

**The Economic Impact of Spending  
for Operations and Construction by  
AZA-Accredited Zoos and Aquariums**

Prepared for

The Association of Zoos and Aquariums  
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By

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# **Economic Impact of Zoo and Aquarium Operations And Construction Spending**

## **Executive Summary**

The objective of this research is to calculate the economic impacts of the annual spending of all Association of Zoos and Aquariums (AZA) accredited zoos and aquariums at the state and national level. The annual operating and capital outlays of zoos and aquariums generate important economic benefits within their respective local and state economies and, in aggregate, generate important economic benefits nationally. These economic impacts include: contributions to the local, state and national economies that enlarge their respective values of goods and services they produce (i.e., gross domestic product), new personal earnings (salaries and wages) that accrue to workers residing in the host jurisdictions, and jobs that are supported across the breadth of the local, state and national economies as the initial direct spending by the zoos and aquariums is re-spent and re-cycled in the form of indirect and induced business activities and payroll disbursements.

In 2010, AZA-accredited zoos and aquariums spent \$3.482 billion. This spending was divided between operating outlays (these recur annually) totaling \$3.013 billion and capital outlays (these vary annually according to construction scheduling) that totaled \$469 million. Excluded from this direct spending are the outlays of concessionaires that independently provide on-site retail and food services. Their operating outlays would add to the total economic impacts of their respective zoos and aquariums.

In addition to this spending by the zoos and aquariums for their annual operations and capital improvements (and the spending by concessionaires that are not included in this analysis), the visitors to zoos and aquariums represent a potential source of economic activity that may accrue to businesses elsewhere in the host jurisdiction. While not all visitors to zoos and aquariums combine their visit with other commercial activities either before or after their visit, research has shown that some do and that this spending can be significant. Out of town and overnight visitors—tourists—account for the majority of this spending. Total visitation to AZA-accredited zoos and aquariums in the U.S. totaled 165.5 million in 2010 and the off-site before-and-after-visit spending impacts of this visitation has been estimated to total \$2.2 billion.

The economic impacts of this direct spending in 2010 are shown in the table below.

- The direct outlays by U.S. AZA-accredited zoos and aquariums of \$3.482 billion contributed a total of \$10.2 billion to U.S. GDP reflecting an aggregate output multiplier of 2.94;
- This direct spending generated \$3.2 billion in new personal earnings to the benefit of workers residing in the U.S. and supported 85,820 jobs across all sectors of the U. S. economy;

- Before-and-after visitor spending, estimated to total \$2.2 billion, added an additional \$5.788 billion to GDP (reflecting a multiplier of 2.593), generated \$1.5 billion in new personal earnings and supported 56,616 jobs nationwide.
- Total contribution of AZA-accredited zoos and aquariums to the U.S. economy in 2010 was \$16 billion, generating personal earnings totaling \$4.7 billion and supporting 142,436 jobs.
- AZA's eleven international member organizations reported direct annual operating and capital outlays totaling \$492.8 million. This spending added an estimated \$1.15 billion in aggregate benefits to these organization's host economies, generated \$353 million in new personal earnings to workers residing locally (in addition to direct payroll outlays) and supported 10,840 jobs across the breadth of their respective national economies.

Summary of Economic Impacts Generated By  
AZA-Accredited Zoos and Aquariums, 2010

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Total US	\$5.714	\$16.019	\$4.722	142,436
AZA Members	3.469	10.231	3.222	85,820
Visitors	2.232	5.788	1.500	56,616
International	\$0.493	\$1.147	\$0.353	10,840
Canadian	0.149	0.341	0.106	3,444
Other	0.343	0.806	0.247	7,396
Total Impacts	\$6.207	\$17.166	\$5.075	153,276

Source: Association of Zoos and Aquariums; GMU Center for Regional Analysis. Notes: (1) the total value of goods and services generated directly and indirectly as a result of annual outlays by zoos and aquariums and their visitors in the US in 2010; (2) the additional earnings generated within the U.S.; (3) the additional new jobs supported nationwide by the spending and re-spending of direct outlays.

In summary, these analyses have confirmed that the economic impacts of annual spending by AZA's accredited zoos and aquariums and the incidental before-and after-visit off-site spending by their visitors have benefits that far exceed their initial annual operating and capital outlays and constitute an important source of new income and jobs that extend broadly across the effected economies as this direct spending is re-cycled and re-spent by businesses and residents in the host jurisdictions.

## Introduction

The objective of this research is to calculate the economic impacts of the annual spending of all Association of Zoos and Aquariums (AZA) accredited zoos and aquariums at the state and national level. The annual operating and capital outlays of zoos and aquariums generate important economic benefits within their respective local and state economies and, in aggregate, generate important economic benefits nationally. Excluded from this direct spending are the outlays of concessionaires that independently provide on-site retail and food services. These operating outlays would add to the total economic impacts of their respective zoos and aquariums. Before-and-after visit spending for goods and services by visitors to zoos and aquariums are an additional source of potential economic impact on the host jurisdictions and their respective state economies.

