Economic Models: Input-Output Modeling (with IMPLAN)

Description	Input-output accounting (using the IMPLAN model as an example) describes commodity flows from producers to intermediate and final consumers. The total industry purchases of commodities, services, employment compensation, value added, and imports are equal to the value of the commodities produced. Industries producing goods and services for final use and purchases for final use (final demand) drive the model. Industries producing goods and services for final demand purchase goods and services from other producers. These other producers, in turn, purchase goods and services. This buying of goods and services continues until leakages from the region stop the cycle. The resulting sets of multipliers describe the change of output for every regional industry caused by a US$1.00 change in final demand for any given industry.
Appropriate Use	Serves three functions: data retrieval, data reduction and model development, and impact analysis. Comprehensive and detailed data coverage of the entire U.S. by county and the ability to incorporate user-supplied data at each stage of the model building process provide a high degree of flexibility in terms of both geographic coverage and model formulation. Can be used to look at the effects of adaptations such as changes in economic policies (e.g., removal or imposition of subsidies) toward agriculture. Designed specifically for the U.S., but basic model structure can be adapted and applied to other countries where data are available.
Scope	Agricultural sector; national or regional-specific.
Key Output	Being demand-driven, most input-output models are structured to trace changes in the flows of capital and labor between industries in response to a change in final demand. Climate change impact analysis often uses input-output models to trace the interindustry flows in response to climate-induced changes in supply.
Key Input	The IMPLAN database consists of 1) a U.S. level technology matrix and 2) estimates of sectoral activity for final demand, final payments, industry output and employment for each county in the U.S., along with state and national totals.
Ease of Use	Commercially available input-output models like IMPLAN are relatively easy to use, although modification from demand to supply driven models is facilitated with an economics background.
Training Required	Training in the use of these models, along with a background in economic analysis, is essential.
Training Available	MIG Workshops (see Contacts below) provides training for the use of IMPLAN in economic analysis. Workshops are held either in MIG's Minnesota USA office or at user's site.
Computer Requirements	Requires a PC, Windows, and the IMPLAN software package. Adobe Acrobat needed to download user manual from the website.
Documentation	A user manual for IMPLAN, available from the MIG, Inc. website listed in Contacts below, may be downloaded to a PC using Adobe software.
Applications	Applied by numerous state, federal, academic, and private institutions in the U.S., such as U.S. Department of Agriculture Forestry Service, the Illinois Department of Natural Resources, and Cornell University.

Economic Models: Input-Output Modeling (with IMPLAN) (cont.)

Contacts for Tools, Documentation, Technical Assistance	Tools and Documentation: MIG, Inc., 1725 Tower Drive West, Suite 140, Stillwater, MN 55082 USA; Tel: +1.651.439.4421; Fax: +1.651.439.4813; e-mail: info@implan.com; website: http://www.implan.com/. Technical Assistance: http://www.implanpro.com/.
Cost	IMPLAN costs vary depending on scope of study (county, state, or national). County-level software costs $150 per county. State-level software averages about $1,500 per state.
References	Bowes, M. and P. Crosson. 1993. Consequences of climate change for the MINK economy: Impacts and responses. *Climatic Change* 24:131-158.