



AN ECONOMIC IMPACT STUDY ^{OF} BICYCLING IN ARIZONA

Out-of-State Bicycle Tourists & Exports

EXECUTIVE SUMMARY

PREPARED FOR:



MPD 64-12 CONTRACT NO: ADOT11-013181

PREPARED BY:



JUNE 2013

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PREPARED BY:

McClure Consulting LLC
2944 N. 44th Street, Suite 101
Phoenix, AZ 85018

Economic & Policy Resources, Inc.
400 Cornerstone Drive, Suite 310
Williston, VT 05495

Kimley-Horn and Associates, Inc.
333 East Wetmore Road, Suite 280
Tucson, AZ 85705

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ARIZONA DEPARTMENT OF TRANSPORTATION

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TECHNICAL ADVISORY COMMITTEE (TAC)

TAC members included representatives from the diverse set of stakeholders below:

- ADOT, Communications
- ADOT, Multimodal Planning Division (MPD), Bicycle and Pedestrian Program
- ADOT, MPD, Transportation Analysis
- ADOT, MPD, Research Center
- ADOT, MPD, Tribal Transportation
- Arizona Office of Tourism
- Arizona State Parks
- Federal Highway Administration – Arizona Division
- MPOs and COGs

KEY INFORMANTS

The authors appreciate the input of Key Informants who were contacted for this study and agreed to be interviewed in order to provide additional insight into the study approach and processes. In addition to the persons listed below, other individuals offered informal opinions, and these contributions were also appreciated.

- Tom Armstrong, Cochise Bicycle Advocates
- Bob Beane, Coalition of Arizona Bicyclists
- Wayne Cullop, Greater Arizona Bicycling Association
- Richard DeBernardis, President, Perimeter Bicycling Association of America
- Karen Lamberton, Cochise County Transportation Planner
- Mike Melley, Mountain Bike Association
- Daniel Paduchowski, Verde Valley Cyclists Coalition
- Eric Prosnier, White Mountain Road Club
- Anthony Quintile, Flagstaff Biking Organization
- Bob Richards, Verde Valley Cyclists Coalition
- Todd Sadow, Epic Rides
- Dave Singer, City of Sedona
- Randy Victory, Arizona State Parks
- Matthew Zoll, Bicycle and Pedestrian Program Manager, Pima County Department of Transportation



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Synopsis

This study was specifically focused on the contribution to the Arizona economy from out-of-state visitors engaged in bicycling activity in the state, and out-of-state customers, wholesale or retail, of bicycle products made or sold in Arizona. Obtaining this information included documenting:

1. The manufacture of bicycles and bicycle parts, as well as bicycle-related clothing and accessories.
2. Wholesaling and distribution of these bicycle-related goods.
3. Retail sales of bicycles and also bicycle parts, accessories, and clothing, and bicycle servicing and renting.
4. Inventorying the various types of bicycling events and of organized tours by bicycle: on-road bicycling, mountain biking, cyclo-cross bicycling, BMX (bicycle motocross) races, triathlons and duathlons, and organized training camps for event participants and teams.

The focus on out-of-state customers/participants stems from a need to both contain the scope of the study to manageable levels and to avoid the following types of problems: a) in general, methods for analyzing potential secondary benefits of bicycling, such as measuring and/or quantifying the health effects, are as yet unproven and present too many challenges, in data gathering as well as methodology, to be practically implemented within a study with limited resources, and b) the focus on out-of-state participants minimizes concerns about the “substitution effect,” or whether in-state participants would simply be doing some other recreational activity, with attendant benefits, if the event did not exist. Out-of-state visitors, in contrast, clearly import dollars into Arizona.

The ultimate purpose of the study is to provide information for, and recommendations regarding, policies that the Arizona Department of Transportation (ADOT) and potentially other organizations such as the Arizona Office of Tourism (AOT) could use to support and grow the bicycle industry.

Study results reflect Arizona’s unique position with respect to bicycle tourism, which has several dimensions:

- The diversity of Arizona’s natural environment, including spectacularly scenic attractions such as the Grand Canyon
- Good riding weather year-round, scenic roadways, visitor-support facilities and services, and the existing base of event activity in the state.

- The fact that bicycling is an activity that involves the need for physical conditioning, which bicyclists would seek to maintain throughout the year, and which they can do in Arizona.
- Events spawn communities of participants and therefore social as well as personal commitments. Helping to foster this community spirit are nine Arizona places that have received designation as Bicycle Friendly Communities.

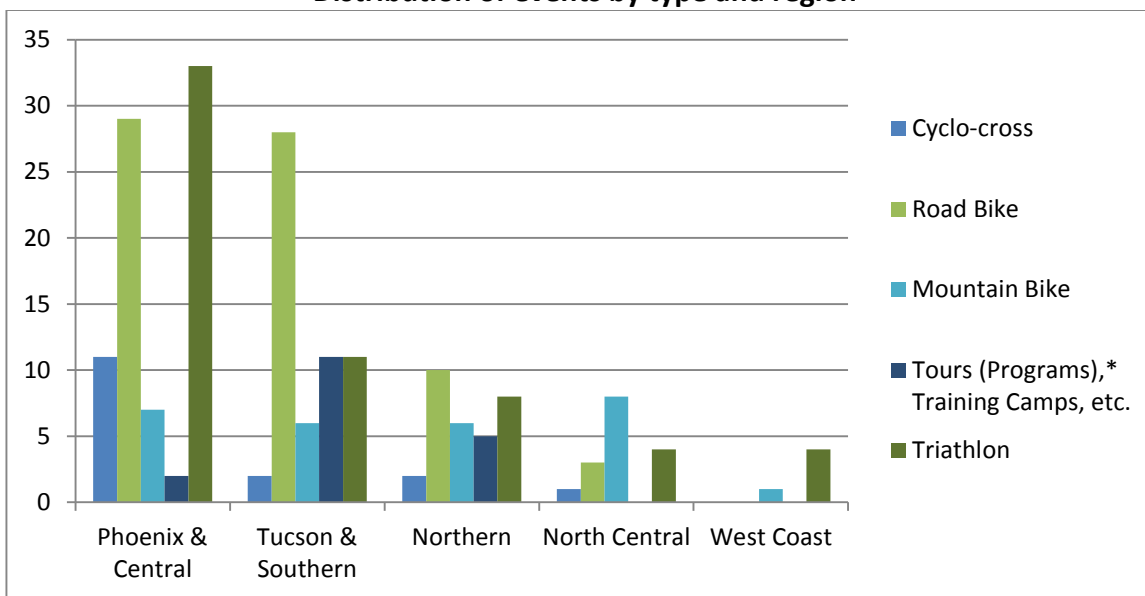
The study findings related to bicycle tourism include the following:

- At least 250 events annually attract about 14,000 participants from outside the state; these participants' travel parties include 36,500 total visitors (including the participants) to the state, annually.¹
- Compared to the typical cross-section of tourists coming to Arizona, these participants are more educated and have higher incomes.
- The estimated annual direct and indirect/induced economic contribution of these participants totals \$30.6 million and 404 jobs.