The total economic impact of the direct spending by AZA-accredited zoos and aquariums is the sum of these initial outlays plus their subsequent effects on their host economies as these dollars are re-spent multiple times for the purchases of goods and services provided locally. The aggregate value of this direct and indirect spending by U.S. zoos and aquariums can be calculated by applying appropriate economic multipliers calculated by the U.S. Bureau of Economic Analysis for each state and the nation as a whole. Additionally, the resultant generation of new personal earnings (that is, earnings accruing to workers residing within the jurisdiction of analysis) and the number of jobs supported elsewhere within the economy (not necessarily only local jobs) can be calculated by applying the respective state and national multipliers. For international member organizations representative multipliers have been constructed to estimate their economic impacts on their respective jurisdictions.

The result of these analyses will be the economic impacts that are generated by one year's spending by AZA's accredited zoos and aquariums. This spending and its cumulative impacts will represent the economic impacts generated in 2010. As the operating outlays associated with the zoos and aquariums recur annually, these impacts will continue each year and will likely grow in response to increases in operation outlays as prices rise and services are expanded.

The economic impacts resulting from capital outlays in 2010 will vary in subsequent years in response to changes in the value of capital programs. The results reported herein for the capital component of spending outlays, inclusive of major repairs or expansion of infrastructure, by zoos and aquariums are illustrative of the magnitude and related significance of construction outlays. These capital outlays represent a different mix of economic activities than is associated with spending for operations.

This report is divided into four major sections in addition to the executive summary. The first section focuses on measuring the economic impacts that result from the direct spending for their annual operations by AZA's accredited zoos and aquariums. The second section presents the economic impacts associated with 2010 capital spending by the AZA's accredited zoos and aquariums. The fourth section—Appendices—presents

the state-by-state lists of 2010 spending for operations and capital improvements and the associated multipliers used for calculating their economic impacts. Also included in the Appendices are a description of the methodology and definitions relevant to this study. The expenditure data used in this analysis have been provided by the Association of Zoos and Aquariums from its 2010 annual member survey. The operating and capital spending data were reported by each member organization and aggregated to the state level and nationally for use in this analysis. Before-and-after visit spending as been estimated from individual member studies with spending values calculated on a per visitor basis and applied to the full visitor count report by the AZA members in their annual survey.

### Profile of Zoos and Aquariums

A survey conducted by the Association of Zoos and Aquariums (AZA) of its membership establishes the broad dimensions of their economic importance as a source of business activity. This survey found that AZA-accredited zoos and aquariums had 178.6 million visitors in 2010. These organizations reported operating outlays totaling \$3.013 billion, capital outlays of \$456 million and a total work force of 46,692. Further details of AZA’s economic profile are presented in the Table 1.

Table 1

#### Direct Economic Impacts of AZA-Accredited Zoos and Aquariums, 2010 (dollars in billions)

AZA Members	Operations	Capital Outlays	Employees	Attendance
United States	\$3.013	\$0.469	42,297	165,458,402
Outside U.S.	0.277	0.216	4,918	13,173,070
Total	\$3.190	\$0.685	47,215	178,631,472

Source: Association of Zoos and Aquariums, 2011

### Economic Impacts of Direct Spending By Zoos and Aquariums

Two primary categories of outlays are reflected in this analysis: annual operating outlays made by the member organizations during 2010 and capital outlays involving the construction of infrastructure and facilities contracted in 2010. The former recur annually and will increase annually to reflect changes in costs and the services provided while the later are one-time outlays and recur on an as needed basis. When combined for 2010, these total economic impacts establish the full magnitude of economic benefits that flow from AZA-accredited zoos and aquariums to the benefit of their respect state and national economies.

## Economic Impacts of Spending By Zoos and Aquariums in the U.S.

The findings of this economic impact analysis are presented in Table 2 for the AZA-accredited zoos and aquariums located in the United States.

Total direct spending by AZA-accredited zoos and aquariums in the United States, for both operations and capital improvements in 2010, totaled \$3.482 billion. These direct outlays contributed a total of \$10.231 billion to the national economy (Gross Domestic Product) reflecting a combined multiplier (operating outlays and capital—construction—outlays) of 2.93825. That is, for each dollar (\$1.00) of outlays by AZA’s U.S. member organizations in 2010, an additional \$1.94 was generated to the benefit of the U.S. economy for a total economic impact of \$2.94.

Table 2

Total Economic Impacts of U. S. AZA-Accredited Zoos and Aquariums, 2010  
(dollars in billions)

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Operating Outlays	\$3.013	\$8.734	\$2.772	73,430
Capital Outlays	0.469	1.497	.450	12,390
Total Outlays	\$3.482	\$10.231	\$3.222	85,820

Sources: Association of Zoos and Aquariums, GMU Center for Regional Analysis. \*Direct outlays from Table 1. Notes: (1) the total value of goods and services generated directly and indirectly as a result of annual operating and capital outlays by zoos and aquariums in the US in 2010; (2) the additional earnings generated within the U.S. from outlays for zoos and aquariums in 2010 for operations and capital projects; (3) the additional new jobs supported locally and elsewhere by the spending and re-spending of outlays associated with the operation and capital outlays of zoos and aquariums in 2010.

