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AMERICA'S BYWAYS RESOURCE CENTER

**ECONOMIC IMPACT TOOL:
SENSITIVITY ANALYSIS**

Woodward Avenue All-American Road

CASE STUDY

AUGUST 16, 2012

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Executive Summary

Since the inception of the National Scenic Byways Program in the early 1990s, local byway organizations have often found themselves asked to prove their worth to elected officials and taxpayers. Hence, the need to quantify their contribution to the local economy in terms of output growth, job creation and additions to the tax base in particular. However, conducting an economic impact analysis can be daunting for byway organizations, the majority of which have modest budgets, limited staff resources and little to no expertise in economic modeling.

As part of its congressionally designated function of providing technical assistance to local byway groups, America's Byways Resource Center commissioned the development of an Economic Impact Tool (Tool) for National Scenic Byways and All-American Roads. The Tool's main purpose is to assist byway organizations in showing the positive effect of scenic byways on the economy to elected officials, business leaders and the community at large. The Tool was officially released in February 2010 and has been made available to byway organizations since then.

HDR Decision Economics (HDR) has been commissioned by the Resource Center to perform a sensitivity analysis of the tool and to determine its effectiveness. As part of the study, HDR has been tasked with conducting a number of case studies with selected byways, including Woodward Avenue National Scenic Byway.

Through visitor spending and various capital projects, Woodward Avenue is generating multiple impacts on the two-county byway region, including:

- \$234 thousand in total business sales;
- About 1.2 jobs; and
- An increase of \$53 thousand in earnings.

A summary of economic impacts is provided in the table below.

Overall Economic Impacts by Type of Impact

	Direct Impacts	Indirect Impacts	Total Impacts
Employment (No. of Jobs)	0.5	0.7	1.2
Earnings (\$000)	\$26.6	\$26.7	\$53.3
Economic Output (\$000)			
Visitor Spending	-	-	-
Annual Operating Expenses	-	-	-
Capital Investments to Date	\$110.5	\$123.1	\$233.6

1 Introduction

As part of its congressionally designated function of providing technical assistance to local byway groups, America's Byways Resource Center commissioned the development of an Economic Impact Tool (Tool) for National Scenic Byways and All-American Roads. The Tool's main purpose is to assist byway organizations in showing the positive effect of scenic byways on the economy to elected officials, business leaders and the community at large. The Tool was officially released in February 2010 and has been made available to byway organizations since then.

HDR Decision Economics (HDR) has been commissioned by the Resource Center to perform a sensitivity analysis of the tool and to determine its effectiveness. As part of the study, HDR has been tasked with conducting a number of case studies with selected byways.

1.1 Case Study Objectives

The case studies have three key objectives:

- Ensure that the tool is both practical (ease of use) and reliable (sound methodology and valuable results);
- Ensure that the tool meets all the needs of the byway community (i.e., the outputs from the Tool can be readily used for a variety of purposes such as investor outreach and federal grant application); and
- Identify potential areas for improvement (interface, organization of the workbook, inputs, results, technical manual, etc.).

In collaboration with the Resource Center, HDR developed a list of candidate byways and sent a short solicitation form. Of those who responded favorably, the following five byways were selected:

- Woodward Avenue All-American Road;
- Journey Through Hallowed Ground National Scenic Byway;
- Blue Ridge Parkway All-American Road;
- Volcanic Legacy All-American Road; and
- Cherokee Hills National Scenic Byway.

HDR assisted each selected byway organization to conduct an economic impact analysis with the Tool and organized webinars that covered the following topics:

- Installation of the Economic Impact Tool;
- Overview of the Tool structure and logic;
- Utilization of the Tool (entering input data, producing the results, etc.);

- Examination and resolution of issues identified during the interviews, if necessary; and
- One-on-one hands-on training using up to three (3) examples customized to each byway.

1.2 Organization of the Report

This report presents the results of the case study that was conducted for Woodward Avenue National Scenic Byway. It consists of four chapters. Following this introduction, Chapter 2 provides background information on the case study. Chapter 3 discusses the data sources and the model inputs used to estimate the economic impacts of the byway. And Chapter 4 presents the results of the case study.