In addition to the out-of-state visitors, another 39,000 Arizonans ride in the events inventoried for this study annually, and this estimate therefore does not include numerous other local events and informal group rides. The sub-state regions outside the major metro regions of Phoenix and Tucson benefit from in-state as well as out-of-state visitors, although these in-state benefits are not analyzed in this report. Events are distributed throughout the state as shown below (p. 3). Areas outside the major urban counties tend to have a more-than-proportionate share of event activity, in comparison to other measures of activity in bicycle-related industries, such as retail sales.

¹ In this report, discussions of “participant spending” should be understood to include the entire participant travel party.

Distribution of events by type and region



*The chart reflects the fact that multiple programs are held within specific named tours.

The independent bicycling tourist, traveling in or through the state independent of any formal event or tour program, is a component of out-of-state bicycle tourism known to exist, but not analyzed in this report due to lack of data.

Bicycle-related manufacturing and wholesaling activity in Arizona is minimal. For this report, the estimated annual direct and indirect/induced economic contribution is included with figures for the retail component.

Bicycles and related goods are sold in several types of establishments in addition to bicycle shops: mass merchant stores such as Wal-Mart, general sporting goods stores, outdoor recreation stores, and internet-based retailers. The estimated 163 bicycle shops in Arizona account for about half of the sales dollars in these goods, feature higher-value products than the other store types, provide mechanical servicing of bicycles, and are therefore the most likely to interact with out-of-state visitors.

When asked about sales to out-of-state buyers, bicycle shops in Arizona reported figures that resulted in estimates for this report of 25% of total annual sales for bicycles and 35% for bicycle-related goods and service/rentals. The annual direct and indirect/induced economic contribution of these sales is estimated at \$57.6 million and 317 jobs. (The figures include effects of manufacturing/wholesaling export sales, as a small portion of the totals shown.) Because of the small size of the survey sample, these numbers should be thought of as initial findings subject to supplemental verification in future years.

Annual retail sales of bicycle-related goods in Arizona, to local and out-of-state customers, in all store types and including service and rentals, are estimated to be \$114 million (excluding internet sales).

Because the study focuses on purchases by out-of-state customers or event participants, the economic impacts can be summarized within the results of Input-Output analysis. The combined results of the analysis for all categories of benefits analyzed in the report are shown below (p. 5).

Total annual economic effects generated by out-of-state customers/participants

	Bicycle Tourism	Retail sales and manuf./wholesaling	Total
Jobs			
North Central	26	16	42
Northern	14	13	27
Phoenix & Central	134	221	355
Tucson & Southern	214	54	268
West Coast	16	13	29
Arizona Statewide Total	404	317	721
Output in \$2013			
North Central	\$1,428,000	\$1,401,000	\$2,829,000
Northern	\$889,000	\$1,117,000	\$2,006,000
Phoenix & Central	\$13,774,000	\$47,152,000	\$60,926,000
Tucson & Southern	\$13,550,000	\$6,726,000	\$20,276,000
West Coast	\$909,000	\$1,221,000	\$2,130,000
Arizona Statewide Total	\$30,552,000	\$57,618,000	\$88,170,000
Labor income in \$2013			
North Central	\$631,000	\$610,000	\$1,241,000
Northern	\$394,000	\$490,000	\$884,000
Phoenix & Central	\$5,822,000	\$13,730,000	\$19,552,000
Tucson & Southern	\$6,005,000	\$2,577,000	\$8,582,000
West Coast	\$389,000	\$543,000	\$932,000
Arizona Statewide Total	\$13,241,000	\$17,949,000	\$31,190,000

Conclusions and recommendations

The findings of the study that are perhaps the most illuminating to readers have to do with the extensive inventory of bicycling events and the number of out-of-state participants. The study estimated that a total of about 39,000 in-state and 14,000 out-of-state participants are involved annually in as many as 250 events held throughout the state.

Arizona has a small base of manufacturing related to bicycling. The manufacture of bicycles and related goods is likely to continue to be a highly dynamic, global activity, and other states have a much more developed manufacturing base than Arizona.

Arizona bicycle shops that responded to the survey for this study indicated high levels of sales to out-of-state customers. To the extent these unusual findings can be verified, for example in subsequent updates to this study, additional efforts could be justified to assess how this kind of activity could be supported/encouraged, as it constitutes “export” activity relative to the state.

A proactive approach to involving businesses and the entire bicycling community in an ongoing data-gathering process could greatly expedite preparing updates to this report. Any such actions however must take into account what appear to be high levels of “competition anxiety” among bicycle business owners.

State agencies could encourage the integration of bicycling activity with overall tourism at both the state and regional level. Two aspects of policy related to this concept are: 1) To maximize AOT’s engagement in bicycle-related tourism, and 2) For policymakers generally to recognize that, while this report focuses on statewide impacts from out-of-state bicyclists, bicycling events in areas outside the major cities can be economically significant, from both in-state and out-of-state participants, to that locality.

Executive Summary

1 Introduction – focus of study, challenges

This study is specifically focused on the contribution to the Arizona economy from out-of-state visitors engaged in organized bicycling activities in the state, and out-of-state customers, wholesale or retail, of bicycle products made or sold in Arizona. Deriving those estimates involves documenting:

- The manufacture of bicycles and bicycle parts, clothing, and accessories (e.g. helmets, shoes, water bottle cages, cyclometers, locks, gloves, etc.),
- Wholesaling and distribution of these goods,
- Retail sales of bicycles and also bicycle parts, accessories, and clothing, and bicycle servicing and renting,
- Inventorying the various types of bicycling events and of organized tours by bicycle.

The ultimate purpose of the study is to provide information to serve as one basis by which the Arizona Department of Transportation (ADOT) and potentially other state agencies could expand support for bicycling activity, and thereby the bicycle industry, in Arizona.

The focus on these topics was initially defined by ADOT, and while discussions about including additional topics (health benefits, in-state travel to participate in events, etc.) were held in the initial meetings for the study, the appropriateness of the defined focus was reinforced through observations such as the following:

- In general, methods for analyzing potential secondary benefits of bicycling, such as health effects, are yet unproven and present too many challenges, in data gathering as well as methodology, to be practically implemented within a study with limited resources.
- The focus on out-of-state participants minimizes concerns about the “substitution effect,” or whether in-state participants would simply be doing some other recreational activity, with attendant benefits, if the event did not exist. Out-of-state visitors, in contrast, clearly import dollars into Arizona.