This direct spending by AZA’s U.S. member zoos and aquariums also generated new wages and salaries earned by workers across the breadth of the U.S. economy and supported jobs beyond those of the member organizations. In 2010, the direct and indirect spending impacts of the zoos and aquariums covered by the AZA survey generated new personal earnings of U.S. resident workers totaling \$3.222 billion and supported the full-time equivalent of 85,820 jobs nationwide across all sectors.

The distribution of these economic benefits across each the host states of AZA member zoos and aquariums reflect the scale of their local annual operating outlays and capital budget as well as the size and complexity of the respective state’s economy. When all of

the individual state-level impacts are summed their combined impacts account for approximately 77 percent of the national economic benefit as shown in Table 3 below.

The economic benefits that cannot be assigned to any specific state—interstate spillovers—account for economic benefits that involve transportation effects, the instances of employees residing in a state different from that in which they work (cross-state commuting), and interstate visitor travel patterns. While the economic impacts that accrue locally do reflect significant benefits beyond the direct outlays for the operation and capital improvement of local zoos and aquariums, these local outlays also have extra-state benefits that can be calculated at the national level that significantly enlarge the magnitudes of benefits flowing from these facilities.

Table 3

Total State, Interstate and National Economic Impacts of  
U.S. AZA-Accredited Zoos and Aquariums, 2010  
(dollars in billions)

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
All States	\$3.482	\$7.838	\$2.730	77,938
Interstate		2.393	.492	7,882
Total US	\$3.482	\$10.231	\$3.222	85,820

Source: GMU Center for Regional Analysis. See Appendix C for state-Level economic impacts for AZA-accredited zoos and aquariums. For definition of headings, see Table 2.

### The Economic Impact of Before-and-After-Visit Spending

Spending by visitors to zoos and aquariums either before and after their visits (excluding all on-site spending) have been found to generate significant retail and other consumer services sales to the benefit of the host jurisdictions. This spending is the greatest for out-of-town overnight visitors and out-of-town day-trippers. Research undertaken as part of an economic impact study of the Maryland Zoo in Baltimore (1996) found that on average, in 2010 dollar equivalents, the average outlay per visit when spread out across all visitors (the total before-and-after visitor spending divided by total visitation) was \$13.49. If all visitors to AZA member zoos and aquariums reflected this level of before-and-after visit spending, total spending associated with the day's visit to AZA member zoos or aquariums would have generated \$2.232 billion in 2010 to the benefit of the local economy. This spending largely benefits retail and consumer services and the hospitality (including lodgings, restaurants and food services) sectors. As these sectors are relatively labor intensive and have a moderate wage and salary structure, the economic impacts of

these spending are more concentrated within local economies. With a multiplier of 2.5931, the contribution of this spending to GDP would total 5.788 billion and it would have generated a total of \$1.5 billion in new personal earnings and supported 56,616 jobs locally and elsewhere in the U.S. economy.

### The International Economic Impact of Spending By Zoos and Aquariums

The Association of Zoos and Aquariums has eleven international member organizations that responded to its survey on 2010 spending for operations and capital outlays. The annual spending of these organizations impacts their attendant economies similarly to the impacts reported above for U.S. zoos and aquariums. As the relevant multipliers for these international locations are not available, estimates of the total economic impact, impact on personal earnings and impact on employment have been calculated by borrowing and combining U.S. state-level multipliers that closely mirror the size and complexity of the host economies of the respective international zoos and aquariums.

This approach will not result in as precise an analysis as would have been achieved if the local multipliers had been available for the international jurisdictions. However, in the absence of locally specific internationally multipliers, this substitute approach will establish an order-of-magnitude measure of related economic impacts that result annually from the direct operating outlays and capital spending in 2010 of zoos and aquariums located outside of the United States.

As reported in Table 1, the direct spending of AZA's international member zoos and aquariums totaled \$277.0 million for operations in 2010 and \$216.8 million for capital projects. These outlays are disaggregated to reflect the five Canadian members. Six other members located are elsewhere internationally and grouped together for this analysis and their estimated economic impacts are also reported in Table 4.

The total direct spending of AZA's international members for operations and capital projects in 2010 was \$492.8 million. It is estimated that this direct spending resulted in a total contribution to these organizations' respective economies of \$1.15 billion, reflecting an estimated aggregate multiplier of 2.327. Additionally, this direct spending generated an estimated increase of \$353.2 million in new personal earnings for residents of these institutions' host jurisdictions beyond their direct payroll outlays. Furthermore, in addition to these organizations direct employment of 4,918 workers (see Table 1), the spending and the re-spending of these outlays within the local and national economies supported an estimated additional 10,840 jobs.

In addition to the direct spending of these AZA international member zoos and aquariums, as was the case of their U.S. counterparts, the presence of on-site concessionaires will generate additional direct operating outlays (payroll and non-payroll) that will support and generate direct and indirect employment and personal income to the benefit of the local economies. Beyond these on-site outlays that generate off-site economic impacts, visitors to these zoos and aquariums may also take part in before-and-after visit activities and may include out-of-town visitors staying in the area

and spending additional money at retail outlets, hotels, restaurants, and other local attractions. No attempt has been made to estimate the magnitude of this related spending on the local economies of the jurisdictions where the AZA international member zoos and aquariums are located.

