

Museums as Economic Engines

A NATIONAL REPORT

An Economic Impact Study for the
American Alliance of Museums
December 2017

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From the President of AAM



As a nonprofit finance executive for most of my career, I appreciate and respect the value of strong data and analytics. I have witnessed the power of numbers, and I know that persuasive data and facts can open eyes and change minds. I am confident that this unprecedented report will open many eyes to the power of the museum field.

Throughout this detailed study, the numbers tell an indisputable story about museums as true economic engines for their communities, supporting jobs and wages that are vital to the health of their hometowns.

For over 100 years, the Alliance has championed museums and nurtured excellence in museum practice to contribute to a more informed and enriched world. Museums play an essential role in the cultural and social life of the United States – and beyond. They tell our stories, preserve our heritage, interpret the past, and explore our shared futures. Museums enrich lives each and every day.

Our legislators, policymakers, funders, and trustees also need to know that museums sustain important jobs for their constituents. They need to recognize that museums generate substantial tax revenue for their communities, and that museums are economic drivers providing financial benefits that ripple throughout the economy.

Until now, we have lacked comprehensive economic data representing the diverse museum field. Working with our highly esteemed partner, Oxford Economics, we embarked on this unique study, the first of its kind to examine the full scope of the museum sector's economic contributions to the US economy. We are grateful to the Andrew W. Mellon Foundation for their generous support, without which this work would not be possible.

In partnership,

A handwritten signature in black ink that reads "Laura Lott". The signature is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Laura L. Lott
President and CEO
American Alliance of Museums



ABOUT OXFORD ECONOMICS

Oxford Economics was founded in 1981 as a commercial venture with Oxford University's business college to provide economic forecasting and modelling to UK companies and financial institutions expanding abroad. Since then, we have become one of the world's foremost independent global advisory firms, providing reports, forecasts, and analytical tools on 200 countries, 100 industrial sectors, and over 3,000 cities. Our best-of-class global economic and industry models and analytical tools give us an unparalleled ability to forecast external market trends and assess their economic, social, and business impact.

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December 2017

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The modelling and results presented here are based on information provided by third parties, upon which Oxford Economics has relied in producing its report and forecasts in good faith. Any subsequent revision or update of those data will affect the assessments and projections shown.

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Executive summary

\$50 billion

GDP contribution in 2016.

This is made up of direct, indirect, and induced effects as the impact of museums spreads through the US economy.

726,200 jobs

Supported in 2016.

This includes the 372,100 jobs that are directly provided in the museum sector in the US.

\$12 billion

Fiscal contribution in 2016.

This was made up of \$8 billion in federal taxes and \$4 billion in state and local taxes.

Museums play an essential role in cultural and social life across the US. They tell our stories, preserve our heritage, interpret the past, and explore the future. In this way, museums enrich our lives daily: feeding a hunger for knowledge and igniting our imaginations. They provide forums for learning, but also a place for enjoyment and escape. Museums preserve and protect more than a billion objects, safeguarding these treasures for future generations. Museums, widely defined, also provide places where communities can come together, interact, understand, and appreciate cultural diversity.

But beyond this cultural impact, the museum sector is also essential to the national economy – generating GDP, stimulating jobs, and contributing taxes.

These economic effects can be measured using a standard technique known as economic impact analysis. This kind of analysis measures not just the direct (operational) contribution of the museum sector but also the impact that is felt as its activities ripple out across the economy. This includes, for example, the impact generated as museums makes purchases from a wider supply chain, known as the indirect impact. It also measures the effects that are felt in the wider consumer economy as employees in museums and their supply chains spend their wages on things like meals in restaurants or going to the gym (known as the induced impact). Each of these economic channels can be quantified in terms of a contribution to GDP, jobs, and the amount of tax revenue that is generated for all levels of government.

Each year, more than 850 million visits are made to US museums from all across US society, and that number continues to grow. To meet this level of demand, the museum sector directly supports 372,100 jobs and generates \$15.9 billion in income. In support of the sector, museum volunteers also contribute more than a million hours of service every week, which we do not

quantify. But, the economic contribution of museums also extends far beyond these immediate operations—in ways that we can calculate.

The total economic contribution of museums in 2016 amounted to more than \$50 billion in GDP, 726,200 jobs, and \$12 billion in taxes to local, state, and federal governments. On top of the 372,100 workers directly employed by the museum sector, a further 354,100 jobs are supported in the wider economy, either in the supply chains of museums or through the wage spending of those employed by museums themselves or those employed in the supply chain—totalling 726,200 jobs.

The contribution of museums is widespread. Of the \$50 billion total contribution to GDP made by the sector in 2016, some \$34.2 billion results from supply chain and consumer spending activities. This spreads the benefits of the sector to other parts of the US economy, including, for example, \$11.9 billion in financial services; \$6.0 billion in trade, transportation, and utilities; and \$4.8 billion in professional and business services. The impact is also spread widely across the US, with every state realizing economic benefits from museums.

GLOSSARY OF TERMS

American Community Survey (ACS): An annual household survey conducted by the US Census Bureau that samples about 3.5 million addresses across the US. It provides information on individual socioeconomic and demographic characteristics.

County Business Patterns (CBP): A US Census program that measures subnational economic data by industry. This series includes the number of establishments, employment during the week of March 12, first quarter payroll, and annual payroll.

Gross Domestic Product (GDP): Produced by the Bureau of Economic Analysis (BEA), GDP is the official economic measure of output in the US economy.

Gross Value Added (GVA): A measure of output less intermediate consumption (contribution to GDP), it is the measure of the value of goods and services produced in a specified region.

IMPLAN: Economic impact software that uses Input-Output tables showing the relationships between industries to evaluate the full economic contribution of one industry throughout the economy.

Metropolitan Statistical Area (MSA): A geographic region in the US, defined by the Office of Management and Budget, to identify a single set of geographic delineations for the Nation's largest centers of population and activity (i.e. cities).

North American Industrial Classification System (NAICS): The standard used by Federal statistical agencies in classifying business establishments for the purpose of collecting, analyzing, and publishing statistical data related to the US business economy.

NAICS Code 712 (Museums, Historical Sites, and Similar Institutions): This US industry comprises establishments primarily engaged in the preservation and exhibition of objects, sites, and natural wonders of historical, cultural, and/or educational value.

Occupational Employment Statistics (OES): A Bureau of Labor Statistics (BLS) program that produces employment and wage estimates annually for over 800 occupations.

Quarterly Census of Employment and Wages (QCEW): A Bureau of Labor Statistics (BLS) program that publishes a quarterly count of employment and wages reported by employers covering 98 percent of US jobs.

Standard Occupational Classification (SOC): A system used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of 840 detailed occupations according to their occupational definition.