In part, the specificity of this report reflects data limitations that lie at the heart of any study dealing with bicycling in the United States. Nationally, there is little concerted effort to document bicycle usage, and, generally speaking, the information that is available cannot be

considered reliable at even the statewide level.² Conditions within the bicycle-related industries also add to the challenge of documenting economic impacts. Virtually all aspects of the bicycle industry, from production to retailing to the staging of bicycle-related events (including those solely devoted to bicycling as well as duathlons/triathlons in which bicycling is only one component of activity), are highly competitive and dynamic. There is both growth in bicycling industries and sometimes contraction or consolidation.

1.1 Arizona's competitive position

Arizona benefits from its unique position with respect to bicycle tourism, which has several dimensions, including the following:

- The diversity of Arizona's natural environment, including spectacularly scenic attractions such as the Grand Canyon
- Good riding weather year-round, scenic roadways, visitor-support facilities and services, and the existing base of event activity in the state.
- The fact that bicycling is an activity that involves the need for physical conditioning, which bicyclists would seek to maintain throughout the year, and which they can do in Arizona.
- Events spawn communities of participants and therefore social as well as personal commitments. Helping to foster this community spirit are nine Arizona places that have received designation as Bicycle Friendly Communities.

2 Approach to the study

This study was sponsored and managed by ADOT, with the advice of the Technical Advisory Committee (TAC) representing the entities shown on the title page.

The study progressed through a series of Working Papers. Working Paper #1 consisted of a review of bicycle-impact-related literature, an annotated inventory of potentially relevant data sources, a preliminary listing of Arizona bicycling events and tour operators (continually refined throughout the study), and a list of "special contacts," or Key Informants, who were asked to provide their insight into various aspects of the bicycle industry in Arizona and the details of conducting this study. These individuals included government representatives (including members of this study's Technical Advisory Team), and other individuals throughout the state

² For example, the *National Household Travel Survey*, US DOT, Federal Highway Administration.

known to have leadership roles involving advocacy groups, bicycle clubs, and event organizing (including regionally-oriented groups).

Working Paper #2 identified data needs for this study, and a discussion of data availability from various secondary sources. The gaps identified within these secondary data sources provided an introduction to a discussion of primary data collection sources and survey techniques, with various methods recommended. Working Paper #3 described: 1) the methodologies for primary data collection and analysis, for compiling and analyzing secondary data (with a focus on the inventories of bicycle-related businesses and events), and for using the primary and secondary data in combination; 2) the findings and conclusions from the data received, compiled, analyzed, and quantified to the extent practical; and 3) designs and recommendations for updating the study in the future.

2.1 Steps to define/refine method

A number of steps were undertaken to define appropriate study methods and refine those methods. A series of interviews with the Key Informants was especially helpful in providing guidance with respect to business contacts and event organizers and approaches and protocols for contacting the different groups.

2.2 Secondary data, including inventories of events & organizers, retailers, and manufacturers/wholesalers

Secondary data used for the study were compiled from a variety of sources. Business data sources included: InfoUSA, other online bicycle business directories, individual business websites and other online resources. Event and tour data were obtained primarily from event websites and listings of events and event results. With the broad range of bicycling events around the state, it is likely that not all bicycling events that occur throughout the state were identified. For example, while bicycling clubs that host rides were included in the inventory, there are also informal clubs that host riding events throughout the state. However, the event inventory is considered to be representative of and include the majority of formal bicycling events in Arizona.

The bicycle shop and event inventories were used to both report on the “big picture” (statistically speaking, the universe) of bicycling activity around the state and to serve as contact databases for the survey (primary data) process. Separate contact databases – the universe of the targeted survey group – were prepared for the following groups:

- Event organizers/sponsors (through these organizations, contact would be made indirectly to participants, consequently the database of events was the initial channel for reaching participants in an on-line survey)
- Tour operators
- Event participants
- Bicycle shops, including dealers as well as repair and rental businesses
- Mass merchandise, sporting goods and other stores that sell bicycles and related goods as one of many product lines
- Manufacturers/wholesalers of bicycles and related products
- Key informants for special contacts (e.g. for training groups)

In general, the processes by which inventories were compiled for businesses and events included identification of data sources, database creation, and multiple steps to verify the identified bicycle-related retail and manufacturing establishments and the event listings. National-level data on bicycle-related businesses were obtained primarily from business-organization websites, such as the National Bicycle Dealers Association site.

2.3 Confirm/define need for primary research

A review of the secondary or published data pertaining to this study revealed that these sources were not sufficient to conduct a focused economic analysis of bicycle-related activity in Arizona. In order to address these deficiencies, strategies were devised for primary data collection. The primary data collection efforts were focused on obtaining information about the following sources of economic benefits:

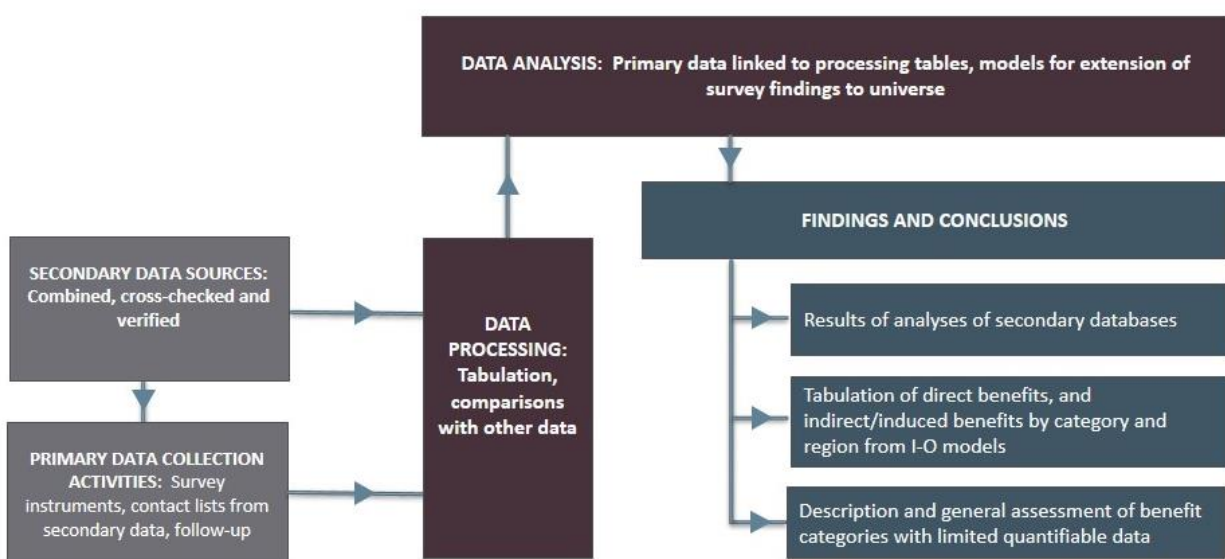
- Revenues, especially from out-of-state purchasers, generated by bicycle shops, other retailers selling bicycles and bicycle-related goods, including sporting goods and mass merchants (i.e. big-box stores), and manufacturers and wholesalers
- In-state spending generated by bicycle events and tours through their out-of-state participants

To obtain this information, specific primary research products—such as survey formats and questionnaires—tied to each targeted survey group database identified above were drafted, and a testing process was conducted, which involved certain Key Informants identified and consulted in prior phases of this study along with other establishments and organizations selected to take part in this process. Feedback from the testing process, although very limited, was used to refine the survey questions.

