

A Review of Impact Studies Related to Scenic Byway Designation

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Executive Summary of A Review of Impact Studies related to Scenic Byway Designation¹

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Introduction

America's Byways Resource Center sponsored a *best practices* study and literature review of how researchers have attempted to measure the economic impact of scenic byway designation. Although many studies exist, they use different methods, variables, and ultimately different audiences. What do their results mean? Can other byways apply the same studies to their regions? What makes the quantitative data so elusive? Is there a best practice or a standard model for future studies? The study, undertaken by Economic Development Research Group, Inc. (EDR Group) of Boston, MA, and PA Consulting of Madison, WI, also led to the development of a concise spreadsheet model based on best practice components for estimating the economic impacts due to byway designation, and an accompanying guidebook for stepping through such an analysis. The guidebook includes a template *visitor questionnaire* and *area business questionnaire* for use when byway study budgets allow for active primary data collection.

The research note "Quantifying the Economic Impacts of Scenic Byways," dated August 2001, summarized the literature review which revealed in great detail the formats that have been used to quantify economic impact. America's Byways Resource Center requested the UMD School of Business and Economics Bureau of Business and Economic Research (BBER) to prepare an executive summary of the document. The task included defining terms, identifying findings, and distilling material into a version for non-economists in the byway community.

The resulting executive summary offers individual byway leaders, state coordinators, and other byway partners the information they need to draw conclusions from previous economic- impact research. Significantly, the BBER executive summary version does not verify any findings of the specific studies reviewed. This document simply evaluates how those studies were constructed and why they may or may not help in the in design, implementation, and analysis of future research.

¹ Authored by Glen Weisbrod and Lisa Petraglia of Economic Development Research Group, Inc. of Boston, MA.

Overview

What Was Studied?

Quantifying the Economic Impacts of Scenic Byway Designation analyzed 21 byway impact studies. In addition, the analysis included several studies relating to national parks and non-scenic byway highways. The non-scenic highways and national park studies were not reviewed in the *Quantifying* document. Half of the 21 studies utilized surveys. Over 70 percent of the studies were conducted for existing byways as opposed to proposed byway designations.

How Do Dollars Flow?

Terms To Know

Economic impact looks at incremental changes (in jobs or \$) when a byway is designated.

Economic significance looks at the portion of existing total economic activity in a region that is attributed to tourism, or in this case to a specific road.

Economic activity refers to imports brought in from outside the region used or re-sold in the local market.

A well-constructed impact analysis of tourism looks at the dollars that flow into a region from other regions (*non-local*) as the base raw data. Further, the analysis considers only impacts on the local region, which means deducting imports. Few of the studies reviewed incorporated these critical elements. The findings of the analysis are summarized in this report under the titles:

- *Increase in Annual Traffic; one study for three byways; Range of Results = 3.4% to 20% increase due to byway designation.*
- *Visitor Group Spending Per Trip; one study; Value = \$104 per trip.*
- *Visitor Group Spending per Day; three studies for five byways; Range of Results = \$50 - \$188.*
- *Extra Visitor Spending with a 1% Increase in Vehicle Miles Traveled; one study; value = \$65,000.*
- *Jobs per \$1 million in Visitor Spending; six studies; Range = 19 to 33 jobs.*
- *Total (New) Business Sales; five studies; Range = \$.074 million to \$1,450 million.*
- *Tax Receipts per \$1 Visitor Spending; five studies; Range = \$.045 to \$.08.*
- *Willingness to Pay; two studies; Values = \$.076 per car in one study and \$1.06 in annual sales tax in the other study.*

General Recommendations

A Dollar's Ripple Effect

Term To Know

A multiplier traces the rounds of spending that occur when a new dollar enters the region. A total multiplier can be broken into three effects:

- (1) Direct effect
- (2) Indirect effect
- (3) Induced effect

Whether or not a multiplier should be reported depends upon the purpose of the study. Social, environmental and related impacts should be acknowledged in any economic impact analysis. Resource allocation decisions should not be based on economic impact alone.

EDR Group offered several recommendations based on their analysis of the existing studies:

- Determine the portion of the incremental increase in non-resident byway visitors
- Determine how many new trips- linked to designation- occur annually
- Identify the mix of trip purposes
- Determine the incremental effect (if any) of scenic byway “designation” on traveler spending, especially if byway promotion has drawn a repeat visit
- Determine the average travel group spending per trip
- Determine the allocation of trip spending (by commodity and place)
- Decide if a multiplier analysis would be useful to the effort

A Closer Look

More Details

The review looked at 21 economic impact studies related to the designation, improvement, or existence of scenic byway highways. In addition, the review looked at similar studies conducted for national parks and non-scenic byway highways. The primary goals of these reviews were to look at study outcomes and develop a “best practice” model for future impact assessments of scenic byways.

About half of the 21 studies used surveys. Many of those employing surveys also used data from government and private sources. The other studies depended entirely on already available published data.

The surveys were conducted, in most cases, for portions of a year and not for each season. Further, surveys were often administered at a limited number of possible sites.

These approaches may pose statistical problems. Because the various reports failed to detail their survey methods, the reviewers could not assess potential statistical weaknesses. Seasonality and sufficient sample sizes are important issues in statistical analysis. However, partial-year surveys and limited sampling were often employed due to budget and/or timeframe limitations. Over 70 percent of the studies were conducted for existing byways. The remaining 30 percent were oriented toward proposed byway designations.

Economic Significance

Many of the studies analyzed the estimated *portion of total economic activity* in the region that results from traffic flowing along the road. This approach measures the *economic significance* of the byway. A major problem with emphasizing economic significance is that this approach fails to measure the additions to economic activity resulting from designation, promotion, and management.

Economic Impact

Another approach is to estimate the *addition to economic activity* resulting from the designation. This approach measures the *economic impact* from highway designation. More specifically, an economic impact value estimates the addition to regional output (i.e. *local sales*), value added, employment, or some other similar economic measure that is attributed to such factors as byway designation, a promotion campaign, or effective resource management to maximize the region's economic impact.

A well-constructed economic impact assessment requires several considerations. Economic impact studies look for increases (or decreases) in economic activity resulting from changes in "final demand." Tourists create *demand* for goods and services from the area's tourism-serving businesses. With tourism, the most important component of final demand is exports. Exports are measured by money coming into the reference region from other localities outside the region's boundaries. What matters is that the region attracts dollars from outside its pre-defined economic boundary – that is how the economic pie grows for the byway community.

Tourists bring outside money into a region. Thus, spending by outsiders is of primary importance. A research effort must first clarify whether the measure is of tourists, recreational visitors, or visitors in general. A visitor analysis would include business travelers, commuters, or other travelers not engaged in recreation. If the question is one of tourism, these other travelers should be ignored.

A well-constructed economic impact assessment measures the *local content* associated with fulfilling visitor spending. This is achieved by thinking about *margins* for specific industries that attract visitor dollars (in particular *retail* activities). Take a restaurant for example. Generally, the region didn't produce the crops or livestock, agriculture processing, dishes, silver, or many other components of the served meal. Applying the

industry-specific *margins* to the visitor dollars flowing to that industry captures the true local content.

The reviewers found that only five of the 21 impact studies attempted to differentiate between the spending of local traffic versus out-of-region traffic. Even when the visitor's point of origin was obtained in a survey, it was rarely used in the analysis.

Traffic Considerations

Some studies used traffic growth as a measurement. Traffic growth occurs for reasons other than the scenic byway. Increased population levels, gasoline prices, increases in economic activity due to the location of new employment centers, as well as market growth of other existing tourism assets in the area. To adequately credit the byway with growing traffic to the region, a visitor must have the highway designation as his/her primary reason for coming to the region. For example, if a visitor goes to a city with professional sports, and the visitor opts to see the game instead of eating out, it is incorrect to list the visit as being the result of the professional sport. It is just a choice - a transfer - as far as impact analysis is concerned.

Study Findings

The impact studies were quite diverse in their approaches to estimating trips, new trips, and per-trip spending. The review authors did not verify the results, but instead discussed the diverse approaches and described the key findings:

Increase in Annual Traffic; one study for three byways; Range of Results = 3.4% to 20% increase due to byway designation.

- The one study asked byway travelers if the designation influenced the decision to enter the region. It would be very difficult to compare different byway results from this approach.

Visitor Group Spending Per Trip; one study; Value = \$104 per trip.

- The one study asked, through survey, the number of people in the travel party, the length of stay, and spending by category (accommodations, food service, retail trade, etc.).
- Studies of this type should be sure to report the length of stay and that the spending occurred in the region being analyzed, in case a trip has multiple destinations, some of which are not in the study region.

Annual Visitor Spending per Mile; three studies for five byways; average value = \$32,500.

- These studies utilized national estimates using 12-year-old data from the U.S. Travel Data Center.
- This approach presents many problems. The age of the data, the use of one national estimate for all designated highways, regional definition problems (the data looked only at the corridor and not at a broader market region),

and the data do not make clear whether or not a multiplier was applied to direct visitor spending.

Extra Visitor Spending with a 1% Increase in Vehicle Miles Traveled; one study; value = \$65,000.

- Such an analysis hopes that each incremental (1%) increase in miles traveled can be used to estimate increases in visitor spending.
- This approach would not allow comparisons between different localities and would be more useful if local data and parameters could be used. Accumulating local data and parameters tends to be both difficult and expensive.

Jobs per \$1 million in Visitor Spending; six studies; Range = 19 to 33 jobs.

- This approach generally divides total jobs by “byway-generated spending”. It usually involves a time interval, such as a year. Another possibility involves using an employment multiplier as opposed to other possible multipliers. An employment multiplier estimates the number of jobs created as a result of one additional job in visitor-related industries.
- The review contends that these studies used a single, regional multiplier that was not related to specific industries. The use of such a multiplier implies that the economy’s structure of industries and economic interactions (purchasing and selling) does not change during the pre- and post-designation time interval.

Total (New) Business Sales; five studies; Range = \$.074 million to \$1,450 million.

- The keys are to estimate “new” sales correctly and to have comparability between the before and after time periods for the study. At risk of overstating the true impact on the region, sales of specific area visitor-serving industries must be *marginized* to capture only the local content in a \$ of sales.