The report also includes a number of appendices. A table describing the different model input variables of the Tool is provided in Appendix A. Economic multipliers obtained from the US Bureau of Economic Analysis and used to estimate the total economic impacts are provided in Appendix B. Finally, a list of data sources and references used in the sources of the case study is available in Appendix C.

2 Background Information

This chapter provides general background information on the case study. Section 2.1 gives an overview of the Economic Impact Tool for National Scenic Byways and All-American Roads. Section 2.2 introduces the Woodward Avenue National Scenic Byway.

2.1 Economic Impact Tool

Since the inception of the National Scenic Byways Program in the early 1990s, local byway organizations have often found themselves asked to prove their worth to elected officials and taxpayers. Hence, the need to quantify their contribution to the local economy in terms of output growth, job creation and additions to the tax base in particular. However, conducting an economic impact analysis can be daunting for byway organizations, the majority of which have modest budgets, limited staff resources and little to no expertise in economic modeling.

As part of its Congressionally-designated function of providing technical assistance to byway groups, America's Byways Resource Center commissioned the development of an Economic Impact Tool that would allow byway staff and/or volunteers to easily measure the impacts of byways and byway-related activities in their communities. The most recent version of the Tool (Version 2.0) was released in May 2010.

The Economic Impact Tool is a Microsoft Excel-based software program with a user-friendly interface that allows even those with little or no knowledge of either economic impact analysis or spreadsheet applications to make effective use of it. The Tool is highly scalable – not all model features need to be used to conduct an analysis. This allows the user to adjust the scope of the analysis based on available resources as well as experience in Excel and economic impact analysis. The model inputs can be entered by means of one of two forms: the short form and the long form. The short form allows the user to run the Tool with only a few key inputs and is therefore an attractive option for those looking to obtain results quickly. On the other hand, the long form requires more detailed inputs, thus the results are more comprehensive and reliable. The Tool is designed to be used to measure a broad range of activities, from the overall economic effects of byway-related (tourism) activities to the specific effects of a given investment. The model results can be used for different purposes, such as supporting federal grant applications, improving tourism marketing efforts and increasing policymakers' awareness of the byway.

2.2 Woodward Avenue National Scenic Byway

Woodward Avenue is M-1, one of America's Byways and a key historic, cultural and visitor destination in the Detroit metropolitan area. It extends 27 miles from downtown Detroit in Wayne County to Pontiac in Oakland County. Woodward Avenue was part of the Theodore Roosevelt International Highway that connected Portland, Maine, with Portland, Oregon through Ontario in Canada. Woodward Avenue is also home to the first mile of concrete roadway in the country. The road received the National Scenic Byway designation from the Federal Highway Administration in June 2002. A map of the byway region is shown on the following page.

Figure 1: Map of the Byway Region



3 Model Inputs

This chapter presents the model inputs used for this case study. Section 3.1 covers the different sources that were tapped to obtain the necessary data. The inputs used in the Tool, along with the assumptions made to derive these inputs, are discussed in Section 3.2.

3.1 Data Sources

Information on grants and other investments that are wholly or partially attributable to the byway was collected by Woodward Avenue. Only National Scenic Byway grants were considered as part of the case study.

Economic multipliers for the byway region were purchased from the US Bureau of Economic Analysis (BEA).

3.2 Case Study Inputs

A table describing the different model input variables of the Tool is provided in Appendix A. The table includes references to pages of the technical manual where the user can find additional information. Note that data on visitor profiles and visitor spending were not collected as part of this case study.

3.2.1 Investments

Table 1 below shows the investment data provided by Woodward Avenue for 2010. Please note that these estimates represent the funds allocated to the byway for that year (and used as a proxy for the funds actually spent in that year). Note also that these estimates only account for public investments, as no attempt was made to quantify potential private investments that could be wholly or partially attributed to the byway. Investments attributed to the byway designation totaled \$110.5 thousand in 2010.