2.4 Analytical processes overview

Figure 1 (below) summarizes a generalized description of how primary and secondary data were combined into analysis processes. These processes included: 1) guidelines for data analysis (e.g. missing data estimation, translation of survey results to the entire database), 2) analytical systems for quantifying the economic impacts, and 3) the recommended input-output model to estimate “multiplier effects” of the estimated direct economic activity.

Figure 1. Overall structure of data collection and analysis processes



2.5 Survey process overview

To obtain the primary data, surveys were distributed and collected between October 2012 and February 2013. Surveys were distributed via e-mail and physical mail and collected from online platforms, e-mailed editable pdf files and returned surveys through the post. Follow-up activities related the survey process included:

- Follow-up on low-response groups, by e-mail and phone in some cases
- Follow-up on event/tour responses, for contacting their participants
- Follow-up with selected bicycle dealer survey respondents to attempt to retrieve additional data related to out-of-state sales (based on “permissions” given in the questionnaire response)
- Follow-up with event participant respondents to verify certain data elements reported

2.5.1 Survey results

Despite the efforts of ADOT, advisors to the study, and the consulting team, obtaining primary data from all categories of entities proved to be quite difficult. As noted above, the competitive nature of the bicycle industry appears to be a contributing factor in the low response rate to the surveys. The study team learned, from both direct comments and inferentially, to expect at least some bicycling entities to be protective of their business information.

A total of 41 dealer responses were received, from the 163 on the contact list, half of which were located in the Phoenix & Central region. Three manufacturing/wholesaler responses were received (out of 11 on the contact list) along with five responses from event organizations and one from a touring company, from contact lists numbering about 160 and 19, respectively. A total of 132 out-of-state bicycle-event participants responded to the on-line survey designed for that group. Participants would have received notices of the on-line survey from their event organizers and (unintentionally) from an on-line posting about the survey by a bicycle organization. Approximately half of those respondents submitted usable expenditure information, and most of the other travel characteristics interpreted for the study are based on usable responses from 50 to 65 percent of respondents.

Given these results, the findings reported in this document are, as described throughout the text, often based on small survey samples. The findings were reviewed in comparison to other data available, at both the local and national level. Based on these reviews, figures used in the report represent either conservative or consistent results, in comparison to other information. However, many of the findings should still be considered tentative and, at best, estimates rather than statistically valid conclusions applicable to the entire population of interest (for example all Arizona bicycle retailers) with confidence.

2.5.2 I-O model

The principal tool used in ascertaining the full range of economic benefits associated with bicycling activity is an input-output model. At its roots, an input-output model is an accounting method to describe a specific regional economy. One can think of an input-output model as a matrix of the regional economy where the columns represent the buyers (demand) and the rows are the sellers (supply).

The derived economic multipliers from the input-output analysis are composed of three segments. The first part is the direct effect that caused the initial change in the economy. This initial direct action will have a rippling effect throughout the economy. This rippling effect is captured by the second component of the economic multiplier (indirect effect) and the third component, referred to as the induced effect. Indirect effects are generally business-to-

business transactions. Induced effects refer to wages and salaries paid to employees and the spending of their incomes in the regional economy. The model uses several measures to gauge the economic effects, including industry output (sales), income, and employment.

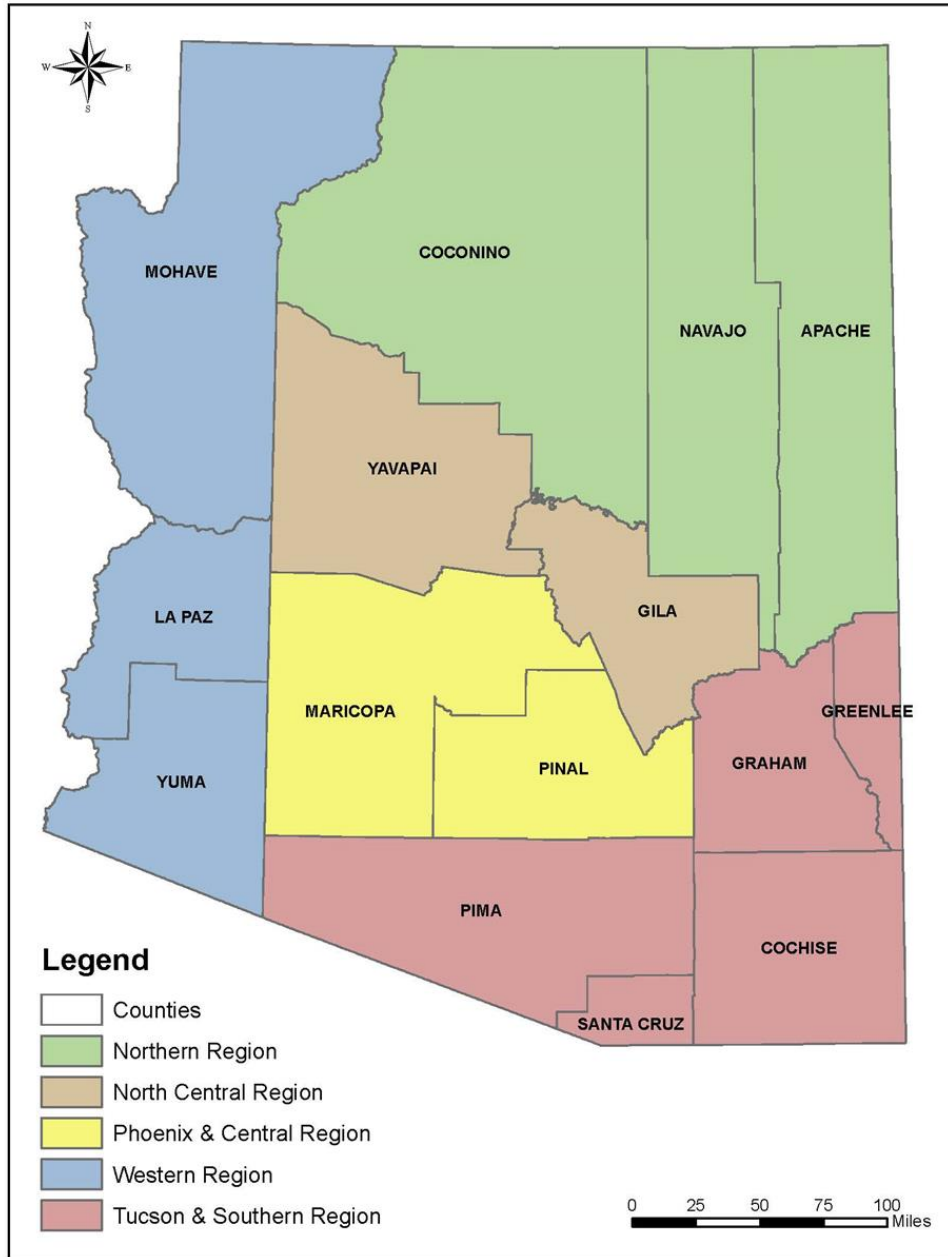
There are a number of input-output modeling systems available for use in this study. In this report, the authors used the Redyn (the name is derived from "Regional Dynamics") modeling system to ascertain the scope and scale of economic effects of bicycling activities in Arizona. The Redyn model is able to provide industry-specific detail on economic effects, using industries with some association with bicycle production, sales, and events.

