



# The Economic Impact

of San Francisco Hotels



# Impact Analysis

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This publication was prepared for:

## Hotel Council of San Francisco

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## EXECUTIVE SUMMARY

As San Francisco grows to become one of the most flourishing tech hubs in the world, the hotel industry stands in the unique cultural position of presenting to City residents, neighbors and international tourists the best that the City has to offer. Many hotels in San Francisco are near the Moscone Center, museums, shopping districts, sports arenas and other tourist locations, giving their visitors proximity to many culturally rich venues.

Millions of people visit San Francisco each year for business or pleasure. With San Francisco a major financial center and a leader in the tech industry, and with business travelers constituting about a fifth of all visitors,<sup>1</sup> the importance of hotels has become increasingly apparent. According to San Francisco Travel, direct spending for convention centers and meetings hit a record \$754.3 million in 2016, up 11.5% from 2011.<sup>2</sup>

This report takes an in-depth look at the San Francisco hotel industry to measure the influence it has on the City's economy. It includes an estimate of the revenue it generates for City government. And it discusses the social impacts and how the industry supports dependable middle-class jobs for residents of San Francisco and surrounding areas. These numbers reflect the magnitude of the industry's impact.

Our analysis estimates the impact of hotel operations and visitor spending in 2016:

- San Francisco hotels generated about \$11.3 billion in economic output, supporting roughly 105,300 jobs in the City.
- Moving through the San Francisco economy, the indirect and induced impacts of hotel operations generated about \$3.5 billion, supporting more than 17,200 jobs.
- The hotel industry has been a boon to workers in terms of wages. Hotel operations and retail activity in connection with San Francisco hotels were responsible for \$5.5 billion in wages.
- San Francisco hotel operations serve an important role in local tax revenue, generating more than \$385.4 million in 2016.
- San Francisco hotels pay some of the highest wages in the country and support a myriad of entry-level positions. The average annual wage for San Francisco workers in the hotel industry in the third quarter of 2016 was \$55,500 on a seasonally adjusted basis.

Clearly, the hotel industry plays an important role in the economic and cultural growth of San Francisco. The hotel industry stands at a crucial social juncture, acting both as a venue for and contributor to the vibrant Bay Area culture.

Impact	Employment	Wages (\$ Millions)	Output (\$ Millions)	Tax Revenue (\$ Millions)
Direct	88,050	4,103	7,802	-
Indirect	7,840	800	1,881	-
Induced	9,420	677	1,695	-
<b>Total</b>	<b>105,300</b>	<b>5,580</b>	<b>11,378</b>	<b>385.4</b>

Source: IMPLAN; Calculations by Beacon Economics

<sup>1</sup>"San Francisco Travel Reports Record-Breaking Year For Tourism." San Francisco Travel. <http://www.sftravel.com/article/san-francisco-travel-reports-record-breaking-year-tourism>.

<sup>2</sup>"Visitor Volume and Direct Spending Estimates." San Francisco Travel. 2016. <https://sftravel.ent.box.com/s/m4pxqir9bz1tv2f6p8bnbprrs88g0vmb>.

## OVERVIEW OF THE INDUSTRY AND TOURISM TRENDS

Tourism has long been a mainstay of the San Francisco economy. Given the nearby wine valleys, temperate climate and numerous attractions, it is an attractive destination for travelers worldwide. Last year, the City had another record-breaking year for tourism. According to the San Francisco Travel Association, San Francisco had 25.1 million visitors in 2016, an increase of 2.3% over 2015. This averages to about 68,580 visitors every day. Tourism is also a significant contributor to the growth of business in the City. The Great Recession had a decidedly negative effect on the tourism industry, but tourism-related spending has since accelerated.

**According to the San Francisco Travel Association, San Francisco had 25.1 million visitors in 2016, an increase of 2.3% over 2015.**

The strength of the San Francisco tourism industry is reflected in hotel occupancy rates, which remain among the highest in California. Occupancy rates have hovered above 80% over the last four years, and average daily room rates have risen 2.6% year over year in 2016, reflecting strong demand. Another key measure of performance in the industry is revenue per available room (RevPAR), a function of occupancy and room rates. According to data compiled by CBRE Hotels, RevPAR in San Francisco was up 3.7% year over year in 2016, slightly below Northern California overall, which increased 4.6% in that period.