Table 1: Investment Data (2010)

Investment Name	Total Amount	Amount Attributable to Byway Designation	Investment Type
Boston Edison Streetscape Grant	\$12,500	\$12,500	Capital Investment
Pontiac 'Transportation' Tribute	\$98,000	\$98,000	Capital Investment

3.2.2 Economic Multipliers

Economic multipliers are used to estimate the overall impacts of byway investments on the local economy. Type II multipliers (accounting for the direct and indirect effects) for the byway region were

purchased on the BEA website.¹ The byway region consists of the following two counties: Oakland, MI; and Wayne, MI.

A table showing the output, earnings, employment, and value added² multipliers by industry aggregate for the byway region is provided in Appendix B.

¹ BEA's RIMS II multipliers can be purchased online at <http://www.bea.gov/regional/rims/>. You will need to order *benchmark series* multipliers for your byway *region* (as of July 1, 2012 the cost is \$275). Orders are typically processed within 24 hours. You will be notified by email when the multipliers can be accessed online. Note that both *Type I* and *Type II* multipliers will be available for download. However, only *Type II* multipliers are actually used in the Tool. You will need to save the following two data files in the appropriate folder on your computer's hard drive (C:\BywaysImpactTool\Multipliers): *M406RG01.DAT* and *M_62RG01.DAT*. Though the multipliers are updated annually, they can be used for a number of years (3-5 years).

² Refer to the Technical Manual for the definitions of these terms.

4 Study Results

This chapter presents the final results of the case study. A summary of the overall economic impacts is provided in Section 4.1.1. Employment impacts and tax revenue impacts are presented in Section 4.1.2 and Section 4.1.3 respectively.

4.1 Scenario 1

Though the tool was originally designed to measure the net impacts generated by a byway over a period of several years, it can also be used to estimate the contribution of the byway to the economy at a given point in time. For this case study, the Tool was used to estimate the economic impacts associated with public investments in the Woodward Avenue byway region in 2010.

4.1.1 Economic Impact Summary

Through various investment projects, Woodward Avenue is generating multiple impacts on the two-county byway region, including:

- \$234 thousand in total business sales;
- About 1.2 jobs; and
- An increase of \$53 thousand in earnings.

A summary of economic impacts is provided in Table 2 below.

Table 2: Overall Economic Impacts by Type of Impact

	Direct Impacts	Indirect Impacts	Total Impacts
Employment (No. of Jobs)	0.5	0.7	1.2
Earnings (\$000)	\$26.6	\$26.7	\$53.3
Economic Output (\$000)			
Visitor Spending	-	-	-
Annual Operating Expenses	-	-	-
Capital Investments to Date	\$110.5	\$123.1	\$233.6

4.1.2 Employment and Earnings Impacts

Based on the inputs presented in Chapter 3, it is estimated that Woodward Avenue sustained 1.2 jobs in the two-county byway region in 2010. About half of that job estimate was the direct consequence of public investments. The remaining half was the result of suppliers' spending and expenditures made by the employees of the suppliers and the directly affected businesses.

A summary of the employment impacts by type of expenditure and by type of impact is provided in Table 3 below. Please note that these estimates include both part-and full-time jobs and should not be interpreted as full-time equivalents (FTEs).

Table 3: Employment Impacts by Type of Impact

	Direct Impacts	Indirect Impacts	Total Impacts
Employment Change from Capital (One-Time) Investments			
Public Investments	0.5	0.7	1.2
Private Investments	-	-	-
Total from Capital Investments	0.5	0.7	1.2
Employment Change from Operating (Ongoing) Investments			
Operating Expenses	-	-	-
Visitor Spending	-	-	-
Total from Operating Investments	-	-	-
Total Byway Related Employment Change	0.5	0.7	1.2

These job impacts represent \$53.3 thousand in earnings annually, or about \$43,000 per employee. A summary of the earnings impacts by type of expenditure and by type of impact is provided in Table 4 below.

