World Expo 2020

Silicon Valley - USA

Economic Impacts

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BAY AREA COUNCIL ECONOMIC INSTITUTE

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Executive Summary

The World Exposition (Expo), also known as a World's Fair, is one of the world's oldest international events and is the largest gathering of people on the planet. Centered around a theme, a World Expo focuses global attention on an issue, and has the potential to transform the region that hosts it through improved infrastructure, new landmarks and a refreshed image. Securing hosting rights is therefore an economically significant prize for any community. The Bay Area has hosted two previous Expos, the 1915 "Panama-Pacific" World Expo and the 1939-40 "Golden Gate" World Expo.

The economic benefits of bringing the World Expo to Silicon Valley (Moffett Field) would come primarily through expenditures by event organizers, and through spending on hotels, restaurants, and other services by both domestic and overseas visitors. We estimate that a six month World Expo in Silicon Valley would lead to 25 million visitors. While the economic impacts of an Expo at Moffett Field would primarily be concentrated in the counties of Santa Clara, San Francisco, and San Mateo, nearby counties such as Alameda, Marin, Monterey, Napa, Santa Cruz and Sonoma would also benefit from increased visitor activity. This report provides estimates of the economic impact of a World Expo held in Silicon Valley.

We estimate that the increase in overall economic activity in San Francisco, San Mateo, and Santa Clara Counties due to the hosting of a World Expo would be on the order of $5.6 billion. The potential increase in employment surrounding the event would be on the order of 42,000 yearlong, full-time jobs. This increase in output and employment would likely yield a benefit to state and local coffers of $440 million.

In addition to these quantifiable benefits, the Bay Area would likely see a number of benefits that are more speculative in nature, but nonetheless potentially significant. One could come in the form of permanent additions to the region's transportation infrastructure – expanded airports, improvements to Caltrain, VTA and Highway 101, a new Moffett Field ferry or hovercraft terminal, among other improvements – all of which would help accommodate large numbers of visitors. World Expos tend to leave monuments, such as the Eiffel Tower and the Space Needle, that can become tourist attractions long after the event. A different benefit could come through the opportunity to showcase the region's companies, technology and innovation through a major global event held in the heart of Silicon Valley. Finally, the positive exposure provided by extensive national and global media coverage can also generate longer-term visitor and other economic benefits for the Bay Area, extending well beyond the duration of the World Expo.

At this early stage, it is important to recognize that a number of important parameters related to the World Expo, such as the number of exhibitors and visitors, and how much organizers will ultimately spend, are still uncertain. As a result, the findings in this analysis are cautious and conservative indications of the type of economic benefit the three-county area could expect to see, based on the best information currently available.

Introduction

World Expos are the Olympic Games of the economic, scientific and industrial world. They occur every five years, attract large scale exhibits from countries around the globe and attract millions of visitors over a six month period. According to the Expo Museum, ever since the first world's fair in London in 1851, the goals of world expos have been both high-minded as well as commercial. They allow people to explore the world outside of their everyday experience — outside cultures, new scientific advancements, and new inventions. As times change, world expositions have changed to fit those times. They continue to reflect both the commercial needs of their times while presenting the ideals, hopes, and aspirations of people even as those evolve.

To host an Expo, a region, via its national government, must secure the approval of the Bureau of International Expositions (BIE), through a competitive process much like the Olympics. The BIE is a treaty organization with 157 member countries. The United States has participated in World Expos for 160 years and was a founding member of the BIE. About ten years ago, the United States stopped paying its relatively small annual dues to the BIE, and in 2002, because of unpaid dues, needed to drop out of the organization. The U.S. Department of State is currently exploring rejoining the BIE, which would cost about $33,000.

If chosen to host Expo 2020, the United States would extend invitations to BIE member nations and other countries to participate in the Expo. According to experts, if the location of the event is of interest in terms of market exposure, prospective trade, business opportunities and goodwill, then invited countries will allocate resources to build a pavilion or otherwise participate in Expo 2020 in Silicon Valley.

Estimates of the expenditures related to previous World Expos indicate that hundreds of millions of dollars are spent in the local economy by various participants. Exhibitors will generally take up residence in the area well in advance of the event in order to prepare their displays, which take the form of pavilions – immersive exhibition

New York - 1964

UK Pavilion, Shanghai - 2010

Governor Schwarzenegger announces Silicon Valley, USA bid

halls that offer visitors an image of the country, reflect on the overall theme of the Expo, and are often on the cutting-edge of design and technology. Their staff members may be housed on-site, but their presence will generate economic activity for restaurants and retail establishments throughout the Bay Area. Media and event organizers can also be relied upon to add significant demand to the local economy, and the many visitors to the World Expo, both domestic and international, will provide a strong influx of tourist dollars to local businesses.

These benefits manifest themselves in a variety of ways. First, local businesses see an increase in demand for goods and services. This increased demand drives an increase in revenues. Second, there is an increase in employment at these businesses, as they require more workers to provide these goods and services. Third, increased employment and sales lead to more state and local tax revenues.

In addition to quantifiable benefits, the Bay Area would likely see permanent additions to the transportation infrastructure, which would be needed to accommodate the expected influx of visitors. Any transportation projects would create jobs in the short-term and leave improved infrastructure in the long-term.

Because Expo 2020 is still 10 years away and many details about the event are unknown, we have consciously made an effort to be conservative in our analysis. This conservative approach reduces the estimates of the impact, but given the size of the numbers, it still presents a compelling case for substantial local economic benefits.

What is a World Exposition?

Treasure Island - 1939 | Shanghai - 2010

Korean National Pavilion, Shanghai - 2010

Cisco Corporate Pavilion, Shanghai - 2010

Joint African Pavilion, Shanghai - 2010

A World Expo is an international event now held every five years in different parts of the world, with a history dating back to the Great Exhibition in London in 1851. The first World Expo in 1851 also created the first America's Cup Race, currently scheduled for 2013 on San Francisco Bay. Hundreds of exhibitors participate in a World Expo; countries are most prominent, but an Expo can also include international organizations, corporations and other groups. Since its formation in 1928, the Bureau of International Expositions (BIE) has been the governing body responsible for overseeing the bidding and selection process for these Expositions, of which there are two main types:

- World Expositions
- Specialized Expositions

World Expositions

A World Exposition, also known as Registered Exposition or Universal Exposition, is the larger of the two events, taking place every five years and running for up to six months. Recent World Expos include Expo 1992 in Seville, Spain, Expo 2000 in Hannover, Germany, and Expo 2005 in Aichi, Japan. Expo 2010 in Shanghai, China, the most recent Expo, concluded its run in October. A World Expo is always centered on a broad, universal theme, which exhibitors must keep in mind when constructing their pavilions, the main attractions at an Expo. In the past several Expos, there has been a strong focus on environmental sustainability, but technology features prominently and has been at the historical core of World Expos. Expo 2020 will be a World Exposition.

World Expositions are the more expensive event, involving the design and construction of extravagant pavilions by most participants. There are five main types of pavilions:

- National Pavilions: Designed and built by participating countries and organizations.

- Rented Pavilions: Designed and built by the organizer, and rented to participants.
- Joint Pavilions: Designed and built by the organizer to be shared by developing nations.
- Theme Pavilions: Designed and built by the organizer, highlighting the universal theme of the World Expo.
- Corporate Pavilions: Designed and built by corporate participants.

The format for Pavilions can have further variations. For instance, multiple corporations and organizations sometimes build and share a single pavilion. Joint pavilions are sometimes shared by a group of states or provinces, as opposed to developing nations, as was the case in the "Joint Provincial Pavilion" during Expo 2010. However, the five types of pavilions listed above are present at every Expo.

A World Expo usually has a large number of exhibitors, with the vast majority being countries. Exhibitors compete not only for visitors on any given day, but also for recognition as the best pavilion of the Expo. Because of competition both for the attention of visitors and for the international spotlight, many exhibitors construct large, distinctive pavilions.

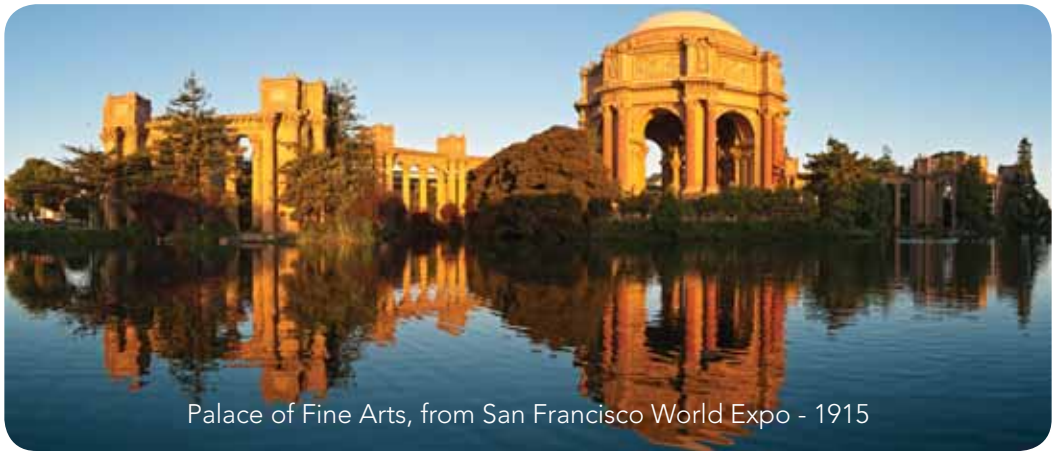
Most structures at a World Expo are temporary and are removed at the conclusion of the event. However, there have been some structures that have remained after the closing of various World Expos. The most famous example is the Eiffel Tower, which was built for the 1889 World's Fair. Other notable examples include the Palace of Fine Arts in San Francisco, built for the 1915 Panama-Pacific International Exposition, and the Space Needle in Seattle, built for the 1962 World's Fair. In some cases, pavilions have been disassembled and reconstructed in other locations. Structures that are not torn down are usually sold and, as a result, there has been increasing consideration for potential continued use of Expo buildings.

In addition to expenditures related to the construction of pavilions, there are usually significant costs for the host country and region, including developing the Expo site and improving transportation infrastructure to support the influx of visitors. The size of a World Expo site is not restricted by the BIE and varies from Expo to Expo. The site of the most recent World Expo, Expo 2010 in Shanghai, has been the largest to date, covering 528 hectares (1,305 acres).

Specialized Expositions

A Specialized Exposition, also referred to as a Recognized or International Exposition, is held in the years between World Expos. The BIE has set restrictions on certain aspects of Specialized Expos, restrictions that are not in place for World Expos. Specialized Expos may run for a maximum of three months. The size of the site is limited to 25 hectares (62 acres). Because Specialized Expos are smaller in scale and shorter in duration, they are less expensive to hold. Recent Specialized Expos include Expo 1993 in Daejeon, South Korea, Expo 1998 in Lisbon, Portugal, and Expo 2008 in Zaragoza, Spain.