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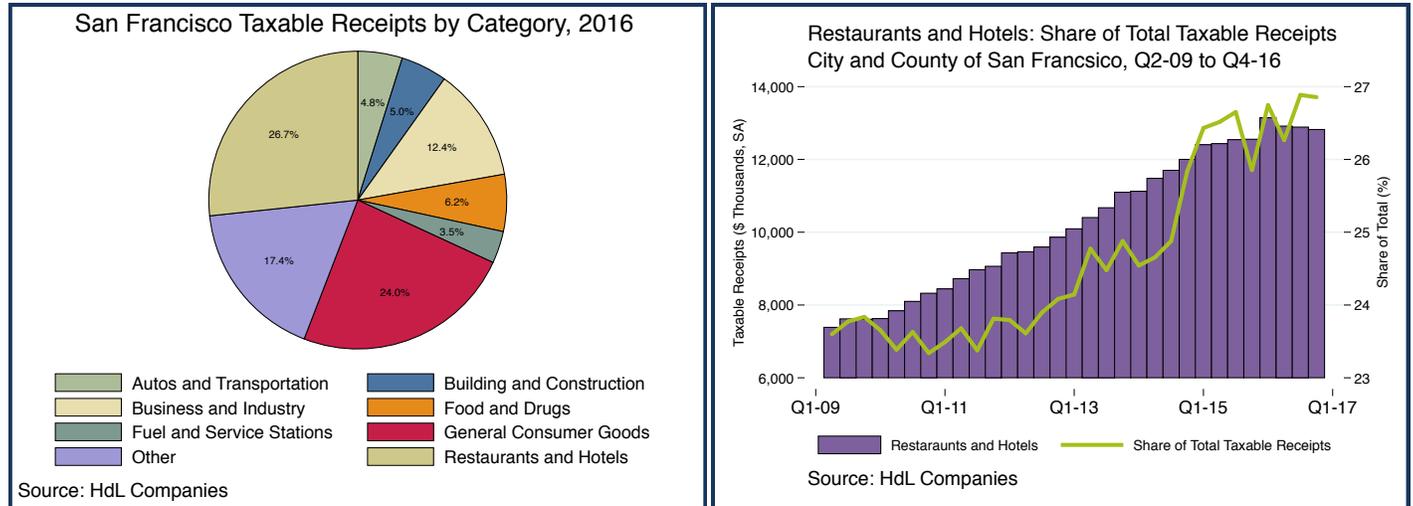
## AIR TRAVEL



San Francisco International Airport passenger traffic, both domestic and international, has been on a consistent upward trajectory. From January 2016 to 2017, total passenger flows increased 3.8% on a seasonally adjusted basis. Growth in international travel, which now represents roughly one-fourth of all air traffic through San Francisco, was

particularly strong. Year over year, international passenger flows were up 9.6%. Overall, a record 53 million people flew through SFO in 2016, a 6.2% increase over 2015.

**FISCAL IMPACT**



Tourism is important for San Francisco because it injects outside funds into the local economy, creating jobs and additional revenue for the City that support public works projects. According to data from HdL Companies, which provides county-level data for taxable receipts, spending on restaurants and hotels was the largest category, constituting 26.7% of total taxable receipts in 2016. Spending in restaurants continues to rise. This is marked not only by the growth in spending but also by the increasing share of total taxable receipts from the restaurants and hotels category. Indeed, taxable receipts from restaurants were roughly 23.7% of the City total in 2009, but have since reached nearly 27%. Strong demand for travel in San Francisco has increased hotel rates and spending, both of which provided the City with an important stream of revenue to support public works projects.

*According to data from HdL Companies, which provides county-level data for taxable receipts, spending on restaurants and hotels was the largest category, constituting 26.7% of total taxable receipts in 2016.*

## ECONOMIC IMPACTS

### DATA COLLECTION

To conduct this analysis and estimate the hotel industry's effect on San Francisco, Beacon Economics gathered data from:

- Economic Census
- CBRE Hotels
- Visit California
- Dean Runyan Associates

This was necessary to produce an estimate of the impact for 2016, accounting for the growth in hotel revenues while leveraging certain expenditures estimated for San Francisco travelers in 2016.

### IMPACT TYPES AND MODEL

Beacon Economics used the IMPLAN modeling system in this analysis. This system is an input-output model that estimates the short-run impacts of change in the San Francisco economy through the use of multiplier analysis.

Impact studies assume that any increase in spending has three effects:

- A direct effect on that industry itself, resulting from the additional output of goods and services. In the case of hotels, this includes direct spending on goods and services associated with hotel operations and administration, as well as operations such as capital improvements alongside retail activity in connection with hotels.
- A chain of indirect effects on the industries whose outputs are used by the hotel industry and the impacts generated by a business's supply chain. For example, to maintain operations, hotels need to buy materials and supplies as well as items for their connected operations, such as food and drink. Hotels also need to buy house-keeping and maintenance services, security, accounting/payroll services and other inputs to the production process, like utilities. These indirect impacts boost output and employment at the companies in the local economy that provide these inputs to the production process.
- Induced effects that arise when employment increases and household spending patterns are expanded. These impacts follow from the income that is earned in the course of producing this output, both by employees at the hotels and in those companies supplying the hotel. For example, to supply a restaurant or cafe at a hotel, a supplier may need to bring on additional workers. These workers will earn wages for this effort, and, to the extent that they live locally, will spend this income on rent, automobiles, clothes and dining out, among other expenses. This creates additional demand and employment opportunities in San Francisco.

