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THE ECONOMIC CONTRIBUTIONS AND IMPACTS OF U.S. FOOD, FIBER, AND FOREST INDUSTRIES:

A new resource for researchers analyzing the economics of food, fiber, and forest industries

Leah English, M.S.; Jennie Popp, Ph.D.; Wayne Miller, Ph.D.; Rachel Barry; Delia Bartlett



MCRSA/IMPLAN Conference Kansas City, Missouri June 6-8, 2018

CONTRIBUTIONS AND IMPACTS OF AGRICULTURE:

Every state in the U.S. has been involved in some form of economic contribution or impact analysis.







CONTRIBUTION OF AGRICULTURE:







Agriculture and Agribusiness, including the farming, processing, wholesaling and retailing of food, natural fiber and forestry products, accounted for \$76 billion of value added to the North Carolina economy.¹

THAT'S 16 CENTS OF EVERY DOLLAR.

 Value-added is the sum of the returns to factors of production in the state and includes employee compensation, proprietary income, other property-type income, and indirect business taxes.

Source: Agriculture and Agribusiness in North Carolina, Dr. Michael L. Walden, NC State University, May 2015. Data are for 2013.





CONTRIBUTION OF AGRICULTURE SURVEY:

Methodological Differences

- IMPLAN methodologies
 - Multi-Industry Contribution Analysis in IMPLAN Pro
 - <u>https://implanhelp.zendesk.com/hc/en-us/articles/115009542247-Multi-Industry-Contribution-Analysis-In-IMPLAN-Pro</u>

Defining Agriculture

- What sectors are considered agricultural sectors?
 - Ag Production
 - Ag Processing
 - Forestry
 - Others?





CONTRIBUTION OF AGRICULTURE WORKSHOP:

Development of Standard Procedures for Contribution Analysis of Agriculture and Forestry

Workshop participants expressed interest in:

- A quick reference guide
- A more expansive document that would delve further into the complex issues confronted by researchers performing contribution of agriculture and forestry analyses.
- A hub for researchers to find resources and share information
 - <u>Contribution of agriculture website</u>





CONTRIBUTION OF AGRICULTURE WEBSITE:

Economic Contributions and Impacts of the Food, Fiber, and Forestry Industries





https://wordpressua.uark.edu/food-fiber-forestry-impacts/



Alabama | Alaska | Arizona | Arkansas | California | Colorado | Connecticut | Delaware | Elorida | Georgia | Hawaii | Idaho | Illinois | Indiana | Iowa | Kansas | Kentucky | Louisiana | Maine | Maryland | Massachusetts | Michigan | Minnesota | Mississippi | Missouri | Montana | Nebraska | Nevada | New Hamoshire | New Herico | New York | North Carolina | North Dakota | Ohio | Oklahoma | Oregon | Pennsylvania | Rhode Island | South Carolina | South Dakota | Tennessee | Texas | Utah | Vermont | Virginia | Washington | West Virginia | Wisconsin | Wyoning





The Economic Contributions and Impacts of U.S. Food, Fiber, and Forest Industries

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Arkansas Economic Contribution and Impact Research

In 2015, the Natural State generated more than \$8.9 billion in agricultural cash receipts with the highest valued commodities being broilers, soybeans, and rice. That same year, the value of Arkansas' agricultural production and processing industries represented 8.4 percent of total state GDP. Some of the dollars generated by these industries end up being re-spent within the local economy, bringing additional value to the state through "multiplier effects." Economic impact and contribution studies measure these effects, which can be broken down into direct, indirect, and induced economic effects.

Websites, reports, fact sheets, and articles related to the economic impacts and contributions of Arkansas' food, fiber, and forest industries can be found below.





The Economic Contributions and Impacts of U.S. Food, Fiber, and Forest Industries

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Websites:

Studies and articles related to the economic impacts and contributions of Arkansas' food, fiber, and forest industries can be found by clicking the links below, or by visiting the following website(s):



University of Arkansas System, Division of Agriculture, Center for Agricultural and Rural Sustainability – Economic Contribution of Agriculture





The Economic Contributions and Impacts of U.S. Food, Fiber, and Forest Industries

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Contribution and Impact Research Documents:

The following are current and historical studies, fact sheets, and articles related to Arkansas' food, fiber, and forest industries. These can be viewed and/or downloaded by clicking the images or links below:



2018 - Fact Sheet - The Animal Feed and Pet Food Manufacturing Industry is Crucial to American Agriculture, Economy



2017 – Pocket Facts – Arkansas Agriculture Profile



2017 - Report - Economic Contribution of the Agricultural Sector to the Arkansas Economy in 2015



RESOURCES:

The resources page will contain publications and presentations related to the study of impact and contribution analysis. This is also where the Quick Reference Guide to Performing a Contribution of Agriculture Analysis using IMPLAN will be found, as well as the more expansive working paper.