Tax Receipts per \$1 Visitor Spending; five studies; Range = \$.045 to \$.08.

- As the title implies, this method looks at tax receipts from various regional sectors (accommodations, retail sales, etc.) as a proxy measure for sales.
- A possible problem is that tax jurisdictions are often different from the boundaries of a study area. Such a condition could make estimates unreliable.

Willingness to Pay; two studies; Values = \$.076 per car in one study and \$1.06 in annual sales tax in the other study.

- The first study used a survey to estimate what people would be willing and able to pay for scenic improvements or highway designation. This approach is termed “contingent valuation” and is often used in cost/benefit analysis. This approach is significantly different from impact analysis. A rather abstract concept, it tries to estimate how people value a particular change in resource allocation. An impact, on the other hand, is the result from any change in resource allocation. Resources include land, labor,

physical capital, and enterprise. (Note: Not from the review study.)

- The second study used sales tax receipts in a similar manner to the approach discussed immediately above. The key to this approach is to attribute the tax changes to a change in the number of visitors or to visitor spending levels.

Issues To Consider

The studies reviewed demonstrated three general problems:

(1) The mis-interpretation of what defines *economic impact* and how to structure an analysis to truly measure the economic impact of receiving byway designation.

(2) There is a high possibility of misuse of the studies since the various studies used different measurements and often did not disclose statistical tests for potential data problems.

(3) If the studies do not take both traffic volumes and visitor frequency into account, the results cannot be used for prediction.

More On Multipliers

Impact studies often use multipliers to estimate the total impact from an initial change in spending. One might ask, “What is a multiplier?”

There are many types of multipliers. The most detailed of studies would report multipliers for industry designations (sectors) within a study region.

Term To Know

Intermediate sales and purchases refers to industries buying from and selling to each other within a region.

In any region, industries generally buy from and sell to one another. For example, an attorney may sell his/her services to a local bank. The bank may provide services for a retail store. And so it goes. These local industry interactions are called intermediate sales and purchases.

The assumption is that when one local industry finds its sales expanding, it will need additional intermediate products and services from other local industries. In this way, attorneys and banks may find expansions in their sales levels when local hotels and motels find their sales increasing as a result of increased visitor traffic. These secondary sales lead to third level sales as well, since an increase in banking service levels lead to the banks dealing, perhaps, with local attorneys. If the attorneys buy from a local office supply firm, another impact is generated.

This approach usually divides economic impacts into three categories:

(1) Direct effects, which measure the first round of impact on, say, hotels and motels, as a result of an increase in sales to visitors after byway designation. It is the initial change in spending with no multipliers applied.

(2) Indirect effects, which include the suppliers to the initial industry.

(3) Induced effects, which represent the extra local consumption spending by households because of new income generated by increased tourist traffic.

Several software packages are available for constructing industry-specific multipliers. Researchers should use these packages carefully, since the programs will give results even if the inputs are incorrect. One example of incorrect inputs has already been mentioned, that being the sales vs. strictly local nature (retail margin) of the region's output.

The impact researcher also needs to be very careful in making estimates for the reference region's industrial capacity. If the local hotels, motels, restaurants, etc., have significant excess capacity before the highway is designated or an infrastructure change is made, they may accommodate capacity increases without new employees or new construction.

The usual assumption is that all local industries are at capacity so that any change in economic activity will require changes in employment and capacity. This assumption leads to overstating the true impact.

Eight of the 21 studies referenced multipliers in one way or another. The remainder looked only at the direct effects from the existence or change in byway designation. Whether or not multipliers should be used depends on the purpose of the impact assessment. For example, multipliers can be useful in a tourist impact study where the model applies sector-specific multipliers to individual spending categories.

Non-Economic Impacts

Economic impact should never be the sole determinant of a byway's success. Designation produces many social and environmental effects, and the authors of the review argue that these non-economic factors should be identified as a part of the impact analysis and not as an afterthought.

Building Upon the Earlier Byway Economic Impact Study Efforts

The review authors recommend six methodology elements needed for an accurate impact assessment:

- *Identify the mix of trip purposes.* This helps the researcher determine how many trips were actually generated by increased tourist traffic and how many were commuting, drive-through trips, or some other factor not related to the byway.
- *Determine the incremental effect of scenic byway "designation" on traveler spending.* The key here is to determine the extent of new tourism to the region, in effect, shifting dollars away from other locations.
- *Determine the average travel group spending per trip.* This actually represents the direct effect described above. Looking at groups as opposed to individuals brings a more accurate estimate of the generated impacts.
- *Determine the allocation of trip spending (by commodity and place).* This allows the researcher to determine the local impact due to the byway designation when the byway is not the primary purpose of the trip.
- *Determine the portion of the incremental increase in non-resident byway visitors.* Local spending, unless it is generated by new tourist spending, is not included in

an impact analysis unless the spending now stays home rather than occurring in other regions (termed , *recapture*).

- *Determine how many new trips linked to designation occur annually.* Such a procedure allows the researcher to estimate the new trips due to the byway's formal designation.

Also, decide whether or not a multiplier analysis would be useful to the effort. This implies a thorough consideration of the purpose of the analysis.

Can A Standard Impact Study Be Developed?

The “best practice” impact study involves two important considerations. The first is budget. Surveys are generally preferred over strictly secondary data analyses. However, surveys tend to be costly. The estimated cost of a well-constructed survey approach varies between \$25,000 and \$100,000, depending on the sample size, survey detail, and use of professional surveyor services. Professional surveyors are preferred to amateurs, even when amateurs complete training sessions. However, using professionals is usually costly. This represents a three-way trade-off between accuracy, level of response, and budget.

The second consideration is purpose. If there is reason to compare results between different regions, and if multipliers are involved, common software input-output systems would be preferred over each region working independently. Of course, the survey instruments would need common questions for comparisons. If the purpose of the impact study is public relations, legitimate methods exist for reporting results on the high side of possibilities. The most honest approach, however, is a credible analysis that produces results above criticism.

Regarding variables to study, only impacts on the region should be counted. This means that imports into the region should be deducted from total sales. A sales impact is quite misleading.

Ideally, the analysis should include all seasons. Implement a random sample of survey locations and dates for the survey, within each season.

Secondary data analyses pose additional issues. Different states provide different data for such analyses. Carefully examine what data are available prior to designing the impact estimation procedure.

Pay close attention to input-output procedures if the study requires multipliers. The authors of the report designed a *best practices* spreadsheet impact model using IMPLAN-style multiplier relationships (IMPLAN is an input-output software system for estimating impacts). This is certainly a valid approach, although other multiplier data options are available (such as RIMs from the U.S. Dept. of Commerce). Notably, any impact model or multiplier data can provides results even when your study data contains errors or data are used incorrectly. If the researchers are not familiar with input-output

analysis, they should employ someone knowledgeable about the model and the software used to estimate impacts. Avoid the GIGO possibility (garbage in - garbage out)! The EDR Group report suggests several reasonable procedures for developing an impact analysis that byway organizations will find useful for producing more credible, accurate assessments.

A Review of Impact Studies Related to Scenic Byway Designation

Prepared by Lisa Petraglia & Glen Weisbrod, EDR Group
Prepared for the National Scenic Byways Resource Center
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1. Introduction

This memo summarizes the survey of literature pertaining to scenic byway studies over the past decade. This task is undertaken on behalf of the National Scenic Byways Resource Center. This review is a necessary first step to guiding further development of tools to help standardize the economic impact analyses of scenic routes receiving national designation.

This literature review covers three classes of studies:

- Scenic byway studies
- National Park impacts &
- Highway – Economic Development interface

There are two reasons we extend the review into the national park and highway impact study literature. First, we acknowledge this literature may highlight different approaches to measuring their respective economic impact that can then be melded into the recommended methods for future scenic byway impact studies. Secondly, the scenic byway is a *hybrid* of a scenic destination and a travel route. Yet the scenic byway is not exactly the same since it is not always a destination nor is it the preferred travel route.

It can be said that these three classes of studies have in common the objective of identifying increased activity (*be it trips, attendees or new business*) attributable to changes in their respective *designations* or investment. Where these three classes of studies depart in emphasis and results stems from focus on other types of impacts such as, *environmental amenities, property value changes, highway access benefits and potential economic development opportunities*.