Economic output is the total increase in local productivity and its distribution across broad industry clusters. It includes all direct spending by hotels, as well as secondary spending by institutions affected by that initial hotel spending. Employment represents the number of full-time-equivalent jobs across industries that are supported in connection with hotel operations. Tax revenues represent the fiscal benefits that hotel operations provide to local government. The impact of the hotel industry comprises a) the effect of hotel operations, which evaluates the im-

pacts of the hotel industry, and b) the indirect effect of hotel operations, that is, the visitor impact, which includes visitor spending in San Francisco in connection with hotels.

## THE IMPACT OF SAN FRANCISCO HOTEL OPERATIONS

### OUTPUT IMPACT

<b>Impact of Hotel Operations on Output</b>		
Impact	Output (\$ Millions)	Share of Total (%)
Direct	2,821.5	70.1
Indirect	667.1	16.6
Induced	535.5	13.3
<b>Total</b>	<b>4,024.1</b>	<b>100.0</b>

Source: IMPLAN/Beacon Economics

Beacon estimates that the hotel industry:

- Generated \$4 billion in economic output in San Francisco in 2016.
- Of this total, \$2.8 billion was generated through hotel operations and expenditures, while \$1.2 billion was generated through secondary effects.

Indeed, the operations of the hotels and retail activity in connection with San Francisco hotels had a substantial effect. Not only did the direct revenue generated by hotels multiply throughout the San Francisco economy, but visitors spent money at retailers, restaurants and attractions, intensifying the multiplier effect. These funds created an additional ripple effect through the supply chain, benefiting numerous sectors in the local economy.

Some sectors received a substantial benefit from hotel operations in San Francisco, as measured by their total secondary impacts (the sum of indirect and induced effects). The Real Estate sector was the largest recipient, with \$107 million in secondary economic activity generated as a result of hotel operations. This is perhaps unsurprising. Hotel operations increase business revenue throughout San Francisco, and many of these businesses use the revenue to invest in property. This spending also supports thousands of jobs, and some workers invest their income in housing. This represents 9.5% of secondary activity generated in San Francisco. Second was Management of Companies and Enterprises, at \$72.4 million, or 6.4% of all secondary economic activity, because the spending associated with hotel activity leads to new business activity in general.

***Beacon estimates that the hotel industry generated \$4 billion in economic output in San Francisco in 2016.***

Wholesale Trade was another key beneficiary of secondary output, at \$5.3 million, as businesses that support hotels and tourist consumption expenditures bought goods locally and from abroad. In general, wholesalers sell resale goods (goods sold to retailers and then bought by consumers, for example), durable nonconsumer goods, and raw

materials and supplies used in production. Thus, the wholesale process is a key step in the distribution of merchandise. As more revenue is indirectly generated throughout the City, consumers spend more on goods, which signals to businesses an increase in demand. In all, more goods are produced and sold, as indicated by the increase in output in this sector.

## EMPLOYMENT AND WAGES

Type	Employment		Wages (\$ Millions)	
	Jobs Supported	Share of Total (%)	Wages Generated	Share of Total (%)
Direct	25,338	80.6	1,283.7	71.2
Indirect	3,133	10.0	306.1	17.0
Induced	2,973	9.5	214.0	11.9
<b>Total</b>	<b>31,444</b>	<b>100.0</b>	<b>1,803.9</b>	<b>100.0</b>

Source: IMPLAN/Beacon Economics

Through operations and expenditures, San Francisco hotels supported roughly 31,500 local jobs. Hotel operations and expenditures directly supported a considerable number of entry-level positions. Hotels and Full-Service Restaurants were the main beneficiaries of employment directly related to hotel operations.

*Through operations and expenditures, San Francisco hotels supported roughly 31,500 local jobs.*

The increase in employment directly translates to a boost in overall wages. Unsurprisingly, the largest beneficiaries were hotel workers, who received over half of total wages generated in 2016 from hotel expenditures and operations. The second-largest beneficiaries in terms of overall wages were workers in full-service restaurants. In general, the sectors with the largest wage gains were more labor-intensive industries.

## THE IMPACT OF SAN FRANCISCO HOTEL VISITOR SPENDING

### OUTPUT IMPACT

Not only did the direct hotel revenue multiply through the San Francisco economy, but visitors staying at these hotels also spent money at local retail and dining establishments, which created multiplier effects.

- Beacon estimates that the total economic output of visitors in connection with San Francisco hotels was \$7.4 billion in 2016.
- This includes nearly \$5 billion in direct spending and \$2.4 billion in secondary spending, of which \$1.2 billion was indirect and \$1.2 billion was induced.
- Secondary output, 32.3% of the total, shows that visitor spending in connection with hotels generated significant impacts beyond the direct impact from visitor spending.