For Specialized Expos, the host country bears the responsibility for building all pavilions and providing them to participants, rent-free. Like World Expositions, a Specialized Exposition always has a theme, though the theme



Palace of Fine Arts, from San Francisco World Expo - 1915

typically has a narrower focus.

Overview of Recent Expositions

While past Expos have always been successful in showcasing the host region, they are often seen as an investment by the host country. Costs and revenue for organizers can vary significantly. For example, the 2010 Shanghai World Expo reportedly made $8-10 billion, and the 2005 World Expo in Aichi netted Japan a $122 million profit, yet the 2000 Expo in Hanover had a deficit of $600 million.

Since Expo organizers base their expenditures in part on attendance projections, Expos that made money generally had conservative attendance projections that were met or exceeded by actual visitors. Host regions have generally anticipated that any operating losses from the event itself would be more than offset by its long-term benefits, including tourism. This report examines the economic impact of a World Expo in Silicon Valley. A future Feasibility Report will examine in detail the costs, revenues, business model, and projected profit or loss the organizers of the 2020 World Expo would likely generate.

Impact Focus: Tourism

A main goal of any World Expo is to attract visitors, and the tourism impacts of a Silicon Valley World Expo would be significant. Since the proposed site is Moffett Field, between Mountain View and Sunnyvale, much of the economic benefit would accrue to the South Bay. However, the entire Bay Area would be positively impacted. In particular, most visitors to the Expo would visit other regional destinations during their stay in the Bay Area. Overall, Santa Clara County, along with the counties of San Francisco and San Mateo, where many visitors will decide to stay, would see the majority of the economic benefit from Expo 2020, while other counties with major tourist destinations such as Napa, Sonoma, Marin, Santa Cruz and Monterey would also benefit.

The benefits to the Bay Area's visitor industry would come in several forms:

Hotels. As of October 2010, there were approximately 70,000 hotel rooms in San Francisco, San Mateo, and Santa Clara Counties. With an average occupancy rate of 70%, this implies the availability of 21,000 rooms for World Expo visitors. The estimates of hotel impacts contained in this study are based on a six-month run for the World Expo, during which almost 8.3 million overnight visitors would travel to the area in direct connection with the Expo.

Increased demand could easily mean that San Francisco, San Mateo, and Santa Clara Counties may have insufficient capacity to accommodate all potential visitors during certain periods of the World Expo. Hotels and inns in the North Bay and East Bay are the likely beneficiaries of any excess demand.

Restaurants. Restaurants in Mountain View, Sunnyvale and San Jose would particularly benefit from World Expo activity, but restaurants across the Bay Area should also benefit as visitors staying multiple days explore the region. It is not surprising that restaurants tend to be one of the primary beneficiaries of any increase in visitor spending. While visitors may be able to resist the urge to spend heavily during their stay in the region, even the most frugal of visitors will eventually have to purchase a meal or two.

Retail. A significant amount of retail sales would be generated within the Expo site from the purchase of souvenirs and other goods. Other retail establishments in the region should receive a boost from the influx of visitors staying across the Bay Area.

Airports. As discussed below, an estimated 8.3 million non-local visitors would attend the Expo. The vast majority of these visitors would travel to the Bay Area by air, generating a significant amount of demand for all three local airports that would not otherwise exist. San Francisco International Airport (SFO) handles almost all international air travel to and from the Bay Area, and would be expected to handle most foreign Expo-related travel. Oakland International Airport (OAK) and San Jose International Airport (SJC) would also be expected to see increased passenger volumes, primarily from non-local visitors flying in from Sothern California and out of state.

Impact Focus: Infrastructure

Large numbers of visitors would generate major pressure on local transportation systems, particularly in the immediate vicinity of the Expo site. World Expos, like other major international events such as the Olympic Games, have often been used by the host country or city as a way to spur development of long-term infrastructure, to reduce the pressure, and benefit a region long after the event.

The World Expo would require two major categories of infrastructure improvements: external and internal. External infrastructure would be needed to allow for movement of visitors around the Bay Area, and to and from the event. The Expo site itself would require major internal changes to accommodate the event.

Internal Infrastructure

Moffett Field. Bringing Expo 2020 to Silicon Valley presents a major opportunity for Moffett Field, particularly the 182-hectare (450 acre) section of the property proposed for World Expo use. There would be some upfront costs, but the net gains are projected to be substantial.

The current proposal calls for a temporary transformation of the two large runways at Moffett into the main Expo pavilion grounds – permanent additions would go elsewhere – with landscaping and temporary infrastructure to facilitate National, Shared, Theme or Corporate Pavilions. The three very large and iconic hangars would be used either for the USA National Pavilion or Theme Pavilions. Given the large size of the facility, on-site transportation such as buses, trams or aerial gondolas will be needed to allow visitors to easily move between pavilions. After the Expo, the runways would be returned to service.

Planned Academic Center

Academic Center. University Associates-Silicon Valley (UA-SV), a partnership between the University of California, Santa Cruz and the Foothill-De Anza Community College District, is developing plans for a major academic center in Silicon Valley as a public-private partnership, located at Moffett Field. Faced with a weak economy that has slowed development, the plan to date has lacked a catalyst – which an Expo could provide. An Expo would

be beneficial in helping to secure private funding for construction costs, perhaps in exchange for the use of some facilities during the Expo. In addition, any permanent facilities built for the World Expo have the potential to become part of new University of California and Foothill-De Anza College District campus at its conclusion, and could be built with this purpose in mind. In particular, the on-site infrastructure discussed below could be re-purposed to serve the new campus.

Expo Structures. The Expo site would be filled with a variety of structures, mostly pavilions, but also possibly housing and administrative facilities. Some existing structures, such as Hangar One, Two and Three would likely be used as exhibition halls. Most newly built structures would be torn down at the conclusion of the Expo, but it is possible that some structures could be kept and used for academic and other purposes.

Basic Services. The sudden presence of structures and visitors would require the addition or expansion of many services, including electricity, water, and other utilities. This could also entail reconfiguration of pathways and lighting.

Expo Transportation. The large size of Moffett Field suggests that transportation services within the Expo site may be necessary. This could be in the form of an electric bus system, which has the potential for being used after the Expo as transportation for the academic center.

Runways. In preparation for significant construction activity, the runways and other open areas may need to be temporarily covered, both to provide a suitable building surface for structures, and to protect the underlying airfield.

External Infrastructure

Large numbers of visitors would stay in hotels a closer to the Expo site in San Jose and the surrounding cities, especially if new hotels were built. That said, San Francisco currently claims the majority of the region's hotel rooms, and would most likely host a significant number of non-local Expo visitors. Several transit systems would be involved in moving visitors to, from and around the South Bay.

San Jose International Airport (SJC). Given its proximity to Moffett Field, the San Jose International Airport is likely to play a significant role in bringing visitors to the region, primarily from distant domestic locations but perhaps also from abroad.

Projections are for some 25 million visitors to attend the

World Expo. Of these 25 million, it is estimated that roughly one-third, or nearly 8.4 million would come from a distance suggesting air travel. If this were to imply an additional 8.4 million air travelers to the region and current airport market shares apply, this could mean an additional 2.4 million passengers through SJC. As some visitors will attend the Expo on more than one day, the actual number could be somewhat less.

At today's use levels, SJC has the capacity to serve these additional passengers. In 1999, the airport handled 14.2 million passengers, roughly evenly divided between in and outbound. Service is currently being provided to 8 million passengers, with capacity to go to 12.2 million. The 14.2 million in 1999, at the peak of the dot-com boom, strained the airport's capacity, leading to crowding and inconvenience. At current levels, the addition of the World Expo traffic, 2.4 million in and 2.4 million out, would still leave SJC below its capacity.

However, the Expo related traffic would occur over a six-month period. This could tax SJC's ability to support the increase in demand while the Expo is in process. In addition, by 2020, traffic through the airport is likely to be significantly greater than the 8 million currently served. For planning purposes, 12.2 million passengers is considered by the airport to be the level of demand that would trigger expansion. If this figure is reached in 2016/17, construction would likely begin on 12 new gates, bringing the facility's total to 40, and total airport capacity to 17 million. Demand generated by a World Expo could trigger that expansion, a project estimated at $400 million.

A remaining issue is connecting the airport with the downtown hotels and the World Expo. There is currently no mass transit system between the airport and either location. Options under consideration include an automated "people mover" following an underground route linking the VTA station at North First Street with a new BART/Caltrain station, via the airport. Another option being looked at is a "pod car" connecting the airport with North First Street and possibly downtown San Jose/Diridon Station. The anticipation of a World Expo could again be a catalyst for the development of this kind of local infrastructure.

Caltrain. Caltrain would be the primary means of public transport for Expo visitors. It is best positioned to respond to the capacity needs of an Expo, a dormant freight spur extends directly into Moffett Field, and, alternatively, Caltrain's existing Mountain View station is two miles from Moffett Field. If new connections were required from the Mountain View station, shuttle busses, a possible automated people-mover or the current VTA connection at the station could be called in. The VTA connection at Mountain View, as indicated below, is capacity-constrained by a short single track section. VTA's plans for future expansion, including complete double tracks from Mountain View to Moffett, could address this bottleneck.

A World Expo could catalyze needed improvements to the Caltrain system. Caltrain's current capacity, fully utilized at rush hour, is 40,000 passenger trips per day. Its proposed electrification project (converting the system from diesel), which is tentatively scheduled to break ground in 2012 and be completed in 2020, would increase capacity to 100,000 trips per day. Major components of the plan include electric poles and wires, control system upgrades, and new rail cars. The project is expected to reduce Caltrain's operating costs and increase service frequency.

As proposed, California High-speed Rail would share Caltrain's right-of-way, and its implementation would benefit Caltrain by supporting the electrification of their shared infrastructure. At present, the proposed electrification improvements are approximately forty percent funded.

BART. The cost and time required to build BART capacity makes an extension from Millbrae to Mountain View or Santa Clara to Mountain View by 2020 unlikely. While BART would not bring visitors directly to Mountain View, it would be the main connector to Caltrain for East Bay visitors.

Highways. While congestion on Bay Area roads is already significant, anticipated travelers to a World Expo could provide additional impetus to make needed improvements to Highway 101, including interchanges and overpasses. That said, if the Expo were held at Moffett Field, additional congestion would be generated on Highway 101 and adjacent roadways, improvements to public transit capacity and efficiency would be vital to reduce additional congestion on highways and local streets.