AN INTRODUCTION TO ECONOMIC IMPACT ANALYSIS

A standard economic impact assessment identifies three channels of impact that stem from an activity:

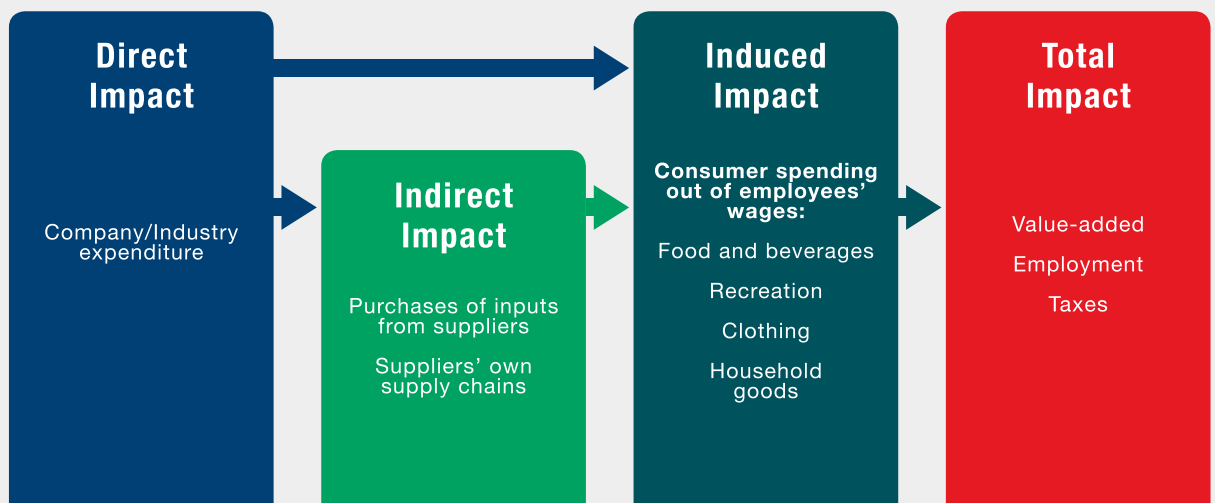
- **Direct effect**, which measures the economic benefit of museum operations and activities in the US.
- **Indirect effect**, which encapsulates the activity driven by the supply chain as a result of the procurement of goods and services from other businesses.
- **Induced effect**, which captures the impact of workers spending their wages on locally produced goods and services. This supports activity across the spectrum of consumer goods and services, and their supply chains. An example of this is the purchases a worker makes using his wages, including groceries, clothing, transportation, and utilities.

In accordance with standard economic impact assessments, the scale of the museum sector is measured using four key metrics:

- **GVA**—the gross value added (GVA) contribution to GDP.
- **Employment**—employment is measured in terms of headcount of workers.
- **Wages**—the compensation paid to workers within the industry, the industry’s supply chain, and induced wages paid to workers in consumer industries.
- **Taxes**—gross tax receipts paid at federal, state and local levels.

All monetary impacts in this report are presented in current 2016 (i.e. non-inflation adjusted) US\$.

Fig. 1: The channels of economic impact



Introduction

Museums play an essential role in cultural and social life across the US by collecting, preserving, researching, and interpreting objects, living specimens, and historical records. In doing so, museums enrich our lives, providing forums for learning, and support as well as a variety of services to our communities. Museums preserve and protect more than a billion objects and help the public better understand and appreciate cultural diversity. But beyond this cultural impact, the museum sector is also essential to the national economy – generating GDP, creating jobs, and contributing taxes.

Demand for the kind of opportunities and engagement that the museum sector provides is widespread and data about visits and exhibits is readily available. More than 850 million visits are made each year to US museums. In 2009, AAM completed a financial study of museums, but despite this, no comprehensive economic analysis has attempted to address the overarching impact of the museum sector on the US economy. Until now, we have lacked comprehensive economic data representing the diverse museum field.

To address this, the American Alliance of Museums (AAM), founded in 1906 and which now represents more than 35,000 professionals and volunteers, institutions, and corporate partners in the sector, commissioned Oxford Economics to conduct research, analysis, and impact modeling to clearly quantify the economic contribution of museums in the US.

AAM's membership, and the sector more generally, as defined in this study, comprises a diverse group of organizations. It includes aquariums, art museums, botanic gardens, children's museums, culturally specific museums, halls of fame, historic sites, history museums, maritime museums, military museums, natural history museums, planetariums, presidential libraries, science and technology centers, and zoos.

For this study, Oxford Economics has quantified the economic contribution of the sector using an economic impact analysis at the national level and by state, as set out in Fig. 1. This technique highlights the importance of the museum sector to the US economy in terms of jobs, wages, tax revenue, and GDP.

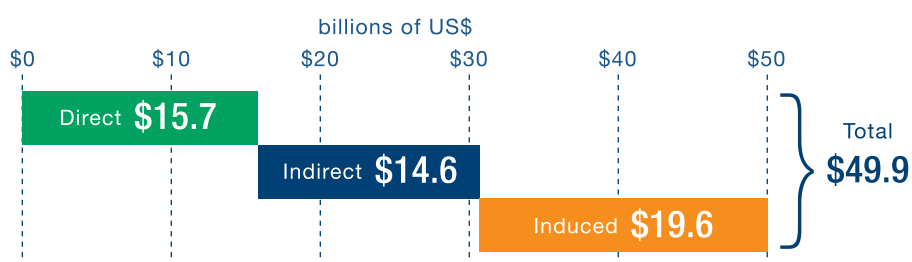


The GDP impact of museums

Museums have a considerable economic footprint in the US. Hundreds of thousands of people work in the industry, designing displays, educating visitors, conducting research, and preserving history throughout all states and territories in the US. In turn, the purchases made by museums from suppliers to support their operations (that is, the indirect effect) enable further activity, sustaining thousands more jobs across the country. Finally, wages paid to museum employees, and those employed in the supply chain, fund consumer spending (the induced effects), for example in retail and leisure establishments. This delivers additional economic benefit to the US economy.

In the following sections, we quantify the industry's economic footprint in terms of its contribution to GDP, the employment it supports, and the tax revenues it generates at the federal, state, and local level. In this chapter, we explore the three core channels of impact, starting with the direct contribution of museums.

Fig. 2: The total GVA contribution of museums



Source: Oxford Economics, IMPLAN



Combining all the channels of impact—direct, indirect (supply chain), and induced (wage spending)—the total impact that museums had on the US economy amounted to \$50 billion in 2016, equivalent to about 0.3 percent of the total US economy (note: US nominal GDP was \$18.6 trillion in 2016). Fig. 2 shows the breakdown of this impact across the three core channels, in terms of GVA contribution to GDP. We subsequently explore each channel of impact in turn.

DIRECT GDP IMPACT

The direct impact of museums comprises the value-added output generated by the sector; those employed directly by museums, the wages these museums pay, their operation expenditures, and the taxes that they pay. We estimate that in 2016, this direct impact accounted for \$15.7 billion in GDP and \$15.9 billion in employee compensation (wages).

A comparison of the total impact with the direct impact reveals how, for every \$100 of value-added output created by museums, an additional \$220 of value added is created in other sectors of the US economy as a result of supply chain and employee expenditure impacts. This means that the sector has a value-add multiplier impact of 3.2, which is greater than that for boat building (2.8), and just below that for chocolate and confectionery manufacturing (3.5), and far exceeds that for amusement parks and arcades (1.3) or fruit farming (1.4), for example.

INDIRECT GDP IMPACT

The indirect impact of the museum sector reflects the employment and GDP contribution made by the suppliers of those establishments (e.g. security providers, IT support, and legal services) and, in turn, within the supply chains of those suppliers. In 2016, the GDP contribution of these suppliers was \$14.6 billion, including \$7.5 billion in employee compensation.

INDUCED GDP IMPACT

The induced impact of the museum sector represents the economic activity supported by the consumer spending of wages by those employed directly by museums or in their supply chains. As a result of this spending, we estimate that the induced impact attributable to museums' operations to be a \$19.6 billion contribution to GDP in 2016. This includes \$11.2 billion in employee compensation.



GDP IMPACT BY SECTOR

The economic impact of the sector's activities is spread throughout the economy as the employees and suppliers of the museum sector spend their incomes purchasing goods and services from all kinds of other businesses, from restaurants to power companies, and retail to health care and so on. The impact at sector level is calculated using an input-output modeling framework. This uses inter-industry relationships to calculate the multipliers, or the ripple effects of museums' activities, which, in turn, support activity in other sectors of the economy.