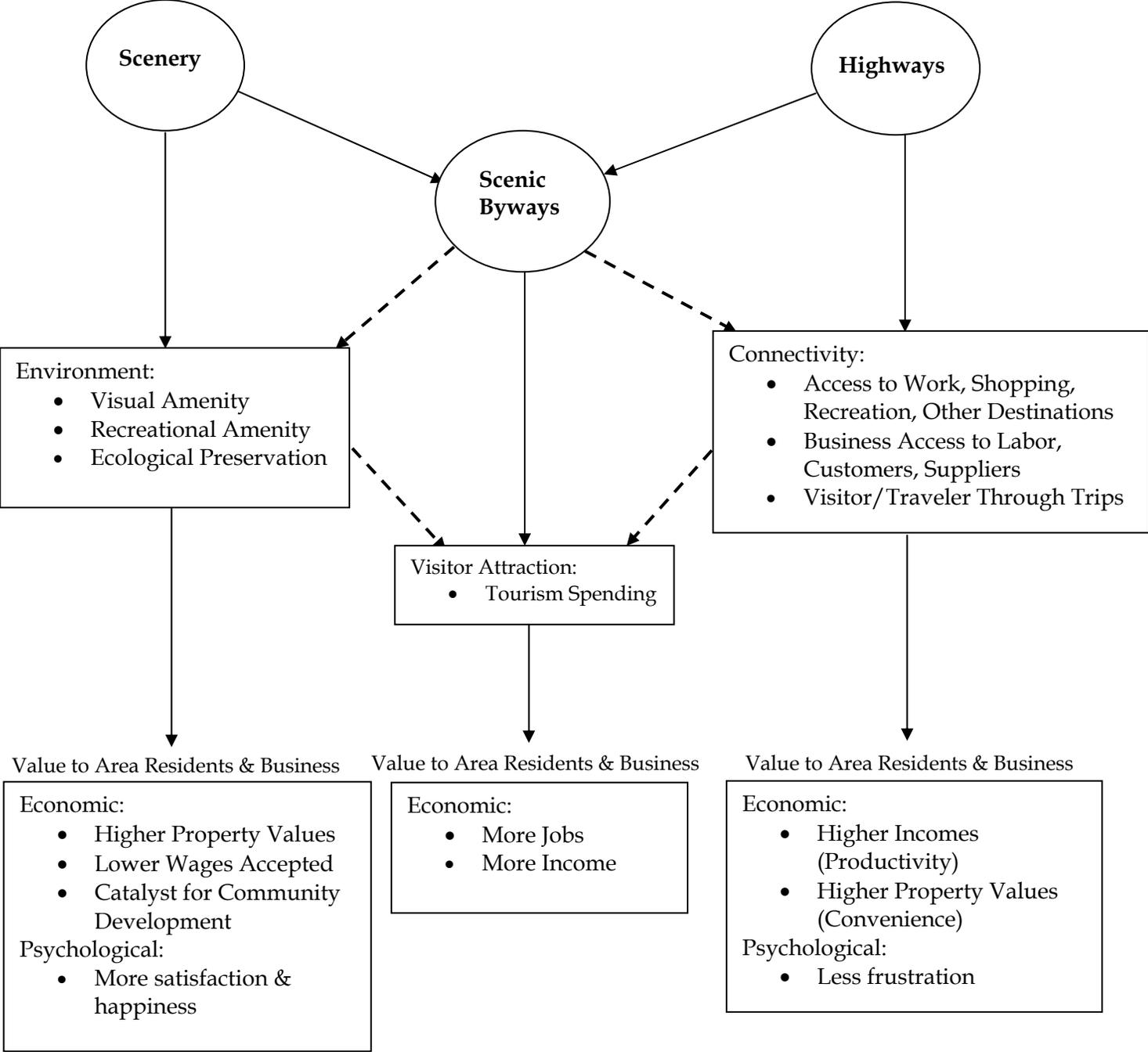
Figure 1 depicts this tri-pronged framework for partitioning the impacts associated with the scenic byway. This framework shows how a scenic byway inherits aspects of scenery and access, yet it is unlikely that byway designation alone can claim full credit for the overall change experienced in an area's economic activity.

Summary of Findings

As will be presented, the 21 scenic byway studies comprising the core of this review address economic impacts or benefits, to varying degrees. The purpose of this literature

review is to help us identify common themes of *best practices* that will help to correctly portray impacts and benefits as they occur in their particular scenic byway communities.

Figure 1. Framework for Distinguishing Economic Impacts of Byway from Other Related Factors



Two main findings are produced by this review:

- 1) A common conceptual structure that researchers agree under-lies any scenic byway/ tourism economic impact analysis (in Figure 1) &
- 2) A new method for implementing these concepts (presented later in Figure 2).

No one study was over-reaching or comprehensive as Figure 1 suggests. The union of all the literature indicates the resulting conceptual framework.

2. Summary of the Scenic Byway Literature

This section reviews the scenic byway studies. Other related studies are reviewed in Part 3. In reviewing the 21 studies, five dimensions emerge for evaluating the similarities and differences across the studies: subject, purpose, data collection methods, analysis variables, and findings.

Study Subject

The subject of study for each of the 21 studies reviewed can be grouped into three categories: (1) *existing official Scenic Byway*, (2) *proposed designation of existing road as Scenic Byway* and (3) *other (e.g. road & facilities design, program administration)*. Some study approaches combine more than one of these subjects as shown in Table 1.

The majority of studies (15 of 21) address economic impacts of existing scenic byways (termed “*retrospective*” or “*ex post*” studies). A smaller segment (7 of 21) of the literature is structured to explore the impacts of proposed scenic byway designation (termed “*prospective*” or “*ex ante*” studies.) In this grouping of studies, the issue of proposed designation was either the central objective [H, S] or part of a broader study focus on a regional transportation strategy plan [T], a rural economic development strategy [D,U], travelers’ preferences to highway facility changes [C], and the return on investment in promotion and marketing [L]. Issues concerning either road design, facility choices and /or byway administration were emphasized to varying degrees in a small group of studies (6 of 21).

The motivations behind the study of an existing designated byway in comparison to a proposed byway are important to clarify. They may help interpret why certain analysis methods were used and conclusions were reached. Studies of proposed byways are examining eligibility and *should address* potential changes (*i.e. in non-resident* trips) that might result from receiving designation. The study of an existing byway typically seeks a result that can *justify* or *promote* further initiatives in the byway corridor. The study approach most often resorted to (for better or for worse) measures total traveler (or tourism) generated impacts. In most cases this result does not truly reflect the *economic impact* of byway designation but rather the *economic contribution* of the road.

Table 1: Subject Under Study

Study I.D.	Study Info.	Existing Official Scenic Byway	Proposed Designation of Existing Road as Scenic Byway	"Other" (e.g. Roads/Facilities /Program Admin.)
A.	<i>Economic Impacts of Scenic Highways</i> , Real Estate & Land Use Institute, CSU-Sacramento, 1994	Yes	-	-
B.	<i>Economic Benefits of Scenic Highways</i> , CA DOT, 1991	Yes	-	-
C.	<i>Valuing Changes in Scenic Byways - VT Pilot Study</i> , Tyrrell & Devitt, from <u>Consumer Behavior in Travel & Tourism</u> , 2000	-	Yes	Yes
D.	<i>Great River Road Visitor Study</i> , Gardner Consulting & SEH, 1998	Yes	-	-
E.	<i>Economic Impact of Travel on Scenic Byways</i> , U.S. Travel Data Center, 1990	Yes	-	-
F.	<i>New Hampshire's Scenic Byways: Economic Impacts</i> , NH DOT, 1990	Yes	Yes	-
G.	<i>Economic Impacts of Kansas Scenic Byway Designation on Flint Hills Scenic Byway Communities</i> , KS DOT, KS Scenic Byways Program and BWR Corp., 1999	Yes	-	-
H.	<i>Colorado Scenic and Historic Byways: Economic Impact Study - Interim Report</i> , CO Center for Community Development, UCO Denver, 1996	Yes	Yes	-
I.	<i>Economic Impacts of New Mexico's Scenic Byways: El Camino Real, Rt. 66 and the Geronimo Trail</i> , Seeley & Assoc., 2000	Yes	-	-
J.	<i>1995 -1996 Economic Impact of Travel to the Blue Ridge Parkway, North Carolina</i> , Office of Parks, Tourism Research, NCSU, 1996	Yes	-	-
K.	<i>Scenic Byways: A Review of Processes, Administration and Economic Impacts</i> , Sipes et al., Transportation Research Record 1599, 1997	-	-	Yes

Table 1: Subject Under Study - continued

Study I.D.	Study Info.	Existing Official Scenic Byway	Proposed Designation of Existing Road as Scenic Byway	"Other" (e.g. Roads/Facilities / Program Admin.)
L.	<i>Assessing Visitor Responses to IA Scenic Byways Pilot Program</i> , Dahlquist and Peterson, Transportation Research Record 1599, 1997	-	Yes	YES
M.	<i>Scenic Byways Data Needs, Resources, and Issues</i> , Bob L. Smith, KSU - Manhattan, 1990	-	-	Yes
N.	<i>State of Washington: National Scenic Byways Study</i> , WA D.O.T., 1990	Yes	-	Yes
O.	<i>Economic Impacts of Scenic Byways: Virginia</i> , Urban Institute, 1990	Yes	-	-
P.	<i>Economic Impact of Alpine Loop Backcountry Scenic & Historic Byway</i> , CO Center for Community Development, UCO-Denver, 1999	Yes	-	-
Q.	<i>Holmes County Scenic Byways; the Value of Viewshed - Economics & Related Aspects of Signage</i> , Strouse, 1999	Yes	-	Yes
R.	<i>Florida Scenic Highways Program: Economic Benefits Report</i> , FL D.O.T., 1997	Yes	-	Yes
S.	<i>Economic Analysis of Scenic Byways in Iowa, Kansas, Missouri and Nebraska</i> , Mid West Transportation Center, IA State University, 1991	Yes	Yes	-
T.	<i>Scenic Byway Development on the Oregon Coast - Economic Benefits & User Preferences</i> , Dean Runyan Assoc., 1990	-	Yes	-
U.	<i>Scenic Byways as a Rural Economic Development Strategy? - The Development of a GIS Model of Tourism & Recreation in Montana</i> , Thompson et al., 1995	-	Yes	-

Note: entries made in lighter text are less relevant to the overall table topic.

Study Purpose

While most studies emphasize “*economic impacts*” in their titles, the purpose was defined by any one of the following four objectives: *assess economic impacts*, *identify non-economic benefits*, *assess the eligibility or design options for a currently un-designated route* and *conduct market research*. Some studies addressed a combination of these purposes as shown in Table 2.

Almost all studies (18 of 21) attempt to measure the impacts on local or state economy for the specific scenic byway. Few of these studies take the step to stipulate how much of the measured economic impact really is *linked* to designated road status. Some exhibit strong logic for what they try to measure and provide an explicit definition of “*economic impact*”:

- *Spending*
- *Sales*
- *Jobs*
- *Wages*
- *Tax revenue*

(The others were either methodological discussions or reviews of other studies.)

There is little indication in the literature of the distinction between the *economic impacts* of byway designation (arising from the *net new*, trips or traveler spending) and the *economic significance* of a scenic road (arising from all, trips or traveler spending) [see Jackson, 1987 and Stynes, 1999].

A smaller set of the studies (4 of 21) addresses non-economic benefits associated with “*view*” or “*designation*”. Three of these involve methods for identifying non-economic benefits using a *willingness-to-pay* framework (see [C] and [Q]). One study proposed the concept of a consumer surplus model for valuing recreational benefits but did not actually measure the benefit (see [S]).

Seven of the studies had ‘economics’ in the title but actually focused on eligibility/design aspects (see [F, K, L, M, N, R & T]). Seven of the studies also included surveys, and all of those studies included some market research focus (see [D, G, I, J, L, P & T]).