3 Findings

3.1 General issues of data limitations, need for geographic consolidation

The regions utilized in this study were based on the five (5) regions used by the Arizona Office of Tourism (AOT). The regions and counties that comprise them are shown on Figure 2 (below). The limitations of the study data necessitated that the results be reported at the regional rather than county level.

Figure 2. AOT regions as used for this study



3.2 Bicycle tourism

3.2.1 Overview

Bicycle tourism, especially if defined as travel associated with organized, generally competitive events, is a subset of the growing “sports tourism” phenomenon. Bicycle tourists for the purposes of this report are defined as event participants and their families who have come to

an Arizona event from another state. An “independently recreating bicyclist” (not participating in an event) is not part of bicycle tourism as used here.

Bicycle event categories addressed in this report include the following:

- Road Bicycling Events
- Mountain Bike Events
- Bicycle Tours
- Triathlon and Duathlon Events
- Cyclo-cross Events
- Training Camps
- BMX (limited data for this unique category)

While road events and tours could have a wide geographic extent, some bicycling events operate within specific areas, in relation to special facilities. These include mountain biking events, which might occur on a bounded trail system, and cyclo-cross events, which are held on a short course. For these cases, event benefits are more likely to be concentrated in a specific community.

BMX (bicycle motocross) racing also occurs in Arizona. This category of bicycling is, in the context of this study, a “fringe” activity with little direct connection to bicycle infrastructure for which ADOT and local government would be responsible. BMX event riders use specialized tracks (sometimes indoors) and typically do not rely on on-street infrastructure. However, BMX events do involve bicycles, even if these are very specialized, and BMX events attract participants from outside Arizona. For these reasons, BMX events are included, but only selectively, in the event tallies discussed below, as noted.

3.2.2 Methodology highlights and challenges

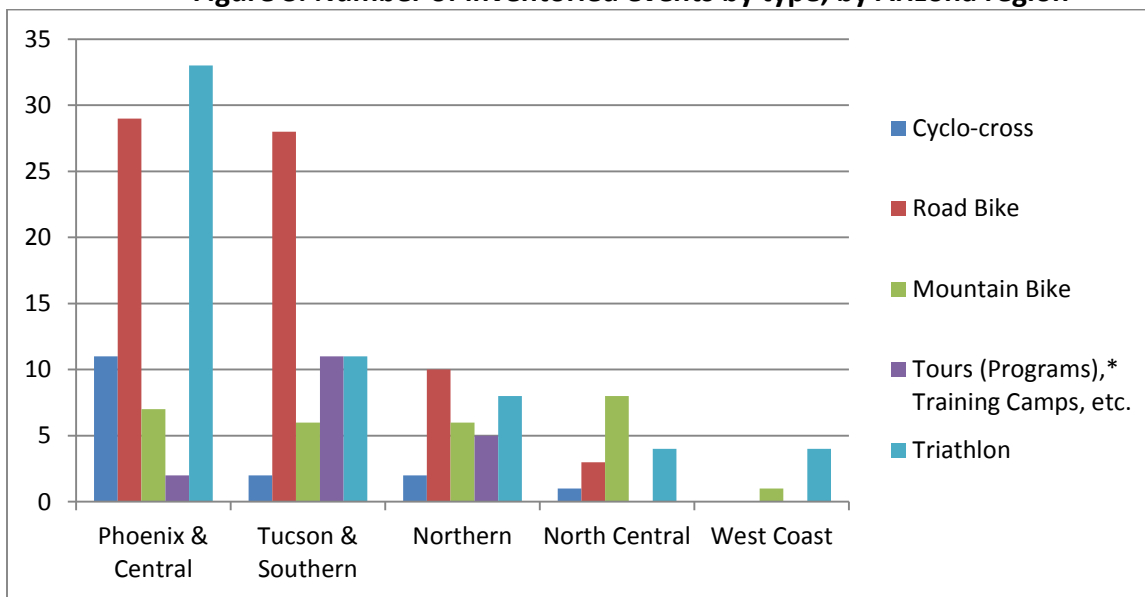
Preparing estimates of economic benefits from out-of-state event participants was accomplished by applying travel expenditure data obtained through the participant survey, by categories such as lodging, food, retail purchases, and the like, to the Redyn modeling system, within the model’s industry matrix structure. Retail sales figures were adjusted to reflect the fact that only the retail margins are applicable to local impacts. Using the retail margins more accurately and conservatively expresses the multiplier effects of these purchases than the full retail sales figures.

Participant-expenditure data were applied to approximately 250 events, tours (counted as the number of events in each tour program), and training camps.

3.2.3 Events summary – number, location, location disproportionalities, seasonality, etc.

As shown in Figure 3 (below), most events are held in the Phoenix & Central region, although the Tucson & Southern region has a large share, compared to its size, of event activity, especially in the Road Bike category. The Phoenix & Central and Western regions have more triathlon events than any other single type. The North Central region is the only region that has as many mountain bike events as other types of bicycling events combined. Note that data for tours reflect the number of programs, and individual programs typically have more than one event per year.

Figure 3. Number of inventoried events by type, by Arizona region



*The chart reflects the fact that multiple programs are held within specific named tours.

Figure 4 (below) shows events by season, and illustrates that most events are held in the spring, followed by the fall.