Table 4

Total Economic Impacts of AZA's International Member Zoos and Aquariums, 2010  
(dollars in millions)

Source*	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Canada	\$149.293	\$340.92	\$106.576	3,444
Operating Outlays	113.812	303.75	95.408	3,131
Capital Outlays	15.481	37.17	11.168	313
Other International	\$343.469	\$805.71	\$246.576	7,396
Operating Outlays	143.174	325.00	102.083	3,350
Capital Outlays	200.295	480.71	144.493	4,046
All International	\$492.762	\$1,146.64	\$353.152	10,840

Sources: Association of Zoos and Aquariums, GMU Center for Regional Analysis.

\*For definition of headings, see Table 2.

#### Summary of Economic Impacts

Annual spending by zoos and aquariums for operations and capital projects generate significant economic benefits for their host jurisdictions. These benefits build from the initial outlays, as they are re-spent across the breadth of the economy. These benefits accumulate and expand the economy's total output as measured by their contributions to Gross Domestic Product and respective Gross State Products. These benefits also generate new personal earnings to the benefit of workers residing in the host jurisdictions and support job growth locally, regionally and nationally.

The \$5.714 billion in total direct outlays by AZA's U.S. member zoos and aquariums and their visitors within their host economies in 2010 generated \$16.019 billion in total economic impact; that is, each \$1 of direct spending by zoos and aquariums generated \$2.80 of total benefit on average to the overall economies of host jurisdictions. This direct spending of \$5.7 billion also generated \$4.722 billion in new personal earnings to the benefit of U.S. resident workers as a result of the re-spending of payroll and business income by employees and vendors of the zoos and aquariums and the subsequent re-spending of these monies within the local economies. This economic activity—direct outlays, indirect impacts and induced effects—also supported 142,436 jobs throughout

the local, state and national economies beyond the direct job base supported by the zoos and aquariums. These economic impacts are summarized in Table 5.

Table 5

Summary of Economic Impacts Generated By  
AZA-Accredited Zoos and Aquariums, 2010  
(dollars in billions)

Sources	Direct Outlays	Total Output(1)	Personal Earnings(2)	Jobs Supported(3)
Total US	\$5.714	\$16.019	\$4.722	142,436
AZA Members	3.482	10.231	3.222	85,820
Visitors Off-site	2.232	5.788	1.500	56,616
Others*	\$0.493	\$1.147	\$0.353	10,840
Total Impact	\$6.207	\$17.166	\$5.075	153,276

Source: GMU Center for Regional Analysis.

\*Five Canadian and six other international members

For definition of headings, see Table 2.

## **Appendix I**

### **Economic Multipliers**

The total impacts of the Association of Zoos and Aquarium (AZA) accredited zoos and aquariums on their respective states and countries reflect the combination of direct outlays (capital or operating) and their subsequent monetary effects as these funds are circulated through the economy; that is, the re-spending of these direct outlays will generate additional economic activity that otherwise would not have occurred. The total value of these combined direct and indirect values can be estimated by the application of appropriate multipliers that have been calculated for each state and for the U.S. in aggregate by the Bureau of Economic Analysis of the U.S. Department of Commerce employing its Regional Input-Output Model (RIMS II). For foreign member zoos and aquariums, composite multipliers have been constructed reflect similar size and complexities of economies in the U.S. in order to estimate likely impacts on their respective economies.

The results of these calculations are estimates for: (1) output value—total contribution to the local and regional economy; (2) personal earnings—new earnings realized by residents of the state or nation in which respective member spending occurs; and (3) the jobs supported by these outlays—full-time year-round jobs throughout the state and nation.

The key variables governing the magnitude and significance of these economic impacts are their dollar value, the category of outlay (e.g., infrastructure and capital construction, and zoo and aquarium operations), the direct employment and payroll associated with the direct spending by member zoos and aquariums, and the geographic area of analysis and the complexity of the state economies. The size and complexity of the state and national economies determine the extent to which the local economies can provide the inputs (goods and services purchased by member zoos and aquariums and its employees as they spend their wages) and retain the outputs of these economic activities; i.e., how self-sufficient these economies are.

The state-by-state listings of operations and construction multipliers are included in the Appendix IV.