Table 2: Byway Study Purpose

Study I.D.	Study Info.	Assess Economic Impact	Assess Economic Significance	Identify Non-economic Benefits	Assess eligibility /design	Market Research
A.	<i>Economic Impacts of Scenic Highways</i> , Real Estate & Land Use Institute, CSU-Sacramento, 1994	-	Yes	-	-	-
B.	<i>Economic Benefits of Scenic Highways</i> , CA DOT, 1991	-	Yes	-	-	-
C.	<i>Valuing Changes in Scenic Byways - VT Pilot Study</i> , Tyrrell & Devitt, from <u>Consumer Behavior in Travel & Tourism</u> , 2000	Yes	-	Yes	-	-
D.	<i>Great River Road Visitor Study</i> , Gartner Consulting & SEH, 1998	-	Yes	-	-	Yes
E.	<i>Economic Impact of Travel on Scenic Byways</i> , U.S. Travel Data Center, 1990	Yes	-	-	-	-
F.	<i>New Hampshire's Scenic Byways: Economic Impacts</i> , NH DOT, 1990	-	Yes	-	Yes	-
G.	<i>Economic Impacts of Kansas Scenic Byway Designation on Flint Hills Scenic Byway Communities</i> , KS DOT, KS Scenic Byways Program and BWR Corp., 1999	-	Yes	-	-	Yes
H.	<i>Colorado Scenic and Historic Byways: Economic Impact Study - Interim Report</i> , CO Center for Community Development, UCO Denver, 1996	Yes	-	-	-	-
I.	<i>Economic Impacts of New Mexico's Scenic Byways: El Camino Real, Rt. 66 and the Geronimo Trail</i> , Seeley & Assoc., 2000	-	Yes	-	-	Yes
J.	<i>1995 -1996 Economic Impact of Travel to the Blue Ridge Parkway, North Carolina</i> , Office of Parks, Tourism Research, NCSU, 1996	-	Yes	-	-	Yes
K.	<i>Scenic Byways: A Review of Processes, Administration and Economic Impacts</i> , Sipes et al., Transportation Research Record 1599, 1997	Yes	Yes	-	Yes	-
L.	<i>Assessing Visitor Responses to IA Scenic Byways Pilot Program</i> , Dahlquist and Peterson, Transportation Research Record 1599, 1997	Yes	-	-	Yes	Yes
M.	<i>Scenic Byways Data Needs, Resources, and Issues</i> , Bob L. Smith, KSU - Manhattan, 1990	Yes	-	-	Yes	-

Table 2: Byway Study Purpose - continued

Study I.D.	Study Info.	Assess Economic Impact	Assess Economic Significance	Identify Non-economic Benefits	Assess eligibility /design	Market Research
N.	<i>State of Washington: National Scenic Byways Study, WA D.O.T., 1990</i>	-	-	-	Yes	-
O.	<i>Economic Impacts of Scenic Byways: Virginia, Urban Institute, 1990</i>	Yes	-	Yes	-	-
P.	<i>Economic Impact of Alpine Loop Backcountry Scenic & Historic Byway, CO Center for Community Development, UCO-Denver, 1999</i>	-	Yes	-	-	Yes
Q.	<i>Holmes County Scenic Byways; the Value of Viewshed - Economics & Related Aspects of Signage, Strouse, 1999</i>	-	-	Yes	-	-
R.	<i>Florida Scenic Highways Program: Economic Benefits Report, FL D.O.T., 1997</i>	-	-	-	Yes	-
S.	<i>Economic Analysis of Scenic Byways in Iowa, Kansas, Missouri and Nebraska, Mid West Transportation Center, IA State University, 1991</i>	Yes	-	Yes	-	-
T.	<i>Scenic Byway Development on the Oregon Coast - Economic Benefits & User Preferences, Dean Runyan Assoc., 1990</i>	Yes	-	-	Yes	Yes
U.	<i>Scenic Byways as a Rural Economic Development Strategy? - The Development of a GIS Model of Tourism & Recreation in Montana, Thompson et al., 1995</i>	Yes	-	-	-	-

Note: entries made in lighter text are less relevant to the overall table topic.

Data Collection Methods

Most of the literature exhibits a strong reliance on *primary* data collected through survey instruments. Table 3 indicates the sample size and response rate (where published) on the 11 (of the 21) studies making use of survey data. (Sample sizes are not included for the other studies.) Some of these studies rely solely on the survey information to calculate the economic impact. Most survey studies collect responses for either a peak season or portion of a year. Few perform active collection for an entire year. Study findings are either reported for the survey interval or are extrapolated into an annual result. For the latter, the studies are not always explicit regarding adjusting for *seasonality* in their sample data. Survey procedure usually involves only an on-site intercept survey but may also include a more detailed follow-up mail-in survey. General survey content appears to be present in many of the examples but some critical information is often omitted.

In addition to survey design, the “how and where” of survey implementation affects the response rate and ultimate sample size as well as how representative the sample is to the *universe* of travelers on the road (known as *sample bias*). Several of the researchers acknowledge that time and budget constraints on their studies dictated fewer sampling locations than ideal and suggest that *bias* be explored as a basis for building upon their findings. Surveys implemented entirely at a specific type of tourist destination along the scenic byway (*e.g.* historic sites) warrant closer examination of bias issues. Some studies were explicit on whether their survey methods were careful to distribute surveys from a combination of locations (*e.g.* restaurant, information center, scenic overlook, historic site) [D, T], or use a stratified sampling approach, which is sensitive to time of week, amount of traffic and in-state *vs.* out-of-state traveler representation [J, T, U]. Attempts to also survey the corridor’s business community for evidence of revenue growth attributable to visitors traveling the scenic byway are reflected in studies for Colorado [H], and Kansas [G]. The U.S Travel Data Center study [E] taps establishment data already collected for part of its analysis. The four-state study [S] recommends surveys of both visitors and area traveler-related businesses to validate estimates of visitor spending impacts from the econometric model used.

Even more studies (19 of 21) make use of published *secondary* data (state revenue, tourism and transportation departments, National Park Service, prior studies, IMPLAN or RIMS data.) Many of these studies (10 of the 19) use a combination of primary and secondary data.

Judgmental approaches are also used (in 10 of the 21 studies) to estimate factors such as the tourism share of traffic [A], multiplier values [A], spending per mile [F], the change in traffic due to designation [H], trip demand and traveler-related service supply responses [C].

Both Stynes (1999) and Smith (1990), [M], address the data collection requirements of the impact study done correctly. There is a benefit of the pre-designation (*ex ante*) study in that it gives the local byway planners time to deliberately collect the data for both *pre-* and *post-designation* (*ex post*) intervals. This *ex ante* approach requires a *projection* of

new traffic and assumptions regarding visitor spending (amount, allocation by commodity and region, local capture rates) under the “*designated*” status which can later be verified once post-designation data become available. Projections can be made using either a “*control road*” approach (see NH DOT study, [F]) or a simulation model (see OR DOT study [T] and Montana study [U]).

Table 3: Data Collection Methods in Use

Study I.D.	Study Info.	Survey (n=)	Response Rate	Secondary Data	Judgmental
A.	<i>Economic Impacts of Scenic Highways</i> , Real Estate & Land Use Institute, CSU-Sacramento, 1994	-	-	Yes	Yes
B.	<i>Economic Benefits of Scenic Highways</i> , CA DOT, 1991	-	-	Yes	-
C.	<i>Valuing Changes in Scenic Byways - VT Pilot Study</i> , Tyrrell & Devitt, from <i>Consumer Behavior in Travel & Tourism</i> , 2000	Yes (752)	Unknown	Yes	Yes
D.	<i>Great River Road Visitor Study</i> , Gardner Consulting & SEH, 1998	Yes (555)	44%	Yes	-
E.	<i>Economic Impact of Travel on Scenic Byways</i> , U.S. Travel Data Center, 1990	Yes (?)	Unknown	Yes	Yes
F.	<i>New Hampshire's Scenic Byways: Economic Impacts</i> , NH DOT, 1990	Yes (955)	Unknown	Yes	Yes
G.	<i>Economic Impacts of Kansas Scenic Byway Designation on Flint Hills Scenic Byway Communities</i> , KS DOT, KS Scenic Byways Program and BWR Corp., 1999	Yes (204)	Unknown	-	-
H.	<i>Colorado Scenic and Historic Byways: Economic Impact Study - Interim Report</i> , CO Center for Community Development, UCO Denver, 1996	Yes (418,77)	Unknown	Yes	Yes
I.	<i>Economic Impacts of New Mexico's Scenic Byways: El Camino Real, Rt. 66 and the Geronimo Trail</i> , Seeley & Assoc., 2000	Yes (>10k)	Unknown	Yes	Yes
J.	<i>1995 -1996 Economic Impact of Travel to the Blue Ridge Parkway, North Carolina</i> , Office of Parks, Tourism Research, NCSU, 1996	Yes (830)	Unknown	Yes	-
K.	<i>Scenic Byways: A Review of Processes, Administration and Economic Impacts</i> , Sipes et al., <i>Transportation Research Record</i> 1599, 1997	NA	NA	Yes	-
L.	<i>Assessing Visitor Responses to IA Scenic Byways Pilot Program</i> , Dahlquist and Peterson, <i>Transportation Research Record</i> 1599, 1997	Yes (1,125)	Unknown	-	Yes
M.	<i>Scenic Byways Data Needs, Resources, and Issues</i> , Bob L. Smith, KSU - Manhattan, 1990	NA	NA	NA	NA

Table 3: Data Collection Methods in Use – continued

Study I.D.	Study Info.	Survey (n=)	Response Rate	Secondary Data	Judgmental
N.	<i>State of Washington: National Scenic Byways Study, WA D.O.T., 1990</i>	NA	NA	Yes	-
O.	<i>Economic Impacts of Scenic Byways: Virginia, Urban Institute, 1990</i>	-	-	Yes	Yes
P.	<i>Economic Impact of Alpine Loop Backcountry Scenic & Historic Byway, CO Center for Community Development, UCO-Denver, 1999</i>	Yes (?)	Unknown	Yes	Yes
Q.	<i>Holmes County Scenic Byways; the Value of Viewshed - Economics & Related Aspects of Signage, Strouse, 1999</i>	-	-	Yes	Yes
R.	<i>Florida Scenic Highways Program: Economic Benefits Report, FL D.O.T., 1997</i>	NA	NA	Yes	-
S.	<i>Economic Analysis of Scenic Byways in Iowa, Kansas, Missouri and Nebraska, Mid West Transportation Center, IA State University, 1991</i>	-	-	Yes	-
T.	<i>Scenic Byway Development on the Oregon Coast - Economic Benefits & User Preferences, Dean Runyan Assoc., 1990</i>	Yes (534)	89%	Yes	-
U.	<i>Scenic Byways as a Rural Economic Development Strategy? - The Development of a GIS Model of Tourism & Recreation in Montana, Thompson et al., 1995</i>	Yes (9,300)	Unknown	Yes	-

Note: entries made in lighter text are less relevant to the overall table topic.

