact of health-care interventions, and informing and evaluating public health policies and programs.

SUPPORTING AND REWARDING QUALITY CARE: It is inefficient and unfair to pay too much for some health care services and not enough for others, or to hold providers who care for the sickest patients responsible for their higher costs and worse outcomes. Statisticians have developed tools that use patients' demographic and medical data to determine how much to pay providers to cover expected costs and achieve expected outcomes of care. Risk-adjusted, global payments that have been adopted by the Centers for Medicare and Medicaid Services enable providers to use resources well.

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