Figure 4. Percent of inventoried events by type, by season

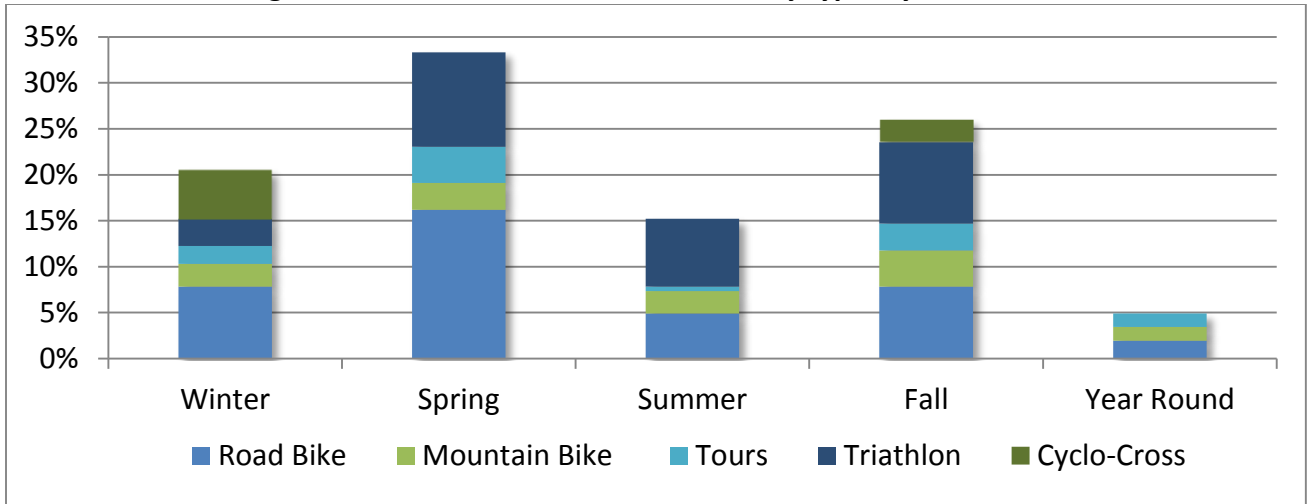
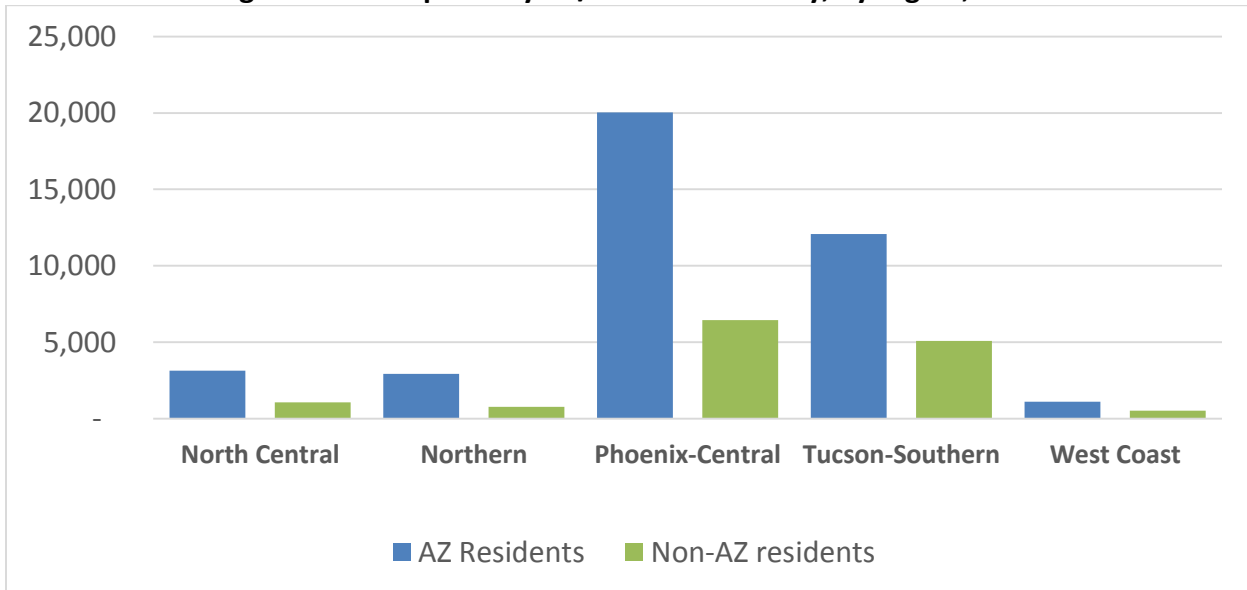


Figure 5 (below) shows the number of Arizona and non-Arizona participants in all event types out of a total of approximately 53,000, by region, for 2012.

Figure 5. Participants by AZ/non-AZ residency, by region, 2012



3.2.4 I-O results

The Redyn model was set up with inputs of expenditures by participants and their parties specific (where applicable) to the various categories of events: bicycle rides/races, tours (commercial and otherwise), cyclo-cross, mountain biking, triathlons/duathlons, training camps, and BMX (for a single event). The combined results are shown on Table 1.

Table 1. Total economic effects generated by out-of-state event participants

	Total Effects	Direct Effects
Jobs		
North Central	26	20
Northern	14	11
Phoenix & Central	134	78
Tucson & Southern	214	134
West Coast	16	11
Arizona Statewide Total	404	254
Output in \$2013		
North Central	\$1,428,000	\$1,048,000
Northern	\$889,000	\$669,000
Phoenix & Central	\$13,774,000	\$5,919,000
Tucson & Southern	\$13,550,000	\$8,195,000
West Coast	\$909,000	\$565,000
Arizona Statewide Total	\$30,552,000	\$16,397,000
Labor income in \$2013		
North Central	\$631,000	\$451,000
Northern	\$394,000	\$288,000
Phoenix & Central	\$5,822,000	\$2,564,000
Tucson & Southern	\$6,005,000	\$3,609,000
West Coast	\$389,000	\$244,000
Arizona Statewide Total	\$13,241,000	\$7,156,000

3.3 Manufacturing/Wholesaling

3.3.1 Methodology challenges

Bicycle-related manufacturing and wholesaling in Arizona is limited to a few small firms, about three-fourths of which are located in the Phoenix metro area. Of the eleven firms that were identified in the process of compiling the manufacturer/wholesaler database, three responded

to the survey designed for this group. A limited amount of data was obtained through Internet searches of the remaining firms. Given the small number of firms and survey responses, only very generalized information about Arizona manufacturing/wholesaling firms could be shared in this report. This issue was also addressed by including the estimate of export sales by manufacturers and wholesalers, by region, with the revenues from bicycle shops' sales to out-of-state customers in the I-O model results.

3.3.2 General and export

From the limited data available, consisting of a combination of web-based sources and survey responses, estimated total Arizona full-time-equivalent (FTE) employment for manufacturers and wholesalers is 75-90. Several firms have only 1 to 3 employees. The manufacturing firms produce a range of goods, both individually and as a group, including different types of bicycles and custom bicycles, nutrition products, bicycling accessories, and bicycle racks. Several firms are involved in both manufacturing and wholesaling (including Internet sales). One firm is both a custom bike builder and a dealer of bicycles manufactured by others. Only three firms are, to the best of our knowledge, exclusively engaged in wholesaling (in Arizona operations). Two of the three survey respondents stated that their exports (from Arizona) constituted 90% of their business; the third stated 20%. Given the nature of the other firms, it is probably safe to assume, as a rough estimate, that out-of-state sales constitute well over 50% overall.