Analysis Variables

All studies reflect (to varying extent) some aspect of the components in Figure 1. To measure the economic impact of byway designation, the following 4 critical pieces of information are needed:

- *Frequency of use (change in traffic since designation & other factors affecting traffic growth)*
- *Spending patterns (amount, composition & location)*
- *Extent that 'designation' is linked to spending (trip motivation)*
- *Link of this spending to changes in the local economy (non-local visits, multiplier impacts)*

The treatment of these 4 aspects in literature varies widely in terms of explicitness and depth as shown in Table 4 and in the discussion that follows.

Change in Traffic. Overall, 8 of the 21 studies explicitly addressed the connection between “change in traffic since designation” and the impact attributable to designation. Of these, four studies used econometric modeling techniques to try and separate base case traffic from post-designation traffic [C, S, T & U]. These four studies also happen to cluster on the *ex ante* studies. The study from the Midwest Transportation Center [S] describes a time-series econometric model to predict Scenic Road Use (SRU) in both *pre-* and *post-*designation intervals.

Non-modeling techniques to obtain the *change in traffic* concept also included solely focusing on those who made inquiries to the state tourism office [L] and only reporting the impacts of those that decided to travel. The final case study for Virginia [O] focused on 2 of 5 initial byways on the basis that new traffic could be identified after observing differential growth rates for auto-light truck traffic as opposed to heavy truck traffic.

Both studies in Oregon [T], Colorado [H] and the four state analysis [M] work with time-series on traffic count data to try and establish what the historic trends are for trip demand along the routes. The New Hampshire study [F] contains an appendix of traffic count data but it is not used to identify new traffic since designation.

Other Factors Affecting Traffic Growth (*for the 'post-designation' studies only*) The ability to link the *change in traffic since designation* to the “designated status” or more generally “tourism,” is limited in the byways literature. The recent scenic byways impact studies for New Mexico [I] report the percentage of annual visitors that were “*influenced to visit by byway designation*”. The preferred approach seems to rely on first subtracting the traffic growth associated with the changes in the region’s population growth, domestic gasoline prices and the region’s background growth for tourism - to cite a few

examples. This is done to be conservative in attributing trip growth to the designated status.

Other factors examined affecting traffic growth include movement in fuel prices [S], population growth [S, H, Q, T, M] income growth, vehicle registrations (passenger & SUV) [M, S], attendance at other local recreation facilities & attractions [M, S]. The approach mentioned above for *changes in traffic*, citing the Virginia study [O] was intended to also have the interpretation of “due to designation”. The study performed by the U.S. Travel Data Center [E] examined a set of byways across the country that were screened to remove any location with too many other ‘influencing’ factors (urban, commercial airport, major resorts) on traffic growth. Hence the study examined mainly rural, scenic byways.

Non-Local Visitors. Only a small set of the studies (5 of 21) make clear their efforts to distinguish between spending by those who already live in the area and new spending introduced by non-residents. The *non-resident* focus acknowledges the importance of the scenic byway to promote tourism export growth that draws new dollars to the region instead of displacing *resident* leisure dollars already circulating elsewhere in the community. (See Oosterhaven et al, under TOURISM, in Section 3.)

Non-resident is defined in various studies as either *out-of-state* [C, T, U], or outside a set perimeter of miles, or outside county boundaries. The Great River Road Development Study [D] uses only those visitor surveys where the group has traveled at minimum 100 miles from home. The 1996 Blue Ridge Parkway study [J] measures the associated spending impacts of those travelers from outside the 18-county (multi-state) region that the byway runs through. Studies relying on secondary data (traffic or sales tax receipts) attempt to first control for growth in local activity as mentioned above under Other Factors Affecting Traffic Growth [Q]. Many studies have information regarding the origin of travelers but do not make clear how that is reflected in the impacts they report. It is likely this information is gathered for targeted marketing efforts.

Trip Purpose. Ten of the studies either ascertain trip motivation (*e.g.* nature of trip – leisure/personal/business, passing through, multiple destinations, sole destination) from survey questions or assume a specific *tourism share* of total traffic [A]. *The Vermont Pilot Study Approach to Byway Changes* [C] reports spending responses for the out-of-state travelers by differing trip purposes (*e.g.* business, sightseeing, shopping). The Iowa Scenic Byways Pilot Study [L] attempted to make clear the trip motivation in order to determine the effectiveness and return on investment for the marketing/promotion campaign. (See also the Orlando Cultural Event Analysis referenced below under *Tourism Studies*.)

Characteristics of Spending. Treatment of spending related to byway travel most often was handled through mail-back surveys. Studies usually reported this data as average party spending per day careful to document the size of the travel party [G, H, P]. The Iowa Scenic Byways Pilot Study [L] reports average trip expenditure. A few examples build up expenditures on a per-mile traveled, per-hour in attendance and per-night of

lodging basis combined with unit cost data on each of these categories from a secondary source [A, E, O].

Sales tax data is used in one study [Q] to infer willingness-to-pay but also to approximate non-local spending on taxable goods and services.

Almost all studies provide a breakout of spending across key, traveler-related industries (lodging, food, gas, souvenirs, entrance fees, entertainment).

The best example from the literature of capturing the location of spending (using a survey) is the 1996 Blue Ridge Parkway study [J], which delineates specific regions of spending for the multi-state study area by attaching simple maps and asking visitors to record their trip expenditures across four possible zones across NC and VA. Stynes (1999) presents a sample survey in his *Guidelines for Measuring Visitor Spending* that asks for travel party spending in the *local* area and defines this to mean *within 30-miles* of the sampling site, and attaches a map attached for reference.

Multiplier Impacts. These refer to indirect effects from increased sales by suppliers of goods & services generated as a consequence of additional visitor spending, and local income created from it. Here we need to distinguish between several concepts that often get confused. There are *direct effect ratios* which are sector-specific (e.g. *restaurant, hotel etc.*) These ratios simply restate the *direct* business sales arising from visitor spending into a specific number of jobs and wages in the restaurant sector, the hotel sector, retail etc. The *economic multipliers* are also sector-specific and scale upward these initial sales, jobs and wages to include extra sales, jobs and wages for all sectors in the region due to increased supplier activity and the spending of newly generated local income. There are also *tourism spending multipliers* which are applied directly to the category specific amounts of spending (*instead of sector-specific sales*). These multipliers are adjusted (downward) economic *multipliers* for sales, that reflect the local *capture rate* (expressed as the percent of spending that is captured by local manufacture or margin) on visitor spending. The economic multiplier impacts are referenced or identified in several of the studies (8 of 21). The majority of the studies reviewed concentrate on estimates of the *direct* visitor spending only and do not include the multiplier effects. There are two reasons for this:

- (1) researcher does not have access to multiplier model (IMPLAN or RIMSII) or does not know how to use them, and
- (2) care must be taken to identify when multipliers are appropriate.

To justify reporting the multiplier impacts the researcher must rule out that the new, byway visitor demand can be accommodated by the existing supplier base and the current level of jobs. This case might hold well for byways situated near well-established tourism destinations with a broad base of services. The other consideration before calculating multiplier impacts is the plausibility for new businesses to be attracted into the byway corridor as a result of traveler-related spending.

If the goal of the study is a benefit-cost analysis of conferring byway designation, then multipliers should be applied to both the direct benefits and costs.

Stynes (1999) recommends for tourism studies that the focus remain on handling the direct impacts only. There are many examples of errant multiplier analyses that have made government decision-makers wary. There has also been a tendency for the multipliers themselves to be bandied about as benchmarks. This often occurs when researchers take a *judgmental* approach to the size of the local multiplier instead of using a model (such as IMPLAN) or the RIMS data series.

Table 4: Analysis Variables Involved

Study I.D.	Study Info.	Change in Traffic	Factors behind Traffic Growth	Non-"local" Visitors	Trip Motivation	Location of Spending	Multiplier Impacts
A.	<i>Economic Impacts of Scenic Highways, Real Estate & Land Use Institute, CSU-Sacramento, 1994</i>	-	-	-	assumed	assumed	-
B.	<i>Economic Benefits of Scenic Highways, CA DOT, 1991</i>	-	-	-	-	-	present multipliers
C.	<i>Valuing Changes in Scenic Byways - VT Pilot Study, Tyrrell & Devitt, from Consumer Behavior in Travel & Tourism, 2000</i>	Yes	Yes	Yes	Yes	Yes	-
D.	<i>Great River Road Visitor Study, Gardner Consulting & SEH, 1998</i>	-	-	Yes	Yes	-	-
E.	<i>Economic Impact of Travel on Scenic Byways, U.S. Travel Data Center, 1990</i>	-	Yes	-	-	assumed	-
F.	<i>New Hampshire's Scenic Byways: Economic Impacts, NH DOT, 1990</i>	-	-	-	Yes	-	-
G.	<i>Economic Impacts of Kansas Scenic Byway Designation on Flint Hills Scenic Byway Communities, KS DOT, KS Scenic Byways Program and BWR Corp., 1999</i>	-	-	-	Yes	-	-
H.	<i>Colorado Scenic and Historic Byways: Economic Impact Study - Interim Report, CO Center for Community Development, UCO Denver, 1996</i>	Yes	Yes	-	-	-	-
I.	<i>Economic Impacts of New Mexico's Scenic Byways: El Camino Real, Rt. 66 and the Geronimo Trail, Seeley & Assoc., 2000</i>	-	-	-	Yes	-	Yes
J.	<i>1995 -1996 Economic Impact of Travel to the Blue Ridge Parkway, North Carolina, Office of Parks, Tourism Research, NCSU, 1996</i>	-	-	Yes	Yes	Yes	Yes
K.	<i>Scenic Byways: A Review of Processes, Administration and Economic Impacts, Sipes et al., Transportation Research Record 1599, 1997</i>	NA	NA	NA	NA	NA	NA
L.	<i>Assessing Visitor Responses to IA Scenic Byways Pilot Program, Dahlquist and Peterson, Transportation Research Record 1599, 1997</i>	Yes	-	-	Yes	-	-
M.	<i>Scenic Byways Data Needs, Resources, and Issues, Bob L. Smith, KSU - Manhattan, 1990</i>	Yes	Yes	-	Yes	Yes	Yes
N.	<i>State of Washington: National Scenic Byways Study, WA D.O.T., 1990</i>	NA	NA	NA	NA	NA	NA

