



FIVE-YEAR ECONOMIC
IMPACT ANALYSIS OF THE
DETROIT ZOO
PRESENTED TO THE
DETROIT ZOOLOGICAL SOCIETY

FEBRUARY 12
2019

February 12, 2019

Mr. Paul Good

Community and Government Relations Manager

Detroit Zoological Society

8450 West 10 Mile Road

Royal Oak, MI 48067

Dear Mr. Good:

We have completed the study process for an updated analysis of the economic impacts associated with the Detroit Zoo (Zoo) for the five-year period spanning 2014 through 2018. Over the past several months, CSL has worked closely with Detroit Zoological Society leadership and staff in conducting research into the many ways in which the operations of the Zoo provide a quantifiable economic impact locally and throughout the state of Michigan.

The generation of economic impacts associated with the Zoo requires the coordinated effort of the highly qualified Zoo staff and management team, the public sector (through support in funding Zoo operations), the private sector (through vendors and suppliers working with the Zoo), and the thousands of volunteers that provide an invaluable service to a highly valued community asset. The purpose of this study is to develop an impact model using conservative assumptions in order to present supportable estimates of community-wide benefits associated with the Detroit Zoo.

We sincerely appreciate the assistance and cooperation we have been provided in the completion of this report and would be pleased to be of further assistance in the interpretation and application of our findings.

Very truly yours,



CSL International



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EXECUTIVE SUMMARY

The 125-acre Detroit Zoo (Zoo) opened in 1928 and recently celebrated its 90th anniversary. The Zoo attracts an average of nearly **1.5 million guests per year**. These visitors are able to experience and enjoy more than 2,400 animals among 235 different species, a wide variety of world-class habitats and a growing number of interactive educational programs. The Zoo has continued to make significant investments throughout the campus in recent years. Totaling more than **\$40 million**, these projects have added to and improved the Zoo's habitats and visitor amenities.

Over the past several months, CSL has worked closely with Detroit Zoological Society (DZS) leadership to conduct extensive research into the many ways in which the Detroit Zoo serves as a vital community asset and helps support the generation of significant economic impacts within the community. This effort seeks to update these impacts for the five-year period spanning 2014 through 2018. As part of the analysis process, extensive data with respect to Zoo operations, attendance levels, and other such factors have been analyzed. A summary of the various impacts generated as part of this report is presented below.



Over the past five years, the Zoo has attracted a total of nearly **7.5 million visitors**, or an average of approximately **1.5 million annual attendees**. The number of Zoo visitors reached a high of nearly 1.7 million in 2016, with the opening of the Polk Penguin Conservation Center.



Total Output, which represents the re-spending of dollars in the economy, has ranged from a low of approximately \$154 million in 2014 to more than **\$196 million** in 2015. The financial operations of the Zoo itself represent nearly half of this total output. *This compares to approximately 44 percent from visitor spending (outside of the Zoo) and eight percent from the Zoo's third-party food/beverage and gift shop services provider.*



Over the past five years, approximately **46 percent** of the total output generated by Zoo-related visitor spending takes place among people residing outside of Michigan. *This compares to 31 percent for those residing outside of the tri-county metro area (but within Michigan) and 23 percent from local visitors.*



In 2018, the Zoo supported more than **\$65 million** in earnings and an estimated 1,916 full- and part-time jobs.

The combination of quantifiable and non-quantifiable economic impacts generated from the operations of the Zoo is significant, supporting the regional and statewide economy, creating significant employment opportunities, providing educational programs for students throughout the state, and fulfilling the following mission:



Demonstrate leadership in wildlife conservation and animal welfare



Provide a broad audience with outstanding and unique educational opportunities that lead to the appreciation and stewardship of nature



Inspire the community with engaging, meaningful and memorable experiences



Provide innovative zoological facilities that contribute to the region's economic vitality