3.4 Retail

3.4.1 Total environment, sales volume and employment estimates

Retail sales of bicycles and related products take place in several distinct establishment types: bicycle shops (dealers), mass merchants such as Wal-Mart and other discount or big-box stores, chain sporting goods stores, and mail order or Internet sites. In any given year, bicycle shops account for roughly half of revenues from sales of all bicycle-related goods. Mass merchants account for roughly one-quarter of sales, with the rest going to chain sporting goods stores and the Internet. Among these categories of stores, *volume* (units sold) percentages vary significantly from *sales dollar* percentages. Mass merchants for example have a much higher percentage of total *unit* sales because, in general, the bicycles sold in bicycle shops tend to be more expensive, specialized machines.

Nationally, bicycle retailing has experienced a number of trends that have major influences on how these businesses are faring. Although a full discussion of this is beyond the scope of this study, it is instructive to note that the number of bicycle dealers nationwide has been decreasing over the last decade (the decreases seem to be disproportionately high in smaller

cities), and Internet sales have continued to increase as a percent of total sales, some of the increase in the form of direct sales from foreign suppliers, primarily in Europe and Asia.

Bicycle dealers (shops) in Arizona are distributed throughout the state as shown in the table below.

Arizona region	Number of bicycle dealers in region	% of total
North Central	8	4.9%
Northern	10	6.1%
Phoenix & Central	95	58.3%
Tucson & Southern	42	25.8%
West Coast	8	4.9%
AZ Total	163	100.0%

Annual bicycle and related product sales from *all* store types in Arizona (excluding service and rental revenues and Internet sales) total an estimated \$114 million, and involve an estimated 690 employees, based on data compiled in this report. Bicycle shops could be employing an estimated additional 420 mechanics.

3.4.2 Methodology highlights and challenges

While attempts were made to contact mass merchant and sporting goods stores to obtain information about their Arizona bicycle sales, these efforts were not successful. Consequently, the data obtained from bicycle shops was used to “back out” results for the other retailer categories. Because the sample sizes within regions were small (especially for the regions outside the Phoenix area), the region-level findings have limited reliability. With that caveat, the data show that average revenues were lowest in the North Central region and lower in the Tucson & Southern region than in Phoenix & Central.

3.4.3 Focus on bicycle shops

Among the retail categories discussed above, bicycle shops are of primary interest, for the following reasons: a) because by their specialization they represent a high level of commitment to bicycling, b) a sufficient number of bicycle shop representatives provided data for this study to allow some estimates of overall activity to be developed (although these should be viewed with caution as noted), and c) a working assumption of this study is that most sales to out-of-state visitors would be made within bicycle shops, rather than mass merchants, sporting goods stores, and other retailers.

According to the survey data, Arizona bicycle shops secure on average of about 45 percent of their revenues from the sale of bicycles. Approximately one-fourth of revenue comes from bicycle parts and accessories sales. The final component of revenues is divided among clothing and shoe sales and bicycle repair and rentals. These breakdowns are similar to national averages for bicycle shops.

3.4.4 Out-of-state sales and I-O results

Purchases of bicycle-related goods and services in Arizona by visitors from other states constitute a specific tourism-related benefit associated with bicycling activity in the state. Estimating such purchases within this study involved two survey-based approaches:

- Asking bicycle shop owners or managers, in the survey directed to them, to estimate sales to out-of-state visitors;
- Asking out-of-state visitors attending Arizona bicycling events, within the survey directed to that group, about their expenditures, including bicycle-related purchases, while they were in Arizona.

Results of the survey of bicycle shops indicated that a relatively high proportion of sales are made to out-of-state visitors. However, the sample size for this information was small, and additional review of the findings resulted in “reported estimates” used in this report of 25% for bicycles and 35% for parts, clothing and other accessories, and service/rental (although service/rental activity might not be fully captured in either the survey of shop owners or the participant surveys, and this topic should receive additional attention in any future updates). These figures reflect the fact that the small overall sample size calls for a conservative approach to these estimates. Nevertheless, these numbers reflect a very active trade to tourists, and should be viewed as data points that definitely call for verification in subsequent updates of this study.

Survey respondents were also asked, “Which season(s), if any, do you estimate that sales to out-of-state visitors are higher than the annual average?” According to the responses to this question, spring and winter are essentially tied for the top seasons for sales to out-of-state visitors. Two-thirds of survey respondents (answering this particular question) stated that they observed an increase in sales to out-of-state visitors when major bicycling events were occurring in the city (county) where their establishment was located.

The results of the I-O impact modeling process shown on Table 2 for retail sales to out-of-state customers include the estimated export sales from the manufacturing/wholesaling sectors, due to the need to avoid disclosing data at the regional level for this latter group.

Table 2. Total economic effects generated by out-of-state retail/manufacturing/wholesale customers

	Total Effects	Direct Effects
Jobs		
North Central	16	9
Northern	13	9
Phoenix & Central	221	97
Tucson & Southern	54	29
West Coast	13	9
Arizona Statewide Total	317	154
Output in \$2013		
North Central	\$1,401,000	\$863,000
Northern	\$1,117,000	\$793,000
Phoenix & Central	\$47,152,000	\$22,847,000
Tucson & Southern	\$6,726,000	\$3,826,000
West Coast	\$1,221,000	\$843,000
Arizona Statewide Total	\$57,618,000	\$29,172,000
Labor income in \$2013		
North Central	\$610,000	\$359,000
Northern	\$490,000	\$340,000
Phoenix & Central	\$13,730,000	\$6,318,000
Tucson & Southern	\$2,577,000	\$1,299,000
West Coast	\$543,000	\$376,000
Arizona Statewide Total	\$17,949,000	\$8,692,000

4 Conclusions and recommendations

Table 3 shows the combined total for all benefit categories for which the I-O model was used to generate multiplier effects from expenditures by out-of-state visitors/consumers:

- Event participant spending
- Retail sales to out-of-state customers combined with manufacturing/wholesaling exports

Table 3. Total annual economic effects generated by out-of-state customers/participants

	Bicycle Tourism	Retail sales and manuf./wholesaling	Total
Jobs			
North Central	26	16	42
Northern	14	13	27
Phoenix & Central	134	221	355
Tucson & Southern	214	54	268
West Coast	16	13	29
Arizona Statewide Total	404	317	721
Output in \$2013			
North Central	\$1,428,000	\$1,401,000	\$2,829,000
Northern	\$889,000	\$1,117,000	\$2,006,000
Phoenix & Central	\$13,774,000	\$47,152,000	\$60,926,000
Tucson & Southern	\$13,550,000	\$6,726,000	\$20,276,000
West Coast	\$909,000	\$1,221,000	\$2,130,000
Arizona Statewide Total	\$30,552,000	\$57,618,000	\$88,170,000
Labor income in \$2013			
North Central	\$631,000	\$610,000	\$1,241,000
Northern	\$394,000	\$490,000	\$884,000
Phoenix & Central	\$5,822,000	\$13,730,000	\$19,552,000
Tucson & Southern	\$6,005,000	\$2,577,000	\$8,582,000
West Coast	\$389,000	\$543,000	\$932,000
Arizona Statewide Total	\$13,241,000	\$17,949,000	\$31,190,000