Table 4: Analysis Variables Involved - continued

Study I.D.	Study Info.	Change in Traffic	Factors behind Traffic Growth	Non-"local" Visitors	Trip Motivation	Location of Spending	Multiplier Impacts
O.	<i>Economic Impacts of Scenic Byways: Virginia</i> , Urban Institute, 1990	Yes	Yes	Yes	Yes	assumed	-
P.	<i>Economic Impact of Alpine Loop Backcountry Scenic & Historic Byway</i> , CO Center for Community Development, UCO-Denver, 1999	-	Yes	-	-	Yes	Yes
Q.	<i>Holmes County Scenic Byways; the Value of Viewshed - Economics & Related Aspects of Signage</i> , Strouse, 1999	-	Yes	Yes	-	Yes	Yes
R.	<i>Florida Scenic Highways Program: Economic Benefits Report</i> , FL D.O.T., 1997	NA	NA	NA	NA	NA	NA
S.	<i>Economic Analysis of Scenic Byways in Iowa, Kansas, Missouri and Nebraska</i> , Mid West Transportation Center, IA State University, 1991	Yes	Yes	-	-	-	-
T.	<i>Scenic Byway Development on the Oregon Coast - Economic Benefits & User Preferences</i> , Dean Runyan Assoc., 1990	Yes	Yes	Yes	Yes	Yes	Yes
U.	<i>Scenic Byways as a Rural Economic Development Strategy? - The Development of a GIS Model of Tourism & Recreation in Montana</i> , Thompson et al., 1995	Yes	Yes	Yes	Yes	Yes	Yes

Note: entries made in lighter text are less relevant to the overall table topic.

Impact Findings

Most of the scenic byways impact studies are either recommendations on the analysis methods (with no empirical content) or else studies *thin* on methodology but concluding with a *rough* measure of the impacts. Some of the “methods-oriented” studies either conclude with quantitative estimates [C, E, H, J, M, O, S, T, U], while others do not [H, M, S]. It was discovered in follow-up with the authors on two of these last three studies that they did not receive subsequent funding to complete the actual economic analysis [H, S]. Table 5 summarizes the key findings on each of the twenty-one studies reviewed.

The Vermont Pilot Study [C] resulted in a 2-page workbook for byway planners to use when estimating economic impacts of byway changes. The workbook includes clear instructions and look-up tables of key information taken from the researchers’ willing-to-pay model. The methodology developed in both the four state study [S] and the Oregon study [T] are very strong. The Oregon study does an excellent job of establishing a *base case* or *pre-condition (i.e. designation)* first and then developing alternative projections of trips/ economic activity. It is the *base case* in comparison to an *alternative case* from which the *economic impact* is identified.

Overall Findings on Scenic Byway Literature

Overall, the range of scenic byway impacts found from the prior studies is as follows:

<u>Type of Impact Reported</u>	<u>Value/Range</u>	<u># of Studies</u>
--------------------------------	--------------------	---------------------

- | | | |
|--------------------------------------|---------|---|
| ▪ Jobs per \$1 mil. Visitor Spending | 19 – 33 | 6 |
|--------------------------------------|---------|---|

Limitation: This resembles an aggregate multiplier – with no specific sector designated. It is most likely calculated by dividing the total jobs related to tourism-generated or byway-generated travel by the amount of visitor spending estimated in a specific interval (typically a year) or by restating the *tourism spending multiplier* into units of jobs (instead of sales.) Assuming the initial estimate of visitor spending is correct to begin with, as well as the corresponding jobs impact, the application of this concept within the range given will depend on how comparable your region is to the original study area *e.g.* possessing similar byway attributes, usage and regional economic structure.

- | | | |
|-------------------------------------|------------------|---|
| ▪ “Total” Business Sales (millions) | \$.074 - \$1,450 | 5 |
|-------------------------------------|------------------|---|

Limitation: “New business sales” is a meaningful way to express the economic impact of travel related to byway designation. However an aggregate indicator such as this one reflects the *direct* visitor spending activity and its *indirect effects*. Once again care should be taken before drawing analogies between your byway and any of the 5 reporting this concept. The key here is to identify which values for the above range can be interpreted as the change in total business sales due to trips *influenced* by designation. Then you must decide how comparable your

byway situation is to that in the referenced study. You must also verify that the method used to calculate *business sales* from visitor spending was correct.

- Tax Receipts per \$1 Visitor Spending .045 - .08 5

Limitation: “Tax receipts” is another useful expression of the economic (*fiscal*) impact of designated byway activity. This can be fairly straightforward to apply knowing your state and county sales tax rates and a reliable estimate of the *non-local* visitor spending segmented into relevant categories (*e.g. food, gas, lodging etc*).

- Increase in Traffic (annual) 3.4% - 20% 1

Limitation: This is one of the key pieces of information to performing the economic impact analysis of byway designation correctly. This range, reported from a single study, resulted from asking byway travelers if they were influenced in their travel route due to byway designation. The “increase in traffic” response for each byway will be highly unique and vary with the byway’s attributes and the level of promotion upon or after designation.

- Willingness to Pay (per car) \$0.76 1

Limitation: The *willingness to pay* model is useful for uncovering estimates of travelers’ *economic valuation* of scenic improvements and facility (i.e. road) enhancements. From this initial estimate of a *demand-response* (additional trips) on a designated byway, an estimate of the business community’s *supply response* (in terms of *price* and *quantity*) is derived to indicate how initial visitor spending is affected. Composite (weighted across 17 tourism –related sectors) economic ratios for wages and jobs determine the *direct* visitor spending impacts. Application of this model might have slow adoption.

- Willingness to Pay via Sale Tax (annual) \$1.06 million 1

Limitation: Working from historical, aggregate revenue data, this is another in the *economic valuation* approaches. Care must be taken to isolate the portion of tax payments truly reflective of *non-local* visitor spending *linked* to byway designation and not some other factor influencing non-resident trips. Application of this model might have slow adoption.

- Extra Visitor Spending with 1% Increase in Vehicle Miles Traveled \$65,000 1

Limitation: A *response-parameter* that is highly specific to the particular byway(s) studied. An appropriate value would likely come from a model calibrated to local data.

VISITOR SPENDING CONCEPTS

- Visitor Group Spending per Trip \$104 1

Limitation: Application of this value is critically dependent on the length of stay and number of persons in the travel group. Before using, verify that the value reflects only the amount of visitor expenditures made in the desired byway region as defined by the study. This is especially true if the byway region is not the only trip destination. Examine whether this estimate came from an unbiased and adequately size sample.

- Visitor Group Spending per Day \$50 - \$188 6

Limitation: Whether travel groups have been surveyed for the spending associated with the prior 24-hours or this estimate was calculated by dividing group spending *per trip* by the average trip length, your *minimal* concerns should focus on the sampling characteristics. If *per trip* spending is used to derive this concept, then the above discussion also applies.

- Visitor Spending per Mile (annual) \$32,500 3

Limitation: This value resulted from the U.S. Travel Data Center study of 5 *pre-screened* byways throughout the country. This *convenient* estimate reflects the *per mile* contribution of travel - generated spending, not all *linked* to designation. The spending estimate reflects business activity on the byway only. Depending on the location, attributes and market area of your scenic byway, this value may under or overstate the contribution of designation. It is not clear whether this result is for *direct* spending or *direct plus* a *tourism spending multiplier*. You need to know the length of your byway in order to apply a *per mile* estimate.

The first two of these Visitor Spending concepts require also knowing the change in trips –or – change in visitor group days *linked* to designation to calculate the aggregate direct visitor spending impact due to designation.

Interestingly, with several assumptions (*), the range of *per day* spending estimates can be roughly reconciled to the *Visitor Spending per Mile* estimate:

Assume the mid-point of the range \$50 - \$188 group spending per day and visitor traffic of 100 cars per day, then

$\$100/\text{day}/\text{car} \times 100^* \text{ cars}/\text{day} \times 365 \text{ days} = \$3,650,000$ *Total Visitor Spending annually.*

If the byway is 100 miles in length, then*

$\$3,650,000 / 100 \text{ miles} = \$36,500$ *of Visitor-spending per mile of byway.*

Clearly it is impossible to identify one central value when there is such a disparity in how impacts are defined and reported. It is also not clear whether the focus of study is on the byway, as opposed to *byway designation*. Identifying the 'impact' means annual traffic data can't be multiplied by the average, party, trip spending unless you assume all the traffic was influenced to travel the byway due to its designation. Furthermore, there must be some resolution on whether the '*gross impact*' concept is appropriate to report without reporting the '*net impact*' concept attributable to *non-local* visits only. These findings underscore the importance of the NSBRC developing clear guidelines for future studies.