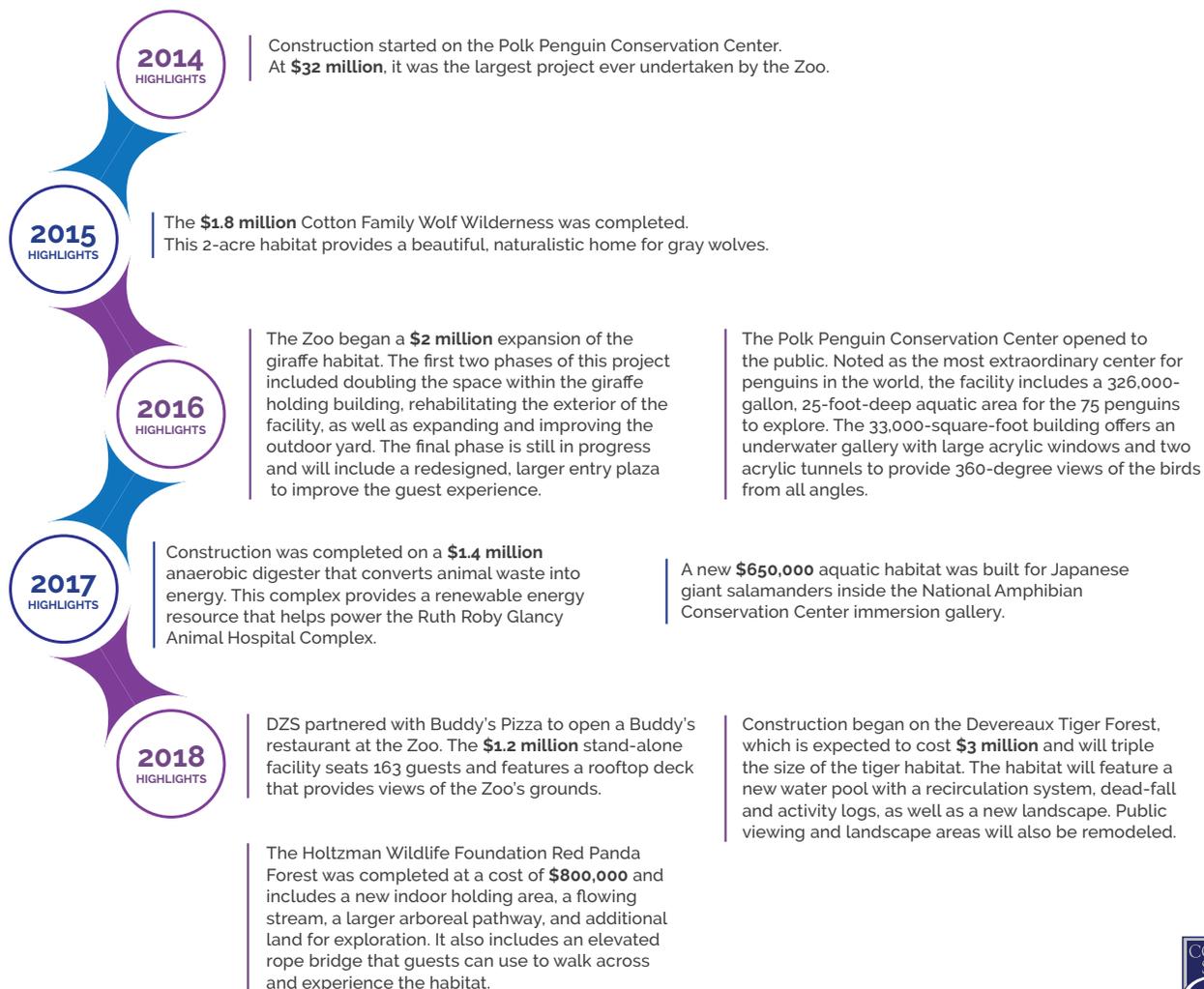
Demonstrate organizational excellence consistent with a commitment to outstanding service, progressive resource management and environmental leadership

1.0 | PROJECT BACKGROUND & INTRODUCTION

The 125-acre Detroit Zoo (Zoo) opened in 1928 and recently celebrated its 90th anniversary. The Zoo is operated by the Detroit Zoological Society (DZS), which currently employs more than 290 full- and part-time people, along with the assistance of more than 1,000 volunteers donating in excess of 100,000 hours of their time each year. Together, the highly professional staff, thousands of volunteers, and essential private sector partners work to support the operations of the Zoo.

The Zoo attracts an average of nearly **1.5 million people per year**. These visitors are able to experience and enjoy more than 2,400 animals among 235 species, a wide variety of world-class habitats and a growing number of interactive educational programs. Major habitats include the Polk Penguin Conservation Center, Arctic Ring of Life, Australian Outback Adventure, Great Apes of Harambee, National Amphibian Conservation Center, Holden Reptile Conservation Center and Butterfly Garden.

The Zoo has continued to make significant investments throughout the campus in recent years. Totalling **more than \$40 million**, these projects have added to and improved the Zoo's habitats and visitor amenities. A summary of the ongoing efforts to build on the Zoo's success is presented below.





ADDITIONALLY,

the DZS recently completed an update to its Physical Master Plan - a 13-year, **\$83 million** plan that is to be implemented in three primary phases between 2011 and 2024. The phasing approach considers timing of important new guest experiences, the impact of construction on surrounding areas of the Zoo, and maintaining the guest access/experience. In addition to this plan, the Zoo is also planning for the development of a **\$15 million facility** called the Great Lakes Nature Center, which will focus on the water and wildlife of the Great Lakes and will be situated in Macomb County.

