

REDYN Model Data Sources and Baseline Estimation Process

Where the REDYN Model Gets Data

Regional Dynamics uses several sources to estimate county-level employment and output for its baseline database. The REDYN model applies the North American Industrial Classification System (NAICS) at the five-digit detail level (703 industries), and also uses NAICS to identify all the goods and services (over 180 commodities) consumed and produced by the detailed industries. NAICS is used by the US Government to classify and organize information about all the various industries making up the US economy, such as retail stores, automobile manufacturing, insurance firms, and so forth. NAICS reports five levels of detail. The two-digit level aggregates all activity into 24 broad economic industries, and the five-digit level identifies activity across 703 specific industries.

The primary data sources are the County Business Patterns (CBP) from the Bureau of the Census, and the Regional Economic Information System (REIS) from the Bureau of Economic Analysis (BEA). Wage Bill (payroll) data are derived from the same sources and with the same techniques as the employment data. The CBP reports the total annual payroll for each NAICS code up to the five-digit level of detail for the US as a whole and for every region, state, and county. However, total employment data and total payroll data are subject to data suppressions for privacy. Regional Dynamics developed a sophisticated row-and-column sum (RAS) analytic system to fill all data suppressions by using all information available in the CBP series and guaranteeing internal consistency with unsuppressed wage and employment data. All the furnished and estimated CBP wage bill and employment data are then totaled and scaled to match the wage bill and employment data reported in the BEA's REIS, which includes all county and state wage bill data at three-digit NAICS detail and employment data at two-digit NAICS detail.

The REIS directly provides wage bill and employment data for the government and agriculture sectors, and also disposable personal income data by county. The REIS county income data are used to allocate national consumption to counties from the BEA's National Income and Product Accounts (NIPA).

Annual Input-Output (IO) tables are constructed using BEA IO make-and-use tables, as well as biennial 10-year IO forecast tables from the Bureau of Labor Statistics (BLS). Make tables describe all the commodities made by each economic entity, and use tables describe all the commodities used by each economic entity. The very detailed BEA IO make-and-use tables are extended year-by-year to match the annual changes in make-and-use composition implied by the current 10-year BLS IO tables. This generates a detailed annual forecast series of national IO make-and-use tables.

Each county's wage bill by industry is used to allocate each industry's national output to counties from the NIPA, and then the regional output by industry is allocated to commodities based on the national IO make table proportions. This assumes that the commodities produced by an industry are truly joint in the production process, as dictated by a uniform production function for all firms in each industry based on competitive pressures to diffuse advantages quickly across all firms in an industry.