In comparison to results of studies of the economic impact of bicycling in other states, which can show benefits in the hundreds of millions of dollars, reviewers of this report might ask why these economic effects of bicycling activities in Arizona are rather modest. First, an economic

impact assessment typically focuses on export activity—product/service sales to customers located outside of the region. Such export activity introduces new spending into the regional economy. This new injection of money into the economy causes a ripple (or “multiplier”) effect throughout the rest of the economy. Through the use of an input-output model, we can track and measure this economic impact. Second, the dominant market niche of Arizona in bicycling activities is hosting various events—bicycle road races, “ironman” triathlons, extreme (e.g., 24 hours) mountain bike events, elite training camps, and unique operated bicycle tours. All of these events draw thousands of participants to the roads, trails, and scenic vistas of Arizona, but only for a brief period of time—for instance, a competitive event with an additional two to three vacation days in Arizona with the participants’ families.

Conclusions within this study address two different types of issues: 1) interpretation of the findings, and 2) observations regarding the experience of working with the bicycle industry in Arizona to accomplish the objectives of this study. The findings of the study that are perhaps the most illuminating to readers with minimal or no involvement in bicycling have to do with the extensive inventory of bicycling events, both in general and those that have some level of out-of-state participation. As noted above, the study estimated that approximately 14,000 out-of-state participants are involved annually in about 250 events held throughout the state. With its mild winter in the desert areas and numerous scenic attractions, Arizona is well positioned to increase this kind of activity, regardless of national trends in bicycle usage, and could market itself as a destination for bicycle tourism. A velodrome could be an important complementary asset for bicycle tourism in Arizona.

From an economic development standpoint, it is a logical to conclude that the popularity of the state with bicyclists should provide one platform by which to leverage the capture of other aspects of the bicycling industry, primarily manufacturing. It is also likely that other states that have a much larger established base of bicycle manufacturing, such as California, have an advantage over Arizona. This would particularly apply for those types of bicycles that are mass-produced in large volumes (however this is the type of production most likely to be occurring offshore). In any case, manufacturing of bicycles is likely to continue to be a highly dynamic, global activity, and may perhaps become even more fragmented in terms of specialized vehicles, the materials used, and the specific purposes for which bicycles can be designed and built.

Arizona bicycle shops that responded to the survey for this study indicated high levels of sales to out-of-state customers, although any conclusions in this regard are hampered by the small sample size of respondents. To the extent these findings can be verified, for example in subsequent updates in this study, additional efforts could be justified to assess how this kind of activity could be supported/encouraged, as it constitutes “export” activity relative to the state.

As noted elsewhere in this report, research efforts were hindered by widespread unwillingness on the part of representatives within all categories of the state’s bicycling industry, including both shop owners and event sponsors, to share information. A proactive approach to involving businesses and the entire bicycling community in an ongoing data-gathering process could greatly expedite preparing subsequent updates to this report. Any such actions however must take into account what appear to be high levels of “competition anxiety” among all categories of bicycle business owners.

4.1 Policy implications of findings

Integration of bicycling activity with overall tourism at both the state and region level. Two aspects of policy related to this concept are: 1) To maximize the Arizona Office of Tourism’s (AOT’s) engagement in bicycle-related tourism, including defining, quantifying, and promoting Arizona's position, nationally, as a center for bicycling. There is also a broad economic development component of this, as in all forms of tourism, which involves the exposure of the state to people who subsequently relocate here; and 2) For policymakers generally to recognize that, while this report focuses on statewide impacts as discussed above, bicycling events in areas outside the major cities can be important to that locality, as components of the redistribution of tourism dollars within the state, irrespective of the fact that some participants are Arizonans and the statewide effects are neutral. These local effects, where potentially significant, could be documented separately and taken into consideration in the course of ADOT’s integration of agency plans with local planning.

Public land management coordination. Federal and state land-management agencies can play pivotal roles in encouraging or discouraging off-road bicycle use, and there are “mixed reviews” by informants to this report regarding the federal role in such matters in Arizona. These kinds of issues are complex and part of a whole set of “multiple use” issues faced by federal land management agencies, in which evolving planning processes are an increasingly important component of resolving these issues.

4.2 Summary of related issues addressed in the study:

4.2.1 Non-quantified benefits

In undertaking an economic impact assessment, it is inevitable that a number of considerations are introduced in the course of data gathering that are nevertheless for the most part left out of the overall analysis. Examples for this report include:

- American Association of State Highway and Transportation Officials (AASHTO), US Bike Route System. The implications for additional bicycle tourism for Arizona are unknown but could be important.
- Arizona as destination for cycle training and bicycle marketing. Arizona offers year-round cycling for elite professional/amateur road biking teams/clubs and bicycle companies test and market their products in various natural and/or urban settings in the state. We know that some of this activity occurs in Arizona, but facts are elusive.
- Arizona as retirees' winter destination. To the extent bicycling's popularity increases across the age spectrum, retirees and seasonal vacationers will incorporate bicycling as one of their recreational pastimes. The evidence of this is largely anecdotal at this time, including observations of event results reviewed for this study.
- Rural area impacts compared to statewide impacts. Events in rural areas can be important to that locality irrespective of the fact that some participants are Arizonans and the statewide effects are neutral.

4.3 Plan for updating the study

Given the challenges of conducting this inaugural report, approaches to updating the study are particularly relevant for increasing the understanding of dimensions of growth and other changes in Arizona's bicycle-related industry, including opportunities in bicycle-related tourism. Periodic updating also helps assess the effectiveness of public policies and private sector efforts pertaining to bicycling in Arizona.

The updating process would be greatly expedited by systematizing ways to obtain data from credible, updated, and, ideally, coordinated sources. One way to accomplish this is to establish a coordinating body involving the various Arizona bicycle organizations to serve as an umbrella organization expressly for purposes of keeping this kind of information current. A range of alternative approaches can be applied to updating the report, and costs associated with any updating concept will be heavily influenced by the existence, and effectiveness, of any bicycle-related business and bicycle event data database-compilation systems that are implemented. Under any alternative method, the preparation of an updated report would be considerably simplified, based on the existing databases, survey instruments, and computational models developed for this study. Depending on the rate of the state's growth, and indications of the growth of bicycling at a national level (or in Arizona), the frequency of a comprehensive update could vary between 5 and 10 years.