Over the past several months, CSL has worked closely with DZS leadership to conduct extensive research into the many ways in which the Detroit Zoo serves as a vital community asset and helps support the generation of significant economic impacts within the community. This analysis builds on a previously conducted analysis by CSL in which we evaluated the economic impacts of the Detroit Zoo in 2013. This effort seeks to update these impacts for the five-year period spanning 2014 through 2018.

2.0 | DETROIT ZOO IMPACT ANALYSIS

The purpose of this section of the analysis is to summarize the findings and supporting research with respect to the quantifiable economic impacts of the operation and investment in the Detroit Zoo over the five-year period spanning 2014 through 2018. We have worked closely with DZS staff to develop an understanding of the various financial operating and visitor spending sources that comprise economic impact. Spending generated by Zoo operations and vendors has been taken from various audited financial reports. In conducting this analysis, we have measured the economic impacts generated from three specific Zoo-related sources as described below.



ZOO FINANCIAL OPERATIONS

includes all expenditures made to operate the Zoo.



ZOO VENDOR SPENDING

includes the expenditures made by the Zoo's third-party food/beverage and gift shop vendor that are not included in the Zoo's financial statements.



ZOO VISITOR SPENDING

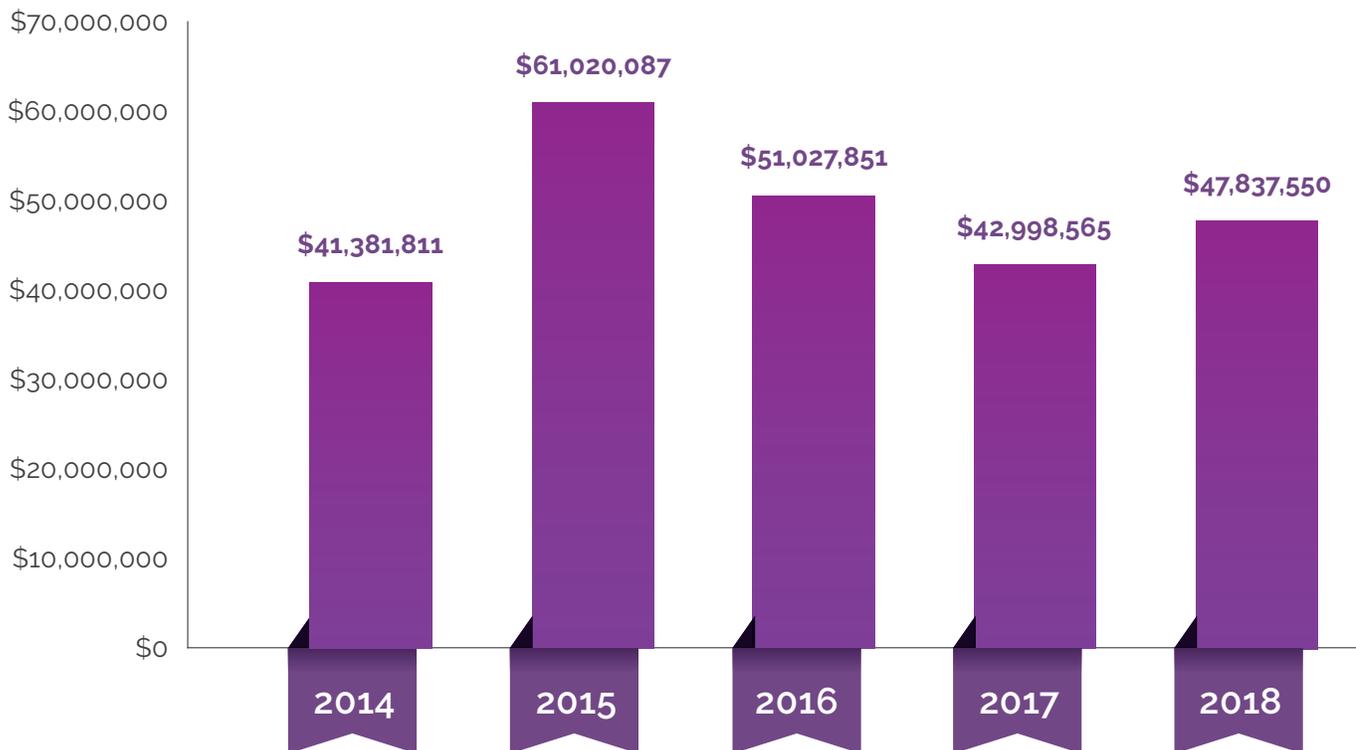
includes only spending taking place outside the Zoo. Any spending that takes place inside the Zoo is accounted for in the Zoo's financial operations.