In terms of economic output, the largest beneficiaries were Full-Service Restaurants and General Merchandise Stores, and Other Amusement and Recreation Industries. Together, these industries accounted for over half of the economic output generated from visitor spending in connection with San Francisco hotels. As discussed earlier, visitor spending at local establishments stimulates demand throughout the supply chain. Spending is a boon to local businesses that experienced an increase in sales, which leads to the creation of jobs and income that generate multiplier effects across San Francisco.

## EMPLOYMENT AND WAGES

Type	Employment		Wages (\$ Millions)	
	Jobs Supported	Share of Total (%)	Wages Generated	Share of Total (%)
Direct	62,705	84.9	2,818.77	74.7
Indirect	4,709	6.4	493.97	13.1
Induced	6,449	8.7	462.97	12.3
<b>Total</b>	<b>73,864</b>	<b>100.0</b>	<b>3,775.71</b>	<b>100.0</b>

Source: IMPLAN/Beacon Economics

Visitor spending in connection with San Francisco hotels supported an estimated 73,860 full-time-equivalent jobs in the City. Of these, 62,700 were supported directly from visitor spending, and 11,150 (15.1%) were supported through secondary economic activity — 4,700 through indirect effects, hiring of suppliers of goods and services, and 6,450 through induced effects, hiring supported by spending as a result of the pay earned by employees at retail establishments and their suppliers.

In terms of overall employment gains, the prime beneficiaries of visitor spending in connection with San Francisco hotels were restaurant and retail employment. Nearly 21,000 of the jobs supported were concentrated in General Merchandise, Gasoline, and Food and Beverage retailers. Together, they represented over 28% of total jobs supported in 2016. The largest beneficiary was Full-Service Restaurants, which represented over 35% of total jobs supported. As with economic output, employment in the Real Estate industry received a large secondary benefit from visitor expenditures, with 750 jobs supported, or 6.7% of all secondary employment effects.

## TOTAL TAX REVENUE FROM HOTELS AND VISITORS

Type	Revenue (\$ Millions)	Share of Total (%)
Employee Compensation	3.4	0.9
Indirect Business Tax	369.6	95.9
Households	11.8	3.1
Corporations	0.6	0.2
<b>Total</b>	<b>385.4</b>	<b>100.0</b>

Source: IMPLAN/Beacon Economics

Beacon estimates that hotel operations and expenditures in the local economy in 2016 generated:

- More than \$385 million in tax revenue for local government.
- About 0.9% (\$3.4 million) of this was in employee compensation, which reflects payroll taxes employers pay.
- An additional 0.2% (\$0.6 million) was paid in corporate taxes, which reflect profits and dividends from corporations.
- By far, the bulk of taxes were in the Indirect Business and Household tax categories, which totaled more than \$381.4 million (or 99% of all tax revenue).

Clearly, hotels and related tourist-related expenditures generated a substantial amount of tax revenue for government agencies throughout the City. These funds pay for the necessities of society: roads, bridges, social programs, police and firefighters, parks and schools. Paying a 14% transient occupancy tax rate is just one way that San Francisco hotels generate revenue for San Francisco. Additionally, hotels in San Francisco do even more for local organizations, which is detailed below.

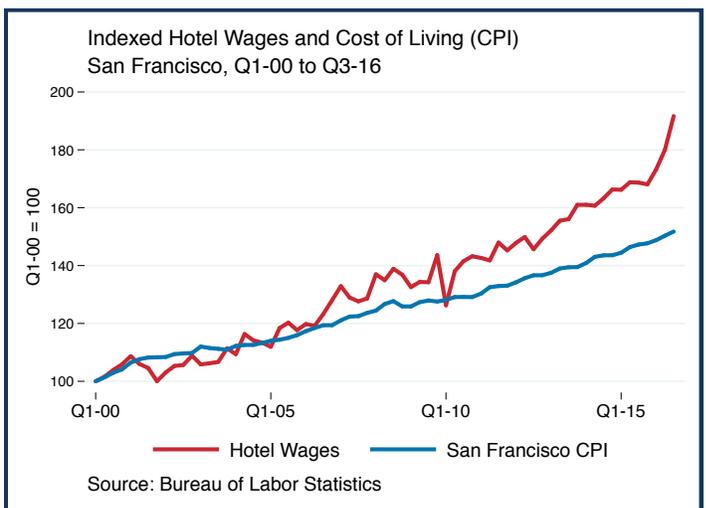
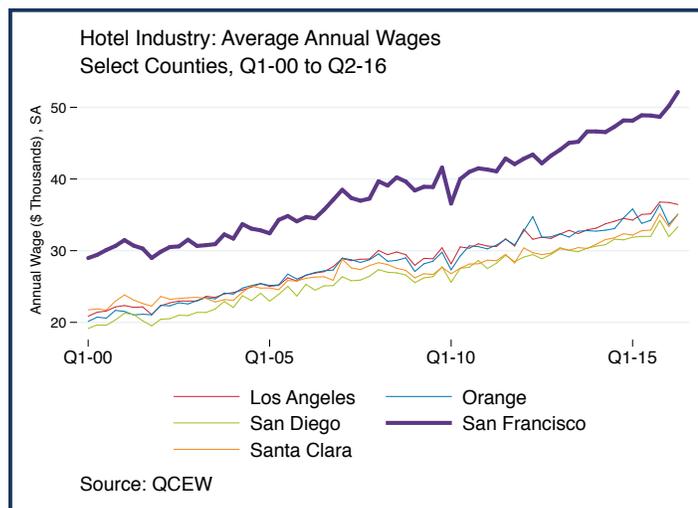
## SOCIAL IMPACTS — THE INDUSTRY IS A TEAM PLAYER

