Projections and Indicators

One of the characteristics of short-term projections is the relationship between economic indicators and their effect on employment. The software used to generate short-term projections enables the use of several indicators to forecast employment, based on the historical relationship of a particular indicator to employment in a specific industry. Not all industries respond to changes in an indicator in the same way. In some cases, there is no statistically significant relationship between an industry and a particular indicator (or combination of indicators). In that case, an alternative method is used to generate a forecast for the industry. Moving average, autoregression (using past employment in the industry as the sole indicator of future employment), or linear trend models are some of the options available to analysts.

In this round of projections a group of indicators was combined to create a "leading index" that had significant statistical success in identifying turning points in the economy where employment reaches a low point and starts increasing again, or a high point and begins to decline. Three variables are based on national economic data and three are based on regionally specific data. National and regional indicators use the historical time series for January 1990 to June 2004.

National

Average Weekly Hours in Manufacturing (Source: Bureau of Labor Statistics) An increase in average weekly hours is often a precursor to increases in hiring. This indicator broke into the positive range on a year-over-year basis in the last quarter of 2003 and remained positive through June 2004.

Light Vehicle Sales (Source: Bureau of Economic Analysis) While New Hampshire has no vehicle manufacturing to speak of, many manufacturing firms in the state produce components that go into trucks and cars. This indicator acts as a barometer of the economy as a whole. When people are confident enough to purchase a car or truck, they are usually feeling good about their employment and earning prospects. The first five months of 2004 were positive, but the last month of historical data in June was down sharply from a peak earlier in the year.

Business Inventories (Source: US Census Bureau) Inventories can be a little trickier to interpret–an increase could be a signal of heightened business confidence that demand will be increasing, or it could mean that sales have dropped and goods are sitting on

Economic Activity Index and Wage and Salary Employment are closely correlated

shelves. On a year-over-year basis, inventories have been on a positive trend since the last quarter of 2002.

State and Regional
Economic Activity Index for New Hampshire (Source: Federal Reserve Bank of Philadelphia) Using July 2000 at a level of 100, this index is calibrated to match the trend in real gross state product. Components of the index include: total non-farm employment, monthly New Hampshire unemployment rate, average number of hours worked in manufacturing, and wage and salary disbursements. The index dipped briefly into negative year-over-year territory for the first six months of 2002, coinciding with a drop in employment in the state. It has been solidly positive since.
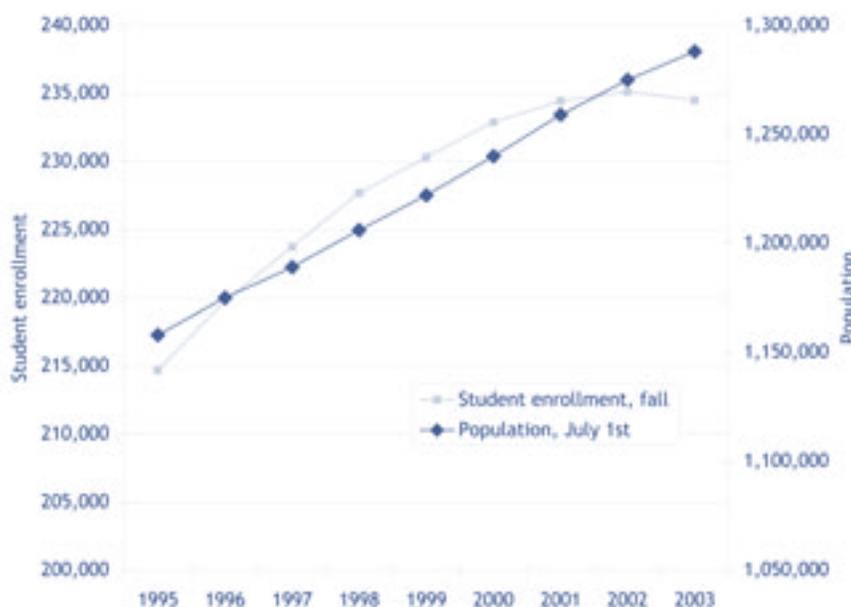
Average Hourly Earnings in Manufacturing (Source: Economic and Labor Market Information Bureau) An increase in hourly earnings can indicate a tightness in labor markets where

employers would have to pay more to retain or recruit workers. Increased earnings can also influence consumer's income, providing more money for spending. Both of these situations are considered as a positive for future employment increases.

New England Consumer Confidence, Future Expectations (Source: The Conference Board, Inc., as complied by the Federal Reserve Bank of Boston) Lacking a time series for New Hampshire itself, the readily available New England data was used as a proxy. This series is based on a monthly survey of households asked about their expectations of business conditions, employment, and family income between the survey date and six months hence. This component has been above the historical mean since September 2003.

Leading indexes may not always produce a statistically significant projection for some industries. In such cases, different combinations of variables can be tested in a trial-and-error process until an acceptable projection is produced. Plastics and rubber products employment, for example, was projected by using a combination of variables specific to manufacturing industries in general, with an emphasis on the automotive industry in particular (because output from this industry in the state is an input for auto makers).

Some industries simply follow trends in population. Elementary and secondary schools are an example of an industry group in which employment levels are a function of the number of students, which depends mostly on the number of school-age children. In this case, an acceptable forecast choice would be a simple linear trend or exponential smoothing model.

Generally, student enrollment is driven by population. New Hampshire is however diverging from this trend in 2002 and 2003.