A summary of key assumptions and resulting impacts associated with each of these sources is presented throughout the remainder of this section.

2.1 | ZOO FINANCIAL OPERATIONS

Each year, the Zoo spends millions of dollars on labor, services, supplies, equipment, conservation, marketing, utilities, insurance, large-scale capital improvement projects and other such expenses. Such spending creates significant impacts on the community and the region. As part of this analysis, we have reviewed the financial operations for the Detroit Zoo over the past several years. A summary of DZS expenditures between 2014 and 2018 is presented below.

SUMMARY OF DZS OPERATING EXPENSES (2014 – 2018)

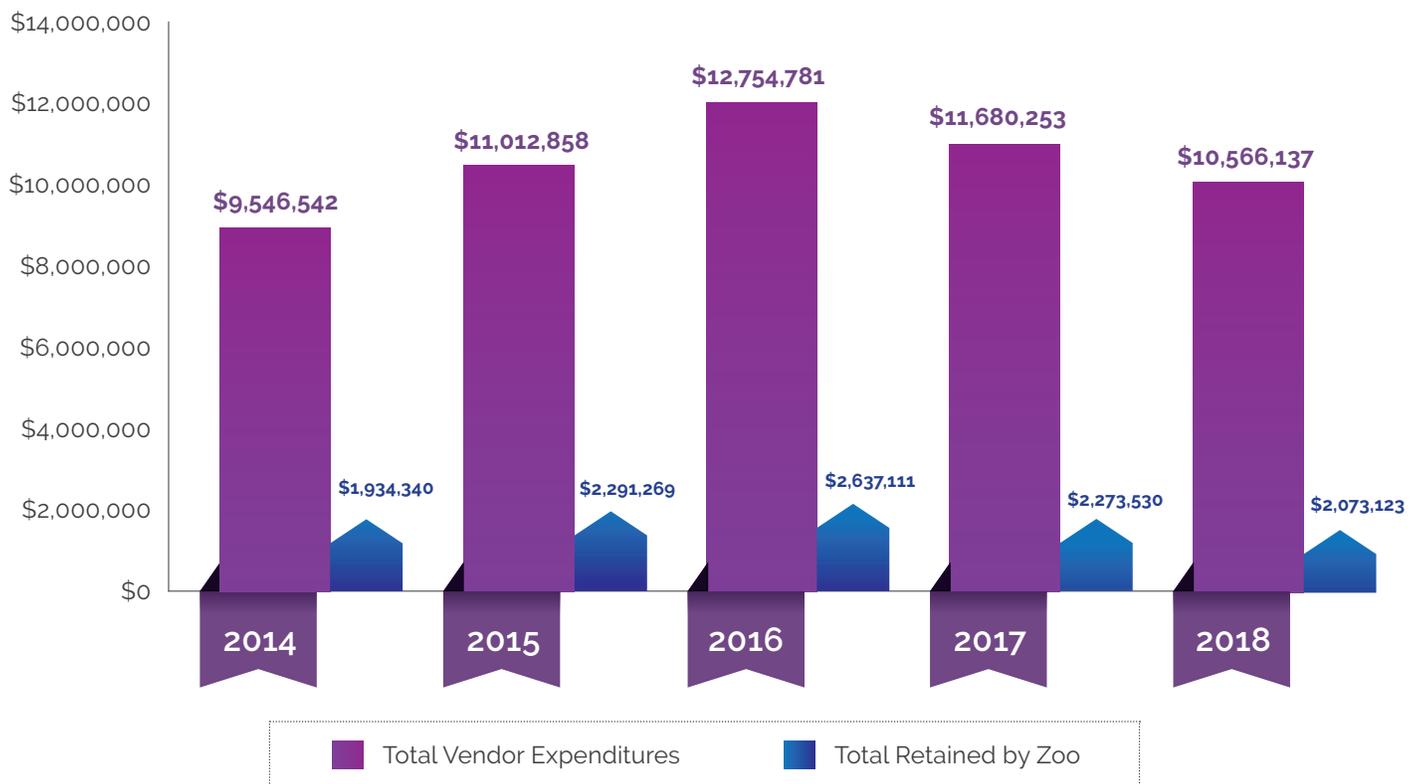


As presented, total DZS expenditures have ranged from a low of approximately **\$41 million** in 2014 to a high of more than **\$61 million** in 2015. It is important to note that figures for 2015 include nearly **\$25 million** in capital improvement spending, largely representing investment in the development of the Polk Penguin Conservation Center. These expenses are supported primarily by operating revenue generated from visitor purchases at the Zoo. In addition, public sector support is provided to ensure that the Zoo remains a highly professional entertainment and educational asset for the community. These financial operating data are applied to economic impact multipliers, as discussed later in this section.