The Economic Contributions and Impacts of U.S. Food, Fiber, and Forest Industries

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COMING SOON





FORUM:

The forum allows researchers to ask questions and discuss topics related to the economic impact/contribution of food, fiber, and forest industries.

The Economic Contributions and Impacts of U.S. Food, Fiber, and Forest Industries

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Welcome!	Categories
by <u>lae001</u> Dec 17, 2017 <u>Uncategorized</u> 0 Comments	<u>Uncategorized</u>
Thank you for visiting our forum! Here you will find topics related to contribution and impact analysis as it pertains to agriculture and agriculture-related industries. If you have any questions, or feel that you can add insight pertaining to a specific	Archives December 2017
read more	Recent Posts Welcome!
	Recent Comments







CONTACT:

The Economic Contributions and Impacts of U.S. Food, Fiber, and Forest Industries Home Resources Forum About Contact ${\cal O}$ More Info Get In Touch If you have any comments or questions, Name Email Address feel free to contact us! You can reach us by filling out the contact form to the left, or by sending an email to Message cars@uark.edu. Submit DIVISION OF AGRICULTURE RESEARCH & EXTENSION Entersity of Arkanas System Center for Agricultural and Rural Sustainability f 🎔 G+ © University of Arkansas 2017



<u>https://wordpressua.uark.edu/</u> <u>food-fiber-forestry-impacts/</u>

Questions/Comments?

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Incorporating Port-Level Foreign Trade Data into IMPLAN's Gravity Model

MCRSA 49th Annual Meeting June 6-8, 2018 Kansas City, MO







Jennifer Thorvaldson, Ph.D.

James Squibb III, M.A.

Agenda



- 1. Brief overview of IMPLAN's gravity model
- 2. Incorporating port-level foreign trade data into the gravity model
 - a. Why?
 - b. How?
 - c. Preliminary results
- 3. Remaining questions and plans for future research

I. IMPLAN'S GRAVITY MODEL

IMPLAN's Gravity Model



- Used to estimate county-to-county trade flows of all goods and services
 - Allows for MRIO analysis
 - Accounts for cross-hauling
 - Captures feedback effects

Gravity Model of Domestic Trade

Mass: Supply of shipping county and Demand of receiving county (commodityspecific)

Distance: ORNL county-to-county impedances for truck, rail, and water (commodity specific)

Force: Trade between the two counties



Foreign Trade



- Gravity model currently used to estimate domestic trade flows only
- Current assumption: constant foreign trade rates for all states and counties
- Hypothesis: counties closer to ports will import/export from/to foreign countries at a greater rate than other counties, ceteris paribus



Data and Methodology



- U.S. Census Bureau Customs Port Data
 - Foreign exports and imports of shippable commodities by U.S. port
 - Foreign exports = "demand" by the port that must come from U.S. counties
 - Foreign Imports = "supply" from the port that must go to U.S. counties
 - Each port is given impedances based upon the state and county in which it is located
 - Now we have all the necessary elements for inclusion in the gravity model
- Non-shippable commodities (i.e., services)?

- □ FIMRs and FEXRs unchanged for non-shippable commodities
- □ FIMRs and FEXRs previously 0 remain 0
- □ FIMRs and FEXRs previously non-zero remain non-zero
- The sum of all counties' foreign exports of each commodity remained unchanged—and equivalent to U.S. control (likewise for foreign imports)

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Quality Control Checks

FIMRs and FEXRs unchanged for non-shippable commodities
 FIMRs and FEXRs previously 0 remain 0
 FIMRs and FEXRs previously non-zero remain non-zero
 The sum of all counties' foreign exports of each commodity

- remained unchanged—and equivalent to U.S. control
- (likewise for foreign imports)