### WAGES AND BENEFITS: GOOD JOBS FOR THE WORKING CLASS

Hotel wages in San Francisco are considerably higher than those in other major California counties. Los Angeles commands a considerable amount of tourism in California, but its wages for workers in the hotel industry are significantly lower than San

Francisco’s. According to the latest estimates from the Quarterly Census of Employment and Wages, **the average annual wage for San Francisco workers in the hotel industry in the third quarter of 2016 was \$55,500 on a seasonally adjusted basis.** By comparison, wages were much lower in other California tourist counties such as San Diego (\$34,900), Orange (\$36,700) and Los Angeles (\$38,700).

*Hotel wages in San Francisco are considerably higher than those in other major California counties.*



Wages in the hotel industry in San Francisco were also growing faster than in other major California counties. From the third quarter of 2015 to the third quarter of 2016, wages in the industry grew 13.6%, a rate over double that of San Francisco's northern neighbor Marin County. San Francisco's housing market is red hot, but wage growth will help workers acclimate to the high cost of living that residents and Bay Area workers face. Thus, San Francisco hotels are a viable source of employment and stability. According to the 2016 Current Population Survey, Bay Area hotel employees had a median tenure of 5 years compared to 3 years the national level. In other words, hotel employees in the Bay Area stay in their jobs 66% longer than the national average.

County	Avg. Wage (\$ Thousands)	Annual Growth (%)
San Francisco	55.5	13.6
Alameda	33.3	12.3
Santa Clara	36.8	12.0
San Mateo	40.8	11.0
Los Angeles	38.7	10.0
San Diego	34.9	9.2
Orange	36.7	7.1
Marin	36.0	6.2

Source: QCEW

Industries supported directly or indirectly by the hotel sector include Amusements, Gambling and Recreation and Museums, Historical Sites, Zoos and Parks. Growth in these industries is largely a function of tourism, so their health is largely dependent on the tourism and the hotel industry. As shown in the charts above, employment and wages in both of these industries have reached record levels. Employment in Museums, Historical Sites, Zoos and Parks has continued to tick up since early 2005, and wages in the industry have increased rapidly over the last three years. Similarly, employment in Amusements, Gambling and Recreation has expanded quickly, posting 7.9% year-over-year growth in the third quarter of 2016. Thus, hotel and retail spending from visitors help support the cultural amenities of San Francisco, which in turn attracts visitors from across the globe. Hotels also integrate visitors from various backgrounds, cultures and traditions, which contributes to the City's cultural diversity, one of the City's hallmarks.

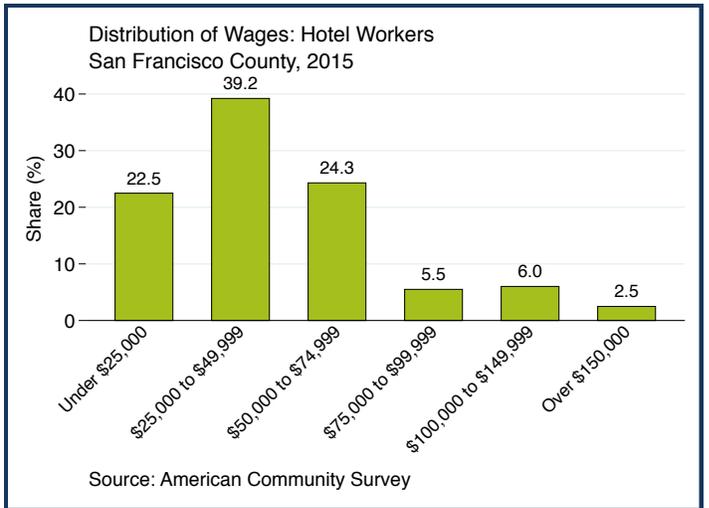
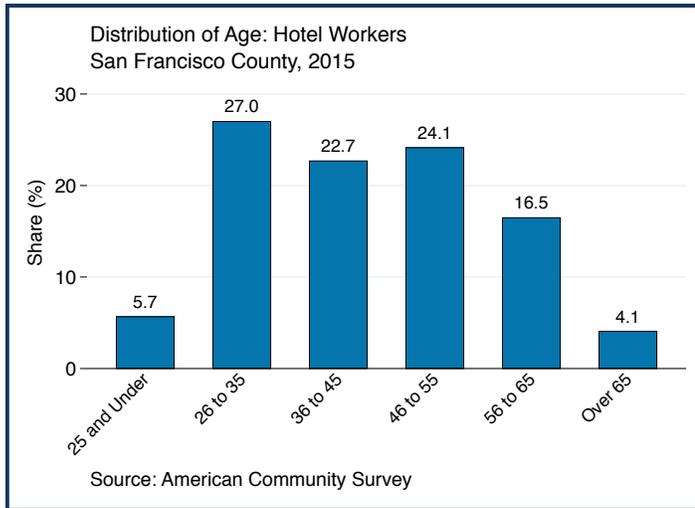
## **HOTEL WORKER PROFILE**