The total GDP impact (direct + indirect + induced) of the museum sector is displayed in Fig. 3. It is broken down into the major sectors of the US economy. The direct impact of the museum sector is concentrated in the leisure and hospitality category. Unsurprisingly, this sector is also where museums have the greatest overall national impact (\$17.2 billion). In fact, 34 percent of the overall GVA impact is captured in this sector.

Still, 66 percent of the total GVA impact is generated in a diverse set of sectors outside of leisure and hospitality. For example, there are three sectors where museums have a significant impact: financial activities (24 percent); trade, transportation, and utilities (12 percent); and professional and business services (10 percent). These sectors represent areas where museums spend money on

Fig. 3: Museums' GVA impact by sector

Sector	Direct	Indirect	Induced	Total
\$ in millions				
Natural Resources and Mining	0.0	242.0	437.7	679.7
Construction	0.0	288.6	198.5	487.1
Manufacturing	0.0	1,060.7	1,685.0	2,745.7
Trade, Transportation, and Utilities	0.0	2,343.0	3,664.2	6,007.2
Information	0.0	822.4	971.2	1,793.6
Financial Activities	0.0	6,325.5	5,572.3	11,897.8
Professional and Business Services	0.0	2,712.8	2,053.7	4,766.5
Education and Health Services	0.0	131.0	2,728.9	2,859.9
Leisure and Hospitality	15,653.6	233.3	1,281.3	17,168.3
Other Services	0.0	223.7	845.7	1,069.3
Government	0.0	189.8	191.3	381.1
Total	15,653.6	14,572.7	19,629.8	49,856.2

Source: Oxford Economics, IMPLAN



their supply chain or areas where employees spend their incomes on goods and services.

For example, some of the top inputs (i.e. indirect impacts) for museum operations include:

- Real estate buying and selling, leasing, managing, and related services (part of financial activities);
- Insurance (part of financial activities);
- Advertising, public relations, and related services (part of professional and business services); and
- Scenic and sightseeing transportation services and support activities for transportation (part of trade, transportation, and utilities).

Similarly, some of the top expenditures for consumers (i.e. induced impacts) include:

- Housing (part of financial activities);
- Transportation (part of trade transportation, and utilities); and
- Healthcare (part of education and health services).

For scalability and comparison, if the museum sector were represented as a US city, the industry would rank as the 59th largest MSA in terms of GDP. It would fall between Albany, NY and Oxnard, CA. Fig. 4 illustrates this comparison, along with similar sized MSAs in terms of GDP.

Fig. 4: MSA comparison of museum GDP contribution

MSA	GDP
GDP, in billions of US\$	
Tulsa, OK	54.6
Grand Rapids, MI	53.9
Baton Rouge, LA	53.7
Albany, NY	51.1
Museum sector	49.9
Oxnard, CA	48.2
Madison, WI	46.6
Des Moines, IA	46.6
New Haven, CT	45.1

Source: Oxford Economics, BEA



The employment impact of museums

Besides its GDP and tax impact, the museum industry directly employs 372,100 people. On top of this, the museum sector indirectly supported an additional 136,800 jobs through supply-chain purchases. We estimate that a further 217,300 induced jobs were sustained as employees of the industry and its supply chain spent their wages on consumer goods. In total, the economic activity of the museum sector supports 726,200 jobs throughout the US economy.

Different sectors affect the US economy in different ways. The best way to compare is by evaluating jobs and value-add multipliers. The museum industry has a jobs multiplier of 2.0. This means that for every direct job in the industry, an additional job is supported elsewhere in the economy. This is higher than many other industries. Fig. 5 displays the job and value-add multiplier of different sectors in the US.

Fig. 5: Multipliers of museums compared to other sectors

Sector	Jobs Multiplier	Value-Add Multiplier
Bottled and canned soft drinks & water	4.8	4.4
Chocolate and confectionery manufacturing	5.8	3.5
Museum sector	2.0	3.2
Engineered wood member and truss manufacturing	2.3	3.2
Boat building	2.2	2.8
Greeting card publishing	1.6	1.5
Fruit farming	1.2	1.4
Amusement parks and arcades	1.2	1.3

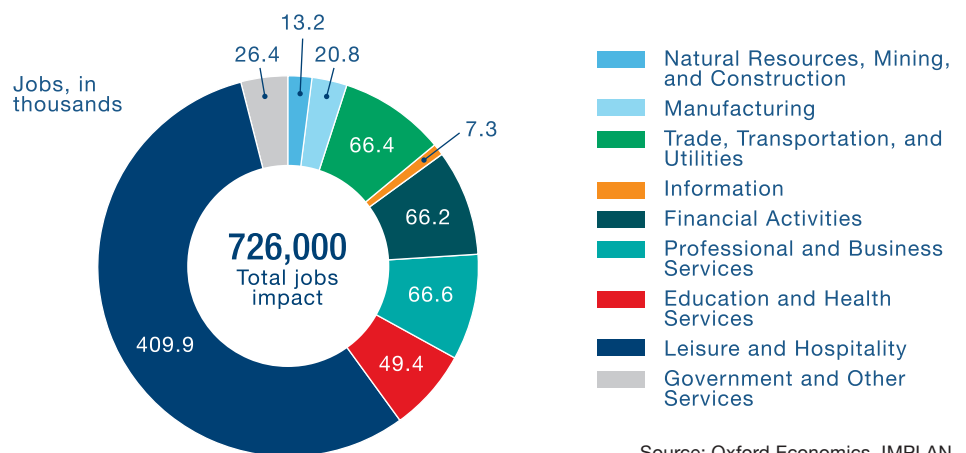
Source: Oxford Economics, IMPLAN



JOBS IMPACT BY SECTOR

The total employment impact (direct + indirect + induced) of the museum sector is displayed in Fig. 6 and Fig. 7 (below). Similar to the GVA impact, the industry's employment impact is concentrated in the leisure and hospitality sector, which accounts for 56 percent of the total employment impact. This is followed by professional and business services (9 percent); trade, transportation, and utilities (9 percent); and financial services (9 percent).

Fig. 6: Total museum jobs impact by sector



Source: Oxford Economics, IMPLAN

Fig. 7: Detail museums' jobs impact by sector

Sector	Direct	Indirect	Induced	Total
Jobs, in thousands				
Natural Resources and Mining	0.0	1.6	5.1	6.7
Construction	0.0	3.8	2.7	6.5
Manufacturing	0.0	10.4	10.4	20.8
Trade, Transportation, and Utilities	0.0	22.2	44.2	66.4
Information	0.0	3.6	3.7	7.3
Financial Activities	0.0	40.2	25.9	66.2
Professional and Business Services	0.0	39.3	27.3	66.6
Education and Health Services	0.0	5.2	44.3	49.4
Leisure and Hospitality	372.1	6.1	31.6	409.9
Other Services	0.0	2.9	20.3	23.2
Government	0.0	1.3	1.8	3.1
Total	372.1	136.8	217.3	726.2

