



**REMI  
PI<sup>+</sup> v1.2**  
(changes from PI<sup>+</sup> v1.1)

## *Major Economic Data Sources*

### Employment

County	BEA REIS (sector industries; 2001-2008) <sup>1</sup>
	BLS QCEW (summary industries; 1990-2008) <sup>2</sup>
	CBP (detail industries; 2007)
State	BEA SPI (summary industries; 1990-2008) <sup>3</sup>
	BLS QCEW (summary industries; 1990-2008)
	CBP (detail industries; 2007)
National	BEA SPI (summary industries; 1990-2008) <sup>3</sup>
	BLS QCEW (summary industries; 1990-2008)
	CBP (detail industries; 2007)
	BLS EP (detail industries; 1993-2008 and 2018) <sup>4</sup>

### Wages

County	BEA REIS (total; 2001-2008)
	BLS QCEW (summary industries; 1990-2008)
	CBP (detail industries; 2007)
State	BEA SPI (summary industries; 1990-2008)
	BLS QCEW (summary industries; 1990-2008)
	CBP (detail industries; 2007)
National	BEA SPI (summary industries; 1990-2008)
	BLS QCEW (summary industries; 1990-2008)
	CBP (detail industries; 2007)

### Personal Income and Earnings

County	BEA REIS (components and summary industries; 2001-2008)
State	BEA SPI (components and summary industries; 1990-2008)
National	BEA SPI (components and summary industries; 1990-2008)
	BLS EP (components; 1993-2008 and 2018)
	RSQE (components; 2009-2012) <sup>5</sup>

<sup>1</sup> The county BEA REIS data used for PI<sup>+</sup> v1.2 is based on their 04/22/2010 release.

<sup>2</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>3</sup> The state and national BEA SPI data used for PI<sup>+</sup> v1.2 is based on their 03/25/2010 release.

<sup>4</sup> The national BLS EP data used for PI<sup>+</sup> v1.2 is based on their 12/11/2009 release.

<sup>5</sup> The 16 June 2010 forecast from RSQE is used for PI<sup>+</sup> v1.2.

**Compensation**

County	BEA REIS (components and summary industries; 2001-2008)
State	BEA SPI (components and summary industries; 1990-2008)
National	BEA SPI (components and summary industries; 1990-2008)

**Commuter Flows**

County to County	Census (employees and wages; 2000) BEA (income; 2008)
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**Technology Matrix**

National	BLS (detail sectors; 1993-2008 and 2018)
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**Final Demand**

National	BEA (components; 1990-2008) RSQE (components; 2009-2012) <sup>5</sup> BLS EP (components and industry value added; 1993-2008, 2018)
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**Occupation Matrix**

National	BLS EP(employment by industry and occupation; 2008 and 2018)
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***Major Demographic Data Sources*****Population**

County	BEA (total; 1990-2008)
County	Census(age, sex, race; 1990-2008)

**Demographic Components of Change**

County	Census (1990-2008)
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**Labor Force**

County	BLS (total; 1990-2008)
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**Natality Rates**

Nation	Census (1999-2100)
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**Birth Rates**

State	CDC (1990-2006)
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**Survival Rates**

Nation	Census (1999-2100)
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**Net International Migrants**

Nation	Census (1999-2100)
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### Participation Rates

Nation BLS (1990-2050)

### Active Military

Base DoD (total; 1994-2008)  
Nation DoD (total, sex, race; 1990-2008)

### Military Dependents

Nation DoD (total; 1990-2005)

### Prisoners

County Census (sex,race,facility; 2000)  
Nation Bureau of Justice Statistics (facility; 1990-2008)



### New 169 Industries

The 169 level industry list has been modified to match the detail supported by the new BLS input-output table. Please also note that many of the industry numbers have also changed. See “**REMI Industries for PI+ v1.2 Models**” for the complete list of names and numbers and “**Comparison of Detailed Industries**” for a side-by-side comparison of the old and new 169 industries.

### New Data Suppression Estimation Procedure

Estimation software called IVEware is now used to impute values for the constrained optimization routine utilized for state data. Instead of relying on the mid-point of the possible minimum and maximum values of the suppressed cell (which could be based on a very large range), the IVEware program fine tunes the initial estimates by imputing values based on the time series and stepwise regression, as well as the maximum and minimum bounds. Also, the constrained optimization procedure is now incorporated for county-level data. See “**PI+ v1.2 Data Sources and Estimation Procedures**”.

### New Estimates of Trade Flow Parameters

The distance decay (beta) and corresponding price elasticity of demand (sigma) parameters were reestimated based on the 1990-2007 state and county datasets for 66 NAICS industries. See “**Estimating Trade Flow Parameters (Industry Betas and Sigmas)**”.

## **Modified State Government Expenditure Predictions**

The state base (growth factor) of state government expenditures has been modified to be based on the average per capita state government demand in the last history year instead of the current year's state government spending. This change was implemented to offset the relatively large response state government spending has to changes in GDP. See "**Predicted Revenue & Expenditure Effects**" and "**State and Local Government Employment and Final Demand**".