2.2 | ZOO VENDOR SPENDING

The Zoo has a contract with Service Systems Associates, Inc. (SSA), a third-party vendor, to exclusively provide a number of ancillary services including the operations of its concessions, catering and gift shop facilities. Over the past five years, SSA has generated more than **\$55 million** in total revenue from these services. The table below summarizes annual vendor revenue between 2014 and 2018. Data has been segmented into total vendor expenditures and the total amount that is retained by the Zoo.

SUMMARY OF DZS VENDOR REVENUE (2014 – 2018)

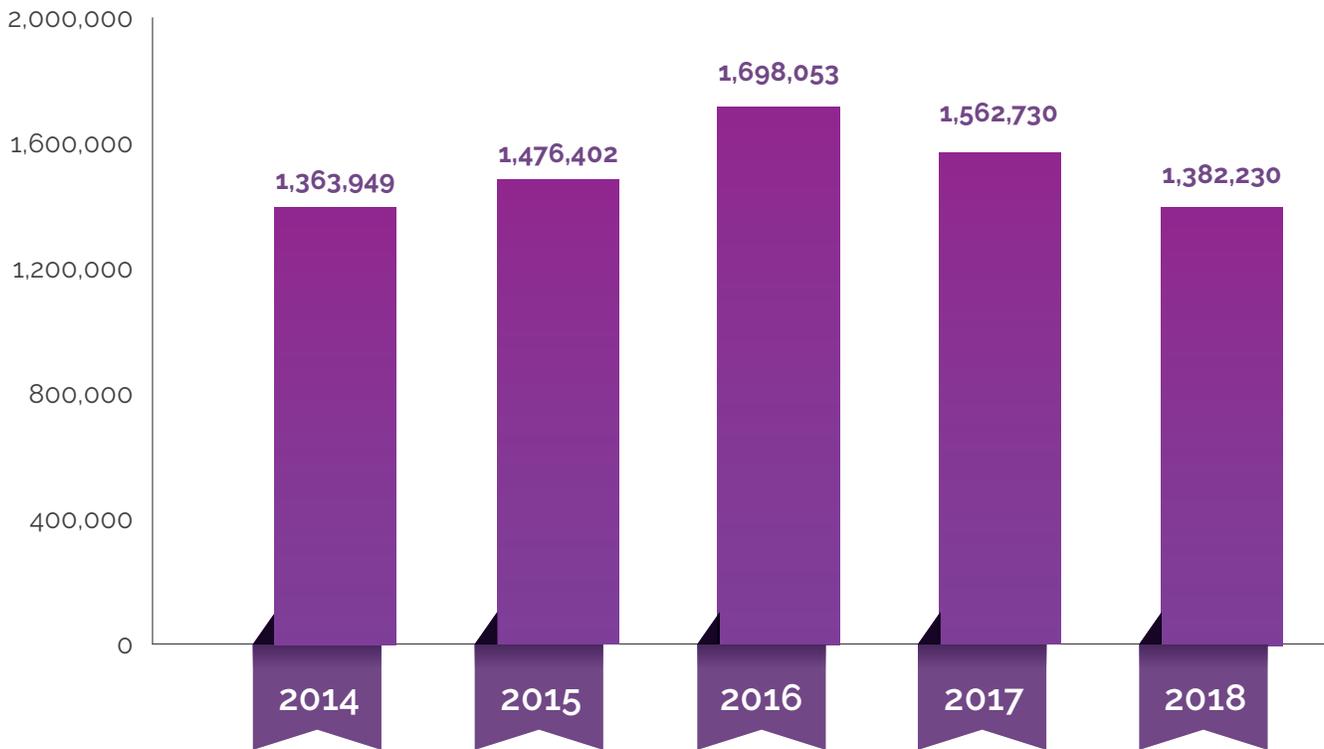


As noted above, SSA generates between **\$9.5 and \$12.8 million** in spending each year related to its provision of food, beverage, gift shop and other services for the DZS. Of this total vendor revenue, the Zoo retains an average of approximately 20 percent, or between **\$1.8 and \$2.6 million per year**. These dollars are included in the Zoo's financial statements. However, the remaining spending is not accounted for in the Zoo financials and is presented separately as vendor spending in calculating overall Zoo impacts. This value has ranged from **\$7.6 to \$10.1 million per year** between 2014 and 2018.