Foreign Exports of Beet Sugar

Produced in just 31 U.S. counties
U.S. FEXR in 2015 was 2.24%

Foreign Exports of Beet Sugar

- Under the old methodology:
 - Each of these 31 counties exported 2.24% of the value of their production to foreign destinations.
 - The foreign export value varied by county solely as a function of each county's level of output and was not influenced by the counties' relative proximity (in terms of cost of transporting the commodity) to a customs port.
 - Polk County, MN had largest foreign export value due to its being the county with the largest output value; Canyon County, ID had the second-largest foreign export value due to its having the second-largest output value



Foreign Exports of Beet Sugar

- Under the new methodology:
 - The county FEXRs depend on both output level and relative proximity to customs ports,
 - County FEXRs range from 0.83% (DuPage County, IL) to 6.52% (Fresno County, CA)
 - Canyon County, ID overtook Polk County, MN in terms of export value due to its closer proximity to a customs port (FEXR = 2.68%)



Foreign Imports of Motor Vehicle Stamped Metal

- U.S. FIMR in 2015 was 3.03%
- Under the old methodology:
 - Each county imported 3.03% of the value of their demand from foreign sources
 - The foreign import value varied by county solely as a function of the demand level of each county and was not influenced by the counties' relative proximity to a customs port
 - Wayne County, MI had the largest demand value and thus also had the largest foreign import value, followed by Jefferson County, KY, Clay County, MO, Rutherford County, TN, and Macomb County, MI


Preliminary Results

Foreign Imports of Motor Vehicle Stamped Metal

- Under the new methodology:
 - FIMRs ranged from 1.00% (Loup County, NE) to 3.15% (Orange County, CA)
 - Wayne County, MI is still the largest importer of motor vehicle stamped metal by value, but its foreign import rate is a bit below the national average, at 3.00%



3. QUESTIONS AND FUTURE WORK

Remaining Questions and Future Work



- Does the assumption hold for all shippable commodities?
 - Further testing by commodity
 - Add constraint of maximum variance from U.S.level foreign trade rates?
- Add country detail

Incorporating Port-Level Foreign Trade Data into IMPLAN's Gravity Model

MCRSA 49th Annual Meeting June 6-8, 2018 Kansas City, MO



INTERPRETING AND REPORTING IMPLAN DATA, IMPACT RESULTS, AND MULTIPLIERS

MCRSA 49th Annual Meeting Kansas City, MO June 6-8, 2018 Jennifer Thorvaldson, Ph.D. James Squibb, III, M.A. IMPLAN Group





Jennifer Thorvaldson, Ph.D.

James Squibb III, M.A.

PRESENTATION OUTLINE

- Model data common points of confusion
- Multipliers comparing and interpreting
- Impacts setting up analyses and reporting results

MODEL DATA

COMMON POINTS OF CONFUSION

IMPLAN SECTORS

- All sectors up to and including the Private Households sector are private industries
 - The Postal Service and following sectors are government enterprises, non-sectors, and government payroll sectors
- IMPLAN sectors include both for-profit and nonprofit businesses, and both corporations and proprietorships

EMPLOYMENT

- Annual average job count
 - Mix of full-time, part-time, seasonal/temporary
 - One person can have more than one job
 - Same definition used by BEA and BLS
- Adjustment methods available for job inputs that represent FTEs and/or are not annual
- Includes proprietors
 - Makes EC/Employment ratios subject to misinterpretation for sectors with high proprietor counts (similar for sectors with high number of PT workers, like real estate)
 - Will eventually be reported separately

CONTRACT EMPLOYMENT

- For all non-construction sectors, contract employment appears as an intermediate purchase (part of the purchasing sector's production function)
 - Will not show up us direct employment but rather as indirect employment
 - Will be a mix of W&S employment and proprietor employment
- For construction sectors, contract employment is part of direct proprietor employment
- Local employment vs. traveling crews

ΙΝΟΜΕ

- Labor income includes proprietor income
 - Thus, it is possible for it to be negative and to fluctuate year-to-year
 - Employee compensation is fully-loaded wages and is always positive
- Personal income includes all sources of income
 - In addition to labor income, personal income includes Social Security payments, investment income, etc.
 - An informational value only not used in impact calculations

Ουτρυτ

- Output = value of production that occurred in that year
- Not always the same as sales!
 - Inventory
 - Output for the wholesale and retail sectors is the wholesale or retail margin only (not sales)
- Output can rise or fall even if physical production levels remain the same.
 - Price changes, tax rate changes, wage rate changes, etc.
 - Thus, output/worker ("productivity") can also change for the same reasons
- Output "double-counts" relative to GDP (see article)