Using data from the U.S. Bureau of Labor, Statistics Quarterly Economic Census and the U.S. Census Bureau, Beacon examined the economic and demographic profile of workers in the hotel and broader accommodation industry.

According to the latest data available, in 2015, 84.5% of American Community Survey respondents in the hotel industry received health insurance through their employers. To put this in perspective, in that same time period, 77% of workers overall in the City got health insurance through their employers.

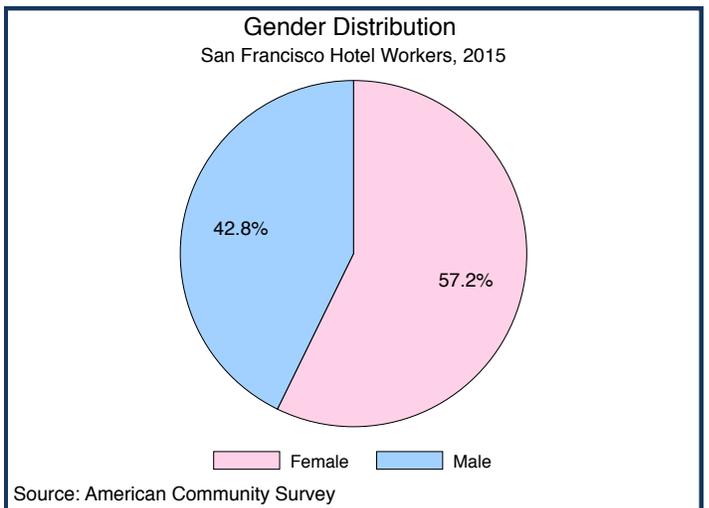
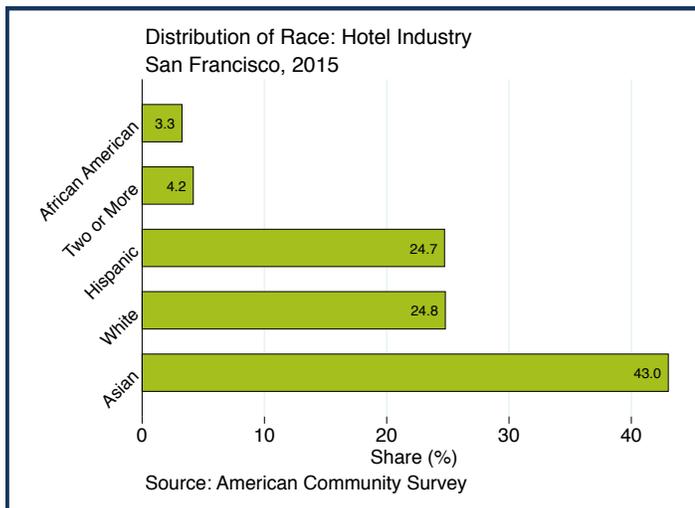
Almost 60% of San Francisco Hotel workers live in the City of San Francisco. More than 40% of workers live outside San Francisco. Of those who commute, the largest share come from San Mateo County (13.8%). Alameda (11.9%), Contra Costa (8.2%), and Marin (1.6%) Counties follow.

***In 2015, 84.5% of American Community Survey respondents in the hotel industry received health insurance through their employers.***



The industry includes a diverse set of occupations, many which are entry-level positions. But as mentioned earlier, workers in San Francisco earn considerably more because of their higher cost of living. The majority (63.5%) of workers in travel accommodation in San Francisco earned from \$25,000 to \$74,999 in 2015.

Ages in the industry further reflect the diversity of the sector overall. Workers are relatively young, with over half under 45. Nearly 74% are in prime working age, commonly defined as 25 to 54.



San Francisco workers in the hotel industry are very diverse. In 2015, 43% of hotel workers in San Francisco identified as Asian, followed by White (24.8%), Hispanic (24.7%), and African American (3.3%). In addition to racial diversity, more than half of hotel workers were females, at 57.2% in 2015.

## GIVING BACK TO THE COMMUNITY

The Hotel Council of San Francisco is a nonprofit trade organization founded in 1987 to help ensure the economic and social vitality of the tourism industry in San Francisco. The group is committed to supporting workers and the community at large through a number of programs.