Public transit service to proposed 2020 site

VTA. The Santa Clara Valley Transportation Authority's light rail system (VTA) would have to handle an increased volume of passengers. To provide an optimum level of service, whether from downtown San Jose or from the Caltrain station in Mountain View, some expansion of VTA's system would be necessary. VTA's capacity to serve Moffett Field is constrained. At present, it only has the capacity to move approximately 3,200 people a day along the 44-minute route from downtown San Jose to Moffett Field. Given forecasts of attendance at a World Expo, this is approximately 2% of the projected daily visitor totals.

VTA's current infrastructure lacks the flexibility that would allow for quick expansion in response to increased demand such as an Expo. This is due to single tracking that precludes flexible scheduling or express trains. Limited platform length also prevents easily adding cars.

Planning for the kind of expansion that would be necessary is already underway, however. The "Long-T" plan for rail service would provide double tracking, and allow for express trains and added capacity by 2018, in advance of the anticipated opening of a BART station in Milpitas, adjacent to a VTA light rail line. Long-T could also provide needed transit capacity on the current light rail line connecting to the Mountain View Caltrain station. The $35 million project isn't currently funded. However, a World Expo at Moffett Field could provide the impetus for this expansion, accommodating not only visitors to the Expo, but providing long-term transit capacity for local residents.

Bus service provided by VTA, from Caltrain to Moffett Field would also require expansion. The service area at the station is insufficient for current needs, but there is room for expansion – something a World Expo could stimulate.

Ferry/Hovercraft System. A ferry terminal or hovercraft terminal connected or adjacent to Moffett Field could provide the most direct service to the Expo site. Traveling by water could be an appealing choice for non-local visitors, who may prefer more scenic modes of transportation. The specific location of a Northern terminus is unclear, but in conjunction with local transportation options, a North Bay, East Bay or San Francisco terminal should be convenient for a large number of travelers.

Ferries or hovercraft carry about 400 people per vessel and likely would not be able to handle a significant number of travelers. However, a ferry terminal could provide a permanent link to the South Bay, a connection

that may be popular with tourists and commuters for years to come.

The possibility of a ferry or hovercraft terminus at Moffett Field was contemplated some years ago. It was relegated to tier II status for terminal options and is not currently on the Water Emergency Transportation Authority's radar as a site under active planning. That said, a World Expo and the development of a university campus at the site could change the demand side of the equation.

Other Options

Two other transit options could serve an Expo, which would also serve as long-term assets for the region.

Samtrans is considering commuter rail on a rail bridge paralleling the Dumbarton Bridge. A $700 million project, the line would connect a multi-modal BART station in Union City with the Redwood City Caltrain station, continuing south on the same track to Diridon Station in San Jose. The line would provide morning and evening commute service between the East and West sides of the bay, with a capacity of 15,000 trips per day. Because the southern end of the line would also serve Mountain View, Dumbarton commuter service would be an additional way of moving residents and visitors in the East Bay to and from the Expo site.

Finally, bus rapid transit (BRT) is being considered for the El Camino corridor, providing another connector to the Expo from locations to the North and South.

Long-Term Legacy

Past Expos have left a variety of transportation improvements. For example, Expo 1986 left behind SkyTrain, a rapid transit system. Expo 2005 left Linimo, a magnetic levitation train system. Both were built specifically to provide transportation for their respective Expos, but are still in operation today.

While a new transportation system in the Bay Area would be improbable, much needed expansion of existing transit systems would be likely. Any expansion of local transportation would entail costs, some of them considerable, but could potentially leave a long-term legacy of improved transportation infrastructure in the region.

Impact Focus: City of San Jose

As the largest city in the Bay Area, and the closest major city to Moffett Field, San Jose would be expected to capture a sizable portion of the economic benefit of a Silicon Valley World Expo. San Jose residents would be responsible for many of the local visitor trips to the Expo. Many non-local visitors would come to the region through SJC or would find accommodations within the city.

Using data from the Bureau of Economic Analysis, we estimated the share of direct spending that would take place in Santa Clara County. With these figures, we used data from the U.S. Census Bureau's American Community Survey to estimate the proportion of the direct and secondary impacts that would occur in San Jose.

Overall, we have estimated that of the $3.4 billion in direct expenditures generated by the Expo, $557 million would be spent in San Jose. The majority of this spending would be by non-local visitors and Expo organizers. The City of San Jose would see an estimated increase in economic activity of $818 million, or 14% of the overall impact of the World Expo. Over 6,000 of the 42,600 jobs created would be within San Jose.

Table 1: San Jose Summary of Impacts by Industry

Top 10 Industries	Output ($)		Employment	
	Direct	Total	Direct	Total
Facilities Support Svcs.	72,834,381	72,886,661	584.4	584.8
Retail	71,293,853	82,181,454	727.6	838.7
Food Svcs. And Drinking Places	58,914,393	67,207,784	803.2	916.3
Entertainment	56,995,999	62,566,990	470.6	516.6
Accommodation	48,386,955	48,527,686	364.4	365.5
Construction Of New Nonres. Commercial Structures	45,203,476	45,203,476	217.8	217.8
Services To Buildings And Dwellings	35,469,237	39,493,552	485.3	540.3
Transit And Ground Passenger Transportation	28,184,457	28,594,560	339.2	344.1
Wholesale Trade Businesses	23,544,878	35,746,302	72.2	109.6
Gasoline Stations	19,750,690	20,326,885	119.9	123.4
Total	557,229,489	818,349,900	4,736.7	6,020.7

Impact Focus: United States

This section provides an overview of the benefit the United States could expect to see from an Expo. At the local level, multipliers are lower because of leakage. That is, local direct expenditures may result in indirect effects outside of the local area. To account for this leakage, the study area is expanded to capture the indirect effects of the World Expo across a greater region.

For the U.S. analysis, "local" visitors include anyone living in the Bay Area, California or another state. These expenditures are completely excluded. A visitor from another state may not come to the Bay Area in the absence of the Expo, but they would potentially make a trip to a different destination. In other words, their spending would have occurred in some form regardless of whether an Expo was held. Therefore, the only visitor spending included in this analysis would be spending by foreign visitors.

Table 2 summarizes the U.S. impact of Expo 2020. The total impact in the local region is $5.59 billion, while the overall effect in the United States is $6.11 billion. Direct effects are $1.1 billion lower as a result of the assumptions discussed above regarding visitor expenditures. However, because of reduced leakage, the total impact is $518 million higher than the local impact.

Table 2: United States Summary of Impacts by Industry

Top 10 Industries	Output ($)		Employment	
	Direct	Total	Direct	Total
Facilities Support Svcs.	350,000,017	351,885,467	3,817.1	3,837.7
Accommodation	331,575,019	358,300,321	2,982.4	3,222.8
Entertainment	179,310,193	236,184,481	1,938.0	2,552.7
Food Svcs. And Drinking Places	174,125,388	283,187,036	2,801.1	4,555.5
Services To Buildings And Dwellings	170,444,690	206,756,304	2,719.0	3,298.2
Construction Of New Nonres. Commercial Structures	151,707,007	151,707,007	897.3	897.3
Transit And Ground Passenger Transportation	119,147,246	126,300,429	1,984.5	2,103.6
Retail	115,053,836	273,064,530	1,560.9	3,704.6
Wholesale Trade Businesses	102,765,571	251,409,089	516.0	1,262.3
Automotive Equip. Rental And Leasing	96,967,865	107,409,403	424.3	470.0
Total	2,271,733,753	6,110,890,434	23,284.7	45,773.9

Sources of Economic Impacts

A World Expo has substantial implications for the local economy. Estimating these impacts in advance of the event is inevitably speculative. Variables include the size of the event, the number of visitors and their projected spending. While it is difficult to predict the details of a Bay Area World Expo this far in advance, the experience of recent Expos provides a useful reference.

Its international nature suggests that, compared to other major sporting or entertainment events, the World Expo will attract a large number of foreign visitors, who historically stay longer and spend more per capita. Past World Expos in some countries have required the construction of new airports to support the anticipated visitor inflows; however, the Bay Area already has well-established air infrastructure in place. Most overseas visitors would arrive and depart through San Francisco International Airport (SFO), which handles 67% of all passengers traveling by air through the Bay Area, and 96.9% of international passengers. SFO's status as a major international air hub, and its extensive network of direct connections to a large number of global destinations, will increase the likelihood of strong international participation.

This section provides a discussion of the primary participating groups and their likely spending patterns. This is followed by a base estimate of Expo 2020's likely economic impact.

Participating Agents

This section evaluates the implications of expenditures by six agents or groups, all of which participate in one way or another in a World Expo. These agents are listed below and the patterns and magnitude of their expenditures are described in this section. Due to the uncertainty about the specifics of a Bay Area World Expo, this analysis required some assumptions regarding expenditures of participating agents, which are detailed in Appendix C.

- Participating Agents:
  - Exhibitors
  - Local Visitors
  - Non-local Visitors
  - Expo Organizers
  - Staff
  - Media

Exhibitors. Each country, corporation, or organization that participates as an exhibitor will have significant expenditures related to the Expo. The largest expenditures are for the design, construction and operation of a pavilion, and filling the pavilion space with exhibits. These costs averaged $12 million per pavilion in Expo 2000. Adjusted for inflation, it is estimated that each pavilion would require an average investment of $15.1 million, in 2010 dollars. These expenditures will generate significant economic activity, most of which will accrue outside of the region. In particular, most exhibitors will design and begin fabricating pavilions in their home countries.

For participating foreign countries, local contractors would probably be involved in the final construction, but this analysis counts only the cost of operations, the expenditures most likely to generate economic activity in the Bay Area. Operating costs at Expo 2010 were approximately one-third of the total pavilion investment. This

implies that operating costs would be approximately $5.1 million per pavilion.

We have assumed that 15 corporate pavilions would require a total investment of $200 million. While only the operating costs of pavilions built by foreign countries are included, a portion of construction costs and all exhibition arrangement costs related to corporate pavilions are included in this analysis. Corporate pavilions, which are mostly undertaken by domestic corporations, are more likely to be constructed locally. We discount construction costs to account for the possibility that some corporations would use contractors from outside of the local region.

Developing countries may spend less on average than other types of participants but nonetheless have expenditures that will contribute economic activity. Since exhibition space in joint pavilions is provided to developing countries free of charge, operating costs of joint pavilions are the only expenditures included in this analysis. We have assumed that 50 developing countries would participate in Expo 2020, and that each country would have $450,000 in operating expenses.

Visitors. Attendance varies widely from Expo to Expo. Expo 2010 in Shanghai shattered World Expo attendance records, attracting an over 73 million visitors during its run. An estimated 95% were from China, of which 80% were from outside the local region. Due to the size of China's population and the great lengths that its government went to encouraging local attendance, the Shanghai Expo was probably unique. Since World Expos typically do not generate such massive visitor counts, the experiences of Expo 1992, Expo 2000, and Expo 2005 may be better indicators of the number of visitors a Bay Area World Expo could reasonably expect to see.