RPC, RSC, S/D RATIO

- RPC = % of local demands that is met by local supply
 = LULS / Local Demand
- RSC = % of local supply that goes to meet local demand
 = LULS / Local Supply
- High ratio of RSC to RPC is one indicator that there is room to increase local production of the commodity
- Domestic Supply/Demand Ratio = <u>Net</u> Commodity Supply / Gross Commodity Demand
 - % of local demand that could possibly be met by local <u>domestic</u> production (i.e., if the commodity were not exported domestically)

MULTIPLIERS

COMPARING AND INTERPRETING

INTERPRETATIONS AND COMPARISONS

- The 2 Rule-Of-Thumb
 - Only applies to output multipliers (other types of multipliers have wide ranges, though VA multipliers tend to be lower than all others)
 - Only applies to sub-national models
- Multipliers are influenced by many things, including:
 - RPCs of the industry's main inputs and of its suppliers' main inputs
 - Wage rates of the industry and its suppliers
 - Labor-intensity of directly-impacted industry relative to suppliers
 - Commuting rates

INTERPRETATIONS AND COMPARISONS

- Geography Size
 - Larger study areas generally, but not always, have higher multipliers (spreadsheet example)
 - Depends on the industry and geographies being compared
 - MRIO multipliers
 - Customized events
- Bigger multiplier ≠ bigger industry

INTERPRETATIONS AND COMPARISONS

- Effects vs. Multipliers
 - Effects are on a per-million-dollars-of-output basis
 - Multipliers are unitless the units of the numerator and denominator are the same.
- Type I Multiplier = (Direct + Indirect) / Direct
 - Assumes no institutions internalized
 - No induced effects
- Type SAM Multiplier = (Direct + Indirect + Induced) / Direct
 - Standard is to internalize households only
 - Internalizing State/Local Government may be justified in some specific cases (will increase induced effects)
 - Generally not recommended to internalize other institutions (see paper)

IMPACTS

SETTING UP ANALYSES AND REPORTING RESULTS

ΕΜΡΙΟΥΜΕΝΤ

- Jobs vs. Individuals
 - Job-years
- Multi-year impacts
 - Workers in subsequent years will likely be the same as those in the first year – shouldn't be counted more than once
- Short-term impacts
 - Employment/output may need to be adjusted upward
 - Most employent should be reported in terms of job-years and reported as temporary

OTHER COMMON PITFALLS

- Event Year should more appropriately be called Dollar Year or Input Year – WHY?
- Net new activity? All about presentation and context.
 - Counter-factual or "but-for" analysis
 - support vs. create
 - contribution vs. impact
 - New economic activity versus shifting economic activity from one sector to another
 - Taxes
 - Net new tax revenue for a county may not be net new tax revenue for the state

WHEN DO MARGINS COME INTO PLAY?

- Anytime you are modeling something that was purchased from a wholesaler or retailer.
 - In other words, anytime the commodity is not purchased directly from the producer.
 - Think manufactured goods.

MARGINS ILLUSTRATED



Producer value = \$100

Electricity Water Rubber Cotton Dye Legal services

Transportation costs = \$30

©`©

Gasoline Motor oil Vehicle repair service Tires Legal services



Retail Mark-up = \$20

electricity Rent Cleaning supplies Advertisin g Legal services

TWO WAYS TO APPLY MARGINS, DEPENDING ON THE INFORMATION YOU HAVE:

- Suppose you are trying to model a \$IMM purchase of gasoline
 - Since you know the specific commodity being purchased, you can set up the Event in the producing sector (petroleum refining)
 - If you don't then apply margins, the producer will receive the entire retail sale price
 - Applying margins will give a portion of the sales price to the producer, a portion to the transporters, a portion to the wholesaler, and a portion to the retailer.



TWO WAYS TO MARGIN DEPENDING ON THE INFORMATION YOU HAVE:

- Suppose you are trying to model \$IMM of purchases from a gas station
 - Can you choose an IMPLAN producing industry?
 - Okay so we have to use the retail sector.
 - What happens if we don't apply margins?
 - What happens when we do apply margins?



THANK YOU!

Questions? Comments?