## **Alternative Model Option for State & Local Government Spending Response to GDP**

Beginning with PI<sup>+</sup> v1.0 the state and local government final demand equations were extended to include a response to GDP to more accurately reflect the reality that state and local government budgets must be restricted to their revenue sources, many of which are affected by economic conditions. While this is true for forecasting purposes, such a strong response from the government sector may not be appropriate when evaluating specific projects. For this reason, an alternative model option has been added to allow users to change the government spending response to be based on population only, instead of a combination of population and GDP.

## **Addition of Natural Disaster Scenario**

A scenario detailing how to conduct a natural disaster analysis is now included in the More Scenarios section of the Regional Simulation Insert ribbon.

## **Integrated and Updated Translator Policy Variables**

The Translator Policy Variables have been incorporated into relevant scenario and topic files. The 2002 BEA IO table is now being used for the detailed industry data instead of the 1997 table. Also, various unit selection options are now available. The Translator Policy Variable coefficients may be viewed by clicking the Model Details button of the Home ribbon, and then selecting "Detailed Policy Variable Translators". See "**Translator Policy Variable Module Methodology**" for a description of the equations.

## **New Policy Variables**

Farm Output (amount)

Farm Output without Employment, Investment, and Compensation (amount)

Farm Value Added with No Effect on Sales or Employment (amount)

## **Map/Diagram View of Model for Policy Variables and Results**

A Model Linkages button has been added to the Input ribbon that displays a model map, allowing selection of policy variables based on the desired model block or equation to be shocked.

A Model Linkages button has also been added to the Tables ribbon that displays a model map, allowing the simulation or control results to be viewed based on the desired model block or equation.

### **Real \$**

The real dollar base year has been updated from 2000 to 2005.

### **3D Charts**

A three-dimensional chart option has been added.

### **Updated DevSight Presentation**

A DevSight button has been added to the Tables ribbon that displays the following results views:

Demographic  
Hierarchical View  
Industry  
Location  
Occupation

### **New Reports**

The first version of a new reporting feature has been added that allows users to select and organize tables and charts into a single PDF document and allows just-in-time previewing by the item or as a group.

### **New Results**

Intermediate Demand	Total Labor Productivity
Local Consumption Demand	Total Regional Purchase Coefficient
Government Demand	Total Government Employment as % of Nation
Investment Activity Demand	Total Government Wage and Salary Disbursements
Disposable Personal Income as % of Nation	Total Government Compensation
Gross Domestic Product (GDP) as % of Nation	Total Government Earnings by Place of Work
Gross Domestic Product (GDP) per Capita	Total Government Average Annual Wage Rate
Total Average Annual Wage Rate	Total Government Average Annual Compensation Rate
Total Average Annual Compensation Rate	Total Government Average Annual Earnings Rate
Total Average Annual Earnings Rate	Total Government Average Annual National Deflator
Total National Deflator	Total Government Average Annual Output
Total Output	
Total Value Added	
Total Demand	
Total Self Supply	
Total Compensation	

Total Government Demand	Federal Civilian Exports
Total Government Exports	Federal Civilian Imports
Total Government Imports	Federal Civilian Self Supply
Total Government Self Supply	Federal Civilian Labor Productivity
Total Government Labor Productivity	Federal Civilian Regional Purchase Coefficient
Total Government Regional Purchase Coefficient	Federal Military Employment as % of Nation
State and Local Government Employment as % of Nation	Federal Military Average Annual Wage Rate
State and Local Government Average Annual Wage Rate	Federal Military Average Annual Earnings Rate
State and Local Government Average Annual Compensation Rate	Federal Military Output
State and Local Government Average Annual Earnings Rate	Federal Military Value Added
State and Local Government Output	Federal Military Demand
State and Local Government Value Added	Federal Military Exports
State and Local Government Demand	Federal Military Imports
State and Local Government Exports	Federal Military Self Supply
State and Local Government Imports	Federal Military Labor Productivity
State and Local Government Self Supply	Federal Military Regional Purchase Coefficient
State and Local Government Labor Productivity	Farm Employment as % of Nation
State and Local Government Regional Purchase Coefficient	Farm Average Annual Wage Rate
Federal Civilian Employment as % of Nation	Farm Average Annual Compensation Rate
Federal Civilian Average Annual Wage Rate	Farm Average Annual Earnings Rate
Federal Civilian Average Annual Compensation Rate	Farm Output
Federal Civilian Average Annual Earnings Rate	Farm Value Added
Federal Civilian Output	Farm Demand
Federal Civilian Value Added	Farm Exports to Rest of World
Federal Civilian Demand	Farm Exports
	Farm Imports
	Farm Self Supply
	Farm Labor Productivity
	Farm Regional Purchase Coefficient

### **Reduced Memory Requirement**

The memory required to run large models has been reduced by restructuring the storage of results and eliminating outdated code.

### **National Forecast**

**REMI would like to acknowledge and thank Don Grimes of the University of Michigan for his collaboration on the national forecast.**