Expo 1992 in Seville attracted over 41.8 million visitors, making it one of the most attended Expos in recent history, though still significantly short of Expo 2010. 25 million people visited Expo 2000 in Hannover and Expo 2005 in Aichi, Japan attracted 22 million visitors. Visitor counts at a Bay Area World Expo could potentially reach the levels seen in Seville, but for this analysis, we will use a conservative estimate of 25 million visitors over a six-month run. In addition, a distinction is drawn between local and non-local visitors depending on the traveling distance to the Bay Area. Throughout this analysis, local visitors are those within driving range of the Bay Area, and non-local visitors are those flying in for the event.

Non-Local Visitors. Domestic and international visitors flying into the Bay Area represent a signifi-

cant source of spending. The assumption is that one third, or 8.3 million, of all visitors will be non-local visitors. This group is more likely to require hotel accommodations, which is the primary difference between their spending patterns and the spending patterns of local visitors.

Expenditures on accommodations have the potential to be much greater than the estimates used in this analysis. In particular, the six-month event would likely coincide with a portion of the summer tourist season and possibly other major events, when room and occupancy rates typically increase, which would raise overall accommodation spending substantially. In addition, major events tend to put upward pressure on room rates.

Local Visitors. This analysis assumes that "local" visitors are those who are within driving distance of the Bay Area. This assumption is made largely because the data on spending patterns do not distinguish between foreign and domestic arrivals. The only distinction possible is between those coming by ground transportation and those arriving by air.

World Expos are usually well attended by those in the local region, so it is assumed that two thirds of the total visitors will be local visitors. The Bay Area has a population of over seven million, meaning that there are a large number of people who would be in relatively close proximity to the World Expo. It should be noted that an individual visitor day contributed by a local resident drives significantly less economic activity than does that of a visitor who has traveled from afar. In addition to Bay Area residents, local visitors include those from adjacent regions, such as Santa Cruz and Sacramento.

It is common to discount spending by truly local visitors. This is because spending by Bay Area residents would have occurred anyway. These expenditures are therefore excluded from the analysis. In addition, visitors who are visiting the area for another reason must also have their expenditures discounted.

Additional Visitor Spending. In addition to visitors coming to the Bay Area to attend Expo 2020, many would come for other reasons and extend their visits, making side trips to other destinations around the Bay Area, including Marin, Napa, and Sonoma Counties. Similarly, visitors to other nearby tourist destinations would travel into the Bay Area to explore the World Expo. These trips make up a relatively small proportion of total expenditures related to the World Expo, but nonetheless generate economic activity in the Bay Area.

Expo Organizers. An organizing committee will likely be created to manage the many aspects of the event. This organizing committee would be responsible for facility improvements leading up to the event, facility maintenance during the event, cleanup costs after the event, and the day-to-day operations of the Expo site. Expenditures include an estimated $100 million for landscaping, $90 million for World Expo entertainment, $20 million for advertising, and $350 million in other operating costs. It should be noted that certain expenditures, such as for entertainment and advertising, would be much higher in total, as we are only including those that fall within the study area.

The organizing committee would be involved in infrastructure improvements, either directly or in conjunction with other groups. We estimate these expenditures will total $40 million.

The total investment in theme pavilions is included in this analysis. The host builds theme pavilions, so it is likely that much of the design and construction would be done locally. We estimate that five theme pavilions would require a total investment of $125 million. In addition, the organizing committee typically constructs a number of joint pavilions to be shared by developing countries. It is assumed that eight joint pavilions would be built at a cost of $40 million.

As an alternative to building their own pavilions, participants have the option of renting a pavilion built by the host. The construction costs for these pavilions will be included in this analysis because, much like theme pavilions, construction would presumably be done locally. We assume that of the 87 national pavilions, the host will

build 37 at a cost of $55.5 million, or $1.5 million each. Participants would still be responsible for providing exhibits, and operating the pavilions. All 87 national pavilions are assumed to have the same operating expenses as described above.

It should be noted that these estimates of the total investment assume that all structures, whether temporary or permanent, would be newly built. Estimates used for this analysis would have to be adjusted downward in the event that existing structures are adapted for World Expo use. This is likely, but because the extent to which existing structures would be used is unclear, this analysis assumes that all construction will be new construction.

Staff. Large events like the World Expo typically employ large numbers of people to ensure that the event is safe and enjoyable for visitors. Examples include guides, security guards, medical personnel, grounds crews, and exhibitors' staff. In addition to paid employees, volunteers would also be on hand for the event. This analysis does not distinguish between paid employees and volunteers. The expenditures of World Expo employees and volunteers would generate significant economic activity in the Bay Area.

It is difficult to predict the number of people that would work at Expo 2020. This analysis assumes 137 participating delegations, including 50 developing nations. The 87 national pavilions and eight joint pavilions would be staffed with a conservative estimate of approximately 80 people per delegation, for a total of 11,000 non-local workers. It is assumed that 6,000 local event staff and volunteers will be on hand on a daily basis, working in theme and corporate pavilions, and throughout the Expo site. In total, we estimate that the total number of staff will be 17,000 per day. This estimate is highly speculative and dependent on many unknown factors, including the number of exhibitors who will ultimately participate.

Expenditures by local staff are included in this analysis as an increase in labor income, contributing economic activity in the form of induced demand. These expenditures are also discounted because it is likely that most of their spending would have occurred anyway. Expenditures by non-local staff will be included, but their average daily expenditures are expected to be lower than that of non-local visitors because the primary purpose of their visit is to work the event. In addition, it is assumed that non-local staff would not have lodging expenses, as there would most likely be on-site facilities available for their use. It is possible that some, and perhaps many, foreign staff members would prefer to find accommodations off-site. Non-local staff members that do this would drive additional economic activity for hotels and other accommodations, but would not be captured in this analysis. We exclude lodging expenses for non-local staff in an attempt to be conservative, and because it is unclear how many people would choose to live off-site.

Media. An Expo would generate considerable interest from press all over the world, particularly since many countries would want to report on the success of their respective pavilions. As with World Expo visitors, members of the press are expected to spend on lodging, transportation, food, and other expenses, all of which will generate economic activity.

Because so much is unknown about Expo 2020, it is difficult to speculate on the number of media personnel that it will attract. Using data from other large international events, we conservatively estimate that 5,000 people will be media accredited, with each person staying an average of 37 days. In total, this represents 185,000 days that individual members of the media will be in place.

The Economic Impact

This section provides a summary of economic impact by participant category. Expenditures of the magnitude discussed in this report have the potential to generate significant increases in economic output, local employment, and government tax revenues. These effects are measured as having three separate impacts. First, there is a direct effect: how many jobs and how much in tax revenues are directly linked to these expenditures. Second, there is an indirect effect, through suppliers of intermediate goods and services who also generate economic activity. Finally, there is an induced effect that results from employees spending their increased salaries. A summary of the economic impacts on the counties of San Francisco, San Mateo and Santa Clara is presented here; the impact of spending by each of the agents is presented in Appendix A.

The groups contributing expenditures come from the six separate sources above. Combining the expenditures of the various groups participating in or attending the World Expo, approximately $3 billion in direct spending can be anticipated (Table 3). This spending translates into a total effect on output (the value of goods and services purchased) in the three-county area analyzed of $5.6 billion.

Table 3: Summary of Impacts by Agents ($)

Agents	Output		Employment		State and Local Taxes	
	Direct	Total	Direct	Total	Direct	Total
Non-Local Visitors	1,288,131,126	2,113,742,901	12,405.0	16,567.3	123,141,920	181,723,088
Organizers	811,705,331	1,379,335,796	6,966.0	10,037.7	39,668,504	79,118,800
Exhibitors	527,245,676	855,285,080	3,716.0	5,374.3	40,017,048	62,739,620
Local Visitors	459,541,657	758,850,131	4,882.3	6,375.8	53,906,632	76,072,328
Non-Local Staff	233,841,851	380,074,977	2,778.4	3,511.9	22,174,808	32,868,084
Media	39,055,073	64,787,860	346.8	479.6	3,262,972	5,106,817
Side/Extended Trips	12,689,146	20,946,325	132.2	173.8	1,236,463	1,828,042
Local Staff	0	19,511,326	0.0	107.6	0	1,568,407
Total	3,372,209,859	5,592,534,395	31,226.7	42,628.0	283,408,347	441,025,186

Table 4: Summary of Impacts by Industry ($)

Top 10 Industries	Output		Employment	
	Direct	Total	Direct	Total
Accommodation	571,586,319	573,926,191	4,089.4	4,106.1
Food Svcs. And Drinking Places	390,085,913	468,104,986	5,523.3	6,628.0
Retail	373,402,868	470,276,706	3,870.3	4,874.4
Facilities Support Svcs.	349,999,991	350,282,918	3,188.6	3,191.2
Entertainment	323,828,666	364,331,238	3,346.4	3,764.9
Transit And Ground Passenger Transportation	189,479,825	192,393,757	3,598.1	3,653.4
Automotive Equip. Rental And Leasing	171,347,227	176,487,831	773.7	796.9
Services To Buildings And Dwellings	170,444,690	201,103,046	2,424.2	2,860.3
Gasoline Stations	166,257,202	172,644,624	745.5	774.1
Construction Of New Nonres. Commercial Structures	151,707,014	151,707,014	746.6	746.6
Total	3,372,209,859	5,592,534,395	31,226.7	42,628.0

Along with these expenditures, the equivalent of over 42,600 year-long, full-time positions would be created and upwards of $440 million in additional state and local tax revenues would be collected.

In terms of output, the largest beneficiary is the accommodation sector, particularly hotels, which would see increased output of over $570 million due to the substantial influx of visitors who require lodging. Meeting this additional demand for hotel space would support employment of more than 4,100 workers. In terms of employment, the food services and drinking places (restaurants) sector and the retail sector benefit the most, with the creation of 6,600 and 4,800 jobs, respectively. Both sectors would also see increased output of around $470 million each, mainly as a result of visitors coming into the region to attend the Expo. The entertainment sector would see increased output of over $360 million and an increase in employment of 3,700 jobs, as a result of a significant amount of spending by the Expo organizers on performances, art and cultural exhibits, and significant expenditures by visitors who will seek out other leisure activities over the course of their stay. Expo staff are also likely to spend on entertainment when they are not working.

Figure 1 shows that of the participating agents in the World Expo, organizers and non-local visitors make up the largest shares of the total increase in local economic output. Non-local visitors and organizers account for 38% and 24% of this additional production, respectively. Exhibitors make up 15% of direct expenditures. Spending by local visitors and staff are the remaining significant sources of economic benefit.