2.3 | ZOO VISITOR SPENDING

Each year the Detroit Zoo attracts more than one million visitors from within the community, throughout the state of Michigan and across both the United States and Canada. Based on information provided by the DZS, we have summarized Zoo attendance over the five-year period spanning 2014 through 2018.

SUMMARY OF DETROIT ZOO ATTENDANCE (2014 – 2018)



Over the past five years, the Zoo has attracted a total of nearly 7.5 million visitors, or an average of approximately **1.5 million annual attendees**. The number of Zoo visitors reached a high of nearly 1.7 million in 2016, with the opening of the Polk Penguin Conservation Center. As expected by facility management, visitation has decreased in recent years and is closer to the normalized annual attendance of approximately 1.4 million (prior to the penguin center opening). In 2018, **1,382,230 people** visited the Detroit Zoo. Based on conversations with facility management, figures were negatively impacted by poor weather in April and May, and Zoo attendance was down 10-20 percent throughout the Midwest as compared to 2017.

Based on zip code data regularly compiled by the Zoo's ticketing system, we have assumed that approximately **74 percent of visitors** come from within the tri-county metro area (Oakland, Wayne and Macomb counties). Nearly 16 percent of visitors are from outside these three counties, but within the state of Michigan, and an additional 10 percent are from outside of Michigan.

CALCULATION OF DIRECT SPENDING

Through the attraction of visitors, the ongoing operation of the Zoo generates direct spending. In order to estimate this spending (also termed change in final demand), we have developed a unique model to incorporate various performance measures associated with DZS operations, including attendance, visitor origination (local, regional and national), and a set of assumptions for per-person spending.

We have also made various assumptions with respect to per-person spending within a variety of industry sectors including **lodging, food and beverage, fuel, and other** such expenditures among visitors from each of these geographic areas. These assumptions focus on the percentage of visitors that make purchases outside of the Zoo, and the value of these purchases. The spending data were derived from a report conducted by Longwoods International for the Michigan Economic Development Corporation in late 2016 that provides detailed information with regard to visitor and travel spending in Michigan. The assumptions used in this analysis have been developed in conjunction with DZS management and consider our 2013 analysis of the economic impacts of the Detroit Zoo, various other major market zoo impact studies conducted nationally, as well as our own past economic impact research for the Detroit Riverfront and associated events and activities. The following chart identifies the various sources of direct spending included in this analysis.



THE FOLLOWING TYPES OF ASSUMPTIONS HAVE BEEN MADE
IN QUANTIFYING ZOO-RELATED DIRECT SPENDING.

VISITORS FROM THE TRI-COUNTY METRO AREA

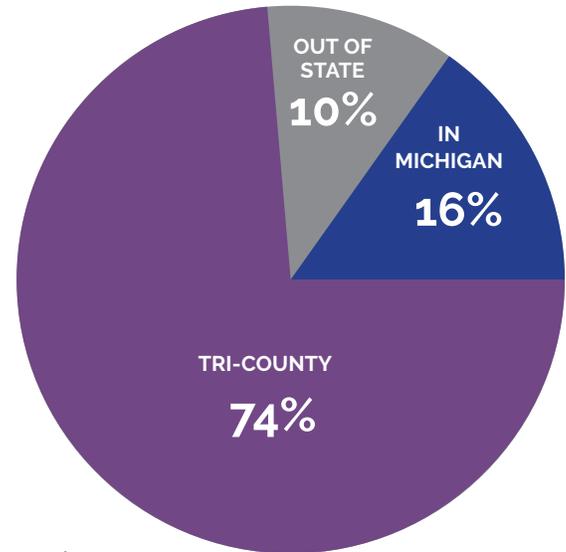
- 30 percent visit restaurants outside the Zoo, spending an average of \$22.89 per person.
- Other spending (entertainment, retail, etc.) accounts for \$2.00 per person.
- The resulting total spending per person for this category is \$8.87 per person.

VISITORS FROM OUTSIDE THE METRO AREA BUT STILL WITHIN THE STATE

- Visitors spend approximately two days and two nights in the market.
- 40 percent visit restaurants outside the Zoo, spending an average of \$30 per person per day.
- 50 percent purchase fuel at \$50 per tank with three people per party.
- 25 percent stay at hotels and pay an average nightly rate of \$135 (three people per party).
- Other spending (entertainment, retail, etc.) accounts for \$4.00 per person.
- The resulting total spending per person for this category is \$58.83 per person.

VISITORS FROM OUTSIDE OF MICHIGAN

- Visitors spend approximately two days and two nights in the market.
- 90 percent visit restaurants outside the Zoo, spending an average of \$30 per person per day.
- 90 percent purchase fuel at \$50 per tank with three people per party.
- 65 percent stay at hotels and pay an average nightly rate of \$135 (three people per party).
- Other spending (entertainment, retail, etc.) accounts for \$6.00 per person.
- The resulting total spending per person for this category is \$127.50 per person.