## **Appendix II**

### **Definitions**

- Direct Outlays**— all annual spending associated with the operations of AZA member zoos and aquariums.
- Economic Impact**—the generation of new spending (\$s) within a jurisdiction as a result operating outlays or outlays for capital projects of AZA members.
- Gross State Product (GSP) and Gross Domestic Product (GDP)** - the value of goods and services produced within the economy of the designated geographic area (state, nation).
- Indirect Benefit** – the additional economic benefits—measured in dollars or jobs—resulting from the accumulated additional value generated by the direct outlays or expenditures, as these dollars are re-spent within the economy. Indirect effects are calculated using multipliers and include sales and purchases by businesses supplying goods and services in support of the activities of AZA member zoos and aquariums as well as the re-spending of payroll by employees of these organizations and the workers of its vendors.
- Multiplier** – a numerical factor that captures the total value of a direct outlay of or benefits produced by the outlays made by AZA member zoos and aquariums on the economy as these funds are re-spent within that economy; an output multiplier measures the contribution (impact) of a direct outlay on the overall economy, an employment multiplier measures the total number of jobs that can be supported by a direct outlay; and a personal earnings multiplier measures the total personal earnings (wages and salaries) generated within the jurisdiction as a result of a zoo's or aquarium's direct outlay and the jobs its supports.
- Operating Costs** – Costs (expenditures) associated with the day-to-day operation of AZA member zoos and aquariums including management, utilities, normal maintenance and repair, custodial services, security, staffing, and purchases of supplies and equipment.
- Spillover Benefits**—economic impacts generated by direct outlays in a host state that are realized by another state due to employees commuting across state lines and indirect impacts of spending by out-of-state suppliers.
- Total Output** – the sum of the direct and indirect impacts (outlays) reflecting the combination of the initial expenditures and their subsequent accumulated value as it is cycled through the economy inclusive of benefits generated by the re-spending of personal earnings; contribution to GDP (gross domestic product) and GSP (gross state product) or GCP.

## Appendix III

Appendix A: Direct Spending by U.S. AZA Member Zoos and Aquariums, 2010  
(dollars in millions)

Name	Overall Budget	Construction Outlays	Total
Alabama	\$11.78	\$2.03	\$13.81
Arkansas	4.40	2.43	6.83
Arizona	29.08	0.63	29.70
California	647.18	67.93	715.11
Colorado	55.75	5.68	61.43
Connecticut	20.20	1.02	21.22
District of Columbia	69.00	34.50	103.50
Delaware	1.19	0.00	1.19
Florida	494.64	6.50	501.15
Georgia	80.45	6.08	86.53
Hawaii	8.00	0.65	8.65
Iowa	3.89	0.00	3.89
Idaho	3.04	0.12	3.16
Illinois	137.45	45.67	183.12
Indiana	34.53	4.91	39.44
Kansas	21.41	6.47	27.89
Kentucky	29.45	12.83	42.28
Louisiana	39.45	10.42	49.86
Massachusetts	49.77	14.61	64.39
Maryland	58.54	13.63	72.17
Michigan	39.75	7.12	46.87
Minnesota	28.14	3.40	31.54
Missouri	74.07	10.32	84.40
Mississippi	2.21	3.64	5.85
Montana	2.31	0.36	2.66
North Carolina	32.16	4.46	36.62
North Dakota	2.85	0.72	3.57
Nebraska	29.13	6.05	35.17
New Hampshire	1.21	0.06	1.27
New Jersey	31.09	1.60	32.69
New Mexico	14.30	5.24	19.54
Nevada	13.90	0.06	13.96
New York	122.71	31.31	154.02
Ohio	140.73	42.45	183.18
Oklahoma	25.82	9.56	35.38
Oregon	41.55	21.70	63.25

<b>Pennsylvania</b>	57.49	11.98	69.47
<b>Rhode Island</b>	9.95	1.03	10.97
<b>South Carolina</b>	37.17	1.11	38.28
<b>South Dakota</b>	3.86	3.95	7.81
<b>Tennessee</b>	53.28	14.12	67.40
<b>Texas</b>	331.77	25.90	357.68
<b>Utah</b>	10.62	6.90	17.51
<b>Virginia</b>	18.92	12.35	31.27
<b>Washington</b>	55.44	4.75	60.19
<b>Wisconsin</b>	32.17	3.11	35.28
<b>West Virginia</b>	1.30	0.00	1.30
<b>State Totals</b>	\$3,013.12	\$469.33	\$3,482.44

Source: AZA, GMU Center for Regional Analysis

Appendix B: Economic Impacts of Operations Outlays by  
U.S. AZA Member Zoos and Aquariums, 2010  
(dollars in millions)

<b>Name</b>	<b>Overall Budget</b>	<b>Total Output</b>	<b>Personal Earnings</b>	<b>Jobs Supported</b>
<b>Alabama</b>	\$11.78	\$24.08	\$8.95	280
<b>Arkansas</b>	4.40	8.20	3.07	87
<b>Arizona</b>	29.08	62.63	23.12	697
<b>California</b>	647.18	1,541.84	559.36	14,048
<b>Colorado</b>	55.75	131.79	47.99	1,376
<b>Connecticut</b>	20.20	41.25	14.57	413
<b>District of Columbia</b>	69.00	100.16	10.75	270
<b>Delaware</b>	1.19	2.30	0.72	21
<b>Florida</b>	494.64	1,090.29	403.04	12,518
<b>Georgia</b>	80.45	190.72	67.59	1,920
<b>Hawaii</b>	8.00	16.60	6.20	211
<b>Iowa</b>	3.89	7.07	2.68	93
<b>Idaho</b>	3.04	5.39	2.09	59
<b>Illinois</b>	137.45	334.76	118.87	3,304
<b>Indiana</b>	34.53	72.31	26.40	842
<b>Kansas</b>	21.41	40.42	14.63	505
<b>Kentucky</b>	29.45	60.26	21.16	700
<b>Louisiana</b>	39.45	75.68	28.83	900
<b>Massachusetts</b>	49.77	109.90	39.02	997
<b>Maryland</b>	58.54	126.48	43.31	1,162