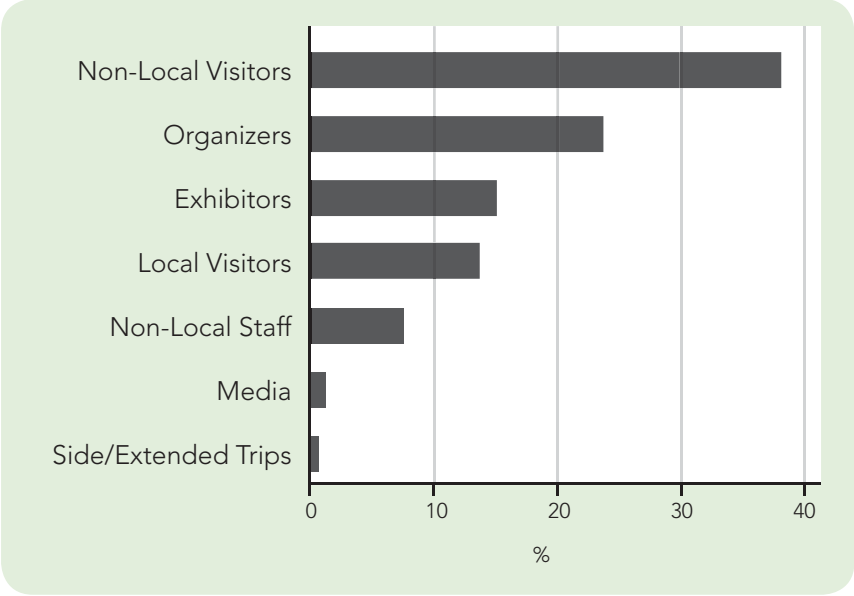


Figure 1: Distribution of Direct Expenditures

Employment Effects by Occupation

All of this economic activity generates demand for a significant number of workers, over 42,600 in total. Table 5 shows that the jobs will be distributed widely across occupations and wage levels. "Food preparation and serving-related" occupations benefit most in terms of jobs created, accounting for over 17.5% of all jobs, followed by "building and grounds cleaning and maintenance," with 13.9%. These are two of the lowest-paying occupations, both with an average annual wage under $30,000. However, there are also a significant number of jobs created in higher-paying occupations. These include jobs in "management," "business and financial operations," and "computer and mathematical" occupations. Overall, the average annual wage of the jobs created is $52,936, significantly lower than the average wage in Santa Clara County.

Table 5: Summary of Occupational Impacts

Occupations	Employment	Average Annual Wages ($)
Food Preparation and Serving-Related	7,454	22,531
Building and Grounds Cleaning and Maintenance	5,925	28,594
Sales and Related	4,513	48,990
Office and Administrative Support	4,218	42,701
Installation, Maintenance, and Repair	2,866	52,650
Management	2,707	143,087
Protective Service	2,078	38,320
Arts, Design, Entertainment, Sports, and Media	2,020	68,002
Business and Financial Operations	1,922	86,601
Computer and Mathematical	1,505	112,006
Construction and Extraction	1,500	58,571
Transportation and Material Moving	1,466	34,088
Personal Care and Service	898	28,214
Healthcare Practitioners and Technical	764	104,008
Production	693	38,339
Architecture and Engineering	561	100,571
Education, Training, and Library	512	58,139
Healthcare Support	444	34,435
Life, Physical, and Social Science	315	92,898
Legal	149	147,095
Community and Social Services	113	51,299
Farming, Fishing, and Forestry	7	32,469
All Occupations	42,628	52,936

Cost and Caveats

Although the economic benefits of hosting a World Expo in the Bay Area are substantial, it is important to keep in mind that hosting such a significant event is not without its impact on local residents and other visitors to the region. In addition to the jobs, tax revenues, and increased economic activity, a significant influx of visitors, local, domestic, or foreign, brings with it:

- added congestion on streets and highways
- higher hotel rates
- longer lines at local restaurants (though locals know places that visitors will never find)
- higher airfares to and from the Bay Area may result as increased demand strains capacity at local airports
- a tug of war over employees (some of the jobs created could come at the expense of other businesses)
- providing tourism related services (e.g. security) is not without cost
- because of the significant increase in visitor volumes to the area, other potential visitors could avoid the Bay Area

It is therefore difficult to fully gauge the net effect of major events such as this on tourism. There is always a certain amount of crowding out of non-event related activity.

Another form of crowding out that is not captured in the model has to do with the estimated increase in employment. If the local economy has completely recovered from the recent recession, it may be difficult to find the employees necessary to provide services to those participating in or attending the World Expo. The source for many of these employees will be establishments elsewhere in the Bay Area. When there is slack in the economy, this need not occur, as there may be sufficient numbers of unemployed workers. The results presented above are therefore more applicable during an economic downturn than an economic boom.

There are also other conceptual difficulties associated with estimating the economic impact in advance of an event. In particular, much of the activity that is evaluated is speculative. The results in this report use expenditures from past World Expos as a guide. However, there are inherent differences between the Expo locations that make the evaluation less than certain. The results presented here are based on assumptions that are, in general, conservative relative to the experience of past World Expos.

Another significant caveat is with respect to the methods used. Although the IMPLAN model is standard in the industry and utilizes the best methods available for assessing the impact prior to an event, there are certain methodological assumptions that are made that may not be correct. These assumptions, detailed in Appendix B, have a tendency to lead to estimated impacts that are too high. This is another reason that many of the assumptions underlying the results above are deliberately conservative.

For these reasons, the results presented above may be significantly different from the actual experience, either higher or lower. The overall message of the findings of this analysis are quite clear, however, even with these costs and caveats: an event such as the World Expo would have a significant benefit for the Bay Area economy, its businesses, and its workers.

Intangible Benefits: Showcasing the Region

While this analysis has focused on economic benefits that can be measured, holding a World Expo in the Bay Area would have other benefits that are potentially substantial, but are less easily measured. Principal among these is the national and global profile that holding a major international event would give the region. The proposed location of the Expo–Moffett Field–offers a unique opportunity in this regard. Situated at the heart of Silicon Valley, Moffett Field is adjacent to many of the region's leading technology companies and in the center of a region that aspires to play a leading role in sustainable development and renewable energy technology. Bringing millions of U.S. and international visitors to the Bay Area could provide a unique opportunity to showcase the region's business and technological leadership, with ancillary corporate and other activities likely to be held through the duration of the event. While difficult to quantify in advance, it is likely that this showcase effect would generate additional business revenue and employment in the longer term.

Summary

This report finds that a World Expo can deliver a major economic windfall. Lasting six months, the Expo 2020 has the potential to increase direct spending in the Bay Area by more than $3.3 billion. This increase in spending brings with it a total increase in economic activity of almost $5.6 billion. The job creation potential is significant, with more than 42,600 jobs across a variety of industries. The enhanced national and global profile gained from visitors coming to the Bay Area and from global media attention can be expected to yield additional – if harder to quantify – economic benefits to the region, its companies and its workers.

Appendix A: Detailed Results

Results by Activity

To provide some perspective of the relative impacts of Expo related activities, Table 6 lists the impact on output, employment, and taxes of a variety of scenarios. The information here may be combined with Table 3 to determine how the economic impact would change if adjustments were made to the analysis. For example, if we assume that 10 corporate pavilions would be built instead of 15, the overall economic impact of the World Expo would fall by $87.5 million to $5.5 billion. Or if an additional five million local visitor days were made, the overall economic impact would increase by $227 million.

Table 6: Examples of Economic Impact ($)

	Output		Employment		State and Local Taxes	
Participant	Direct	Total	Direct	Total	Direct	Total
10% Shift in Visitor Type	25,400,649	41,623,628	239.1	321.1	2,308,526	3,448,485
1,000 Non-Local Staff	21,258,350	34,552,270	252.6	319.3	2,015,893	2,988,008
One Pavilion:						
National	4,075,037	6,591,211	32.0	44.7	282,946	455,454
Rented	5,575,037	8,994,040	39.4	56.7	324,659	559,904
Joint	6,471,214	10,433,697	33.1	53.6	269,114	542,904
Corporate	10,729,841	17,497,028	57.4	92.2	957,342	1,437,146
Theme	23,241,068	37,809,005	123.1	198.0	1,881,854	2,912,085
One Million Visitors:						
Non-Local	154,575,740	253,649,151	1,488.6	1,988.1	14,777,032	21,806,772
Local	27,572,500	45,531,012	292.9	382.6	3,234,397	4,564,339

Results by Agent

Of the participants in the World Expo, including the event organizers, exhibitors, visitors, staff, and media, each group contributes significantly to local economic activity. This section provides detail on the contributions of each participating group to the overall economic impact on the three counties receiving the primary benefit of a World Expo in Silicon Valley.

Non-Local Visitors. Even using conservative attendance figures, non-local visitors would generate an enormous amount of additional demand in the local economy during the six months of the World Expo. World's Fairs are a huge draw for tourists, and the millions of people flocking to the Expo site will spend on accommodations, food and drink, transportation, and entertainment over the course of their stay. Based on typical expenditure patterns of visitors traveling to the Bay Area by air, it is estimated that this group will spend an aggregate of over $1.2 billion, or around 38% of Expo-driven expenditures. This spending would result in a total increase in output of $2.1 billion, supporting the creation of 16,500 jobs.