In 2015 the Hotel Council announced a long-term partnership with Project Homeless Connect, a nonprofit organization that provides essential services and resources to the local homeless population.

The Hotel Council of San Francisco is an active member of the Hotel/Non-Profit Collaborative. The mission of the Hotel/Non-Profit Collaborative is to facilitate the successful donation of usable, excess goods, supplies and equipment from area hotels and businesses to community based non-profit service agencies.

San Francisco Hotels are leaders in sustainability. The Hotel Council has convened hotels to share best practices to create a more sustainable industry.

In an effort to bring awareness to heart disease, the council raised more than \$100,000 in a campaign to benefit the American Heart Association. Each year, members participate in and contribute to the San Francisco AIDS Walk. Since 1987, the event has raised nearly \$74 million for the San Francisco AIDS Foundation and other HIV/AIDS organizations in the Bay Area.

***In 2015 the Hotel Council announced a long-term partnership with Project Homeless Connect, a nonprofit organization that provides essential services and resources to the local homeless population.***

The Hotel Council is also leading the effort to support the arts in San Francisco. A portion of the 14% transitory occupancy tax helps fund the Grants for the Arts/San Francisco Hotel Tax Fund (GTFA). Since its inception in 1961, the GTFA has distributed over \$320 million to hundreds of nonprofit culture organizations in the City. During the 2015 fiscal year, roughly \$10.3 million was shared among 213 cultural groups and activities.

## QUALITATIVE IMPACTS

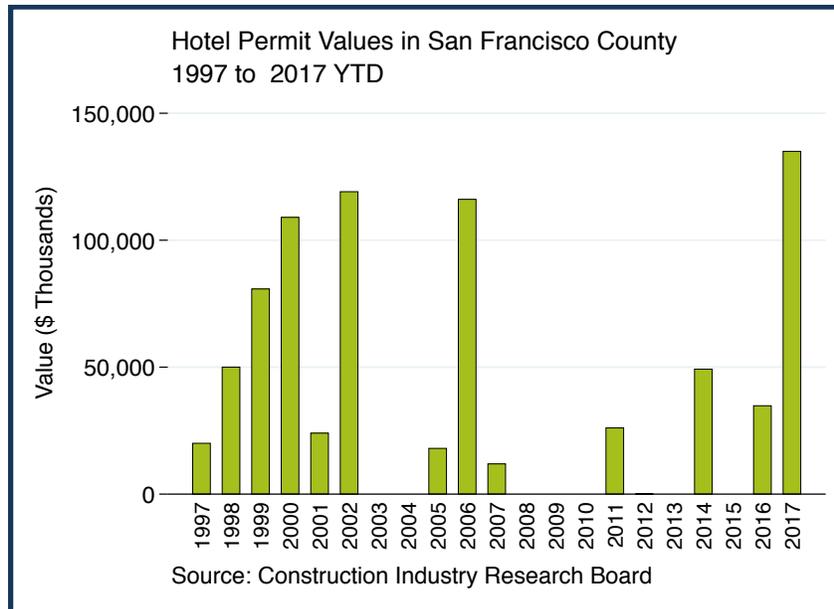
As San Francisco grows to become one of the most flourishing tech hubs in the world, the hotel industry stands in the unique cultural position of presenting to City residents, neighbors and international tourists the best that the City has to offer. Many hotels in San Francisco are near the Moscone Center, museums, shopping districts, sports arenas and other tourist locations, giving their visitors proximity to many culturally rich venues.

The international and American tourists who traffic through the San Francisco hotel industry bolster the transcultural character of the City. San Francisco is known and celebrated for its diversity, progressivism and innovation, and the hotel industry capitalizes on this to great effect. Diversity in both the hotel workforce and clientele means that travelers and locals alike benefit from the collision of various cultures and ideas.

The hotel industry also contributes to the social health and wealth of the City by involving itself directly with San Francisco's cultural cartography. Cultures often suffer from uniformity and homogeneity and so benefit from interaction with novel customs and foreign conventions. With the large number of tourists continually moving through the San Francisco hotel industry, the City has been positively changed. Examples range from profound ideological and political changes to less important but still vibrant menu changes in restaurants and design evolution at art

shows. All of this stimulates Californian (and American) culture for the better. The hotel industry stands at a crucial social juncture, acting both as a venue for and contributor to the vibrant Bay Area culture.

### HOW THE INDUSTRY LOOKS IN 2017



Where do we go from here? Hotel permitting data provided by the Construction Industry Research Board for two decades show that 2017 is a record-breaking year for nominal hotel permit values. Ten hotels are slated to open this year in the Bay Area, four of them in San Francisco. In total, 665 rooms will add to the stock in San Francisco, which clearly demonstrates the health and optimism for the hotel and tourism industry ahead.