S-W DIVERSITY INDEX

- A summary index based on the number of industries in a region (relative to maximum possible) and the spread of employment among those industries
- Could be calculated based on other factors (EC, Output)
- Ranges from 0 to 1
- Is a relative measure best used in comparison to other geographies or across time (we sell spreadsheets of these data if desired)

IMPLAN

Social Accounting Matrix

MCRSA 49th Annual Meeting

IMPLAN's

June 7-8, 2018

Kansas City, MO

(SAM)



Jimmy Squibb

Director of Global Economics

SAM Overview

Crash Course in SAMs

- Debatable lineage, but some notable moments in history:
- Quesnay (1700s), Stone (1985), Pyatt and Round (1970s to 1980s)
- A natural extension of an IO table adds transfer data to show flow of income to final demand.
- Historically, and with IMPLAN, SAMs reveal information about distribution of income across earnings or wealth categories.

Excerpt of IMPLAN SAM

Type Code	Description	Industry Total	Commodity Total	Employee Compensation	Proprietor Income	Other Property Type Income	Taxes on Production and Imports	Households LT15k	Households 15-30k	Households 30-40k	Househol 40-50k
1001	Industry Total		\$31,152,296,638,022								
2001	Commodity Total	\$12,945,480,449,648						\$688,140,043,	\$1,185,319,93	\$849,379,281,	\$774,715
5001	Employee Compensation	\$9,978,641,020,092									
6001	Proprietor Income	\$1,341,932,993,771									
7001	Other Property Type Income	\$6,077,702,996,309									
8001	Taxes on Production and Im	\$1,226,198,000,503									
10001	Households LT15k		\$292,571,961	\$44,140,349,121	\$0	\$15,779,962,402		\$23,677,553	\$77,131,645	\$82,286,232	\$97,
10002	Households 15-30k		\$460,735,630	\$227,827,960,938	\$21,998,785,462	\$38,106,928,223		\$77,131,645	\$251,262,909	\$268,054,413	\$318,
10003	Households 30-40k		\$342,295,940	\$309,320,785,156	\$30,318,147,988	\$39,193,045,898		\$82,286,232	\$268,054,413	\$285,968,079	\$340,
10004	Households 40-50k		\$330,433,167	\$412,621,781,250	\$41,678,357,299	\$50,851,308,105		\$97,889,282	\$318,882,660	\$340,193,115	\$404.
10005	Households 50-70k		\$734,249,752	\$1,020,953,250,000	\$94,911,064,189	\$149,305,300,		\$210,282,196	\$685,012,146	\$730,790,405	\$869,
10006	Households 70-100k		\$832,301,212	\$1,598,012,015,625	\$148,225,293,352	\$190,906,063,		\$269,888,977	\$879,186,279	\$937,940,918	\$1,115,
10007	Households 100-150k		\$891,260,853	\$2,034,893,437,500	\$226,228,486,939	\$233,189,989,		\$378,526,520	\$1,233,082,397	\$1,315,487,305	\$1,564,
10008	Households 150-200k		\$368,941,435	\$1,147,669,765,625	\$155,968,897,605	\$132,974,895,		\$246,996,582	\$804,612,366	\$858,383,362	\$1,021,
10009	Households 200k+		\$450,676,496	\$1,986,741,593,750	\$562,926,418,530	\$484,973,500,		\$1,180,555,786	\$3,845,760,986	\$4,102,767,090	\$4,880.
11001	Federal Government NonDe		\$5,444,711,861	\$1,162,603,000,000	\$59,677,542,408	\$43,852,000,000	\$134,462,555,633	(\$7,594,806,015)	(\$8,733,695,313)	(\$5,686,770,111)	\$24,780,
11002	Federal Government Defense										
11003	Federal Government Invest		\$23,264,803								
12001	State/Local Govt NonEduc		\$466,522,517,317	\$20,258,000,000	\$0	\$51,925,000,000	\$1,091,735,444,870	\$564,312,004	\$54,705,094,742	\$8,334,118,088	\$30,269,
12002	State/Local Govt Education										
12003	State/Local Govt Investment										
13001	Enterprises (Corporations)			\$0		\$1,862,776,00					
14001	Capital		\$118,314,761,437			\$2,769,560,00					\$4,468,
14002	Inventory Additions/Deletions		\$32,193,243,914								
25001	Foreign Trade	\$1,344,784,555,060		\$13,599,081,127	\$0	\$14,309,002,169		\$34,118,535,874	\$61,638,106,162	\$46,818,250,631	\$48,475
28001	Domestic Trade	\$0						\$0	\$0	\$0	
	Total	\$32,914,740,015,383	\$31,779,498,603,800	\$9,978,641,020,092	\$1,341,932,993,771	\$6,077,702,99	\$1,226,198,000,503	\$717,795,320,	\$1,301,292,42	\$907,766,750,	\$893,32