Source: Oxford Economics, IMPLAN

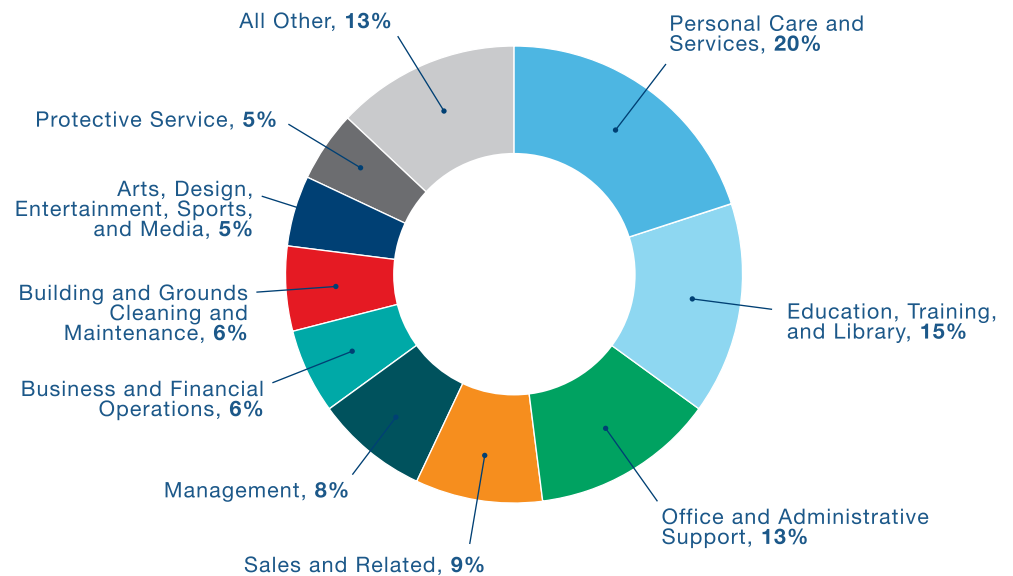


OCCUPATIONAL PROFILE

The occupational profile of the museum sector describes the types of jobs that make up the industry. The major occupation group that has the largest share of employment within the industry is personal care and service occupations, which accounts for about 20 percent of workers in the sector. The roles of museum sector employees are many and varied: they are directors, curators, registrars, educators, exhibit designers, public relations officers, development officers, security managers, volunteer coordinators, researchers, scientists, technologists, and historians, among others.

Beyond the customer-facing service museums provide, several other functions are essential to the operations of museums, including education, training, and library occupations that comprise about 15 percent of workers, office and administrative support occupations that make up about 13 percent, as well as sales and related occupations, which account for about 9 percent of workers in the industry.

Fig. 8: Occupation profile of museums



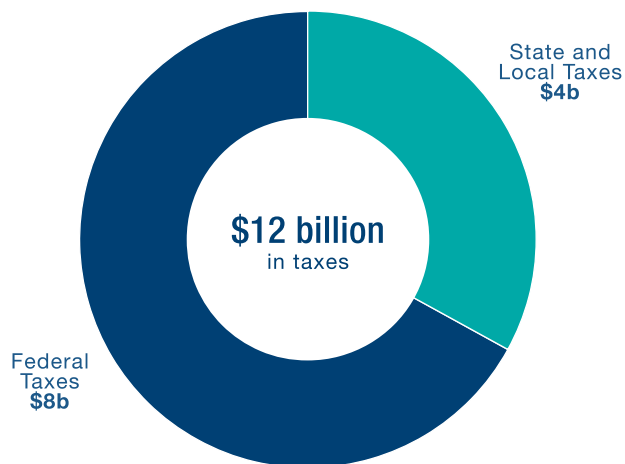
Source: Oxford Economics, BLS OES



Tax impact of museums

The direct, indirect, and induced economic activity supported by the museum sector generated \$8.0 billion in federal tax revenue in 2016 and an additional \$4.0 billion in state and local tax revenue. In total, the economic activity that the museum sector generated was worth over \$12.0 billion in taxes for all levels of government. In total, each job created by the industry's activity results in \$16,495 in additional tax revenue (from all sources).

Fig. 9: Museum tax impact



Source: Oxford Economics, IMPLAN



State-level detail

Museums provide important economic impact to every area of the United States.

The top 10 states are geographically diverse and account for 57% of museums' economic impact nationwide, in terms of GVA.

Museums operate in all corners of the United States, representing a whole host of institutions, including art museums, history museums, botanic gardens, children's museums, historic sites and historical societies, military and maritime museums, science centers, zoos, and aquariums. As a whole, the largest impact is felt in the Mideast states (\$10.7 billion), followed closely by the Southeast region (\$9.9 billion), and the Far West region (\$9.3 billion).¹

There are two ways to evaluate state-level detail. One is measuring the magnitude of the total GVA impact in each state. The other considers the relative contribution of the museum sector to each state's economy, using a measure called location quotient. Each measure is detailed in the following sections.

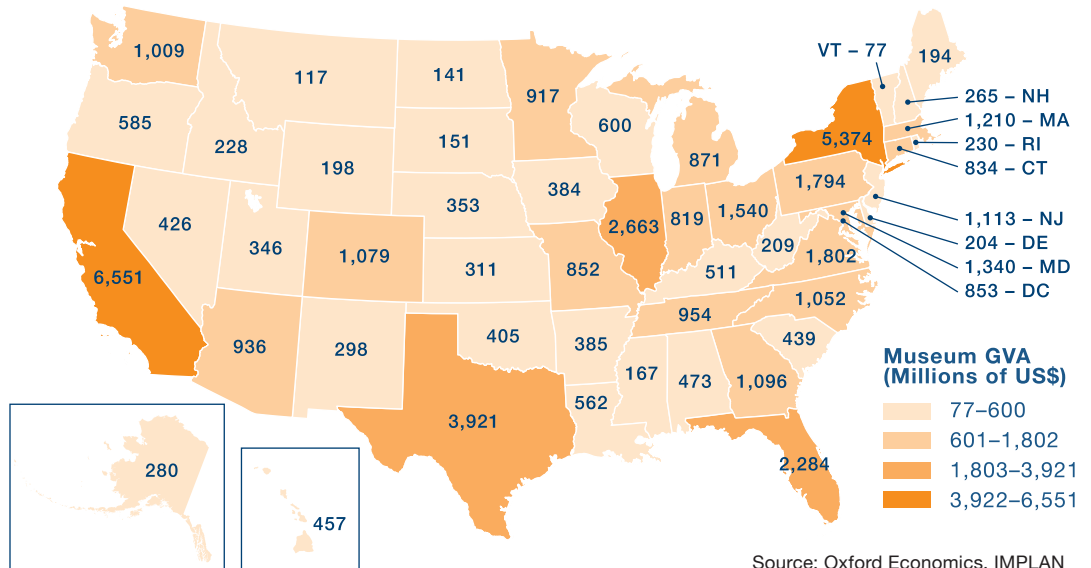
GVA IMPACTS BY STATE

The states where the museum sector generated the highest economic impact, in terms of GVA, include California (\$6.6 billion), New York (\$5.4 billion), and Texas (\$3.9 billion). The top 10 states where the museum sector had the greatest impact account for over half of the sector's economic impact nationwide. They include states from most geographic regions in the US such as Illinois (\$2.7 billion) in the Great Lakes region, Florida (\$2.3 billion) in the Southeast region, Pennsylvania (\$1.8 billion) in the Mideast region, and Massachusetts (\$1.2 billion) in the New England region. Fig. 10 presents a map that shows, in absolute dollar terms, how museums' economic impact differs by state.

¹ Regions, as determined by the Bureau of Economic Analysis. For a detailed list of states by region, see <https://www.bea.gov/regional/docs/regions.cfm>.



