3-1-2012

A Re-examination of Montana's Economic Impact Estimates

Norma P. Nickerson
The University of Montana-Missoula

Kara Grau
The University of Montana-Missoula

A Re-examination of Montana's Economic Impact Estimates
Research Note 2012-1

By: Norma Nickerson and Kara Grau
Institute for Tourism and Recreation Research
University of Montana
March 6, 2012

In February, 2012, ITRR re-examined the Economic Impact Estimates of tourism to Montana, which include industry output, employment, and income attributable to nonresident spending in the state. The re-examination was undertaken to address what appeared to be some inconsistencies in the economic impact trends when looking at the figures over time (2002-2010). The following pages provide a synopsis of what was examined and what actions were undertaken by ITRR as a result of this examination.

Questions addressed:

1. Why did the total nonresident expenditure estimates (collected by ITRR via nonresident surveys) correlate closely in earlier years with the direct industry output and then later seem to correlate with the combined industry output?

2. How can jobs attributable to nonresident spending go from the high number in 2007 to a lower number in the following years with the percent decrease in jobs being larger than the percent decrease in nonresident spending?

3. How can the Bureau of Labor Statistics show employment numbers in leisure and hospitality that are so much higher than jobs reported through the IMPLAN model used by ITRR?

Responses:

1. Answer to Q1: The difference in relationship between nonresident spending and direct industry output is due to changes in IMPLAN software. IMPLAN Version 2 reported direct output differently than Version 3. Direct industry output estimates prior to 2008 reported nearly the entire spending figure as the direct output, not taking into account the amount spent by producers to supply goods purchased by nonresidents. IMPLAN Version 3 correctly subtracts that amount from the direct industry output estimate. ITRR has revised direct industry output figures to account for this difference. The revised figures now accurately show that most of the manufacturing share of retail purchases (e.g. groceries, gas, souvenirs) is not included. Most of the producer price of retail purchases immediately leaks out of the region to cover the cost of goods sold. This issue was due to a reporting change from IMPLAN V2 to V3, not a change in how spending drives other portions of the model. Therefore, this reporting issue did not affect other estimates such as employment or income.

Models are continually fine-tuned. IMPLAN V3 makes use of more sophisticated trade flow models and is an improvement over regional purchase coefficients used in IMPLAN V2. ITRR uses the most recent and updated models available, which can lead to discrepancies in trends. Revising the direct industry output estimates for earlier years makes them more comparable to estimates produced using IMPLAN Version 3.

2. Answer to Q2: In the IMPLAN model, employment data is derived from multiple sources. In general, Census of Employment and Wages (CEW) data from the BLS provide the county-level industry structure for the IMPLAN database. The U.S. Census Bureau's County Business Patterns (CBP) data are used to make non-disclosure adjustments to CEW data, while the BEA Regional Economic Accounts (REA) data is used for control totals. One should not expect employment estimates to follow exactly the same pattern as nonresident spending estimates. Every output within the model has its own set of multipliers based on data from federal sources. Therefore, a three percent increase in nonresident spending, for example, would not equate to a three percent increase in all economic impact estimates for that year (employment, output, income). Generally, if there is an increase or decrease in spending, there will be a corresponding increase or decrease in employment, although not necessarily of the same magnitude.
   There are many factors at play contributing to this changing relationship between nonresident spending and employment estimates, and, therefore, no single concrete answer to this question. Version 3 makes use of refined trade flow models; IMPLAN model data is generally updated annually; different nonresident spending patterns are used within IMPLAN each year and differ based on whether previous spending patterns were adjusted for inflation or new data was collected; and downturns due to the recession certainly seemed to affect things. There is always the possibility that job numbers in the early part of the 2000s were somewhat inflated; the estimates were based on the best information we had available at the time, but, unfortunately, we did not have the benefit of newly collected spending pattern data each year.

3. Answer to Q3: The number of jobs reported in Leisure and Hospitality industries by the BLS are estimates based on a monthly survey of businesses. The BLS figures reflect estimates of all jobs in Leisure and Hospitality, not just those supported by nonresident spending. The number of jobs estimated by IMPLAN is jobs in *all industries* supported by nonresident spending, not just jobs in Leisure and Hospitality. IMPLAN uses multiple data sources to produce these estimates, as explained in #2, above. The BLS figures and IMPLAN figures are estimated through different methods, and are not directly comparable. One should not expect the BLS numbers and IMPLAN numbers to be the same. See Table 3, below, for more information about the IMPLAN estimates of jobs in Leisure and Hospitality industries.