Table 7a: Detailed Impacts by Non-Local Visitors

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Accommodation	482,694,680	3,453.4	170,966,771
Food Svcs. And Drinking Places	203,486,015	2,881.2	80,541,025
Automotive Equip. Rental And Leasing	148,758,727	671.7	35,086,788
Transit And Ground Passenger Transportation	141,047,147	2,678.4	63,092,920
Retail	120,250,783	1,246.4	54,935,302
Entertainment	104,877,387	1,083.8	38,778,623
Gasoline Stations	87,016,387	390.2	26,815,113
Total	1,288,131,126	12,405.0	470,216,542
Total Effects: Top 10 Industries			
Accommodation	483,560,068	3,459.6	171,273,285
Food Svcs. And Drinking Places	234,635,343	3,322.3	92,870,122
Retail	153,679,360	1,592.9	70,206,795
Automotive Equip. Rental And Leasing	151,101,260	682.3	35,639,306
Transit And Ground Passenger Transportation	142,198,448	2,700.2	63,607,918
Entertainment	118,982,983	1,229.5	43,994,195
Gasoline Stations	89,298,984	400.4	27,518,522
Real Estate Establishments	70,812,415	344.0	11,690,615
Imputed Rental Activity For Owner-Occupied Dwellings	55,371,993	0.0	0
Internet Publishing And Broadcasting	45,971,003	30.0	6,867,495
Total	2,113,742,901	16,567.3	755,139,025

Table 7b: Summary of Occupational Impacts by Non-Local Visitors

Top 10 Occupations	Employment	Average Annual Wages ($)
Food Preparation and Serving-Related	4,140	22,531
Office and Administrative Support	2,033	42,701
Sales and Related	1,929	48,990
Building and Grounds Cleaning and Maintenance	1,602	28,594
Installation, Maintenance, and Repair	1,054	52,650
Management	970	143,087
Arts, Design, Entertainment, Sports, and Media	696	68,002
Transportation and Material Moving	668	34,088
Business and Financial Operations	592	86,601
Computer and Mathematical	491	112,006
All Occupations	16,567	50,228

Organizers. The Expo organizers are charged with preparing the site of the Expo, coordinating with participants, overseeing the day-to-day operations of the Expo, enticing sponsorship, advertising, and the multitude of other tasks that go into operating a successful World's Fair. Preparations for the Expo, in particular, making the necessary infrastructure improvements, constructing theme, rented, and joint pavilions, and garnering participation from nations, corporations and international organizations, would begin well in advance of the actual Exposition. Given the monumental task facing Expo organizers, it is little surprise that they contribute a significant share of increased spending, estimated at over $800 million, or 24% of Expo-related expenditures. This spending drives a total increase in economic activity on the order of $1.4 billion, resulting in the creation of some 10,000 jobs.

Table 8a: Detailed Impacts by Organizer

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Facilities Support Svcs.	349,999,991	3,188.6	218,170,890
Construction Of New Nonres. Commercial Structures	126,726,120	623.7	52,458,430
Services To Buildings And Dwellings	105,373,522	1,498.7	50,306,294
Entertainment	89,999,997	930.0	33,277,680
Construction Of Other New Nonresidential Structures	39,999,998	214.8	17,924,211
Wholesale Trade Businesses	39,525,219	132.1	15,246,393
Advertising And Related Svcs.	24,477,934	152.9	11,714,595
Investigation And Security Svcs.	5,373,519	97.2	3,324,330
Accommodation	5,373,519	38.4	1,903,259
Specialized Design Svcs.	4,925,726	25.2	2,165,231
Total	811,705,331	6,966.0	414,766,582
Total Effects: Top 10 Industries			
Facilities Support Svcs.	350,113,458	3,189.7	218,241,619
Construction Of New Nonres. Commercial Structures	126,726,120	623.7	52,458,430
Services To Buildings And Dwellings	111,785,801	1,589.9	53,367,576
Entertainment	100,583,896	1,039.4	37,191,098
Wholesale Trade Businesses	61,219,557	204.6	23,614,731
Imputed Rental Activity For Owner-Occupied Dwellings	45,799,202	0.0	0
Real Estate Establishments	40,581,732	197.2	6,699,749
Construction Of Other New Nonresidential Structures	39,999,998	214.8	17,924,211
Advertising And Related Svcs.	28,379,498	177.2	13,581,796
Retail	27,135,640	281.3	12,396,631
Total	1,379,335,796	10,037.7	624,407,677

Table 8b: Summary of Occupational Impacts by Organizers

Top 10 Occupations	Employment	Average Annual Wages ($)
Building and Grounds Cleaning and Maintenance	2,674	28,594
Protective Service	1,176	38,320
Construction and Extraction	882	58,571
Management	760	143,087
Office and Administrative Support	667	42,701
Business and Financial Operations	616	86,601
Arts, Design, Entertainment, Sports, and Media	544	68,002
Computer and Mathematical	450	112,006
Sales and Related	434	48,990
Installation, Maintenance, and Repair	392	52,650
All Occupations	10,038	57,284

Exhibitors. Exhibitors, primarily foreign countries, but also participating international organizations and other groups, would generate significant expenditures in preparing and operating their pavilions, possibly exceeding expenditures by the Expo organizers. However, the majority of this spending would occur in the exhibitors' home country and is therefore excluded from the analysis. In particular, costs related to the design and fabrication most pavilions are expected to be incurred abroad. Thus, we only include the portion of the operating costs that is likely to be expended in the local economy, which is nonetheless significant, at $527 million. With these expenditures, the net impact on the local economy would be seen in increased output on the order of $855 million, resulting in employment for close to 5,400 people.

Table 9a: Detailed Impacts by Exhibitors

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Accommodation	72,408,125	518.0	25,646,403
Investigation And Security Svcs.	65,071,169	1,177.1	40,256,306
Services To Buildings And Dwellings	65,071,168	925.5	31,065,578
Wholesale Trade Businesses	63,240,351	211.4	24,394,229
Advertising And Related Svcs.	55,754,509	348.2	26,682,870
Electronic And Precision Equip. Repair And Maintenance	44,297,897	184.8	15,686,905
Telecommunications	36,762,064	58.7	6,619,443
Construction Of New Nonres. Commercial Structures	24,980,895	122.9	10,340,871
Natural Gas Distribution	24,508,043	6.4	6,032,334
Water, Sewage And Other Treatment And Delivery Systems	24,508,042	25.3	10,176,335
Total	527,245,676	3,716.0	214,647,573
Total Effects: Top 10 Industries			
Wholesale Trade Businesses	75,410,558	252.0	29,088,744
Accommodation	72,735,353	520.4	25,762,305
Services To Buildings And Dwellings	68,983,938	981.2	32,933,571
Investigation And Security Svcs.	66,174,134	1,197.0	40,938,655
Advertising And Related Svcs.	59,303,122	370.3	28,381,157
Telecommunications	57,074,096	91.2	10,276,865
Electronic And Precision Equip. Repair And Maintenance	45,481,255	189.8	16,105,959
Electric Power Generation, Transmission, And Distribution	32,393,926	18.1	6,502,388
Natural Gas Distribution	26,482,349	6.9	6,518,284
Construction Of New Nonres. Commercial Structures	24,980,895	122.9	10,340,871
Total	855,285,080	5,374.3	328,995,312

Table 9b: Summary of Occupational Impacts by Exhibitors

Top 10 Occupations	Employment	Average Annual Wages ($)
Building and Grounds Cleaning and Maintenance	1,341	28,594
Protective Service	506	38,320
Office and Administrative Support	486	42,701
Management	409	143,087
Installation, Maintenance, and Repair	329	52,650
Computer and Mathematical	314	112,006
Sales and Related	313	48,990
Business and Financial Operations	312	86,601
Food Preparation and Serving-Related	298	22,531
Construction and Extraction	239	58,571
All Occupations	5,374	57,372

Local Visitors. Local visitor spending would be significantly smaller than that of non-local visitors, as this group of attendees will not be spending on accommodations, which is the major difference in expenditures between the two types of visitors. Further, spending by truly local visitors, those who live within the economic area analyzed, is not included in the analysis, as this would most likely have occurred regardless of the Expo. Nonetheless, overall expenditures by this group are still substantial at nearly $460 million. These direct expenditures lead to a total increase in economic activity of over $750 million, creating around 6,300 jobs.

Table 10a: Detailed Impacts by Local Visitors

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Retail	198,708,330	2,059.6	90,777,804
Food Svcs. And Drinking Places	114,958,331	1,627.7	45,501,219
Entertainment	92,458,333	955.4	34,186,650
Gasoline Stations	53,416,664	239.5	16,460,967
Total	459,541,657	4,882.3	186,926,640
Total Effects: Top 10 Industries			
Retail	211,521,264	2,192.4	96,631,257
Food Svcs. And Drinking Places	124,111,066	1,757.3	49,123,928
Entertainment	98,952,100	1,022.5	36,587,734
Gasoline Stations	54,326,421	243.6	16,741,319
Real Estate Establishments	34,830,458	169.2	5,750,255
Imputed Rental Activity For Owner-Occupied Dwellings	21,144,982	0.0	0
Internet Publishing And Broadcasting	16,199,807	10.6	2,420,049
Wholesale Trade Businesses	12,544,832	41.9	4,839,023
Electric Power Generation, Transmission, And Distribution	11,254,720	6.3	2,259,144
Telecommunications	9,939,626	15.9	1,789,747
Total	758,850,131	6,375.8	287,292,004

Table 10b: Summary of Occupational Impacts by Local Visitors

Top 10 Occupations	Employment	Average Annual Wages ($)
Food Preparation and Serving-Related	1,605	22,531
Sales and Related	1,233	48,990
Installation, Maintenance, and Repair	780	52,650
Office and Administrative Support	598	42,701
Arts, Design, Entertainment, Sports, and Media	468	68,002
Transportation and Material Moving	328	34,088
Management	321	143,087
Business and Financial Operations	235	86,601
Personal Care and Service	148	28,214
Building and Grounds Cleaning and Maintenance	144	28,594
All Occupations	6,376	49,910

Staff. Foreign staff that is brought in to operate the various exhibitor's pavilions would generate significant expenditures in the local economy, as they would take up residence in the area over an extended period of time. The number of potential staff is quite difficult to estimate, as it will depend on the number and size of pavilions, and there is a lack of information on staffing patterns at individual pavilions. Nonetheless, based on total counts of workers at previous World Expos, the projections of staff used in the analysis appear to be realistic and fairly conservative. Direct expenditures by staff in the months leading up to and during the World Expo are estimated to be just under $234 million. This spending will lead to an overall increase in local output of around $380 million, supporting over 3,500 jobs.

Table 11a: Detailed Impacts by Non-Local Staff

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Food Svcs. And Drinking Places	65,791,548	931.6	26,040,703
Transit And Ground Passenger Transportation	45,217,701	858.6	20,226,689
Retail	45,156,651	468.0	20,629,339
Entertainment	29,263,300	302.4	10,820,163
Gasoline Stations	25,824,151	115.8	7,958,012
Automotive Equip. Rental And Leasing	22,588,500	102.0	5,327,808
Total	233,841,851	2,778.4	91,002,714
Total Effects: Top 10 Industries			
Food Svcs. And Drinking Places	70,333,314	995.9	27,838,362
Retail	51,503,742	533.8	23,528,941
Transit And Ground Passenger Transportation	45,414,634	862.4	20,314,781
Entertainment	32,113,866	331.9	11,874,166
Gasoline Stations	26,279,172	117.8	8,098,232
Automotive Equip. Rental And Leasing	22,995,353	103.8	5,423,770
Real Estate Establishments	14,796,534	71.9	2,442,800
Imputed Rental Activity For Owner-Occupied Dwellings	10,349,598	0.0	0
Internet Publishing And Broadcasting	6,930,124	4.5	1,035,274
Wholesale Trade Businesses	6,608,128	22.1	2,549,008
Total	380,074,977	3,511.9	140,923,544

Table 11b: Summary of Occupational Impacts by Non-Local Staff

Top 10 Occupations	Employment	Average Annual Wages ($)
Food Preparation and Serving-Related	983	22,531
Sales and Related	519	48,990
Office and Administrative Support	343	42,701
Installation, Maintenance, and Repair	248	52,650
Management	201	143,087
Arts, Design, Entertainment, Sports, and Media	178	68,002
Transportation and Material Moving	159	34,088
Business and Financial Operations	132	86,601
Computer and Mathematical	122	112,006
Building and Grounds Cleaning and Maintenance	84	28,594
All Occupations	3,512	51,977

Media. Expenditures on the part of the media stem primarily from having people on the ground to cover the events and are the sixth largest contributor to economic impact. Members of the media would spend on accommodations, food and drink, and entertainment, much like any other visitors, but their spending would also include a larger share of transportation related costs, as well as equipment and telecommunications related purchases. We have estimated that media expenditures would be on the order of $39.1 million and are thus much smaller than those of of the participants covered above. This leads to an increase in output of $64.8 million overall and to the creation of some 480 jobs.

