

A1 Methodology

The estimated economic impact includes economic output, employment, and labor income, which includes wages, salaries and benefits. The total impact includes *direct, indirect and induced effects*. *Direct* employment is the personnel hired by the department in its ongoing operations and maintenance programs, including engineers, construction workers, administrative, management, and so on. *Direct* output is the value of the services provided by the department. *Indirect* effects are those which stem from the employment and output motivated by the purchases made by the department. For example, indirect jobs are sustained by the suppliers of the office supplies and insurance purchased by a hospital. *Induced* effects are those generated by the household spending of employees whose wages are sustained by both direct and indirect spending.

Contribution analysis of an industry differs from economic impact analysis of a specific project or development to more accurately account for the inter-industry linkages of the sector under consideration. This limits the analysis to only those indirect and induced effects that can be attributed to the sector itself and eliminates double-counting which would occur if economic impact analysis were employed. It provides a more accurate estimate of the actual contribution of the sector to the regional economy.

Estimating the industry's total contribution is complicated by a lack of data. Industry revenues are published by the Economic Census at five-year intervals, the latest of which was completed in 2007. We use this data and extrapolate to 2010 by applying the rate of growth of employment calculated from the Census of Employment and Wages. The growth in employment from 2007 to 2010 was 1.74 percent. Assuming labor productivity to be constant, this implies revenues of \$33.6 billion in 2010. Note that this methodology produces revenue consistent with



the reported revenues from OSHPD but that this may underestimate the total industry revenues.

Estimates for construction spending in 2010 for each county were obtained from OSHPD using the change in percentage of completion of active projects during the year.

Using these as direct output values, we estimated the indirect and induced impacts using models developed with data and software from MIG, Inc. MIG's IMPLAN system is a robust widely-used set of modeling tools that provide economic resolution from the national level down to the ZIP code level. Using multi-regional analysis, these tools allow the estimation of the contribution of hospital operations in the county where they occur and their consequent spillover impact on neighboring regions.

Our estimates for labor income and output are reported in 2010 dollars to correspond with the currency reported in the operations and construction budgets. Labor income includes payments made to wage and salary workers and to the self-employed. Employment estimates are measured on a job-count basis for both wage-and-salary workers and proprietors regardless of the number of hours worked, and are generally reported on an annual basis, i.e., the number of full and part time jobs supported in one year. ❖