Based on these and other assumptions, we have calculated that visitors from within the tri-county area spend an average of **\$8.87 per person** per trip. Visitors from other areas of the state spend approximately **\$58.83 per person**, and people from outside of Michigan spend an estimated **\$127.50 per person**. The higher spending among out-of-state visitors is largely driven by hotel and restaurant spending.

A summary of the total amount of visitor spending taking place outside of the Zoo between 2014 and 2018 is presented below. Estimates have been segmented into spending on hotels, restaurants, fuel and other segments of the economy.

SUMMARY OF VISITOR SPENDING TAKING PLACE OUTSIDE THE ZOO

	2014	2015	2016	2017	2018
 HOTELS	\$13,246,536	\$14,338,669	\$16,491,321	\$15,177,077	\$13,353,863
 RESTAURANTS	\$19,824,970	\$21,459,472	\$24,681,165	\$22,714,248	\$19,985,596
 FUEL	\$3,947,723	\$4,273,200	\$4,914,731	\$4,523,062	\$3,979,708
 OTHER	\$3,732,856	\$4,040,617	\$4,647,231	\$4,276,879	\$3,763,100
TOTAL	\$40,752,085	\$44,111,957	\$50,734,448	\$46,691,266	\$41,082,267

As presented above, total visitor expenditures taking place outside of the Zoo are estimated to have ranged from a low of just under \$41 million (in 2014) to a high of more than **\$50 million** (in 2016). Once again, the spike in 2016 corresponds with the opening of the Polk Penguin Conservation Center during that year. These dollars are distributed throughout the economy throughout sectors that include hotel, restaurant, fuel and other (retail, groceries, etc.). Hotel expenditures have comprised nearly **50 percent** of all Zoo-related direct spending over the past five years. This compares to **33 percent** for restaurants and 10 percent for fuel.

2.4 | TOTAL DIRECT SPENDING, OUTPUT, EARNINGS AND EMPLOYMENT

The operation of a major Zoo facility can generate significant visitation and associated economic impacts within a community and region. The expenses incurred to maintain the Zoo, and the business generated by vendors working at the Zoo also generate significant economic impacts. In terms of quantifiable economic impacts presented in this report, effects are characterized in terms of direct spending, total output, personal earnings and employment. These terms are defined below.



DIRECT SPENDING

represents the initial change in final demand (or spending) generated directly by the operations of the Zoo and the visiting patrons and groups. For this report, we accumulate all direct spending in order to measure the **"economic footprint"** of the Zoo operations within the regional economy. We have not focused on issues of "net new" spending, as it is very difficult to define the likely spending patterns for visitors were the Zoo not to exist.



TOTAL OUTPUT

represents the total direct, indirect and induced spending effects generated by the Zoo. This calculation measures the **total dollar change in output** that occurs in the local economy for each dollar of direct spending generated by Zoo operations and visitation.



INDUCED EFFECTS

consist of the **positive changes** in employment, earnings and tax collections generated by changes in population associated with the direct and indirect expenditures.

The re-spending of dollars in an economy (encompassing the indirect and induced spending) is estimated by utilizing economic multipliers specific to the local economy and applying them to the amount of direct, or initial spending. The multipliers illustrate that spending in a defined economy will lead to additional spending until that dollar has completed its cycle through leakage. **Leakage** represents the portion of a dollar spent in areas outside the designated economy.

Based on the analysis summarized up to this point, we present the following estimates of the direct spending associated with the Detroit Zoo over the five-year period spanning 2014 through 2018. We have segmented DZS-related spending into the following **three sources of economic impact** generation that are used in our estimates:



ZOO OPERATIONS
IMPACTS



ZOO VENDOR
OPERATIONS IMPACTS



ZOO VISITOR RELATED
SPENDING IMPACTS

SUMMARY OF TOTAL ZOO-RELATED DIRECT SPENDING

	2014	2015	2016	2017	2018
 ZOO OPERATIONS	\$41,381,811	\$61,020,087	\$51,027,851	\$42,998,565	\$47,837,550
 ZOO VENDORS	\$5,651,404	\$7,615,202	\$8,721,589	\$10,117,670	\$9,406,723
 ZOO VISITORS	\$40,752,085	\$44,111,957	\$50,734,448	\$46,691,266	\$41,082,267
TOTAL	\$87,785,301	\$112,747,246	\$110,483,889	\$99,807,501	\$98,326,540

Over the past five years, a combined total of more than **\$509 million in direct spending** can be associated with the operations of the Detroit Zoo. Averaging nearly \$102 million per year, direct spending peaked at more than **\$112 million** in 2015 (largely a result of nearly **\$25 million** in capital expenditures taking place that year related to the development of the Polk Penguin Conservation Center). As noted above, the combined direct spending associated with the Zoo is estimated at **\$98.3 million** in 2018. The operations of the Zoo itself are the largest component of this impact, comprising an estimated 48 percent of all Zoo-related direct spending in recent years.