Fig. 10: Museum GVA impacts by state



Source: Oxford Economics, IMPLAN

LOCATION QUOTIENTS

A location quotient (LQ) for an industry helps to illustrate how concentrated it is in one state by comparison to others. A location quotient that is equal to one indicates that the state's industry concentration is equal to the national concentration of the same industry. Industries with higher location quotients (usually greater than 1.2) indicate that a region has a higher concentration in the production of that good or service, relative to the rest of the nation.

A value of 1.5 indicates that industry output within the region is 1.5 times more concentrated than the US average. A location quotient below one indicates that industry output within the region is less concentrated compared to the US average.

Note: High output industries do not necessarily result in high location quotients, as this statistic is relative to national output. For example, if the museum sector makes up 0.70 percent of Washington DC's economy and only 0.28 percent of output in the US, then Washington DC's LQ for the museum sector would be 2.5 (0.70%/0.28%).

As noted above, the GVA impacts of the museum industry is largest in California, New York, and Texas. However, none of the top five states in terms of GVA rank in the top five LQ values, meaning the scale of the impact does not indicate a particular concentration. The states with high LQ values include the District of Columbia (DC), Hawaii, and Alaska. This indicates, for example, that the



economy of Alaska is more reliant on the museum sector compared to Florida, even though Florida has a higher output produced by the industry.

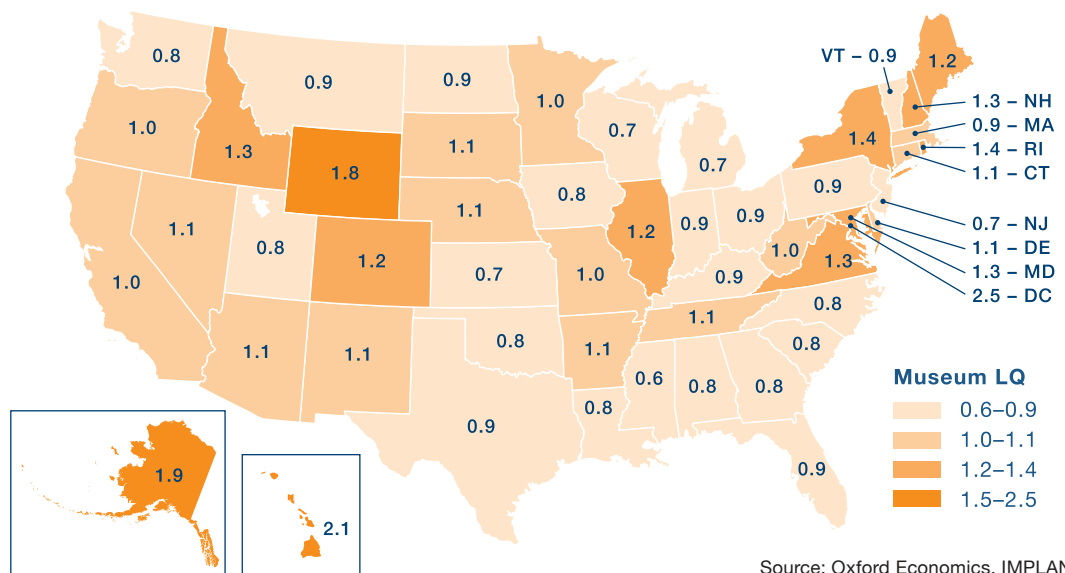
Fig. 12 presents a map that shows, in relative terms (LQ), how museums' economic impact differs by state.

Fig. 11: Top 10 states by GVA impacts and location quotients (LQ)

Top GVA Impact States			Top LQ States		
State	GVA (in billions)	LQ	State	GVA (in billions)	LQ
California	6.6	1.0	District of Columbia	0.9	2.5
New York	5.4	1.4	Hawaii	0.5	2.1
Texas	3.9	0.9	Alaska	0.3	1.9
Illinois	2.7	1.2	Wyoming	0.2	1.8
Florida	2.3	0.9	Rhode Island	0.2	1.4
Virginia	1.8	1.3	New York	5.4	1.4
Pennsylvania	1.8	0.9	Virginia	1.8	1.3
Ohio	1.5	0.9	New Hampshire	0.3	1.3
Maryland	1.3	1.3	Maryland	1.3	1.3
Massachusetts	1.2	0.9	Idaho	0.2	1.3

Source: Oxford Economics, IMPLAN

Fig. 12: Museum location quotient (LQ) by state



Conclusion

This study has demonstrated how vital and valuable the museum sector is to the US economy. Museums offer diverse and educational experiences to visitors from all across the nation and the world. In fact, we estimate that there are 372,100 museum workers employed in the US along with 3 million volunteers.² These workers and volunteers enable the estimated 850 million visitors to museums to learn about our heritage, interpret the past, and explore the future. By preserving and protecting more than a billion objects, museums provide forums for learning and safeguard these treasures for future generations.

In total, museums support employment of over 726,200 workers in the US and generate over \$50 billion in economic activity. Their economic activity impacts every part of the US with significant economic activity in each region.

Appendix C provides a detailed summary of the economic impact of the museum sector in each of the US states.

Fig. 13: Summary of museums' economic impact

	Direct	Indirect	Induced	Total
Income, GVA, Federal, State and Local Taxes in US \$				
Employment	372,133	136,787	217,286	726,206
Income (billions)	\$15.9	\$7.5	\$11.2	\$34.7
GVA (billions)	\$15.7	\$14.6	\$19.6	\$49.9
Federal, State and Local Taxes (billions)				\$12.0

Source: Oxford Economics, IMPLAN

² See "American Alliance of Museums' Museum Financial Information Survey, 2009."

Appendix A

LITERATURE REVIEW

Museums and cultural institutions serve a vital role in collecting, preserving, studying and displaying artifacts and other objects of cultural, historical, or scientific importance. Given the breadth and depth of the roles that museums and cultural institutions play in society, quantifying their economic value is a challenging task, especially given that many of them function as public or quasi-public entities. Three fundamental research approaches seek to characterize and quantify the value of museums as we see in several examples below: economic impacts (the focus of this study), societal impacts, and tourism impacts. Ultimately, the approach and focus of the impact analyses reflect the objectives and strategies of organizations seeking to quantify the value of museums and cultural institutions.

Economic Impacts

The most common approach used to quantify the economic contribution that museums and cultural institutions make to an area uses input-output modeling. As demonstrated in this report, the input-output model quantifies an organization's expenditures, effects (a.k.a. direct effects) across supply chains (a.k.a. indirect effects), and includes an assessment of the economic value stemming from paid employee consumption of personal goods and services (a.k.a. induced effects). For example, the Museum of Fine Arts, Boston (MFA) completed a detailed assessment of their impact across four categories—museum operations; visitors and the School of the Museum of Fine Arts (SMFA) students and guests attending graduation; and 10-year construction impacts.³ The study calculates the direct, indirect, and induced effects stemming from MFA's operational spending, as well as the economic value generated in the community from non-resident visitor spending—totaling in excess of \$338 million.

³ Economic Development Research Group and Mt. Auburn Associates, Inc. The Economic and Community Impacts of the Museum of Fine Arts, Boston (July 2015).