<b>Michigan</b>	39.75	85.30	31.80	1,042
<b>Minnesota</b>	28.14	62.05	22.49	648
<b>Missouri</b>	74.07	158.07	51.14	1,641
<b>Mississippi</b>	2.21	4.05	1.51	43
<b>Montana</b>	2.31	4.24	1.63	57
<b>North Carolina</b>	32.16	69.95	25.55	816
<b>North Dakota</b>	2.85	4.80	1.77	55
<b>Nebraska</b>	29.13	50.71	18.91	656
<b>New Hampshire</b>	1.21	2.47	0.85	26
<b>New Jersey</b>	31.09	70.19	22.93	587
<b>New Mexico</b>	14.30	27.16	10.42	297
<b>Nevada</b>	13.90	27.13	9.92	270
<b>New York</b>	122.71	257.46	87.31	2,138
<b>Ohio</b>	140.73	313.66	112.15	3,567
<b>Oklahoma</b>	25.82	52.52	19.88	661
<b>Oregon</b>	41.55	87.91	32.20	1,007
<b>Pennsylvania</b>	57.49	131.82	45.79	1,297
<b>Rhode Island</b>	9.95	19.79	6.74	227
<b>South Carolina</b>	37.17	79.23	28.02	931
<b>South Dakota</b>	3.86	6.46	2.54	88
<b>Tennessee</b>	53.28	121.92	42.79	1,404
<b>Texas</b>	331.77	814.27	290.07	8,439
<b>Utah</b>	10.62	24.65	8.87	299
<b>Virginia</b>	18.92	41.72	14.36	431
<b>Washington</b>	55.44	121.19	44.13	1,316
<b>Wisconsin</b>	32.17	65.33	24.51	797
<b>West Virginia</b>	1.30	2.23	0.69	21
<b>State Totals</b>	\$3,013.12	\$6,748.41	\$2,401.34	69,162
<b>Interstate Spillovers</b>	0.00	1,985.11	370.43	4,268
<b>USA Totals</b>	\$3,013.12	\$8,733.52	\$2,771.77	73,430

Source: AZA, GMU Center for Regional Analysis

Appendix C: Economic Impacts of Construction Outlays by  
U.S. AZA Member Zoos and Aquariums, 2010  
(dollars in millions)

<b>Name</b>	<b>Construction Outlays</b>	<b>Total Output</b>	<b>Personal Earnings</b>	<b>Jobs Supported</b>
<b>Alabama</b>	\$2.03	\$5.02	\$1.56	48
<b>Arkansas</b>	2.43	5.39	1.64	54
<b>Arizona</b>	0.63	1.40	0.46	12
<b>California</b>	67.93	170.58	55.37	1,330
<b>Colorado</b>	5.68	14.01	4.56	116
<b>Connecticut</b>	1.02	2.07	0.66	16
<b>District of Columbia</b>	34.50	43.54	3.02	71
<b>Delaware</b>	0.00	0.00	0.00	0
<b>Florida</b>	6.50	14.52	4.82	129
<b>Georgia</b>	6.08	15.82	4.93	135
<b>Hawaii</b>	0.65	1.32	0.45	12
<b>Iowa</b>	0.00	0.00	0.00	0
<b>Idaho</b>	0.12	0.26	0.08	3
<b>Illinois</b>	45.67	119.24	36.74	891
<b>Indiana</b>	4.91	11.97	3.63	106
<b>Kansas</b>	6.47	14.58	4.21	130
<b>Kentucky</b>	12.83	30.14	8.82	283
<b>Louisiana</b>	10.42	22.87	7.37	215
<b>Massachusetts</b>	14.61	31.66	9.91	235
<b>Maryland</b>	13.63	29.58	8.97	221
<b>Michigan</b>	7.12	16.70	5.44	148
<b>Minnesota</b>	3.40	8.19	2.58	69
<b>Missouri</b>	10.32	25.13	7.33	213
<b>Mississippi</b>	3.64	8.15	2.48	81
<b>Montana</b>	0.36	0.75	0.25	8
<b>North Carolina</b>	4.46	10.92	3.40	104
<b>North Dakota</b>	0.72	1.44	0.43	14
<b>Nebraska</b>	6.05	13.05	4.09	126
<b>New Hampshire</b>	0.06	0.12	0.04	1
<b>New Jersey</b>	1.60	3.78	1.15	27
<b>New Mexico</b>	5.24	10.55	3.47	109
<b>Nevada</b>	0.06	0.12	0.04	1
<b>New York</b>	31.31	61.57	18.82	447
<b>Ohio</b>	42.45	107.45	33.06	959
<b>Oklahoma</b>	9.56	22.67	7.24	236
<b>Oregon</b>	21.70	50.34	15.35	434