THIS DIRECT SPENDING

is applied to economic impact multipliers in order to measure the indirect and induced spending. Combined, the direct, indirect and induced spending is referred to as total output. Stated another way, the initial direct spending of new dollars into an economy begins a series of transactions in which the dollars are cycled through the economy. The re-spending of the dollars is estimated by utilizing the **economic multipliers** and applying them to the amount of direct, or initial, spending. The multiplier illustrates that spending in a defined economy will lead to additional spending until that dollar has completed its cycle through leakage. **Leakage** represents the portion of a dollar spent in areas outside the designated economy, such as the taxes paid on purchases of goods and services.

Multipliers are also used to calculate the amount of earnings associated with direct spending, as well as the resulting full- and part-time employment impacts. The multiplier effect is estimated in this analysis using a regional economic forecasting model provided by the IMPLAN Group, Inc., a private economic modeling company. The IMPLAN system utilizes an input-output matrix with specific data for multipliers based on regional business patterns from across the country. Financial information for the matrix of multipliers is collected from various sources that include, but are not limited to, the U.S. Department of Labor, as well as state sales and tax reports. The system utilizes this data to determine the economic independence of specific geographic regions, as well as the interdependence which exists between industries in those regions. The systems provide total industry output, personal earnings and employment data for approximately **540 industry segments**.

The multipliers used in this analysis are specific to the local economy and are summarized below.

ECONOMIC IMPACT MULTIPLIERS

	 OUTPUT	 EARNINGS	 EMPLOYMENT
 ZOO OPERATIONS	1.787	0.683	18.220
 HOTELS	1.490	0.499	10.317
 RESTAURANTS	1.656	0.685	25.998
 LOCAL TRANSPORTATION	1.732	0.675	20.900
 OTHER INDUSTRIES	1.879	0.952	39.742

CALCULATION OF ECONOMIC IMPACT SUMMARY

To calculate output, earnings and employment, these multipliers are applied to our estimates of Zoo-related direct spending. The resulting total output, earnings and full- and part-time employment impacts associated with the operations of the Detroit Zoo are presented in the following table. Annual estimates have been calculated for the past five calendar years.

DETROIT ZOO ECONOMIC IMPACT SUMMARY

	2014	2015	2016	2017	2018
 TOTAL OUTPUT	\$153,981,888	\$196,531,362	\$191,962,134	\$169,752,580	\$167,626,085
 EARNINGS	\$59,851,230	\$76,187,519	\$74,612,000	\$66,026,335	\$65,070,604
 EMPLOYMENT	1,776	2,226	2,213	1,966	1,916

TOTAL OUTPUT

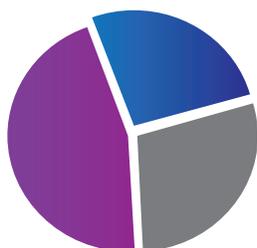
Total Output, which represents the re-spending of dollars in the economy, has ranged from a low of approximately \$154 million in 2014 to more than **\$196 million** in 2015.



The financial operations of the Zoo itself represent **nearly half of this total output**. Visitor spending has comprised an estimated **44 percent** of the Zoo's total output and the operations of Service Systems Associates (the Zoo's third-party food/beverage and gift shop services provider) accounts for **approximately eight percent** of the Zoo's total economic output.



Large capital projects, such as the development of the Polk Penguin Conservation Center, have a significant impact on the total output of the Detroit Zoo. For example, in 2015, more than \$44 million in output can be directly attributed to capital projects.



Over the past five years, **approximately 46 percent** of the total output generated by Zoo-related visitor spending takes place among people residing outside of Michigan. This compares to **31 percent** for those residing outside of the tri-county metro area (but within Michigan) and **23 percent from local visitors**.

PERSONAL EARNINGS

Personal Earnings, which represents the dollars earned among jobs supported by Zoo operations, has ranged from a low of approximately \$59.9 million in 2014 to approximately **\$76.2 million** in 2015.

EMPLOYMENT

Employment, which represents the number of full- and part-time employment impacts supported by Zoo operations, has ranged between **1,776 and 2,226** positions between 2014 and 2018.