Table 5: Study Findings

Study I.D.	Study Info.	Findings
A.	<i>Economic Impacts of Scenic Highways</i> , Real Estate & Land Use Institute, CSU-Sacramento, 1994	No aggregate, direct traveler impact is reported. A mélange of tourism statistics quoted from other studies along with Sales multipliers for five coastal CA regions.
B.	<i>Economic Benefits of Scenic Highways</i> , CA DOT, 1991	CA tourists spend \$174/day and the average length of stay is 3.6 days. Reports average revenue of \$32,500 per-mile of scenic highway. Summary of statistics from five other FHWA studies on scenic byway tourism impacts.
C.	<i>Valuing Changes in Scenic Byways - VT Pilot Study</i> , Tyrrell & Devitt, from <i>Consumer Behavior in Travel & Tourism</i> , 2000	Presents econometric results of attempt to model change in trip demand due to specific changes in scenic byway, e.g. non-residents willing to pay additional \$0.76 for travel on a designated road. Developed a two-page byway planner's workbook to calculate direct spending, wage and employment impact based on this model.
D.	<i>Great River Road Visitor Study</i> , Gartner Consulting & SEH, 1998	presents daily average (\$155) & median travel party (2.5 persons) spending and determines that the road's potential has not been exhausted to maximize economic benefit to the region. Subsequent study by ERA focused on economic development strategies.
E.	<i>Economic Impact of Travel on Scenic Byways</i> , U.S. Travel Data Center, 1990	Estimates that traveler-generated spending per mile is between \$30k and \$35k for 1988.
F.	<i>New Hampshire's Scenic Byways: Economic Impacts</i> , NH DOT, 1990	Study using the "control road" approach in assessing if Lake Sunapee route has potential for designation. Provides low-ball estimate of direct traveler spending for the 35-mile Kancamagus Scenic Byway using a figure of \$33k per mile (or \$1.2 million for 1988.) based on E. above.
G.	<i>Economic Impacts of Kansas Scenic Byway Designation on Flint Hills Scenic Byway Communities</i> , KS DOT, KS Scenic Byways Program and BWR Corp., 1999	Based on daily spending of \$50 per visitor group (4.4 persons), direct annual impact for 1998 was \$465,900.
H.	<i>Colorado Scenic and Historic Byways: Economic Impact Study - Interim Report</i> , CO Center for Community Development, UCO Denver, 1996	Follow-up study to measure traveler-spending impact did not occur. Business survey (of 77 firms) anecdotally attests that scenic byway led to 10% increase in sales.
I.	<i>Economic Impacts of New Mexico's Scenic Byways: El Camino Real, Rt. 66 and the Geronimo Trail</i> , Seeley & Assoc., 2000	Reports annual, direct traveler expenditures for each route (\$1.4 bil., \$0.8 bil., & \$0.014 bil. respectively) and estimate on share of travelers influenced to visit due to byway designation (e.g. 3.4% to 20.1%)
J.	<i>1995 -1996 Economic Impact of Travel to the Blue Ridge Parkway, North Carolina</i> , Office of Parks, Tourism Research, NCSU, 1996	Non-resident direct visitor spending for 1995-1996 period estimated at \$1.31 billion and an additional \$1.63 billion of multiplier sales. Total income impact of \$1.68 billion and total job impact of 75,066. Average travel party (3.39 persons) spending per day of \$188 .

Study I.D.	Study Info.	Findings
K.	<i>Scenic Byways: A Review of Processes, Administration and Economic Impacts</i> , Sipes et al., Transportation Research Record 1599, 1997	a review of byway programs in other states. Many of the states surveyed did not have formal analysis of economic impacts of their program. Many attest to perceived value of current travel & spending trends. Mention studies in IA, NC, OR and AZ.
L.	<i>Assessing Visitor Responses to IA Scenic Byways Pilot Program</i> , Dahlquist and Peterson, Transportation Research Record 1599, 1997	Party spending per-trip of \$104.50 averaged over 4 routes in IA. Return on advertising & promotion investment of \$1.10 to \$1 for those byway travelers who first inquired about route and \$6 to \$1 if counting all byway travel occurring in the same 5-month interval.
M.	<i>Scenic Byways Data Needs, Resources, and Issues</i> , Bob L. Smith, KSU - Manhattan, 1990	High-lights key issues and data requirements for anyone contemplating doing a scenic byway economic impact study correctly.
N.	<i>State of Washington: National Scenic Byways Study</i> , WA D.O.T., 1990	Design emphasis; reports costs-per-mile of various scenic byway configurations vs. standard highway design.
O.	<i>Economic Impacts of Scenic Byways: Virginia</i> , Urban Institute, 1990	Active promotion is the key to generating tourism & significant economic impacts. Presents estimates of direct, <u>annual</u> tourism revenues and jobs for Route 5 and Route 20 (VA portion) based on a 2 to 3 percent increase in VMT per day (\$130k - \$220 k and 4 - 7 new jobs.)
P.	<i>Economic Impact of Alpine Loop Backcountry Scenic & Historic Byway</i> , CO Center for Community Development, UCO-Denver, 1999	Based on total traffic for 1997, the direct traveler spending for the three-county area was \$16.2 million and an additional \$4 million in multiplier sales.
Q.	<i>Holmes County Scenic Byways; the Value of Viewshed - Economics & Related Aspects of Signage</i> , Strouse, 1999	Non-resident traveler 'willingness to pay' (WTP) for 1998 (vis a vis sales tax receipts) was \$1.06 million (for \$20 million in purchased goods & services.) If you assume a 5% return on investment, then the WTP infers the viewshed's value at \$28 million.
R.	<i>Florida Scenic Highways Program: Economic Benefits Report</i> , FL D.O.T., 1997	Informational piece recounting what other states are doing with their byway programs with respect to economic impact studies, data collection, promotion and economic benefit requirement.
S.	<i>Economic Analysis of Scenic Byways in Iowa, Kansas, Missouri and Nebraska</i> , Mid West Transportation Center, IA State University, 1991	Strong methodology for assessing economic and recreational benefits of scenic byways. Proposes two time-series models for predicting Scenic Road Use both pre & post-designation. Follow-up study to demonstrate models on any of the 4 states' scenic byways never was funded.
T.	<i>Scenic Byway Development on the Oregon Coast - Economic Benefits & User Preferences</i> , Dean Runyan Assoc., 1990	Estimates 1988 "base case" direct traveler expenditures along US-101 of "out of county" (non-incident) travel: \$446k. Estimates direct visitor expenditures for year 2000 (and total impacts) under 4 different scenic highway scenarios involving differing degrees of corridor development along the coast.

Study I.D.	Study Info.	Findings
U.	<i>Scenic Byways as a Rural Economic Development Strategy? - The Development of a GIS Model of Tourism & Recreation in Montana</i> , Thompson et al., 1995	Projected impacts for year 2000 of potential byway designation on US-89 under various traffic, marketing, expenditure and capture rate assumptions. Uses GIS simulation model. Designation projected to attract \$90,201 added expenditures for direct sales of \$43,643, direct jobs of 2, total sales of \$74,365 and total jobs of 3.

Note: entries made in lighter text are less relevant to the overall table topic.

3. Summary of Other Related Studies

We provide a brief summary on a subset of studies identified from the *tourism*, *National Parks*, and *highway* impact literature. These examples are catalogued in Table 6. These studies are relevant not only because they too have been studied for their respective economic impact contribution – as roadway or destination – but also as a resource to improve the methods used for future scenic byway impact studies.

Tourism Studies. McHone and Rungeling (2000) develop a concise and rather useful economic impact analysis for a special exhibit at the Museum of Art in Orlando and deals with many of the same issues a byway designation analysis encompasses. This study is explicit in its handling of local visitor impacts captured in the survey, ascertaining *primary* trip purpose and accounting for substitution effects on tourism spending.

Stynes (1999) has an updated set of his primers, as well as tourism models, on the MI State University, Dept. of Park, Recreation and Tourism Resources, website (see Table 6). The primers are very thorough and cover the following topics: *Economic Impacts of Tourism*, *Approaches to Estimating the Economic Impacts of Tourism*, and *Guidelines for Measuring Visitor Spending*.

Kreag (2001) establishes seven categories of tourism impacts: *economic*, *environmental*, *social/cultural*, *crowding & congestion*, *services*, *taxes*, and *community attitude*. For each type of impact there is a group attached to maximizing or minimizing the impact depending on whether it is beneficial or not. This paper gives an understanding to several tourism conflicts that can arise in a community.

Wilson (1998) points to the confusion amidst tourism economic impact studies due to poor definition of “*tourism*” as either a market or an industry. This confusion has affected the tools of analysis chosen to study tourism – related impacts. He establishes several reasons why neither is an appropriate definition and recommends analysts seek to measure the impacts of “*tourism-related activities*.”

A series of regional tourism fact sheets (1994) by the Western Rural Development Center (WREP No. 144 – 147) were adapted from *Tourism USA, Guidelines for Tourism Development, 1986*. The key recommendations by topics are as follows:

Estimating visitor days – track growth in visits and adjust for peak season and special one-time events.

Economic Impacts of Visitors on Your Community – analysis must clearly capture both the “*with and without*” cases of the policy under study; define the geography for the study appropriately; be explicit about the types of economic impacts to be identified; know what data you will need and state the assumptions and limitations of the study.

Impact of Visitor Spending on Local Revenues – outlines the different methods for collecting visitor spending information – *diaries, intercept & exit surveys-interviews, mail-in surveys and business surveys*. Provides guideline on applying multipliers and translating visitor spending into local income.

Ooseterhaven et al. (Built Environment, Vol. 13 No.2) cautions the analyst against the pitfalls encountered with *multiplier models* when identifying the economic impacts of recreation and tourism. He emphasizes that knowing the *change in number of visitors, the regions they come from, and the extent of consumer expenditure substitution taking place in the area of direct concern, will prevent the typical overstatement of economic impacts*.