<b>Pennsylvania</b>	11.98	31.26	9.46	240
<b>Rhode Island</b>	1.03	2.01	0.60	16
<b>South Carolina</b>	1.11	2.70	0.83	26
<b>South Dakota</b>	3.95	8.11	2.59	87
<b>Tennessee</b>	14.12	36.03	10.70	316
<b>Texas</b>	25.90	69.92	21.97	559
<b>Utah</b>	6.90	17.13	5.50	164
<b>Virginia</b>	12.35	28.34	8.46	225
<b>Washington</b>	4.75	11.37	3.62	91
<b>Wisconsin</b>	3.11	7.41	2.34	67
<b>West Virginia</b>	0.00	0.00	0.00	0
<b>State Totals</b>	\$469.33	\$1,089.19	\$328.43	8,776
<b>Interstate Spillovers</b>	0.00	407.95	121.42	3,615
<b>USA Totals</b>	\$469.33	\$1,497.15	\$449.85	12,390

Source: AZA, GMU Center for Regional Analysis

Appendix D: Total Economic Impacts of Outlays by  
U.S. AZA Member Zoos and Aquariums, 2010  
(dollars in millions)

<b>Name</b>	<b>Total Output</b>	<b>Personal Earnings</b>	<b>Jobs Supported</b>
<b>Alabama</b>	\$29.09	\$10.51	329
<b>Arkansas</b>	13.60	4.71	140
<b>Arizona</b>	64.02	23.59	709
<b>California</b>	1,712.42	614.73	15,378
<b>Colorado</b>	145.80	52.56	1,493
<b>Connecticut</b>	43.33	15.23	429
<b>District of Columbia</b>	143.70	13.77	341
<b>Delaware</b>	2.30	0.72	21
<b>Florida</b>	1,104.81	407.86	12,647
<b>Georgia</b>	206.54	72.52	2,055
<b>Hawaii</b>	17.92	6.64	222
<b>Iowa</b>	7.07	2.68	93
<b>Idaho</b>	5.65	2.18	62
<b>Illinois</b>	454.00	155.61	4,194
<b>Indiana</b>	84.28	30.02	947
<b>Kansas</b>	54.99	18.84	635
<b>Kentucky</b>	90.40	29.98	983
<b>Louisiana</b>	98.55	36.20	1,115
<b>Massachusetts</b>	141.56	48.93	1,233
<b>Maryland</b>	156.06	52.28	1,384

<b>Michigan</b>	102.00	37.24	1,190
<b>Minnesota</b>	70.23	25.07	717
<b>Missouri</b>	183.19	58.47	1,854
<b>Mississippi</b>	12.20	3.99	125
<b>Montana</b>	4.99	1.88	65
<b>North Carolina</b>	80.87	28.96	920
<b>North Dakota</b>	6.24	2.20	69
<b>Nebraska</b>	63.76	23.00	782
<b>New Hampshire</b>	2.60	0.89	27
<b>New Jersey</b>	73.97	24.08	614
<b>New Mexico</b>	37.71	13.89	406
<b>Nevada</b>	27.25	9.96	271
<b>New York</b>	319.03	106.13	2,584
<b>Ohio</b>	421.11	145.20	4,525
<b>Oklahoma</b>	75.19	27.12	897
<b>Oregon</b>	138.25	47.55	1,441
<b>Pennsylvania</b>	163.08	55.26	1,537
<b>Rhode Island</b>	21.80	7.34	243
<b>South Carolina</b>	81.94	28.85	956
<b>South Dakota</b>	14.57	5.14	176
<b>Tennessee</b>	157.95	53.49	1,719
<b>Texas</b>	884.19	312.04	8,998
<b>Utah</b>	41.78	14.36	463
<b>Virginia</b>	70.06	22.82	656
<b>Washington</b>	132.56	47.75	1,408
<b>Wisconsin</b>	72.74	26.85	865
<b>West Virginia</b>	2.23	0.69	21
<b>State Totals</b>	\$7,837.61	\$2,729.77	77,938
<b>Interstate Spillovers</b>	2,393.06	491.84	7,882
<b>USA Totals</b>	\$10,230.67	\$3,221.61	85,820

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Source: AZA, GMU Center for Regional Analysis

Appendix E: Output, Earnings, and Employment Multipliers: Operation

<b>State</b>	<b>Output</b>	<b>Earnings</b>	<b>Employment</b>
Alabama	2.0435	0.7595	23.7936
Arkansas	1.8640	0.6969	19.6736
Arizona	2.1539	0.7953	23.9643
California	2.3824	0.8643	21.7069
Colorado	2.3640	0.8609	24.6877
Connecticut	2.0422	0.7212	20.4444
District of Columbia	1.4516	0.1558	3.9150
Delaware	1.9365	0.6074	17.9866
Florida	2.2042	0.8148	25.3065
Georgia	2.3707	0.8402	23.8614
Hawaii	2.0749	0.7745	26.3358
Iowa	1.8170	0.6896	23.9913
Idaho	1.7716	0.6877	19.2867
Illinois	2.4355	0.8648	24.0344
Indiana	2.0944	0.7645	24.3750
Kansas	1.8875	0.6833	23.5693
Kentucky	2.0465	0.7186	23.7618
Louisiana	1.9184	0.7309	22.8147
Maine	2.2080	0.7839	20.0387
Maryland	2.1607	0.7399	19.8570
Michigan	2.1458	0.7999	26.2010
Minnesota	2.2047	0.7992	23.0138
Missouri	2.1339	0.6904	22.1572
Mississippi	1.8322	0.6846	19.5398
Montana	1.8413	0.7071	24.7715
North Carolina	2.1747	0.7945	25.3554
North Dakota	1.6849	0.6193	19.2353
Nebraska	1.7410	0.6492	22.5242
New Hampshire	2.0459	0.7050	21.2225
New Jersey	2.2573	0.7375	18.8821
New Mexico	1.8993	0.7288	20.7363
Nevada	1.9520	0.7140	19.4302
New York	2.0981	0.7115	17.4209
Ohio	2.2288	0.7969	25.3462
Oklahoma	2.0339	0.7699	25.5981
Oregon	2.1157	0.7749	24.2410
Pennsylvania	2.2929	0.7965	22.5571
Rhode Island	1.9896	0.6780	22.7940
South Carolina	2.1315	0.7539	25.0334
South Dakota	1.6722	0.6581	22.8769