Cincinnati's Museum Center took a similar approach, quantifying their economic impact and ongoing construction impact to the tune \$114 million (annually) to the regional economy. The museum also sought to call further attention to their societal contributions by providing quantitative evidence of their community engagement and education programs such as ECSITE, which provides training to dozens of pre-K teachers, who in turn impacted more than 1,200 young learners in 2012.⁴

Societal Impacts

Measuring the societal value of cultural institutions is among the most challenging of quantitative efforts and requires a broader set of civic engagement and understanding to develop the right series of cultural metrics. Usually these efforts are developed with a specific objective and purpose in mind such as health, education, social inclusion, identity, urban revitalization, etc. Contrary to economic impacts, societal impacts generally focus on measuring the results of an activity, rather than the activity itself. For example, one study evaluated smaller community museums in Australia and the impacts they had on their local communities. The impacts were measured through focus groups to ascertain the social and cultural benefits of the museums and participants' perceived impacts—this was followed by a quantitative survey administered to the local population.⁵

Tourism Impacts

A tool used for discussion of the economic importance of museums beyond their communities focuses on the draw that museums and cultural institutions have for tourists and visitors. By definition, tourists enter a community from outside the area, spend money on goods and services, and buoy economic activity—especially in recreation and hospitality sectors. Museums often serve as a magnet that draw in visitors. To this end, many museums seek to quantify this value by collecting data on visitors to their institutions. Through either surveys or a quick question upon entrance (e.g. what's your zip code? or what country are you visiting from?) museums can gather valuable data on their visitors. This data can then be translated into the visitor spending profiles to

4 Rexhausen, Jeff; Heath, Julie; Jones, Michael. Quality of Life, Quality of Living: Economic & Community Benefits of Cincinnati Museum Center. Economics Center—University of Cincinnati. June 2014.

5 Kelly, Lynda. Measuring the impact of museums on their communities: The role of the 21st century museum. INTERCOM – Conference Paper. 2006.

calculate the spending effects (and ripple effects) of non-resident visitors coming into a community's museum.

A Maine Museum visitor impact survey of 14 museums found that about 442,000 non-resident visitors spent nearly \$71 million at museums—and 1 in 5 visitors indicated that museums were the primary reason for their trip and subsequent spending associated with the trip.⁶ Similar to input-output modeling, visitor spending operates in a similar fashion. Visitors stay at hotels, eat at restaurants, visit cultural sites and consume goods and services within a local economy. This serves as an economic boon to drive benefits across many other sectors (in addition to cultural sectors).

Another study evaluated the effects of the Guggenheim Museum Bilbao on driving new visitor growth in a largely non-tourist destination in the Basque region of Spain.⁷ Specifically, the opening of a Guggenheim museum in that region served as a test case of the potential for economic transformation, stemming from a globally-recognized cultural institution. The study used survey results from approximately 1,200 respondents to ascertain their reason for visiting Guggenheim Museum Bilbao. Analyzing the results in conjunction with other visitor data and tourism metrics, a series of regression models were built to segment normal tourism growth cycles from tourism increases attributable to Guggenheim Museum Bilbao. The findings suggest that Guggenheim Museum Bilbao accounts for a foreign visitor increase of nearly 44% to the region and a Spanish national visitor increase of 55% between October 1997 and January 2000.

6 Lawton, Chuch and Rowe, Lindsay. *Maine Museums: An Economic Impact Study*. Prepared for the Maine Arts Commission. 2009 Survey.

7 Plaza, Beatriz. Evaluating the influence of a large cultural artifact in the attraction of tourism: The Guggenheim Museum Bilbao case. *Urban Affairs Review*, Vol. 36, No. 2. November 2000 (pp. 264-274).

Appendix B

CREATING THE DATABASE

To conduct the impact assessment and analysis, Oxford Economics and AAM constructed a state-level database using information gathered from various sources. Use of multiple data sources increases accuracy in the database and mitigates chances of error and outliers in estimation process. The sources of data include:

- BLS Quarterly Census of Employment and Wages (QCEW): 2016 annual data.
- BLS Occupational Employment Statistics (OES): May 2016 data.
- Census American Community Survey (ACS): 2015 annual data.
- BEA Gross Domestic Product (GDP): 2015 GDP by metro area.
- IMPLAN (IMpact analysis for PLANning): 2016 annual data.
- Census County Business Patterns (CBP): 2015 annual data.
- Proprietary databases: Including data provided by AAM, Institute of Museum and Library Services (IMLS), and D&B Hoovers.

Oxford Economics would like to thank AAM employees for their support in completing detailed reviews that allowed us to complete this analysis. Without this input, the analysis would not have been possible.

ABOUT IMPLAN

This analysis utilized IMPLAN economic impact software. IMPLAN is an input-output modeling system used to build models at various levels of geography, including national, state, county, and congressional district. It allows for adjustable assumptions of supply-chain connections and leakages from survey input data and improved accuracy of assumptions. All data are presented in 2016 values.

IMPLAN is widely used and recognized by government organizations, nonprofits, economic development organizations, workforce planners, education institutions, and consultants across the US and Canada.

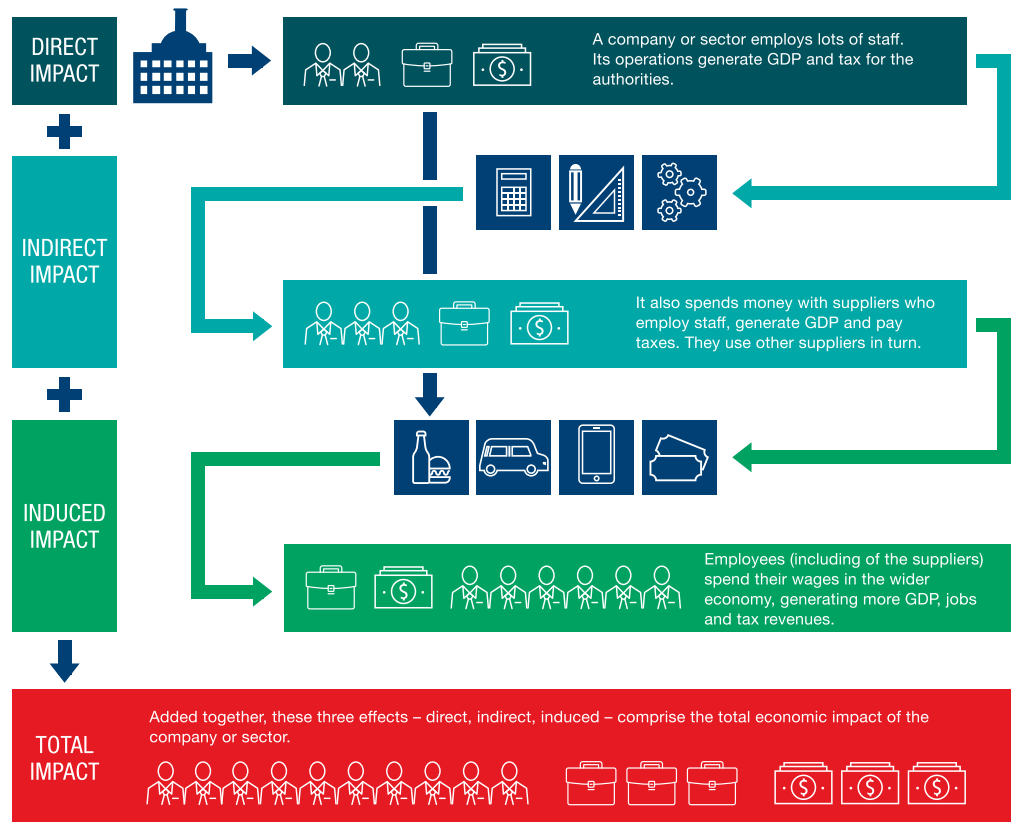
IMPACT MODEL STRUCTURE

The model is designed to capture the inter-industry relationships, consumer spending, and ripple effects that result from direct economic activity generated by museums. The impacts are measured across four channels:

- **Direct Impact:** direct employment and spending by the industry's business operations
- **Indirect Impact:** supply-chain effects, stemming from industry's operations (e.g. legal services, utilities, etc.)
- **Induced Impact:** describes impact resulting from employees spending their incomes in state/national economy
- **Taxes:** Gross tax receipts paid at the federal, state, and local level.