Table 4: Earnings Impacts by Type of Impact

	Direct Impacts	Indirect Impacts	Total Impacts
Earnings Change from Capital (One-Time) Investments (\$000)			
Public Investments	\$26.6	\$26.7	\$53.3
Private Investments	-	-	-
Total from Capital Investments	\$26.6	\$26.7	\$53.3
Earnings Change from Operating (Ongoing) Investments (\$000)			
Operating Expenses	-	-	-
Visitor Spending	-	-	-
Total from Operating Investments	-	-	-
Total Byway Related Earnings Change	\$26.6	\$26.7	\$53.3

4.1.3 Tax Impacts

The diverse economic activities spurred by Woodward Avenue also generate tax revenues to municipal, county and state governments. Total tax revenues in the byway region are estimated at \$2.3 thousand

in 2010.³ Income taxes represent 100 percent of that total. A summary of the tax revenue impacts by type of tax is provided in Table 5 below.

Table 5: Tax Impacts by Type of Tax (\$000)

	Property Taxes	Sales/Use/Lodging Taxes	Income Taxes
Value/Sales/Earnings Increase	-	-	\$53.3
Minimum Tax Amount			
Jurisdiction	Oakland, Michigan	Michigan	Michigan
Primary Tax Rate	\$0 per \$1,000	6.0%	4.4%
Tax Revenue	-	-	\$2.3
Maximum Tax Amount			
Jurisdiction	Oakland, Michigan	Michigan	Michigan
Primary Tax Rate	\$0 per \$1,000	6.0%	4.4%
Tax Revenue	-	-	\$2.3

Note: Sales/Use/Lodging tax rates vary for different types of purchases. This table only displays General Sales & Use Tax rates.

³ The Tool is not equipped to calculate local or county income taxes, as these taxes are typically paid based on a person's place of residence, and not the place of employment. Since the place of residence of those whose jobs are directly or indirectly influenced by the byway cannot be known, local or county income taxes cannot be accurately calculated.