Simple SAM

	1	2	3	4	5	6	7	8	9	10	11	12	
	Agriculture	Mining	Utilities	Construction	Spacecraft mfg	Services	Labor Income	Property Income	Households	Government	Capital	Trade (exports)	Total
1 Agriculture	6.00	0.02	0.08	12.4	3 0.00	0.80			2.00	0.08		5.00	26.41
2 Mining	0.22	0.17	1.11	28.0	3 8.29	29.42			10.00	10.12		128.43	215.79
3 Utilities	0.07	2.68	0.40	5.0	5 7.18	21.04			20.55	304.31		11.24	372.53
4 Construction	1.41	2.85	44.65	378.2	5 112.95	106.77			156.06	127.05		1562.63	2492.62
5 Spacecraft mfg	0.13	3.93	2.28	21.3	2 79.00	19.27			16.47	6.78		2048.77	2197.95
6 Services	2.15	6.62	65.88	325.7) 356.21	519.31			1075.71	295.08		1264.90	3911.56
7 Labor Income	5.13	59.72	100.77	465.4	5 583.64	1383.58							2598.29
8 Property Income	2.54	59.13	12.31	207.3	8 252.68	760.45							1294.49
9 Households							2000.30	800.00		86.00	1157.3	9	4043.69
10 Government							150.00	367.00	2526.00		0.0	0	3043.00
11 Capital							0.00	127.49	0.00	996.78	0.0	0 32.86	1157.13
12 Trade (imports	8.80	80.67	145.05	1049.0	0 797.99	1070.92	448.00	0.00	236.60	1216.80	0.0	0	5053.83
Total	26.45	215.79	372.53	2492.6	2 2197.94	3911.56	2598.30	1294.49	4043.39	3043.00	1157.3	9 5053.83	26407.29

SAMs and National Income and Product Accounts (NIPA)
Goal: Align SAM with NIPA

NIPA example T-account

Account 3. Personal Income and Outlay Account

Line			Line		
1 2 3 4 5 6 7 8	Personal current taxes (4–15) Personal outlays Personal consumption expenditures (1–15) Personal interest payments (3–20) Personal current transfer payments To government (4–25) To the rest of the world (net) (5–17) Personal saving (6–9)	1,354.3 9,590.3 9,224.5 238.0 127.8 78.9 48.9 38.8	10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25	Compensation of employees, received	7,440.8 6,018.2 6,015.3 2.9 1,422.6 970.7 451.8 1,006.7 54.5 1,796.5 1,796.5 1,100.2 696.3 1,612.5 1,585.3 27.2 927.6
9	PERSONAL TAXES, OUTLAYS, AND SAVING	10,983.4	26	PERSONAL INCOME	10,983.4

from U.S. BEA - "Measuring the Economy: A Primer on GDP and the National Income and Product Accounts," 2007

Updating IMPLAN's SAM

- Which NIPA accounts does IMPLAN SAM include?
- How to determine the interaction of T-accounts?
- NIPA usually does not make this clear.
- The task is to test different relationships until you have determined a set of relationships that holds for any year.
- This is inherently an ad-hoc process.

Regional SAMs

- Result is a regional NIPA analogue a set of T-accounts for every IMPLAN model.
- Adds an account that does not exist in U.S. SAM: Domestic Trade.
- Regional personal income, or regional balance of payments, for example, can be calculated from a SAM.
- Sum of all state SAMs = U.S. SAM.

Balancing the SAM

- SAM construction cannot be fully determined before building a model:
 - Combining regions
 - Customizing model
- Identify a transaction for each account to serve as residual:
 - Test of accuracy for U.S. is whether residual matches corresponding NIPA value.
 - Choose residual as data point for which we don't have sub-national empirical estimates, e.g., personal savings by region, net flow of savings from other regions, etc.

