

## ***Major Economic Data Sources***

### **Employment**

County	BLS QCEW (summary industries; 1990-2012) <sup>1</sup> CBP (detail industries; 2011)
State	BEA SPI (summary industries; 1990-2012) <sup>2</sup> BLS QCEW (summary industries; 1990-2012) CBP (detail industries; 2011)
National	BEA SPI (summary industries; 1990-2012) <sup>3</sup> BLS QCEW (summary industries; 1990-2012) CBP (detail industries; 2011) BLS EP (detail industries; 1993-2012 and 2022) <sup>3</sup>

### **Wages**

County	BEA REIS (total; 2001-2012) <sup>4</sup> BLS QCEW (summary industries; 1990-2012) CBP (detail industries; 2011)
State	BEA SPI (summary industries; 1990-2012) BLS QCEW (summary industries; 1990-2012) CBP (detail industries; 2011)
National	BEA SPI (summary industries; 1990-2012) BLS QCEW (summary industries; 1990-2012) CBP (detail industries; 2011)

### **Personal Income and Earnings**

County	BEA REIS (components and sector industries; 2001-2012)
State	BEA SPI (components and summary industries; 1990-2012)
National	BEA SPI (components and summary industries; 1990-2012)
	BLS EP (components; 1993-2012 and 2022)
	RSQE (components; 2013-2016) <sup>5</sup>

<sup>1</sup> Initial estimates of county-level 70 sector employment and wage data for the states of Michigan and Nevada were provided by the University of Michigan.

<sup>2</sup> The state and national BEA SPI data used for PI+ v1.6 is based on their 09/30/2013 release. The estimates for 1990-2006 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. Estimates for 2001 forward reflect the results of the comprehensive revision to the national income and product accounts (NIPAs) released in July 2013. This will create a temporary break in BEA's time series for earlier years.

<sup>3</sup> The national BLS EP data used for PI+ v1.6 is based on their 12/19/2013 release.

<sup>4</sup> The county BEA REIS data used for PI+ v1.6 is based on their 11/21/2013 release. The estimates for 1990-2006 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. Estimates for 2001 forward reflect the results of the comprehensive revision to the national income and product accounts (NIPAs) released in July 2013. This will create a temporary break in BEA's time series for earlier years.

<sup>5</sup> The 09 January 2014 forecast from RSQE is used for PI+ v1.6.

<b><u>Compensation</u></b>		
County	BEA REIS (components and sector industries; 2001-2012)	
State	BEA SPI (components and summary industries; 1990-2012)	
National	BEA SPI (components and summary industries; 1990-2012)	
<b><u>Commuter Flows</u></b>		
County to County	BEA (gross flow of earnings by county; 1990-2012)	
	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)	
<b><u>Technology Matrix</u></b>		
National	BLS (detail sectors; 1993-2012 and 2022)	
<b><u>Final Demand</u></b>		
National	BEA (components; 1990-2012)	
	RSQE (components; 2013-2016) <sup>5</sup>	
	BLS EP (components and industry value added; 1993-2012, 2022)	
<b><u>Occupation Matrix</u></b>		
National	BLS EP (employment by industry and occupation; 2012 and 2022)	

## ***Major Demographic Data Sources***

<b><u>Population</u></b>		
County	BEA (total; 1990-2012)	
County	Census (age, sex, race; 1990-2012)	
<b><u>Demographic Components of Change</u></b>		
County	Census (1990-2012)	
<b><u>Labor Force</u></b>		
County	BLS (total; 1990-2012)	
<b><u>Natality Rates</u></b>		
Nation	Census (1999-2100)	
<b><u>Birth Rates</u></b>		
State	CDC (1990-2010)	
<b><u>Survival Rates</u></b>		
Nation	Census (1999-2100)	
<b><u>Net International Migrants</u></b>		
Nation	Census (1999-2100)	

**Participation Rates**

Nation	BLS (1990-2050)
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**Active Military**

Base	DoD (total; 1994-2009)
Nation	DoD (total, sex, race; 1990-2012)

**Military Dependents**

Nation	DoD (total; 1990-2005)
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**Prisoners**

County	Census (sex,race,facility; 1990; 2000; 2010) Bureau of Justice Statistics (50 largest jail jurisdictions mapped to counties; 1990-2012) Bureau of Prisons (facilities mapped to counties; 2005-2012) Various state-specific correctional websites
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**Incorporated BLS 2012-22 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.