APPENDIX A: ECONOMIC IMPACT TOOL INPUT VARIABLES

		TYPE OF DATA <i>(click on cell for a short description of the variable)</i>	UNIT	DEFAULT VALUE	WORKSHEET	COMMENTS	POTENTIAL DATA SOURCES	REFERENCE TO TECHNICAL MANUAL
Economic Activity	Visitor Profiles	% Daytrippers	%	Yes	InputVisitorProfiles	Sum of the two must be 100%	State or local agencies	pp. 17-18 & 29
		% Overnight Visitors	%	Yes	InputVisitorProfiles			
		% Living Within the Byway Region	%	Yes	InputVisitorProfiles	Sum of the two must be 100%		
		% Living Outside of the Byway Region	%	Yes	InputVisitorProfiles			
		% Staying in Paid Accommodations	%	Yes	InputVisitorProfiles	Sum of the two must be 100%		
		% Staying with Friends/Relatives	%	Yes	InputVisitorProfiles			
		Average Length of Stay in Region (Days) for All Visitors	Days	Yes	InputVisitorProfiles			
		Average Nights Stayed in Region for Overnight Visitors	Nights	Yes	InputVisitorProfiles			
		Average Number of People in Travel Party	People	Yes	InputVisitorProfiles			
		Visitor Spending	Entertainment & Recreation	Per person, per trip	Yes	InputVisitorSpending	Determine whether it is taxable	State Department of Revenue or Taxation
Restaurant Food/Drink			Yes	InputVisitorSpending	Determine whether it is taxable			
Groceries	OR Per person, per day/night		Yes	InputVisitorSpending	Determine whether it is taxable			
Gas Stations			Yes	InputVisitorSpending	Determine whether it is taxable			
Private Hotels/Campgrounds	OR Per party, per trip		Yes	InputVisitorSpending	Determine whether it is taxable			
Public Campgrounds/Lodges			Yes	InputVisitorSpending	Determine whether it is taxable			
Rental Homes/Cottages	OR Per party, per day/night		Yes	InputVisitorSpending	Determine whether it is taxable			
Transportation			Yes	InputVisitorSpending	Determine whether it is taxable			
Retail Purchases	OR Total annual spending		Yes	InputVisitorSpending	Determine whether it is taxable			
Services Purchases		Yes	InputVisitorSpending	Determine whether it is taxable				
Visitor Counts	Person Trips	Person-trips	No	InputVisitorCounts	Info needed for the base year <u>and</u> the current year. Enter up to 200 counts for individual segments of the Byway and specific sites, <u>or</u> enter the overall number of visitors to the Byway region.	Specific visitor locations (e.g., museums); state DOT (traffic data)	pp. 18 & 30	
Investments (Public & Private)	Investment amount	\$	No	InputInvestments	Determine whether to measure the value of how investments affect intrinsic qualities (archeological, cultural, historical, etc.)	Byway	pp. 18-19 & 30-32	
	Amount Attributable to Byway Designation	\$ OR %	No	InputInvestments				
	Investment Type	N/A	No	InputInvestments				
	Investment Sources	%	No	InputInvestments				
Property Value Appreciation	Jurisdiction's Total Valuation by Year	\$	No	InputPropertyValue	For base year and current year	Tax Assessor's office	pp. 20 & 32	
	% of Valuation of Jurisdiction Located in Byway Area	%	No	InputPropertyValue				
	Ratio of Value Change in Byway Area as % of Jurisdiction's Overall Growth Rate	%	Yes	InputPropertyValue	Default assumption is that the ratio is 1:1 (100%). If you feel that values in the Byway Area have grown faster or slower, you will need to adjust the ratio accordingly.			
Tax Rate	Property Tax Rates	Property Tax Rate	Amount per \$1,000	No	InputPropertyTax	Enter inputs for non-primary jurisdictions if necessary	Tax Assessor's office	pp. 20 & 32-33
		% of Value Assessed	%	No	InputPropertyTax			
		Equalization Ratio	%	No	InputPropertyTax			
Sales, Use, and Lodging Tax Rates	General Sales and Use		%	Yes	InputSalesTax	Enter inputs for non-primary jurisdictions if necessary; Cumulative tax rates (state and local)	State Department of Revenue or Taxation; Tax Assessor's office	pp. 20 & 33
		Groceries	%	Yes	InputSalesTax			
		Prepared Food	%	Yes	InputSalesTax			
		Amusements	%	Yes	InputSalesTax			
		Hotel/Lodging	%	Yes	InputSalesTax			
Income Tax Rates	Median Adjusted Gross Income	\$	Yes	InputIncomeTax	ALL INPUTS ARE ALREADY LOADED IN THE TOOL	State Department of Revenue or Taxation	pp. 20-21 & 33	
	Income Tax Rate for Median Adjusted Gross Income Level	%	Yes	InputIncomeTax				
Total increase in visitor spending from base year to current year		\$	No	InputEconActivity1	If you choose to Enter Data with Short Form, a window will pop up asking you to enter the required information		pp. 27-28	
Total value of new public/nonprofit capital investments due to byway designation		\$	No	InputEconActivity1				
Total value of new private capital investments due to byway designation		\$	No	InputEconActivity1				
Total increase in public, private & nonprofit operating expenses from base year to current year due to byway designation		\$	No	InputEconActivity1				
Total property appreciation in the byway area from base year to current year		\$	No	InputEconActivity1				
Property tax rate in primary jurisdiction (per \$1,000 of assessed value)		%	No	InputEconActivity1				
Sales/Use tax rate in primary jurisdiction		%	No	InputEconActivity1				
Income tax rate in primary state (for appropriate median bracket)		%	No	InputEconActivity1				

APPENDIX B: RIMS II MULTIPLIERS

Total Multipliers for Output, Earnings, Employment, and Value Added by Industry Aggregation (Type II)