<b>Tennessee</b>	2.2884	0.8032	26.3470
<b>Texas</b>	2.4543	0.8743	25.4364
<b>Utah</b>	2.3215	0.8349	28.1803
<b>Virginia</b>	2.2046	0.7588	22.7907
<b>Washington</b>	2.1859	0.7960	23.7421
<b>Wisconsin</b>	2.0307	0.7619	24.7910
<b>West Virginia</b>	1.7135	0.5341	16.0189
<b>USA</b>	2.8985	0.9199	24.3700

Source: Bureau of Economic Analysis, U.S. Department of Commerce

#### Appendix F: Output, Earnings, and Employment Multipliers: Construction

<b>State</b>	<b>Output</b>	<b>Earnings</b>	<b>Employment</b>
<b>Alabama</b>	2.4706	0.7681	23.7483
<b>Alaska</b>	1.8870	0.6260	16.2319
<b>Arizona</b>	2.2239	0.7366	18.7596
<b>Arkansas</b>	2.2246	0.6775	22.1435
<b>California</b>	2.5113	0.8152	19.5738
<b>Colorado</b>	2.4669	0.8033	20.4887
<b>Connecticut</b>	2.0325	0.6448	15.3103
<b>Delaware</b>	1.9155	0.5171	13.1468
<b>District of Columbia</b>	1.2621	0.0874	2.0502
<b>Florida</b>	2.2331	0.7412	19.8569
<b>Georgia</b>	2.6018	0.8111	22.2544
<b>Hawaii</b>	2.0293	0.6853	18.0063
<b>Idaho</b>	2.1441	0.6975	23.2344
<b>Illinois</b>	2.6111	0.8046	19.5078
<b>Indiana</b>	2.4349	0.7376	21.4754
<b>Iowa</b>	2.2131	0.6829	21.3966
<b>Kansas</b>	2.2511	0.6502	20.1076
<b>Kentucky</b>	2.3482	0.6869	22.0375
<b>Louisiana</b>	2.1958	0.7072	20.6571
<b>Maine</b>	2.1261	0.6987	23.0145
<b>Maryland</b>	2.1698	0.6581	16.2405
<b>Massachusetts</b>	2.1667	0.6783	16.1096
<b>Michigan</b>	2.3474	0.7645	20.8600
<b>Minnesota</b>	2.4094	0.7583	20.3972
<b>Mississippi</b>	2.2361	0.6804	22.3456
<b>Montana</b>	2.0935	0.6913	23.4654

<b>Missouri</b>	2.4338	0.7100	20.6056
<b>Nebraska</b>	2.1595	0.6760	20.8445
<b>Nevada</b>	1.9840	0.6526	16.3828
<b>New Hampshire</b>	2.1785	0.6581	18.0043
<b>New Jersey</b>	2.3626	0.7161	17.0825
<b>New Mexico</b>	2.0145	0.6621	20.9007
<b>New York</b>	1.9664	0.6012	14.2639
<b>North Carolina</b>	2.4515	0.7639	23.3670
<b>North Dakota</b>	2.0049	0.6017	19.3882
<b>Ohio</b>	2.5315	0.7788	22.5820
<b>Oklahoma</b>	2.3715	0.7579	24.7239
<b>Oregon</b>	2.3197	0.7072	19.9959
<b>Pennsylvania</b>	2.6097	0.7900	20.0365
<b>Rhode Island</b>	1.9626	0.5822	15.6316
<b>South Carolina</b>	2.4375	0.7482	23.2110
<b>South Dakota</b>	2.0558	0.6573	22.0886
<b>Tennessee</b>	2.5516	0.7580	22.3633
<b>Texas</b>	2.6992	0.8480	21.5813
<b>Utah</b>	2.4849	0.7972	23.7748
<b>Vermont</b>	2.0046	0.6298	20.6361
<b>Virginia</b>	2.2948	0.6854	18.1949
<b>Washington</b>	2.3954	0.7629	19.2512
<b>West Virginia</b>	1.9890	0.5923	19.2606
<b>Wisconsin</b>	2.3837	0.7531	21.5571
<b>Wyoming</b>	1.8108	0.5823	17.8606
<b>USA</b>	3.1900	0.9585	26.4000

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Source: Bureau of Economic Analysis, U.S. Department of Commerce