



**REMI
PI⁺ v2.2**
(changes from PI⁺ v2.1)

Major Economic Data Sources

Employment

| | |
|----------|--|
| County | BEA LAPI (sector industries; 2001-2016) ¹ CBP (detail industries; 2015) |
| State | BEA SPI (summary industries; 2001-2016) ² CBP (detail industries; 2015) |
| National | BEA SPI (summary industries; 2001-2016) ³ CBP (detail industries; 2015) BLS EP (detail industries; 2001-2016 and 2026) ³ |

Wages

| | |
|----------|--|
| County | BEA LAPI (total; 2001-2016) CBP (detail industries; 2015) |
| State | BEA SPI (summary industries; 2001-2016) CBP (detail industries; 2015) |
| National | BEA SPI (summary industries; 2001-2016) CBP (detail industries; 2015) |

Personal Income and Earnings

| | |
|----------|--|
| County | BEA LAPI (components and summary industries; 2001-2016) |
| State | BEA SPI (components and summary industries; 2001-2016) |
| National | BEA SPI (components and summary industries; 2001-2016) BLS EP (components; 2001-2016 and 2026) RSQE (components; 2017-2019) ⁴ |

Compensation

| | |
|----------|---|
| County | BEA LAPI (components and summary industries; 2001-2016) |
| State | BEA SPI (components and summary industries; 2001-2016) |
| National | BEA SPI (components and summary industries; 2001-2016) |

Commuter Flows

| | |
|------------------|---|
| County to County | BEA (gross flow of earnings by county; 2001-2016) |
|------------------|---|

¹ The BEA Local Area Personal Income (LAPI) series used for PI⁺ v2.2 is based on their 11/16/2017 release. The estimates for 2001-2006 are based on the 2002 North American Industry Classification System (NAICS). The estimates for 2007-2010 are based on the 2007 NAICS. The estimates for 2011 forward are based on the 2012 NAICS.

² The BEA State Personal Income (SPI) series used for PI⁺ v2.2 is based on their 09/26/2017 release. The estimates for 2001-2006 are based on the 2002 North American Industry Classification System (NAICS). The estimates for 2007-2010 are based on the 2007 NAICS. The estimates for 2011 forward are based on the 2012 NAICS.

³ The BLS Employment Projections (EP) data used for PI⁺ v2.2 is based on their 10/04/2017 release.

⁴ The 19 March 2018 forecast from RSQE is used for PI⁺ v2.2.

BEA (total number of workers commuting between counties of residence and counties of work; 1990, 2000)
 BEA (commuting patterns between counties of work and counties of residence by major industry; 2000)
 ACS (residence county to residence workplace county flows; 2009-2013)

Technology Matrix

National BLS (detail sectors; 2001-2016 and 2026)

Final Demand

National BEA (components; 2001-2016)
 RSQE (components; 2017-2019)
 BLS EP (components and industry value added; 2001-2016, 2026)

Occupation Matrix

National BLS EP (employment by industry and occupation; 2016 and 2026)

Major Demographic Data Sources

Population

County BEA (total; 2001-2016)
 County Census (age, sex, race; 2000-2016)

Demographic Components of Change

County Census (2000-2016)

Labor Force

County BLS (total; 2000-2016)

Natality Rates

Nation Census (2001-2100)

Birth Rates

State CDC (2001-2016)

Survival Rates

Nation Census (2001-2100)

Net International Migrants

Nation Census (2001-2100)

Participation Rates

Nation BLS (2001-2050)

Active Military

Base DoD (total; 2001-2009)
 State DoD (total; 2005-2016)

Nation DoD (total, sex, race; 2001-2016)
County American Community Survey (2005-2016)

Military Dependents

Nation DoD (total; 2001-2005)

Prisoners

County Census (sex, race, facility; 1990; 2000; 2010)
Bureau of Justice Statistics (50 largest jail jurisdictions mapped to counties; 2001-2016)
Bureau of Prisons (facilities mapped to counties; 2005-2016)
Various state-specific correctional websites

College Enrollment

County Census (2000; 2010)
American Community Survey (2005-2016)
State National Center for Education Statistics (2000-2016)
National National Center for Education Statistics (2000-2016)



Incorporated BLS 2016-26 Employment Projections

National projections include the input-output table, employment, output, value added, labor productivity, and deflators by detailed industry; final demand by component; personal income by component; labor force; and occupations by detailed industry. (T. Lacey, Mitra Toossi, Kevin Dubina, and Andrea Gensler, "Projections overview and highlights, 2016–26," *Monthly Labor Review*, U.S. Bureau of Labor Statistics, October 2017, <https://doi.org/10.21916/mlr.2017.29>.)