Table 6: Other Related Impact Studies

Study Category	Study Information
Tourism	
	<p><i>“Practical Issues in Measuring the Impact of a Cultural Tourist Event in a Major Tourist Destination,”</i> McHone and Rungeling, <i>Journal of Travel Research</i>, Vol. 38, Feb. 2000</p>
	<p>Assorted tourism impact primers, Stynes (1999) www.msu.edu/course/prr/840/economicimpact</p>
	<p><i>“The Impacts of Tourism,”</i> Glenn Kreag, Minnesota Sea Grant, (2001)</p>
	<p><i>“Market/Industry Confusion in Tourism Economic Analysis,”</i> Kenneth Wilson, <i>Annals of Tourism Research</i>, Vol. 25, No.4, 1998</p>
	<p><i>WREP Regional Tourism Fact Sheets No. ’s 144 – 147, 1994</i></p>
	<p><i>“On Economic Impacts of Recreation and Tourism: The Input-Output Approach,”</i> Oosterhaven et al., <i>Built Environment</i>, Vol. 13, No.2</p>
National Parks	<p><i>“The Economic Impacts & Uses of Long-Distance Trails – A Case Study of the Overmountain Victory National Historic Trail,”</i> Moore and Barthlow, Dept. of Parks, Recreation & Tourism Management, NCSU, 1998</p>
	<p><i>“Economic Impact of National Park Visitor Spending – Gleaning Visitor Spending Patterns from Secondary Data for Glacier National Park in 1990,”</i> Dave Smyth, Michigan State University, 1998</p>
	<p><i>“The Economic Importance of National Parks: Effects of the 1995-1996 Government Shutdowns on Selected Park-Dependent Businesses and Communities,”</i> Philip Voorhees, NPCA, 1996</p>
	<p><i>“Economic Impacts of Protecting Rivers, Trails and Greenway Corridors – A Resource Book,”</i> RTCA, National Park Service, 1995 (4th edition)</p>
Highway	<p><i>“Development of Benefit-Cost Policy under TEA-21,”</i> Weisbrod and Weiss (draft, 2001)</p>
	<p>FHWA Handbook for Assessing the Economic Development Opportunities from Highway Investments, Weisbrod et al., (2001)</p>
	<p><u>Tourism, Travel and Transportation System Development</u>, NCHRP Report 419, 1998</p>
	<p><u>Current Practices for Assessing Economic Development Impacts from Transportation Investments</u>, NCHRP Synthesis 290, (2000)</p>

National Park Studies. The NPS study prepared by Moore and Barthlow (NCSU, 1998) on the Overmountain Victory National Historic Trail, provides a thorough treatment of designing and handling survey samples, a cogent argument for segmenting visitors for outside the 15-county corridor. IMPLAN multipliers were applied with the assistance of the authors from the 1996 Blue Ridge Parkway study. The OVT study includes a review of other National Park economic impact studies as well as a sample of the on-site survey used.

Smyth (1998) conducts an economic impact study of activity levels at Glacier National Park in 1990. The emphasis of his study is on working with secondary data to ascertain visitor-spending patterns. Care is given to segmenting visitor data and adjusting NPS visitor count data. Almost all issues addressed are relevant to the scenic byway analysis.

The National Parks and Conservation Association (NPCA) conducted a study around the 1995-1996 shutdowns of the National Park System. The focus was on the economic impact and importance for some select states. The NPS Money-Generation Model (MGM) was used to estimate *direct* and *total* impacts.

A resource book entitled *Economic Impacts of Protecting Rivers, Trails, and Greenway Corridors*, (RTCA, NPS, 1995) is intended for use by local planners, activists and parks and recreation administrators. The goal of the book is to help build an understanding of the potential economic impacts arising from preservation and effectively communicate this to the public. This book addresses corporate relocation potential, real property value changes, tourism impacts, resident spending changes, commercial uses, estimating the effects of spending and benefit estimation.

Highway Studies. Weisbrod and Weiss (*draft, 2001*) describe the development of benefit-cost policy under TEA-21. This article has relevance when considering the scenic byway's potential benefits beyond the more obvious tourism draw (see figure 1). The article presents the seven criteria used in U.S. highway funding decisions and the analogous set of five criteria used in Great Britain. These include *safety, accessibility, environment, efficiency, preservation, integration* and *economic vitality*. The U.K. version of economic impact stresses economic revitalization of depressed areas via the project's potential for distributional impacts. This is reminiscent of the Crowley's Ridge success story.

FHWA is developing a guide on collecting the empirical information needed for assessing the extent of economic impacts from highway facilities. (Weisbrod et al. 2001) The guide's comprehensive set of prototypes includes a sample short interview for highway corridor area business experts to fill-out. The survey probes for *property value changes, increases in construction activity, new businesses in the area, growth of existing businesses, start-up activity, increases in traffic to or through the area, change in business mix* and *change in pattern of shopping*. This offers some good guidance to any byway study approached from the business community perspective.

One result from the Phase 1 NCHRP Project 2-17(6) termed "*Tourism Travel Contributions to Economic Development*", conducted 1993-1994, elucidated the analytical tools and key data currently used by state tourism offices and DOT's in considering tourism benefits. NCHRP Report 419 recaps the Phase I findings and presents the recommendations that concluded Phase II. A key Phase II recommendation is the proposal of an optimal model for relating tourism activity to economic development.

The recent *NCHRP Synthesis 290 – Current Practices for Assessing Economic Development Impacts from Highway Investments*, (Weisbrod, 2000), is a strong resource for those researchers wanting to define the connection between specific highway investments and the potential for economic development benefits. This report covers the relationship between transportation and economic development as well as issues of defining an *economic impact*, how to measure it and the need to improve the current analysis methods.

Findings from Related Studies

From the ancillary impact studies regarding tourism, National Parks, and highways two conclusions are reached:

- (1) they serve to reinforce the broader conceptual view of possible sources of impacts occurring on or near scenic byways &
- (2) they highlight the need to explicitly distinguish certain factors which are highly variable in treatment in the scenic byway literature.

Overall they highlight the need for scenic “*designation*” analysis to be more systematic toward identifying *what* spending can be credited to designation and *where* it originates from.

4. Overall Conclusions from the Literature Review

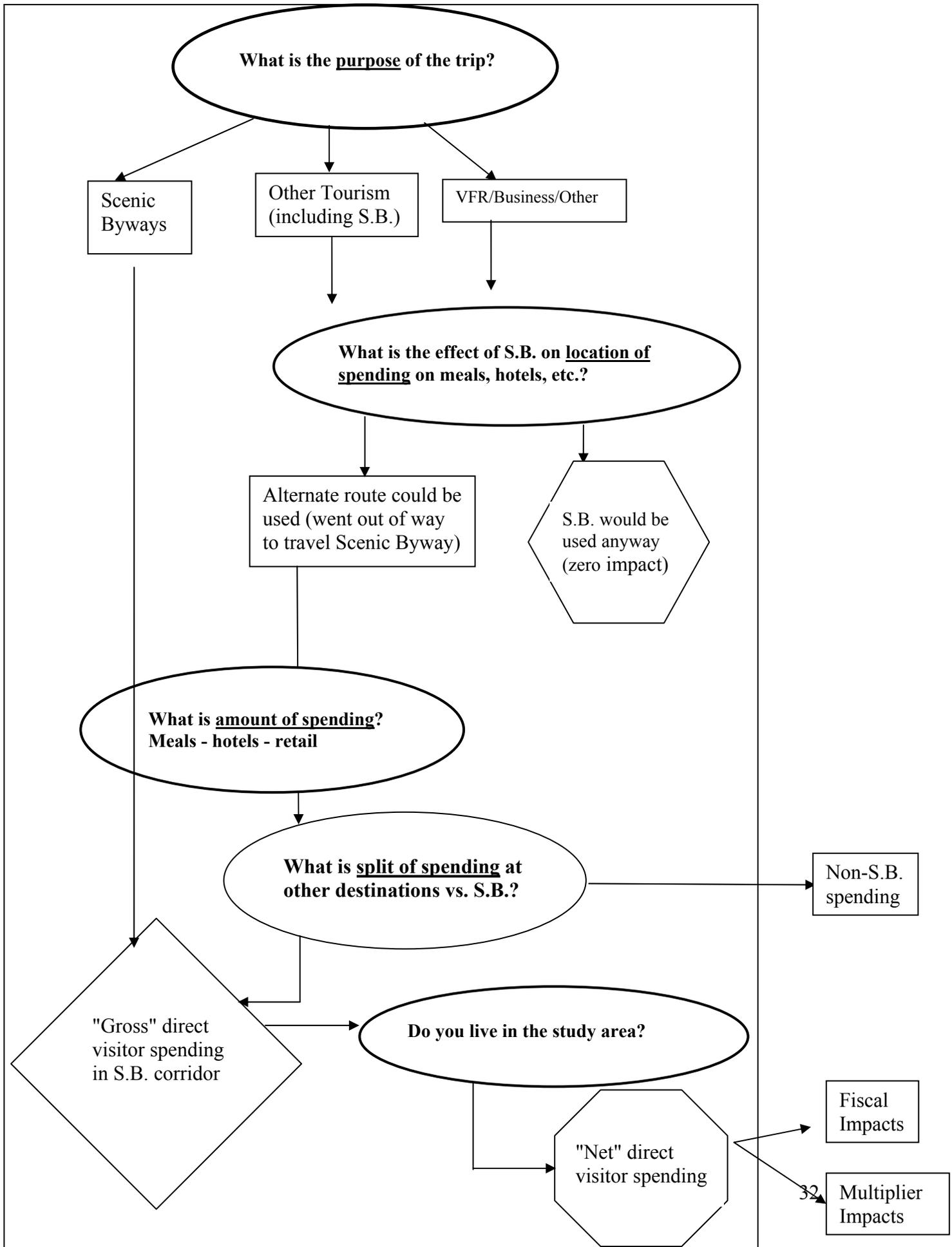
This memo has evaluated the content of a relevant subset of byway studies. There is a wide disparity with some being very good and others less strong. Some studies demonstrate active data assembly and *massaging* (*primary* or *secondary*) as opposed to relying on a *guesstimate*. There are examples of conclusions that suggest shortcuts were taken. These limitations make it difficult for any one study in particular to be *universally* applied. As a result, there is a need to establish guidelines for conducting future (or revisiting prior) economic impact analysis of byway designation that are both *reasonable* and *useful* in the context of the local byway planning process.

From this entire review emerges a core, methodological framework that incorporates the basic concepts needed to estimate the economic impacts associated with byway designation. These include:

- *What is the trip purpose* (needed to understand the reasons behind post-designation traffic *i.e.* for which travelers has 'designation' induced trips – recreational or otherwise?)
- *What is the effect of designated byway on traveler spending* (needed to identify which \$'s were already attracted to the route vs. shifted from other routes in the state.)
- *How much do travelers spend on a trip* (needed to begin the calculation of the potential stimulus to the local economy.)
- *Where does it get spent* (needed to allocate trip spending into other areas if scenic byway is not primary trip purpose.)
- *Do you live in the study area* (needed to focus on new trips from people outside of the study area as these reflect the *true basis* of economic impact.)

Figure 2 portrays the structure of this framework. This framework will be the basis for designing several templates to be put to use.

Figure 2: Framework for Assessing the Potential of Byway Designation to Generate Visitor Spending



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