Paying	Receiving	Transfer Type	NIPA Correspondence	Notes
 14001	12001	15011	Nipa 3.3:27	This is SL savings.
12001	12002	15010	Nipa 3.17:30	SL Ed. This NIPA table never is released in time, so this value is projected and won't perfectly match NIPA.
14001	12003	15011	Nipa 3.9.5:35	Gross SL investment
14001	11001	15011	Nipa 3.2:33	This is Fed savings.
11001	11002	15010	Nipa 3.10.5:24 – 3.30.5:32	Defense consumption spending (output minus own- account investment)
14001	11003	15011	Nipa 3.9.5:19 + 3.9.5:27	Gross Fed investment
10000	14001	15011	Nipa 2.1:34	Personal savings
13001	14001	15011	Nipa 5.1:4	This is net retained earnings
25001	14001	15011	Nipa 5.1:35	Net lending/borrowing (inherently is FT b/c balances FT account, and this is net lending and borrowing across the whole country, so any remaining borrowing/lending can come only from abroad.
14001	14002	15034	Nipa 5.2.5:25	Net change in inventory

Commuting

Commuting: Gross Flows

• Current IMPLAN SAMs:

- Net flows.
- Sub-national SAMs consolidate all commuting in the Domestic Trade account.

• New IMPLAN SAMs:

- Gross flows see total in-commuting and total out-commuting for state and county models.
- Foreign commuting stays in the Foreign Trade account.

• Consequences:

- Greater accuracy.
- Easier to use your own estimated commuting rate.
- Lower induced effects, ceteris paribus.

Other plans and possibilities

Plans and Possibilities

• Initial launch

- SAM customization to enable contribution analysis.
- Other SAM customizations.
- New IMPLAN SAMs:
 - Estimated inter-regional gross flows of capital income (PI + OPI).
 - Options for managing negative values.

Any questions?

IMPLAN

Social Accounting Matrix

MCRSA 49th Annual Meeting

IMPLAN's

June 7-8, 2018

Kansas City, MO

(SAM)



Economics of Bicycling in Minnesota MCRSA CONFERENCE, JUNE 2018



TODAY'S GOALS

Share research

Highlight approaches to data collection

Showcase value of collaboration





PROJECT BACKGROUND







ECONOMIC IMPACT ANALYSIS

Local Economy

Direct Impacts

Indirect Impacts: Suppliers of Material Inputs

Induced Impacts: Labor Income





ECONOMIC CONTRIBUTION Bicycle Industry





5

THREE PARTS

- Retailers
- Wholesalers and manufacturers
- Advocacy groups







282 BUSINESSES







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TO SURVEY, OR NOT TO SURVEY?



SURVEY

Response rate Overall = 22% Highest = 62% (multiple locations) Lowest = 17% (mom and pop)





DIRECT EFFECT OF SPECIALTY BIKE

\$66.8 million – sales \$477,000 per shop

1,480 – employees 10 per shop



\$27.2 – labor income \$195,000 per shop



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NOT TO SURVEY

Economic Census – Product Line data



11

DO THEY CONVERGE?

Survey = \$79.5 million

Census = \$82.4 million





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KEY THEMES

Passion



- Driving behavior change
- Retail trends and marketplace
 - Competition
 - The Fat Tire Bike
- Critical firms
 - Quality Bike Products and Park Tool





TOTAL IMPACT

\$779.9 million economic activity

5,500 jobs



\$208.8 million in labor income





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ECONOMIC CONTRIBUTION Bicycle Events





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100 EVENTS IN MINNESOTA

*Non-races *High School races *Mountain biking *Bicycle races *Bicycle tours *Fundraisers







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SURVEYS







17

DO THEY SPEND \$\$\$\$?

\$121.20 per person/day







COUNTING VISITORS





19

TOTAL IMPACT

\$14.3 million economic activity

150 jobs



\$4.6 million in labor income



20

HOW IMPORTANT IS SCENERY?

Scenic Route as Most Enjoyable Aspect of Event





21

DO THEY VISIT BYWAYS?

Percent of Respondents Reporting Driving on Designated Byways





22

DO THEY STAY?

Average Number of Nights Stayed, Non-Races/Rides





23

HOW MANY PEOPLE COME?

Travel Party, Bike Rides





WHAT DO THEY DO?

Bicycle Tour Participants, Other Activities





WHERE DO THEY COME FROM?





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HEALTH AND INFRASTRUCTURE Bicycling in Minnesota





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