Since the BLS projections are still based on 2005 chained dollars, it was necessary to convert them to 2009 chained dollars in order to be consistent with BEA's 2013 comprehensive revision of the national income and product accounts.

Also, the BLS projections do not yet include the change in definition of fixed investment to include R&D, etc., nor the addition of Intellectual Property to the investment categories. For this reason, REMI has combined BEA's separate Equipment and Intellectual Property Products categories into one category, "Equipment and Intellectual Property Products", and applied this combined definition to the BLS input-output table column for "Equipment and Software".

**Shifted Real Dollar Basis from Chained (2005) to Chained (2009)**

The Industry Economic Accounts from BEA (real valued added in chained dollars (2009) for 1997-2012) were used to develop historical industry deflators to adjust those still based on 2005 provided by the BLS.

## Updated Trade Flow Parameters

New estimation of trade flow betas and sigmas. See *Technical Documentation for Estimating Trade Flow Betas and Sigmas.pdf*.

## Added Ability to Start and Stop a Control or Simulation in any Forecast Year

Users may now:

1. Skip running early forecast years if not applicable (e.g. no policy variable changes to apply).
2. Test a few forecast years at a time to see how results are forming without rerunning from the beginning.
3. Iterate between models, one year at a time.

The screenshot shows a software interface for a regional simulation. At the top, there is a 'Forecast Name' field containing 'Regional Simulation 1'. Below it is a 'Baseline' dropdown menu set to 'Standard Regional Control'. Underneath these are 'Run Years' controls, which include a horizontal slider with tick marks for 2012, 2038, and 2060. The slider is currently positioned between 2012 and 2038. To the right of the slider is a 'Run Now' button. At the bottom of the interface, a note says 'Run forecast from 2016 to 2038'.

## Upgraded Software to Target the Microsoft 64-bit Windows Platform

1. Allows memory usage beyond previous 4 GB limit.
2. Workbook will be more stable in larger models.
3. Able to build and run models with many more regions.
4. Allows for future improvement in numerical precision.
5. Allows for future development of multi-lingual applications (Unicode compatible).
6. Compiler upgrade allows for future reprogramming of model to take advantage of parallelization (simultaneous use of multiple processors, resulting in faster model run time).

During installation, the PI<sup>+</sup> installer will automatically determine which version to install (32-bit or 64-bit compatible) according to the operating system detected.

## Modified Data Suppression System to Handle Loss of County Employment Data, and Reduced Industry Detail for Compensation and Earnings Data

The impact of sequestration and reduced FY 2013 funding levels for the Bureau of Economic Analysis (BEA) necessitated reductions in the Bureau's local area personal income (LAPI) program.

For BEA's LAPI statistics, the following statistical detail was not be updated or made available: 1) local area employment by industry; 2) statistics for "BEA Economic Areas"; 3) detailed statistics on personal current transfer receipts; and 4) detailed statistics on farm income and expenses.

In addition, industry detail on compensation and earnings was reduced from 108 industries to 25 industries.

What this means for REMI models:

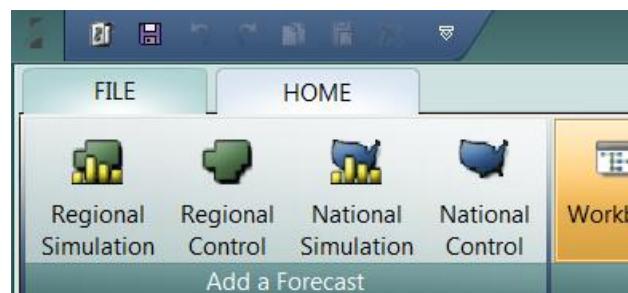
1. We estimated all **county** employment values (total as well as industry-level).
2. We estimated the **county** 3-digit NAICS values for compensation and earnings (in addition to the 4-digit NAICS values, which we previously did).
3. We continued to estimate the **county** 2-digit, 3-digit, and 4-digit NAICS values for wages.
4. We no longer display the county-level detailed statistics on personal current transfer receipts.