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
1. Crop and animal production	1.5586	0.3110	11.3236	0.6642	1.6673	1.4372
2. Forestry, fishing, and related activities	1.6445	0.2804	9.9398	0.7988	2.3482	1.6816
3. Oil and gas extraction	1.7883	0.2715	6.3744	0.9856	3.1856	3.4098
4. Mining, except oil and gas	1.8106	0.3572	7.7940	0.9991	2.2723	2.6088
5. Support activities for mining	1.8936	0.3246	7.2335	0.9587	3.3096	3.9573
6. Utilities*	1.4589	0.2659	4.7049	0.8643	1.7388	2.9314
7. Construction	1.9473	0.5192	13.3026	1.0513	1.8261	1.9256
8. Wood product manufacturing	1.6953	0.3355	8.8436	0.7046	2.0614	1.9836
9. Nonmetallic mineral product manufacturing	1.9331	0.4042	8.7107	0.9700	2.2540	2.6969
10. Primary metal manufacturing	1.9789	0.3638	7.7652	0.8382	2.7038	3.4830
11. Fabricated metal product manufacturing	2.0214	0.4404	10.1627	0.9879	2.1858	2.4322
12. Machinery manufacturing	2.0406	0.4519	9.4989	0.9603	2.2110	2.7057
13. Computer and electronic product manufacturing	1.9908	0.4376	9.1825	0.9397	2.3357	2.8060
14. Electrical equipment and appliance manufacturing	1.8565	0.3953	8.0687	0.9202	2.1394	2.6791
15. Motor vehicle, body, trailer, and parts manufacturing	2.1800	0.3632	7.1317	0.8275	3.1437	4.3887
16. Other transportation equipment manufacturing	1.9895	0.4302	8.9113	0.9218	2.2768	2.8993
17. Furniture and related product manufacturing	1.9027	0.4243	9.7253	0.9215	2.0234	2.3056
18. Miscellaneous manufacturing	1.8926	0.4557	9.9344	1.0086	1.9065	2.2603
19. Food, beverage, and tobacco product manufacturing	1.7889	0.3082	7.2501	0.7167	2.6340	2.6892
20. Textile and textile product mills	1.7000	0.3546	9.8461	0.7212	1.9369	1.7934
21. Apparel, leather, and allied product manufacturing	1.6439	0.3097	8.6194	0.7764	2.2081	2.0821
22. Paper manufacturing	1.6825	0.3220	6.9249	0.7680	2.0930	2.4747
23. Printing and related support activities	1.8366	0.4401	11.1539	0.9619	1.9039	1.9752
24. Petroleum and coal products manufacturing	1.5520	0.2532	4.6366	0.4022	2.0676	3.1586
25. Chemical manufacturing	2.0045	0.3500	6.6751	0.8893	3.1178	4.7027
26. Plastics and rubber products manufacturing	1.8961	0.3614	8.4896	0.8728	2.3028	2.3654
27. Wholesale trade	1.7745	0.4574	9.4619	1.1465	1.7897	2.3443
28. Retail trade	1.8245	0.4923	18.4553	1.1530	1.6898	1.4412
29. Air transportation	1.8703	0.4852	10.8705	0.9463	1.8252	2.4348
30. Rail transportation	1.8087	0.3456	7.2242	0.9683	2.4429	3.8259
31. Water transportation	1.9177	0.3810	10.3486	0.8505	2.8132	2.7280
32. Truck transportation	2.0853	0.5335	13.9615	1.0882	2.1857	2.3554
33. Transit and ground passenger transportation*	2.2387	0.5822	20.3677	1.0068	2.0806	1.6114
34. Pipeline transportation	2.0252	0.4072	8.8894	0.8426	2.8809	5.1828
35. Other transportation and support activities*	1.9285	0.6432	16.2528	1.1967	1.5933	1.7400
36. Warehousing and storage	1.9960	0.6185	15.5871	1.2197	1.6705	1.8377
37. Publishing industries, except Internet	1.8717	0.4603	10.3459	1.0906	1.9917	2.5813
38. Motion picture and sound recording industries	1.7624	0.3800	14.1025	1.0527	2.0197	1.6521
39. Broadcasting, except Internet	2.1378	0.6332	13.4553	1.1115	1.9276	2.9285

(Continued)