***Hotel permitting data provided by the Construction Industry Research Board for two decades show that 2017 is a record-breaking year for nominal hotel permit values.***

San Francisco is actively engaged in attracting even more foreign visitors, with \$100,000 allocated to a campaign designed to highlight the City’s diversity. Tourism and business travel should continue to be strong into 2017, and the latest data support this prediction. Employment and income growth in San Francisco and in the local and global economies leads to more spending on leisure goods and services, including tourism, and San Francisco continues to be a top destination not only because of its accommodating weather but also because of its culture, food, nightlife and natural attractions.

Business travel to San Francisco is also likely to grow, leading to further expansion of hotels, restaurants and stores.

### CONCLUSION

San Francisco’s lodging market continues to be supported by strong fundamentals. Occupancy rates are near record highs, and the average daily rate continues its upward trend. Aside from spending on accommodations, visitors make many other purchases in the City, generating impacts beyond that generated by hotel revenue.

In 2016, San Francisco hotel operations generated a \$11.3 billion economic impact. Nearly 31% of this was due to secondary impacts, \$1.9 billion came from indirect effects, and \$1.8 billion came from induced effects. Beyond the massive increase in output generated, hotel operations and consumption activity from visitors helped support roughly 105,000 full-time-equivalent jobs. These jobs span a variety of industries, and the extent to which these other industries are affected demonstrates that hotels and tourism are hardwired into the economy. At the same time, San Francisco hotels support numerous social causes.

Hotels are the obvious foundation for supporting the growth in San Francisco's thriving tourism economy. San Francisco hotels pay high wages to entry-level positions and employ a diverse workforce. Clearly, the hotel industry plays an important role in the economic and cultural growth of San Francisco.

## IMPACT MODELING APPENDIX

### THE IMPLAN INPUT-OUTPUT MODEL

The input-output modeling system used in this study is IMPLAN (Impact for Planning), originally developed by the U.S. Forest Service and now operated by the Minnesota IMPLAN Group (MIG). In addition to updating and improving the databases and software, MIG holds regular training sessions and biannual user conferences and maintains hundreds of papers that have used IMPLAN.

One advantage of the system is the open access philosophy of the software design. IMPLAN is designed to provide users with maximum access so that they can alter the underlying structure of the data, the model or means of assessing impact. The combination of the detailed database, flexibility in application and the open access philosophy has made IMPLAN one of the most widely used and accepted economic impact modeling systems in the U.S. The results derived from IMPLAN analyses have been accepted in the U.S. court system and in many regulatory settings.

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 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 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 were 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 San Francisco hotel and visitor expenditures. 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.

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 ("leakages"). 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. In this analysis the IMPLAN model has been used to quantify all three of these effects.

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.

Finally, within the IMPLAN model, we define the term "job" as the annual average of monthly jobs in that industry. This is the same definition used by the Bureau of Labor Statistics and the Bureau of Economic Analysis. Thus, to illustrate, 1 job lasting 12 months is equal to 2 jobs lasting 6 months each, which are equal to 3 jobs lasting 4 months each, and so on. This definition should be kept in mind throughout the reading of this report.

## GLOSSARY

**Output:** Output represents the value of industry production. In IMPLAN these are annual production estimates for the year of the data set in producer prices.

**Direct Effects:** The set of expenditures applied to the predictive model (i.e., I/O multipliers) for impact analysis. It is a series (or single) of production changes or expenditures made by producers/consumers as a result of an activity or policy. These initial changes are determined by an analyst to be a result of this activity or policy. Applying these initial changes to the multipliers in an IMPLAN model will then display how the region will respond economically to these initial changes.

**Expenditures:** Expenditures are the values of the amounts that buyers pay, or agree to pay, to sellers in exchange for goods or services that sellers provide to them or to other institutional units designated by the buyers.

**Input-Output Analysis:** A type of applied economic analysis that tracks the interdependence among various producing and consuming sectors of an economy. More particularly, it measures the relationship between a given set of demands for final goods and services and the inputs required to satisfy those demands.

**Indirect Effects:** The impact of local industries buying goods and services from other local industries. The cycle of spending works its way backward through the supply chain until all money leaks from the local economy, either through imports or by payments to value added. The impacts are calculated by applying Direct Effects to the Type I Multipliers.

**Induced Effects:** The response by an economy to an initial change (direct effect) that occurs through re-spending of income received by a component of value added. IMPLAN's default multiplier recognizes that labor income (employee compensation and proprietor income components of value added) is not a leakage to the regional economy. This money is recirculated through the household spending patterns causing further local economic activity.

**Jobs:** A job in IMPLAN = the annual average of monthly jobs in that industry (this is the same definition used by QCEW, BLS, and BEA nationally). Thus, 1 job lasting 12 months = 2 jobs lasting 6 months each = 3 jobs lasting 4 months each. Please note also that Full-Time Equivalent by BLS definitions is 35+ hours.

**Labor Income/Earnings:** All forms of employment income, including Employee Compensation (wages and benefits) and Proprietor Income.

## ABOUT BEACON ECONOMICS

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