Resulting changes enacted by ITRR:

1. In November, 2011, ITRR worked closely with MIG, Inc. (the sole-source provider of IMPLAN) to update and improve the nonresident economic impact estimation model. ITRR re-ran the 2007-2010 data using this new model in IMPLAN Version 3 so those years can be compared to each other legitimately. Only the data from 2007 forward can be run following the same method in IMPLAN V3. The economic impact sheets on the ITRR website reflect the revised numbers based on V3 of IMPLAN.

2. ITRR "archived" all impact, spending, and visitation summaries from 2007 and earlier on the ITRR website to discourage comparison from year to year. It is not recommended to compare economic impact estimates prior to 2008 with 2008 and forward due to IMPLAN structural changes. As mentioned earlier, IMPLAN V3 makes use of more sophisticated trade flow models and is an improvement of regional purchase coefficients used in

IMPLAN V2. The data is still available on the same "MT Tourism Economic" page, but is found under the archive link. Additionally, due to the recession, it may behoove users of the data to compare only figures from 2008 and beyond, since these numbers reflect what has been termed "the new normal" by some in the tourism industry.

3. On the ITRR "MT Tourism Economics" archive webpage, a paragraph has been posted cautioning comparison with the archived years and explaining why such caution is due. It mentions that models are continually fine-tuned, and ITRR uses the most recent and updated models available. Changes in models always create discrepancies in trends.

4. ITRR was able to revise portions of the IMPLAN V2 output estimates for 2002-2006 to more accurately reflect direct output. IMPLAN V2 misleadingly reported the entire spending figure as the direct effect. The revised figures now accurately show that most of the manufacturing share of retail purchases is not included, as mentioned in Response 2, above.

5. Any changes in models, data collection or other changes that may affect estimates for a year will be stated on the yearly economic impact sheets provided by ITRR as a caution to the reader.

6. In the future, ITRR will provide preliminary estimates in December of each year. This means that 4th quarter data used in the preliminary estimate will always be from the previous year (e.g. 2012 preliminary impacts will have Q4 data from 2011). Those preliminary estimates will remain "on the board" until ITRR is able to obtain current year highway counts and current year IMPLAN model (usually available by November of each year). Therefore, *final* estimates will be available approximately one year after the end of the calendar year.

Final note about models and what may affect the numbers: When looking over the visitor spending data, 2010 is the first year that ITRR collected a full year of nonresident expenditures resulting in obvious changes in spending patterns. Therefore, 2007and 2008 represent spending patterns from the 2005 survey year. 2009 Q1 and Q2 represent 2005 spending patterns while Q3 and Q4 represent 2009 spending patterns. From 2010 forward, yearly models will have current-year spending patterns as long as ITRR collection of nonresident expenditure data is on-going.

The following tables provide information which ITRR revised based on IMPLAN V3 and ITRR's updated impact estimation model.

Table 1: Revised Direct & Combined Output Estimates, 2002-2007

Industry Output	2002	2003	2004	2005	2006	2007
Nonres Travel Spending	$1,800,000,000	$1,874,000,000	$1,958,000,000	$2,755,000,000	$2,914,000,000	$3,085,000,000
Direct Output*	$1,352,900,000	$1,400,100,000	$1,439,000,000	$2,021,300,000	$2,296,600,000	$2,536,900,000
Combined Output	$2,227,540,000	$2,170,700,000	$2,236,300,000	$3,087,600,000	$3,503,400,000	$4,070,600,000

*revised to reflect leakage due to producer costs

Table 2: Revised Economic Impact Estimates using IMPLAN V3, 2008-2011

Revised Estimates	2008	2009	2010	2011
Nonres Travel Spending	$2,728,000,000	$2,272,000,000	$2,447,000,000	Coming soon!
Direct Output	$2,234,000,000	$1,924,500,000	$1,954,200,000	
Combined Output	$3,547,600,000	$2,856,100,000	$2,933,000,000	
Direct Employment	27,630	24,030	24,640	
Combined Employment	39,560	33,040	34,210	

Table 3 compares the total number of jobs in Leisure and Hospitality in Montana (U.S. Dept. of Labor, Bureau of Labor Statistics) to the number of jobs in Leisure and Hospitality attributable to nonresident visitor spending (IMPLAN combined employment figures, leisure and hospitality sectors 402-413). IMPLAN employment estimates represent jobs across all industry sectors attributable to nonresident spending. Therefore, the leisure and hospitality jobs represented in the table below have been extracted from the overall IMPLAN employment figures and correspond to BLS figures. In other words, jobs reported by BLS in Leisure and Hospitality industries correspond to jobs reported by IMPLAN in sectors 402-413. The last row of the table shows what percent of jobs in Leisure and Hospitality industries in Montana are attributable to nonresident spending (IMPLAN combined employment, sectors 402-413/BLS Leisure & Hospitality jobs = % of Leisure & Hospitality jobs attributable to nonresident spending in Montana).