Input-output modeling characterizes and follows the flow of spending through an economy, thereby capturing and quantifying effects on supply chains, consumer/payroll spending, economic leakages, and even taxes paid to governments. The following figure depicts the overarching structure of the model.

Fig. 14: The input-output model structure



Appendix C

This table displays the full impact results for museums in each state and the US.

Income, GVA, and Federal, State & Local Taxes in US\$					
United States	LQ = 1.0	Direct	Indirect	Induced	Total
Employment		372,133	136,787	217,286	726,206
Income		15,944,839,118	7,499,351,898	11,235,951,043	34,680,142,058
GVA		15,653,639,730	14,572,697,030	19,629,825,073	49,856,161,832
Taxes, all sources					11,978,645,600
Alabama	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		5,296	1,818	2,234	9,410
Income		144,474,129	76,720,867	97,422,115	320,222,614
GVA		137,018,132	154,260,308	179,156,719	473,040,212
Taxes, all sources					100,484,335
Alaska	LQ = 1.9	Direct	Indirect	Induced	Total
Employment		1,798	445	1,008	3,240
Income		124,642,848	25,457,775	50,846,580	201,195,701
GVA		119,955,775	60,188,313	99,613,972	280,003,469
Taxes, all sources					70,923,896
Arizona	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		7,107	2,959	4,769	14,792
Income		321,183,728	125,135,053	219,447,819	663,776,744
GVA		307,452,918	250,548,922	381,513,799	935,688,507
Taxes, all sources					209,824,089
Arkansas	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		4,149	1,283	1,777	7,250
Income		131,738,638	51,472,660	73,457,948	257,747,377
GVA		135,255,407	108,891,943	138,756,570	384,671,749
Taxes, all sources					89,356,595
California	LQ = 1.0	Direct	Indirect	Induced	Total
Employment		38,207	16,074	26,785	80,722
Income		2,093,711,996	963,389,231	1,505,014,910	4,545,714,992
GVA		2,037,174,118	1,895,790,523	2,646,427,331	6,550,892,138
Taxes, all sources					1,560,309,970

Income, GVA, and Federal, State & Local Taxes in US\$					
Colorado	LQ = 1.2	Direct	Indirect	Induced	Total
Employment		8,107	3,054	5,038	16,162
Income		362,684,699	154,201,789	252,309,130	767,088,455
GVA		350,254,188	297,866,088	434,811,481	1,078,739,798
Taxes, all sources					256,682,262
Connecticut	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		5,398	1,877	2,941	10,229
Income		234,112,851	133,963,926	187,343,375	556,204,970
GVA		237,090,533	273,188,584	320,151,470	833,852,544
Taxes, all sources					223,631,758
Delaware	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		1,393	458	692	2,547
Income		52,512,388	26,614,736	37,570,693	116,835,540
GVA		50,104,290	75,021,129	77,246,716	203,645,828
Taxes, all sources					39,626,956
District of Columbia	LQ = 2.5	Direct	Indirect	Induced	Total
Employment		6,418	1,192	1,398	9,110
Income		568,411,122	110,035,971	106,024,845	792,919,336
GVA		521,068,276	184,728,691	132,684,015	852,980,861
Taxes, all sources					157,906,241
Florida	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		18,110	8,153	11,340	37,636
Income		707,679,748	337,602,464	496,593,207	1,541,518,112
GVA		738,852,306	665,051,719	881,549,120	2,284,312,651
Taxes, all sources					588,659,623
Georgia	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		7,841	3,481	5,630	16,893
Income		319,504,170	168,120,608	263,031,159	748,086,483
GVA		305,088,211	314,623,306	483,965,686	1,096,229,150
Taxes, all sources					238,224,498
Hawaii	LQ = 2.1	Direct	Indirect	Induced	Total
Employment		4,830	1,441	1,782	8,116
Income		162,041,632	65,687,806	80,655,094	310,516,345
GVA		158,360,352	148,446,326	145,696,803	456,622,465
Taxes, all sources					104,612,705
Idaho	LQ = 1.3	Direct	Indirect	Induced	Total
Employment		1,356	488	1,306	3,098
Income		112,757,421	17,000,406	50,976,971	179,413,329
GVA		109,339,103	34,823,868	86,249,656	228,155,605
Taxes, all sources					46,059,984

Income, GVA, and Federal, State & Local Taxes in US\$					
Illinois	LQ = 1.2	Direct	Indirect	Induced	Total
Employment		19,999	6,955	11,583	38,524
Income		764,899,020	405,415,822	611,802,746	1,780,463,776
GVA		780,402,940	804,343,123	1,079,929,488	2,663,482,156
Taxes, all sources					683,164,279
Indiana	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		6,511	2,278	3,817	12,588
Income		236,655,559	103,708,069	174,296,902	513,280,461
GVA		278,968,517	214,176,926	329,094,294	818,514,766
Taxes, all sources					219,405,389
Iowa	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		3,126	1,091	1,798	6,012
Income		94,199,485	55,456,664	84,317,536	233,748,522
GVA		103,944,376	124,251,061	153,944,510	383,671,969
Taxes, all sources					93,349,668
Kansas	LQ = 0.7	Direct	Indirect	Induced	Total
Employment		3,299	1,214	1,577	6,133
Income		81,976,893	56,223,136	70,720,937	210,256,066
GVA		77,361,247	107,342,771	123,400,199	311,115,484
Taxes, all sources					69,255,879
Kentucky	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		4,555	1,762	2,558	8,902
Income		164,346,514	82,099,192	110,393,260	358,673,264
GVA		155,409,131	154,040,842	199,159,512	510,617,845
Taxes, all sources					111,001,659
Louisiana	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		4,292	1,552	2,449	8,307
Income		157,978,190	78,585,573	111,746,783	349,384,218
GVA		183,907,807	157,275,228	219,471,100	561,622,382
Taxes, all sources					141,266,417
Maine	LQ = 1.2	Direct	Indirect	Induced	Total
Employment		1,800	601	999	3,405
Income		73,498,983	24,871,075	40,379,582	139,088,479
GVA		73,826,050	50,105,099	71,067,544	195,394,220
Taxes, all sources					46,454,767
Maryland	LQ = 1.3	Direct	Indirect	Induced	Total
Employment		9,732	3,172	5,287	18,203
Income		509,255,387	176,765,103	266,372,156	955,191,210
GVA		488,415,666	368,122,523	477,472,681	1,339,744,524
Taxes, all sources					320,880,378