INDUSTRY	Multiplier					
	Final Demand				Direct Effect	
	Output/1/ (dollars)	Earnings/2/ (dollars)	Employment/3/ (jobs)	Value-added/4/ (dollars)	Earnings/5/ (dollars)	Employment/6/ (jobs)
40. Telecommunications	1.7490	0.3220	7.4812	0.9970	2.2407	2.6960
41. Internet and other information services	1.7805	0.4148	10.2259	1.1007	1.9029	2.2020
42. Federal Reserve banks, credit intermediation and related services	1.7104	0.3797	8.2828	1.1043	1.9046	2.5203
43. Securities, commodity contracts, investments	2.0352	0.6918	24.4432	1.1989	1.6102	1.4459
44. Insurance carriers and related activities	2.0081	0.5079	11.4618	1.1343	2.0238	2.4307
45. Funds, trusts, and other financial vehicles	1.9353	0.3928	10.7359	0.7517	3.1451	4.4745
46. Real estate	1.4264	0.1485	6.3965	1.0097	2.9597	1.7122
47. Rental and leasing services and lessors of intangible assets	1.5985	0.2879	8.1159	1.0605	2.1201	1.9715
48. Professional, scientific, and technical services	1.9277	0.6093	12.9755	1.2375	1.6462	2.1473
49. Management of companies and enterprises	1.9692	0.5925	10.2744	1.2143	1.7204	2.9568
50. Administrative and support services	1.9015	0.6526	24.9703	1.2172	1.5464	1.3742
51. Waste management and remediation services	1.8789	0.4360	10.5883	1.0772	2.0385	2.3299
52. Educational services	1.9329	0.5495	20.6142	1.1436	1.6716	1.4551
53. Ambulatory health care services	2.0211	0.7267	16.8970	1.2657	1.5561	1.7994
54. Hospitals	1.9623	0.5863	14.1053	1.1560	1.6599	1.8958
55. Nursing and residential care facilities	1.9493	0.6883	25.3139	1.2436	1.5089	1.3732
56. Social assistance	1.9235	0.5702	27.2003	1.1439	1.6532	1.3263
57. Performing arts, spectator sports, museums, zoos, and parks	2.0815	0.6793	25.0740	1.2615	1.7471	1.5454
58. Amusements, gambling, and recreation	1.8366	0.5202	22.4970	1.1394	1.6755	1.3519
59. Accommodation	1.8175	0.4836	18.8908	1.1384	1.7743	1.4476
60. Food services and drinking places	1.8953	0.4972	25.7178	1.0553	1.7719	1.2951
61. Other services*	1.9528	0.5145	15.1396	1.0839	1.8339	1.7886
62. Households	1.1471	0.2802	8.6894	0.6978	0.0000	0.0000

*Includes Government enterprises.

Source: Bureau of Economic Analysis, Regional Product Division, Regional Input-Output Modeling System (RIMS II).

Notes: 1) Multipliers are based on the 2002 Benchmark Input-Output Table for the Nation and 2008 regional data.

2) Each entry in column 1 represents the total dollar change in output that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

3) Each entry in column 2 represents the total dollar change in earnings of households employed by all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

4) Each entry in column 3 represents the total change in number of jobs that occurs in all industries for each additional 1 million dollars of output delivered to final demand by the industry corresponding to the entry.

5) Each entry in column 4 represents the total dollar change in value added that occurs in all industries for each additional dollar of output delivered to final demand by the industry corresponding to the entry.

6) Each entry in column 5 represents the total dollar change in earnings of households employed by all industries for each additional dollar of earnings paid directly to households employed by the industry corresponding to the entry.

7) Each entry in column 6 represents the total change in number of jobs in all industries for each additional job in the industry corresponding to the entry.

APPENDIX B: DATA SOURCES AND REFERENCES

America's Byways Resource Center, *An Economic Impact Tool for National Scenic Byways and All-American Roads, Technical Manual*, January 2010.

US Department of Commerce, Bureau of Economic Analysis, Regional Product Division, *Regional Input-Output Modeling System*,

<http://www.bea.gov/regional/rims/>

Woodward Avenue Action Association,

<http://www.woodwardavenue.org/>