Table 3: Jobs in Leisure & Hospitality

Leisure & Hospitality Jobs, BLS and IMPLAN Estimates	2007	2008	2009	2010
Leis. & Hosp. Jobs in MT (BLS)	58,200	59,000	56,800	55,800
Leis. & Hosp. Jobs in MT Resulting from Nonresident Spending (IMPLAN sectors 402-413, combined employment)	24,900	19,280	15,750	17,260
Percent of MT Leis. & Hosp. jobs attributable to Nonresident Spending	43%	33%	28%	31%

Table 4 is a documentation of all the changes and updates that have occurred since ITRR began data collection and impact modeling. Each time data is collected by ITRR, visitor spending patterns will show a change. In addition, when ITRR collects nonresident data, new proportion counts (resident vs. nonresident) are collected at the entry points to the state. These spending patterns and proportion counts remain in the model for each year until new data is collected. Therefore, the only changes made from year to year when new data is not being collected are highway counts for visitation numbers and inflation adjustments for spending numbers. Each year, IMPLAN provides new economic data for each state. These numbers reflect the current economy for Montana and drive the relationship between nonresident spending and the economic impacts. The availability of a new version of IMPLAN means the MIG, Inc. has revised the structure within the IMPLAN model to better reflect the economy. Likewise, as new methodologies for econometrics become available, MIG, Inc. will revise as they see fit. This obviously affects relationships between spending estimates and economic impact estimates and should be kept in mind whenever comparing years.

Table 4: Documented Changes: 1988-2010 in Nonresident Data Collection, Visitation, Model Adjustments, and IMPLAN Model

	Nonresident data collection	Visitation #'s	Expenditure Year of data	IMPLAN changes
1988	Full year data collection: April 1988 – March 1989	New highway counts and new proportions counts	'88-'89	IMPLAN
1989			'88-'89	IMPLAN
1990		New highway counts; '88-'89 proportion counts	Inflated from '89	IMPLAN
1991		Ditto	Ditto	IMPLAN
1992		Ditto	Ditto	IMPLAN
1993	Full year data collection	New highway counts and new proportions counts	1993	IMPLAN
1994		New highway counts; 1993 proportion counts	Inflated from '93	IMPLAN
1995		Ditto	Ditto	IMPLAN
1996	Data collection June-Sept.	New highway counts '93 proportion counts for Oct. - May '96 proportion counts for June-Sept.	Oct. – May inflated from '93 June-Sept. 1996	Use of Version 1 assumed
1997	Data collection Dec. - March	New highway counts; '93 proportion counts for Oct., Nov., Jan. -May '96 proportion counts for June-Sept. '97 proportion counts for Dec.	Oct., Nov., Jan.- May inflated from '93 June- Sept. inflated from '96 Dec. inflated from '97	Use of V1 assumed
1998		New highway counts; '93 proportion counts for Oct., Nov., April, May '96 proportion counts for June-Sept. '97 proportion counts for Dec.-Mar.	Oct., Nov., April, May inflated from '93 June- Sept. inflated from '96 Dec. – Mar. inflated from '97	Use of V1 assumed
1999		Ditto	Ditto	Use of V1 assumed
2000		Ditto	Ditto	Use of Version 2 assumed
2001	Full year data collection	New highway counts and new proportions counts	2001	Use of V2 assumed
2002		New highway counts; 2001 proportion counts	Inflated from 2001	V2
2003		Ditto	Ditto	V2
2004		Ditto	Ditto	V2
2005	Full year data collection	New highway counts; 2005 proportion counts	2005	V2, 2003 IMPLAN data
2006		Ditto	Ditto	V2, 2003 IMPLAN data
2007		Ditto	Ditto	Version 3, 2007 IMPLAN data, trade flows model, New ITRR model
2008		Ditto	Jan – June inflated from '05 July-Dec. inflated from '05 then adjusted -15% due to spending data collected in summer '08 & to account for economic changes evident beginning Q3 '08	V3,2008 IMPLAN data, trade flows model, New ITRR model
2009	Data collection start July 1	New highway counts; '05 proportion counts Jan.-June '09 proportion counts July-Dec.	Jan.-June inflated from '05 adjusted downward -18% July-Dec. new data	V3, 2009 IMPLAN data, trade flows model, New ITRR model
2010	Full year data collection	New highway counts; 2010 proportion counts	2010	V3, 2010 IMPLAN data, trade flows model, New ITRR model
2011	Full year data collection	New highway counts, 2011 proportion counts	2011	V3, 2010 IMPLAN data (prelim), trade flows model, New ITRR model