Table 12a: Detailed Impacts by Media

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Retail	7,322,826	75.9	3,345,356
Business Support Svcs.	7,322,826	63.5	3,627,525
Entertainment	5,695,532	58.9	2,105,934
Accommodation	5,695,532	40.7	2,017,314
Transport By Air	3,661,413	11.9	1,179,981
Commercial And Industrial Mach. And Equip. Rental And Leasing	3,254,589	7.9	787,045
Food Svcs. And Drinking Places	2,847,766	40.3	1,127,163
Transit And Ground Passenger Transportation	2,440,942	46.4	1,091,877
Telecommunications	813,647	1.3	146,507
Total	39,055,073	346.8	15,428,703
Total Effects: Top 10 Industries			
Retail	8,381,902	86.9	3,829,183
Business Support Svcs.	7,413,124	64.3	3,672,256
Entertainment	6,190,779	64.0	2,289,053
Accommodation	5,723,482	40.9	2,027,214
Transport By Air	3,842,844	12.5	1,238,452
Food Svcs. And Drinking Places	3,838,318	54.3	1,519,230
Commercial And Industrial Mach. And Equip. Rental And Leasing	3,379,208	8.2	817,182
Transit And Ground Passenger Transportation	2,477,714	47.0	1,108,326
Real Estate Establishments	2,206,800	10.7	364,327
Telecommunications	1,947,269	3.1	350,629
Total	64,787,860	479.6	24,419,026

Table 12b: Summary of Occupational Impacts by Media

Top 10 Occupations	Employment	Average Annual Wages ($)
Food Preparation and Serving-Related	65	22,531
Building and Grounds Cleaning and Maintenance	59	28,594
Office and Administrative Support	58	42,701
Sales and Related	55	48,990
Installation, Maintenance, and Repair	41	52,650
Arts, Design, Entertainment, Sports, and Media	31	68,002
Management	30	143,087
Business and Financial Operations	22	86,601
Transportation and Material Moving	21	34,088
Protective Service	21	38,320
All Occupations	480	53,737

Side and Extended Trips. It is quite probable that the draw of an event such as the World Expo should lead to visitors extending their trips in the region. Based on the experience of past World Expos, visitors tend to visit the Expo site on multiple days, and also want to visit other attractions in the region, leading to longer stays. In addition, many people who visit the Bay Area tend to take side trips to nearby areas, resulting in additional expenditures. In combination, extended and side trips are expected to bring an additional $12.7 million in direct expenditures to the local area, increasing output by a total of $20.9 million and generating employment opportunities for 174 people.

Table 13a: Detailed Impacts by Side and Extended Trips

	Output	Employment	Labor Income
Direct Effects: Expenditure Categories			
Accommodation	5,414,463	38.7	1,917,761
Food Svcs. And Drinking Places	3,002,253	42.5	1,188,310
Retail	1,964,278	20.4	897,360
Entertainment	1,534,117	15.9	567,243
Transit And Ground Passenger Transportation	774,035	14.7	346,240
Total	12,689,146	132.2	4,916,914
Total Effects: Top 10 Industries			
Accommodation	5,423,078	38.8	1,920,813
Food Svcs. And Drinking Places	3,318,876	47.0	1,313,631
Retail	2,304,094	23.9	1,052,601
Entertainment	1,688,337	17.4	624,266
Transit And Ground Passenger Transportation	784,104	14.9	350,744
Real Estate Establishments	734,678	3.6	121,290
Imputed Rental Activity For Owner-Occupied Dwellings	566,676	0.0	0
Internet Publishing And Broadcasting	469,674	0.3	70,163
Electric Power Generation, Transmission, And Distribution	381,509	0.2	76,580
Wholesale Trade Businesses	310,456	1.0	119,755
Total	20,946,325	173.8	7,739,906

Table 13b: Summary of Occupational Impacts by Side and Extended Trips

Top 10 Occupations	Employment	Average Annual Wages ($)
Food Preparation and Serving-Related	54	22,531
Office and Administrative Support	19	42,701
Building and Grounds Cleaning and Maintenance	17	28,594
Sales and Related	16	48,990
Installation, Maintenance, and Repair	12	52,650
Management	10	143,087
Arts, Design, Entertainment, Sports, and Media	9	68,002
Business and Financial Operations	6	86,601
Transportation and Material Moving	5	34,088
Personal Care and Service	5	28,214
All Occupations	174	47,591

Appendix B: IMPLAN Input-Output Methodology

The IMPLAN modeling system combines the U.S. Bureau of Economic Analysis' Input-Output Benchmarks with other data to construct quantitative models of trade flow relationships between businesses, and between businesses and final consumers. From this data, we can examine the effects of a change in one or several economic activities to predict its effect on a specific state, regional, or local economy (impact analysis). The IMPLAN input-output accounts capture all monetary market transactions for consumption in a given time period. The IMPLAN input-output accounts are based on industry survey data collected periodically by the U.S. Bureau of Economic Analysis and follow a balanced account format recommended by the United Nations.

IMPLAN's Regional Economic Accounts and the Social Accounting Matrices will be used to construct region-level multipliers that describe the response of the relevant regional economy to a change in demand or production as a result of the activities and expenditures related to the World Expo. Each industry that produces goods or services generates demand for other goods and services and this demand is multiplied through a particular economy until it dissipates through "leakage" to economies outside the specified area. IMPLAN models discern and calculate leakage from local, regional, and state economic areas based on workforce configuration, the inputs required by specific types of businesses, and the availability of both inputs in the economic area. Consequently, economic impacts that accrue to other regions or states as a consequence of a change in demand are not counted as impacts within the economic area.

The model accounts for substitution and displacement effects by deflating industry-specific multipliers to levels well below those recommended by the U.S. Bureau of Economic Analysis. In addition, when estimating the impact of household spending, multipliers are applied only to personal disposable income to obtain a more realistic estimate of the multiplier effects generated by increased demand. Importantly, IMPLAN's Regional Economic Accounts exclude imports to an economic area, so the calculation of economic impacts identifies only those impacts specific to the economic impact area, as determined by the purchasing patterns of the industries where changes in output are occurring. IMPLAN calculates this distinction by applying the area's economic characteristics described in terms of actual trade flows within the area. The current version of IMPLAN not only identifies what proportion of inputs are purchased locally, but also determines where inputs are sourced from that are not obtained within the local economic area. This enables a user to estimate the impact of a spending increase in one economy on other nearby economies and how increased economic activity in those areas in turn impact the original study area.

Impact studies operate under the basic assumption that any increase in spending has three effects: First, there is a direct effect on that industry itself, resulting from the additional output of goods or services. Second, there is a chain of indirect effects on all the industries whose outputs are used by the industry under observation. These are the impacts generated by a business' supply chain. Third, there are induced effects that arise when employment increases and household spending patterns are expanded. These impacts follow from the additional income that is earned in the course of producing this output, both by employees in the target industry and in those supplying it.

It is clear that there are several components to the overall economic impact. First, there is an effect on value added–the net increase in the overall value of the local economy. Value added is the total increase in an indus-

try's output less the cost of any intermediate inputs, and it is commonly used to measure an industry's contribution to local gross product. Value added consists primarily of labor income, but also includes indirect business taxes and other property income. The secondary and tertiary effects of the industry on the rest of the local economy are not very large. Second, there is an impact on local employment, with the single-largest share of jobs created in the industry itself, and the others spread throughout the study area's economy. Third, is the increase in output, where the difference between value added and output is that the former concentrates on various earnings, while the latter includes the costs of intermediate inputs. National income accounting avoids double counting by excluding the costs of intermediate inputs.

It is also important to note that capital investments made on different types of projects can lead to different multipliers. Why? A sector can have a large multiplier if it induces economic activity in industries whose employees have a high propensity to spend from take-home pay. Also, if the sector does not import many materials from abroad or from out of state, then its multiplier effect on the local economy will be high. In essence, some of the spending in the local economy may "leak out" into other states and countries. If raw materials are imported, then a change in a local sector's level of production will result in a commensurate change in economic activity abroad. The same is true if a California business buys inputs from firms in different states.

Our analysis using input-output accounts is based on three important assumptions. First, there are constant returns to scale. This means that a 10% cut in spending will be ten times as severe–across every sector in the economy–as a one percent cut. Second, there are no supply constraints. This means that any marginal increase in output can be produced without having to worry about bottlenecks in labor markets, commodity markets, or necessary imports. This assumption is quite realistic in a free-market economy like California's where there is some unemployment. It is even more reasonable in times of high unemployment, such as the present economic environment, because there are many under- and un-utilized resources that can be activated without detracting from other industries or businesses. Third, the flow of commodities between industries is fixed. This means that it is not possible to substitute in the short-run the many different inputs that go into the target industry.

Appendix C: Assumptions

This section details the major assumptions used in this report to obtain estimates of the economic impact of a World Expo in Silicon Valley.

Staff. In this report, "staff" refers to both paid employees and volunteers. A distinction is made between non-local and local event staff because of the different spending patterns of these two groups.

Non-Local Staff. Of the estimated 137 participating countries, we assume 50 are developing nations. Assuming an average of about 80 people operating each pavilion implies a total of 11,000 non-local staff. In reality, the 87 countries operating national pavilions would bring a larger number of staff than the 50 developing nations spread across 8 joint pavilions. However, 80 people per delegation seems to be a reasonable estimate, given the much higher numbers of staff and volunteers in previous Expos.

In order to keep our estimates conservative, we assume that non-local staff members will not have lodging expenses. There are two reasons for this assumption. First, while it is extremely unlikely that all staff members will live on-site, it is impossible to know what proportion of staff will ultimately live off-site. In fact, a large percentage of staff members may choose to live off-site for a more authentic Bay Area experience, among other reasons. Second, large delegations should be able to secure lower group rates, but the type of discount is unclear. Since we can only speculate on the number of staff staying off-site and the type of rates they will pay, this analysis simply leaves these expenditures out.