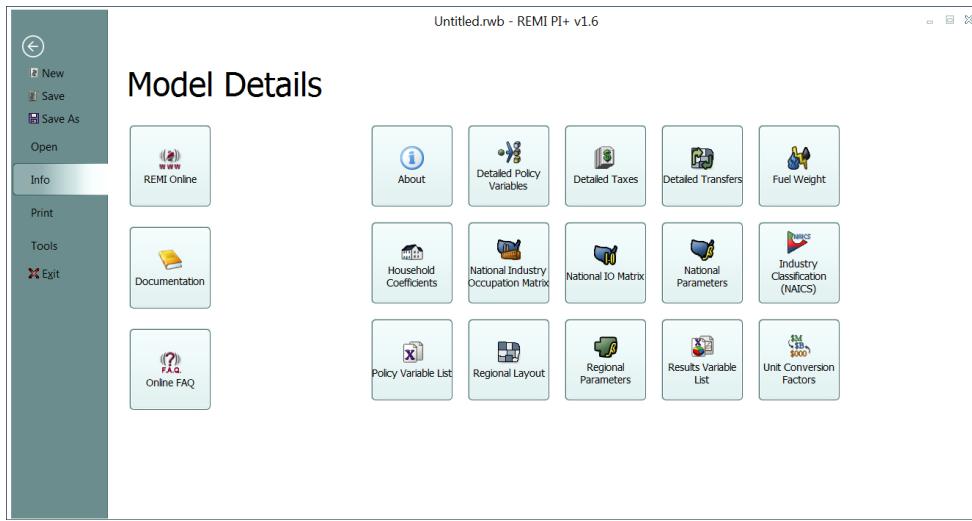
REMI retains 3-digit datasets for compensation and earnings and 2-digit datasets for employment from the BEA prior to the sequestration. These datasets are reused with minimal adjustments to reflect changes available in the latest reduced datasets provided by the BEA. Since the BEA does not provide updates to their previous 2-digit county level employment dataset at any level, we first adjust the 2-digit employment dataset to reflect the updates in county level compensation (as a percent change) that have been made by the BEA between the two releases.

Since REMI does not receive 3-digit county level datasets for the last history year in the latest BEA release, we project from the last history year that we do retain (2011) to reflect changes in industry growth provided by the BLS for the concepts for which BLS data exists (employment and wages).

### **Interface Redesign – “Pearl” Button Replaced with FILE Tab**

To improve consistency with the Microsoft Office 2010 interface, we replaced the “Pearl” button with the new FILE tab. When you click the FILE tab, you see the same basic commands that were available after you click the “Pearl” button. We also included commands in FILE/Information that were previously only available under HOME/Model Details.





## **Detailed Industry (Translator) Policy Variables**

Updated to reflect the new BEA 2007 Benchmark IO table.

## **MacroEconomic Update**

Added display of baseline/reference data.

## **Employment Update**

Added display of baseline/reference data.

## **Population Update**

Added display of baseline/reference data.

Direct Employment Response - Previously, changes to population made via Population Update did not directly impact employment, which might be desired due to a change in the labor force. This option has been added to allow the user to exogenously allow employment to respond based

on a user-set percentage of the change in the population. It should not be used in conjunction with Employment Update (for example, when a user has an exogenous forecast for both Population and Employment). Employment policy variables will be added for all private non-farm industries if the percentage is nonzero. The policy variable values will be equal to the product of the entered percentage and the total change in updated population relative to the baseline. A direct employment response value of 100 would produce policy variables with values equal to the percent change in population. This does not mean that the total employment forecast will grow at this rate, due to interactions between industries and the model's multiplier effect. If the default setting of 0 is used, then employment only responds indirectly to the change in population through transfer payments and dividends, interest, and rental income associated with the change in population, as well as state and local government spending which also responds to the change in population. Consumption spending may also be indirectly affected based on changes in age composition, and wage and compensation rates will respond to changes in employment opportunity resulting from the change in population.

If a nonzero value is entered for the direct employment response, then the product of the percent entered with the percent change in population is exogenously added to the private non-farm industry employment policy variables, and will be combined with the indirect employment response to the population change.