Income, GVA, and Federal, State & Local Taxes in US\$					
Massachusetts	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		8,614	2,964	4,979	16,549
Income		389,389,203	196,411,131	310,947,548	894,870,138
GVA		363,113,072	359,117,987	488,640,936	1,209,679,242
Taxes, all sources					291,673,376
Michigan	LQ = 0.7	Direct	Indirect	Induced	Total
Employment		7,565	2,740	4,514	14,800
Income		255,094,076	136,319,026	217,163,669	606,737,582
GVA		254,540,000	248,242,619	372,391,337	870,984,057
Taxes, all sources					214,168,261
Minnesota	LQ = 1.0	Direct	Indirect	Induced	Total
Employment		6,879	2,510	4,414	13,781
Income		269,288,597	147,557,010	229,758,083	646,439,547
GVA		254,811,861	266,464,400	396,817,112	916,874,807
Taxes, all sources					223,649,492
Mississippi	LQ = 0.6	Direct	Indirect	Induced	Total
Employment		1,468	559	883	2,909
Income		53,890,899	21,603,774	34,288,399	109,737,985
GVA		58,235,236	43,968,737	64,688,541	166,860,145
Taxes, all sources					40,273,954
Missouri	LQ = 1	Direct	Indirect	Induced	Total
Employment		7,009	2,493	4,164	13,653
Income		264,525,408	121,522,876	189,405,960	575,222,067
GVA		287,633,837	231,181,951	332,043,262	851,775,714
Taxes, all sources					215,462,592
Montana	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		1,089	368	632	2,088
Income		44,879,285	13,726,996	24,248,205	82,923,068
GVA		44,570,805	29,434,118	42,387,660	116,711,845
Taxes, all sources					28,809,076
Nebraska	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		2,949	925	1,625	5,492
Income		113,530,957	46,079,226	76,833,433	236,106,960
GVA		112,904,606	99,942,451	140,164,918	353,049,470
Taxes, all sources					75,454,650
Nevada	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		2,861	1,324	1,697	5,893
Income		133,154,238	55,759,844	76,449,405	266,055,085
GVA		167,061,772	112,984,021	144,735,253	425,951,573
Taxes, all sources					126,742,923

Income, GVA, and Federal, State & Local Taxes in US\$					
New Hampshire	LQ = 1.3	Direct	Indirect	Induced	Total
Employment		975	1,140	1,474	3,574
Income		26,441,083	60,756,590	77,834,523	164,731,842
GVA		25,814,527	113,671,986	124,728,284	264,857,436
Taxes, all sources					58,377,748
New Jersey	LQ = 0.7	Direct	Indirect	Induced	Total
Employment		7,111	3,209	4,381	14,747
Income		253,052,186	197,575,450	270,599,054	721,676,097
GVA		251,101,384	400,115,778	456,042,102	1,112,849,572
Taxes, all sources					293,603,916
New Mexico	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		2,832	769	1,323	4,934
Income		125,988,932	30,676,920	51,588,510	208,991,990
GVA		123,242,879	73,582,603	100,010,172	298,108,887
Taxes, all sources					68,157,745
New York	LQ = 1.4	Direct	Indirect	Induced	Total
Employment		32,738	10,411	18,715	61,796
Income		1,904,056,461	781,138,829	1,230,072,667	3,907,523,422
GVA		1,812,573,880	1,506,306,122	2,062,036,380	5,374,319,932
Taxes, all sources					1,388,012,525
North Carolina	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		9,058	3,383	5,162	17,599
Income		318,355,585	150,301,015	233,830,715	701,152,113
GVA		305,141,390	309,817,666	438,827,967	1,051,775,192
Taxes, all sources					229,055,280
North Dakota	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		972	302	607	1,877
Income		53,920,551	17,118,191	29,247,082	100,461,651
GVA		52,323,180	34,804,681	53,325,106	140,710,003
Taxes, all sources					33,044,264
Ohio	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		13,712	4,641	7,618	25,973
Income		447,462,055	238,628,798	356,158,803	1,042,133,616
GVA		419,730,706	470,991,493	650,670,485	1,539,636,196
Taxes, all sources					343,374,231
Oklahoma	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		3,050	1,212	2,146	6,404
Income		118,132,211	66,651,705	106,484,477	291,761,459
GVA		112,591,447	116,522,219	175,727,954	404,731,891
Taxes, all sources					92,023,719

Income, GVA, and Federal, State & Local Taxes in US\$					
Oregon	LQ = 1.0	Direct	Indirect	Induced	Total
Employment		5,149	1,777	2,810	9,740
Income		193,554,938	80,950,507	129,580,341	403,734,394
GVA		180,030,876	172,257,618	233,276,763	584,967,782
Taxes, all sources					131,842,212
Pennsylvania	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		12,251	4,318	8,090	24,590
Income		525,097,853	270,014,833	436,040,375	1,230,272,192
GVA		579,094,369	489,372,978	724,029,931	1,793,713,336
Taxes, all sources					484,945,257
Rhode Island	LQ = 1.4	Direct	Indirect	Induced	Total
Employment		1,993	586	976	3,560
Income		81,034,801	30,746,977	49,167,660	161,116,060
GVA		77,527,028	66,103,990	85,698,909	229,871,766
Taxes, all sources					54,875,207
South Carolina	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		4,460	1,801	2,191	8,489
Income		123,050,112	76,186,347	92,976,469	293,163,338
GVA		116,880,993	148,416,983	172,487,671	439,066,578
Taxes, all sources					97,631,117
South Dakota	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		1,532	407	736	2,676
Income		56,878,318	17,132,519	31,718,156	105,673,441
GVA		55,050,902	37,309,233	58,505,107	150,609,551
Taxes, all sources					31,777,253
Tennessee	LQ = 1.1	Direct	Indirect	Induced	Total
Employment		8,337	3,179	4,854	16,376
Income		290,193,204	160,584,433	240,503,444	691,900,295
GVA		274,545,789	286,279,565	393,537,817	954,326,844
Taxes, all sources					204,789,813
Texas	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		31,260	12,360	18,274	62,013
Income		1,045,350,992	712,441,878	978,050,700	2,742,549,142
GVA		991,739,775	1,247,143,411	1,684,287,264	3,921,108,798
Taxes, all sources					899,562,961
Utah	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		3,317	1,322	1,757	6,420
Income		100,016,390	55,686,105	75,363,869	231,687,322
GVA		94,741,239	113,054,500	136,838,103	345,835,780
Taxes, all sources					74,975,246

Income, GVA, and Federal, State & Local Taxes in US\$					
Vermont	LQ = 0.9	Direct	Indirect	Induced	Total
Employment		831	265	379	1,483
Income		27,480,949	11,226,096	16,330,627	55,250,056
GVA		25,540,924	23,080,811	27,602,935	76,632,523
Taxes, all sources					18,650,297
Virginia	LQ = 1.3	Direct	Indirect	Induced	Total
Employment		15,786	5,079	7,410	28,373
Income		638,396,416	278,315,202	360,074,659	1,282,055,346
GVA		611,094,735	543,524,153	640,398,807	1,802,096,502
Taxes, all sources					408,209,851
Washington	LQ = 0.8	Direct	Indirect	Induced	Total
Employment		7,603	2,483	4,049	14,145
Income		360,735,940	140,264,672	207,840,730	710,077,104
GVA		342,243,324	288,275,764	376,749,500	1,008,622,824
Taxes, all sources					236,367,635
West Virginia	LQ = 1.0	Direct	Indirect	Induced	Total
Employment		1,500	463	997	2,951
Income		87,050,962	22,186,639	41,686,702	151,119,034
GVA		85,888,187	45,500,237	77,967,840	209,177,258
Taxes, all sources					50,799,264
Wisconsin	LQ = 0.7	Direct	Indirect	Induced	Total
Employment		4,409	2,018	3,005	9,444
Income		135,654,085	104,318,508	143,684,188	385,544,478
GVA		129,392,981	207,780,896	256,812,814	600,019,320
Taxes, all sources					137,198,543
Wyoming	LQ = 1.8	Direct	Indirect	Induced	Total
Employment		1,499	431	659	2,600
Income		90,917,024	18,941,875	27,298,841	138,149,243
GVA		95,228,682	44,360,766	57,031,477	198,238,689
Taxes, all sources					54,055,847

**Europe, Middle East,
and Africa:**

Global headquarters

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