

Description of Analytical Tool

Name: IMPLAN (IMppact Analysis for PLANning)

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Availability of technical support:

- a) Website: <http://implan.com>
- b) E-Mail: info@implan.com
- c) Users' manual: available for reference from the library of the Economic Analysis Section, DSIWM, DWR.

Categories: Economics, Social Accounting, and Impact Analysis

Main Features and Capabilities:

Geographic scope: U.S., California and California counties

Temporal scale: 2007 (the available data file)

Other features: The IMPLAN software and data files can be purchased from the author. Data files are updated annually. (The latest data file release contains 2009 data.)

Applications:

This tool was recently used to assess the economic effects of water shortages in the Central Valley and the closure of California state parks.

Geographic scope: Input-output models for California, any county or group of counties in California, can be generated using the IMPLAN software and the available data files. The analyst then uses the generated results from the models, such as income, employment, output coefficients and multipliers, etc., to estimate the direct, indirect, induced, and overall economic impacts of any event. The necessary condition is that the economic variables concerning the event, such as changes in income, changes in production, etc. must be quantified in money terms.

Temporal scale: 2007 (based on the available data files)

Calibration / Validation / Sensitivity Analysis:

The data files can be calibrated using locally available data, if the latter deems to be better. Such attempts were tried satisfactorily in economic analyses done at University of California, Berkeley.

Peer Review:

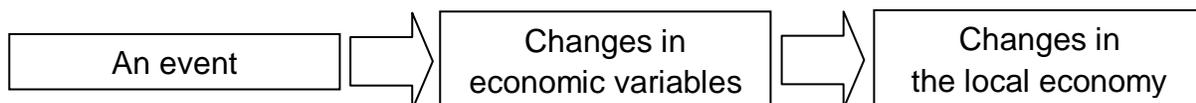
The software has undergone many revisions since first being developed in 1984. It is now used widely in the U.S. by many federal and state agencies, academic institutions, private companies, etc. Approximately 1,500 organizations, including the Army Corps of Engineers, the Environmental Protection Agency, the U.S. Fish and Wildlife Service, UC Berkeley, etc. have utilized IMPLAN software and data files in conducting their economic analyses.

Anatomy of IMPLAN:

Conceptual Basis

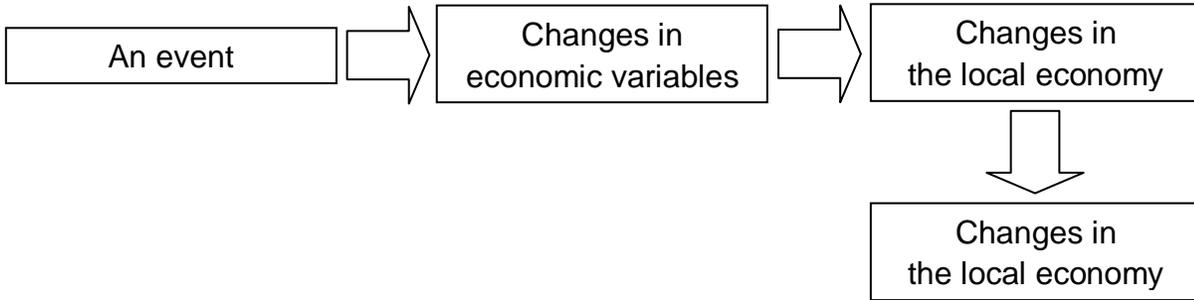
Generally, any event tends to bring about some effects, which change such economic variables as production, income, employment, etc. These changes in an industry of any economy would create a “domino” effect on other industries in the same economy.

For example, a drought--an event--that reduces water supply to farmers by 25% would cause farmers to change their production patterns. Suppose further that the production value--a measurable economic variable--is found to decrease by \$20 million. This reduced production would definitely cause declines in the local economy's employment, workers' income, taxes, etc. Fewer jobs, fewer farm equipment rentals, fewer apartment rentals, fewer haircuts, etc. will result.