New Industry Definitions

The BLS redefined the detailed industries reported in their historical and projected input-output tables. These data are based on the 2012 North American Industrial Classification System (NAICS). Due to the change in the BLS industry sectoring plan, REMI has revised the industry definition for both its 70 and 160 sector level models.

70 Sector Changes

Funds, trusts, & other financial vehicles (525) has been moved from industry 44 to industry 45.

160 Sector Changes

Logging (1133) has been moved from industry 2 to industry 1.

Fishing, hunting, and trapping has been moved from industry 1 to industry 2.

Other information services (519) has been moved from industry 102 to industry 103.

Broadcasting (except internet) (515) has been moved from industry 103 to industry 104.

Telecommunications (517) has been moved from industry 104 to industry 105.

Monetary authorities, credit intermediation, and related activities (521, 522) has been moved from industry 105 to industry 106.

Funds, trusts, and other financial vehicles (525) has been moved from industry 106 to industry 107.

For a detailed comparison, see the documents titled *Industry Comparison – Hierarchical.pdf*, *Industry Comparison – Summary.pdf*, and *Industry Comparison - Detail.pdf* for a list of changes.

New and Modified Policy Variables

- The Industry Employment policy variable now allows 100% removal of an industry.
- New National Value Added Tax (VAT) policy variable available for multi-region US models.
- New National Border Adjustment Tax and Credit (BAT) policy variable available for multi-region US models.
- New “Immediate” option for Actual Capital Stock policy variable.
- New “Immediate” option for Production Cost policy variable.
- New detailed investment policy variables for Intellectual Property Products:

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Software Enhancements

- Main application and forecasts appear in separate windows, each displayed on the taskbar.
- Forecast files stored individually and automatically managed, replacing workbooks. Every forecast is accessible at all times and can be viewed in a single list with descriptions and tags for easy filtering.
- Main application window redesigned with tiles instead of ribbons.
- Forecast results redesigned for simpler navigation with many customization options.
- New chart types added.
- Regional profiles added as another way to visualize historical data and view street level maps.
- Custom aggregations of regions, industries, commodities, occupations, and ages can be used to create policy variables and display results.
- New import and export function of forecasts, included bundled forecasts.

New Results Comparisons

- Share of Nation
- Per Capita
- Location Quotient
- Multiple Forecasts

Added to FAQs and Documentation

- Comparing Employment Multiplier and Economic Migration Responses in Single vs Multi Region Models
- BEA vs BLS Value Added
- Comparing Business Cost Policy Variables

Updated Method for Estimating Economic Migrants by Race/Ethnicity in History

The county estimates of births, deaths, and net international migration by race were adjusted so the national totals would be consistent with the Census table 'PEPCCOMP - Estimates of the Components of Resident Population Change by Race and Hispanic Origin for the United States'. Additionally, the method for estimating the 'residual' for counties by gender and race was adjusted to more closely match the estimates in the Census components of population change file.

Data Unsuppression System Modifications

05/09/2018

- Differentiation of suppressed data under different symbols so the (L) suppressions are constrained with different bounds.
- Added major regions data in estimation procedures.

Labor Supply Closure Modification

The Labor Supply Response adjusts total employment to match the change in the labor force in order to keep the implied U.S. unemployment rate consistent with the baseline. When the national economy is at or close to the lowest level of unemployment that can be sustained in the long term (generally estimated to be between 4.5 and 6 percent), an adjustment to the job growth rate in the forecast period should be made to offset significant direct changes to the labor supply. For example, substantial reductions in labor supply should be matched by reductions in employment because there will not be enough labor to fill existing jobs. Similarly, substantial increases in labor supply should be matched by increases in employment because the baseline national forecast is based on employment and GDP growth that has been constrained by labor force growth. The degree of the Labor Supply Response may be modified by the user (from 100% down to 1%) to allow for different implied unemployment rate change assumptions.

The previous version of the model used cost of capital as the mechanism for obtaining the targeted employment response to the change in labor supply (increasing the cost of capital reduces employment, and vice versa) because the other available closure options use cost of capital and this was the most expedient method to implement. A more comprehensive method is now being used that simultaneously adjusts compensation rates, production, international exports, dividend income, and labor access in order to generate the desired change in employment. This approach is more reasonable since labor costs (and access) respond to a change in labor supply, as does the ability to produce goods. The response to dividends was included because direct changes to production levels will result in changes in the ability of companies to pay out dividends.