There is, however, one exception. Based on participation costs from Expo 2010, a small number of paid employees are given a housing allowance. These housing allowances are considered part of the operating costs of pavilions, which are discussed below.

Local Staff. A large number of local staff would be needed to provide a wide variety of event services to both visitors and exhibitors. We estimate that 6,000 local staff and volunteers would be needed throughout the Expo site, and inside theme and corporate pavilions. Compared to previous Expos, this is an extremely small number of local event staff.

We have opted to model the expenditures of the 6,000 local staff as an increase in labor income. This means that instead of having a direct impact on specific industries, the wages earned by local staff would lead to increased spending in the economy. IMPLAN uses the average spending patterns of residents within the three-county region to determine the industries benefiting from these increased wages. This step is necessitated by the lack of data regarding the spending patterns of local residents whose primary reason for being in the region is for work rather than leisure.

The estimate of local staff is not particularly important in this analysis because our estimate of the increase in labor income is low. In addition, we only count a quarter of their wages to account for possible crowding out of other employment opportunities. After discounting, we have an estimated increase in labor income of $33.3 million.

Expo Organizers. Generally speaking, past Expo organizers have reported their costs as a lump sum, without detailing the specifics of their investment. As described in Appendix B, the analysis contained in this report

requires a breakdown of spending by sector, for instance, construction, advertising, and landscaping. Because of the lack of detailed data from past Expos, we are forced to make assumptions based on the limited information that is available. Our estimates of $100 million for landscaping and $20 million for advertising were based on the amounts spent during Expo 2000. $350 million for other operations costs came from very limited data from several past Expos, including Expo 1988. All of these estimates are meant to be very conservative.

Our estimate of $40 million in infrastructure costs was obtained by looking at a similar proposed ferry terminal in Berkeley. However, there is uncertainty regarding whether organizers would be responsible for providing this funding. Local governments and transit authorities may potentially be involved in planning and investment.

Visitors. The estimate of 25 million visitors, representing an average of over 135,000 visitors per day, is intended to be conservative. Unique characteristics of the Bay Area suggest that this value may be on the low end. The host regions of the Expos from which we based our estimate of visitors did not have the same level of name recognition as the Bay Area leading up to the Expo. In fact, many Expos have been held in regions that were not yet well known, looking to become established tourist destinations. Since the Bay Area already has a strong reputation as a world-class tourist destination, a World Expo would add another attraction to an already diverse set of offerings. In addition, some visitors may be wary of traveling to a relatively obscure location, which the Bay Area certainly is not.

The proportion of local to non-local visitors is one of the key assumptions in this analysis. Assuming a high proportion of local visitors will underestimate the economic impact since a non-local visitor drives more economic activity. Assuming a low proportion of local visitors has the potential to overestimate the economic impact. For this analysis, we assume two thirds of visitors will be local, including Bay Area residents and those driving from neighboring areas. We use this conservative proportion because we would prefer to underestimate the economic impact rather than overestimate it.

A World Expo would not necessarily be the main attraction for visitors or the only reason for being in the area. This poses two problems. First, for visitors whose primary reason for being in the region is something other than attending the Expo, their expenditures cannot be fully attributed to the Expo, and must be discounted. We utilize a sliding scale of discount rates, based on whether the Expo is the only reason for being in the area, one of the reasons, or a secondary reason. The second issue is that visitors who plan on other activities during their stay will generate additional economic activity. This analysis takes into account the expenditures made on these side trips. It is impossible to capture all the different types of trips Expo visitors would make during their stay. The expenditures we have included are meant to be a rough indication of the additional economic activity generated by side trips, and are likely to be underestimated.

Pavilions. Information about the average pavilion investment was not available for most Expos. For national pavilions, this analysis uses the average investment from Expo 2000, which was adjusted for inflation to $15.1 million in 2010 dollars. For other types of pavilions, we estimated the investment cost based on our determination of the complexity of the pavilion relative to an average national pavilion. For instance, theme pavilions are typically the most extravagant at a World Expo, so the investment costs of theme pavilions were increased to incorporate this characteristic.

In addition to the average investment, we needed to determine the breakdown of costs between the three main categories of expenditures related to pavilions: construction, operations and exhibition arrangement. Expo 2010 had specific information detailing the proportion of expenditures falling into each category. We combined the proportions from Expo 2010 with the average investment from Expo 2000 to obtain estimates of expenditures in each of the three categories.

Table 14 shows the categories of expenditures that were included in the analysis for each type of pavilion, and to which participating agent the expenditures were allocated. Table 15 shows the estimated expenditures per pavilion by category, and the estimated number of each type of pavilion. Estimates of the number of pavilions came primarily from Expo 2010, and were adjusted downward to reflect the likelihood that a Bay Area World Expo would be smaller in scale.

Operating expenses consist of pavilion maintenance, utilities, insurance, and public relations. Staff salaries also comprise a portion of operating expenses. Salaries are omitted because it is unclear where they would be spent. However, any funds given to staff to be used for a specific purpose, including accommodations, are left in the analysis. Operating expenses are estimated to be approximately 34% of pavilion investment.

Construction expenses include construction of the actual pavilion, as well as decoration, installation, and dismantling. Construction expenses are estimated to be less than 20% of the pavilion investment.

Exhibition arrangement includes interior and exterior design, furniture, computer software and hardware, and other equipment. These expenses are estimated to be 48% of the total investment.

National Pavilions. This report defines a national pavilion as a pavilion built and designed by a foreign country. For national pavilions, we only include operating costs. Subtracting salaries leaves $4.1 million in operating costs per pavilion. Construction expenditures are excluded because it is unclear how much of the construction would be performed by local contractors. Exhibition arrangement expenditures are excluded because participants bear the responsibility of filling their pavilions, and it is reasonable to expect that most, if not all exhibits in national pavilions would come from foreign countries.

Table 14: Allocation of Pavilion Expenditures

Type of Paviloin	Expenditure Category		
	Exhibition Arrangement	Construction	Operations
National	Not Included	Not Included	Exhibitors
Rented	Not Included	Organizers	Exhibitors
Joint	Not Included	Organizers	Exhibitors
Corporate	Exhibitors	Exhibitors	Exhibitors
Theme	Organizers	Organizers	Organizers

Table 15: Included Pavilion Expenditures by Category ($ millions)

Type of Pavilion	Number	Expenditures per Pavilion			
		Exhibition Arrangement	Construction	Operations	Total Included
National	50	-	-	4.08	4.08
Rented	37	-	1.50	4.08	5.58
Joint	8	-	5.00	1.47	6.47
Corporate	15	5.84	1.29	3.60	10.73
Theme	5	12.05	4.44	6.75	23.24

Rented Pavilions. This report defines a rented pavilion as an empty pavilion built by the host and rented to a foreign country. During an Expo, rented pavilions are typically referred to as national pavilions. A distinction is made in this report between national pavilions and rented pavilions because we include additional expenditures for rented pavilions. Operating costs are assumed to be identical for both rented and national pavilions. In other words, this report assumes that the 87 participants in a national pavilion or a rented pavilion would each have operating costs of $4.1 million.

Any pavilions built by the host country are more likely to use local contractors, so construction costs related to the 37 rented pavilions built by the host are included in this analysis. However, we assume the construction costs of these pavilions would be relatively minimal, since structures would be basic and would not require extensive design. It is assumed that each rented pavilion would cost the host $1.5 million.

Joint Pavilions. As with rented pavilions, this analysis includes operating and construction expenses, both of which are expected to be somewhat different than that of other types of pavilions. Each of the 50 participating developing countries is assumed to have $450,000 in operating expenses, as developing countries would be expected to have smaller budgets than other participants. The analysis counts approximately $235,000 per developing country, after excluding salaries. Each of the eight joint pavilions is assumed to cost $5 million to build. Construction costs of joint pavilions are expected to be higher than for rented pavilions because the structures would most likely be larger and require more intricate interior layouts to accommodate multiple participants.

It should be noted that developing countries generally have their participation costs reimbursed by the organizers. To prevent double counting, reimbursements are not included in the organizers' expenditures. Additionally, reimbursements would most likely be spent outside the local region.

Corporate and Theme Pavilions. The third major expenditure, exhibition arrangement, is only included for pavilions that are organized by corporate participants or the host. We assume that exhibits in these pavilions would be sourced from the local region. Theme pavilions are expected to be quite extravagant, and as such, we estimate a $125 million investment for five theme pavilions, and include $116 million after excluding salaries.

We assume a conservative total investment of $200 million for corporate pavilions. Only half of the construction costs are included to account for the possibility that some corporations would use contractors outside of the local region. After discounting construction costs and excluding salaries, approximately $161 million is included.

Bay Area Council Economic Institute

The Bay Area Council Economic Institute is a public-private partnership of business, labor, government and higher education that works to support the economic vitality and competitiveness of California and the Bay Area. Its work builds on the twenty-year record of fact-based economic analysis and policy leadership of the Bay Area Economic Forum, which merged with the Bay Area Council in January 2008. The Association of Bay Area Governments is a founder and key institutional partner. The Economic Insttute also supports and manages the Bay Area Science and Innovation Consortium (BASIC), a partnership of Northern California's leading scientific research institutions and laboratories. Through its economic and policy research and partnerships, the Economic Institute addresses major issues impacting the competitiveness, economic development and quality of life of the region and the state, including infrastructure, globalization, science and technology, and governance. Its Board of Trustees, which oversees the development of its products and initiatives, is composed of leaders representing business, labor, government, higher education, science and technology, and philanthropy.

Bay Area Council

The Bay Area Council is a business-sponsored, public-policy advocacy organization for the nine-county Bay Area. The Council proactively advocates for a strong economy, a vital business environment, and a better quality of life for everyone who lives here. Founded in 1945, as a way for the region's business community and like-minded individuals to concentrate and coordinate their efforts, the Bay Area Council is widely respected by elected officials, policy makers and other civic leaders as the regional voice of business in the Bay Area. Today, more than 275 of the largest employers in the region support the Bay Area Council and offer their CEO or top executive as a member.

Beacon Economics

Beacon Economics is an independent economic research and consulting firm with offices in Los Angeles and the San Francisco Bay Area. Home to some of California's leading researchers and forecasters, Beacon helps its clients make informed, strategic decisions about investment, growth, revenue, policy, and other critical economic and financial issues. It's nationally recognized forecast was among the first to predict the collapse of the sub-prime mortgage market and one of a handful to stand against the tide and correctly foretell the depth of the financial and economic crisis that followed.

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