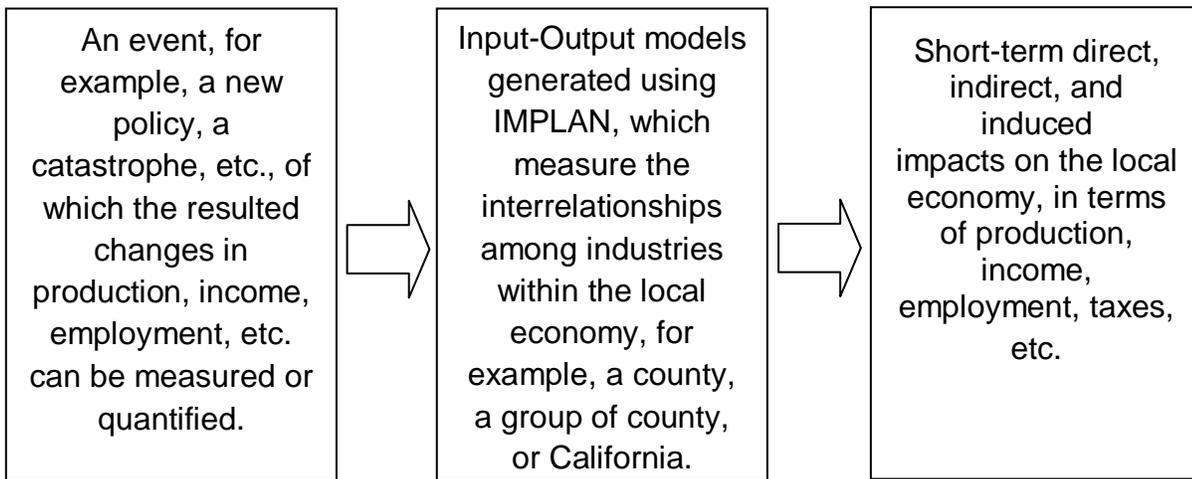


Theoretical Basis

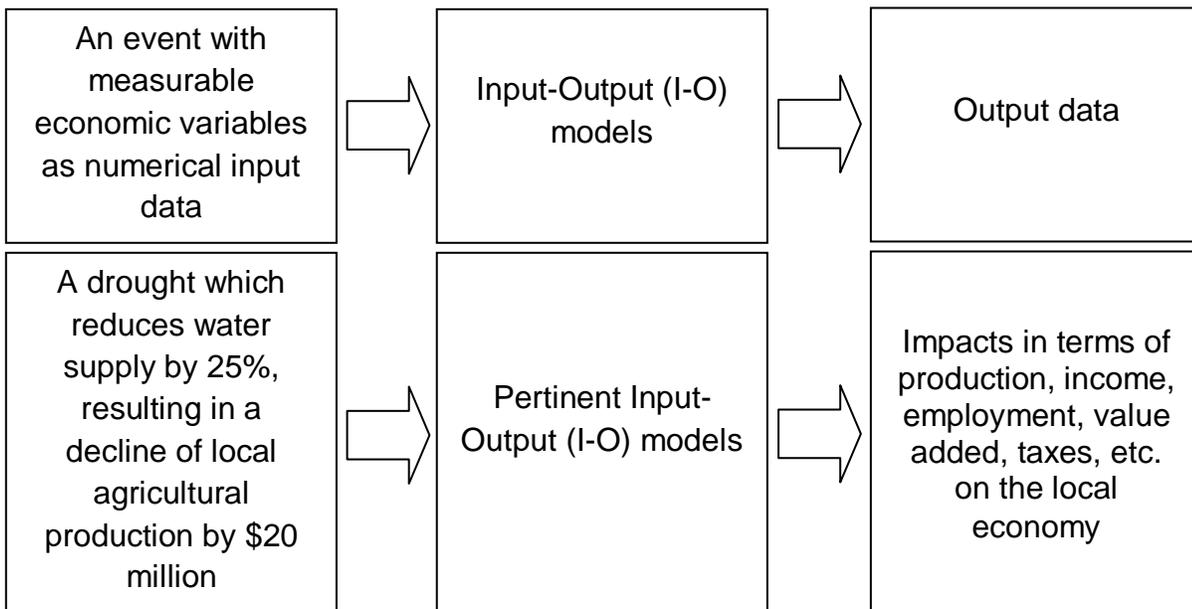
In a nutshell, the input-output (I-O) model, first developed by Professor Wassily W. Leontief of Harvard University in 1941, is a matrix of interindustry flows of goods in an economy. The model takes into account the interrelationships among the industries so it allows us to estimate the effects on all industries of any changes in one industry.



Numerical Basis



An example:



Input and Output Data

(1) Numerical input data, for example, changes in agricultural production due to changes in water supply, are collected or compiled for the projects under analysis.

(2) I-O models, after any necessary calibrations, are generated using IMPLAN software and available data files. The generated results, or the models' output, include a series of coefficients and multipliers concerning production, employment, income, value added, taxes, etc.

(3) Output data are then produced combining the numerical input data and the I-O models' output.

Data Management

IMPLAN software and data files, used together as a unit, can be considered as a tool to analyze a project and to generate the estimated impacts of the project on the economy. Without the data files, the software cannot generate any I-O model, and without the software, the data files are useless.

The issue is with the data files, which are updated by IMPLAN yearly. At this point, available for use at DWR are the 2007 California data files. Even though I-O models can be generated and analyses can be conducted with the software and available data files, for better analyses, latest or more recent data files should be used. The reason is that I-O models are short-term models. Over time, industries' production technology changes, and the technological changes are embedded in the data; so if old data is used, the results may not be accurate.

Software

As stated above, the main software used as an analytical tool is available for purchase at the author's address above (MIG Inc.). The company also provides other products for use in economic analyses.