

## Tesla Replaces GM in Partnership with Toyota at Former NUMMI Site

New United Motor Manufacturing Inc. (NUMMI), an auto manufacturing plant in Fremont, California, and the only remaining such plant on the west coast<sup>1</sup>, was established by a partnership between General Motors (GM) and Toyota aiming to bridge Toyota's lean, flexible manufacturing and GM's North American distribution network. Following GM's 2009 entry into chapter 11 bankruptcy, this partnership was dumped and the factory left entirely in Toyota's hands during a significant slump in car sales. Per the official rational for the subsequent closure (eight months after the announcement, two months after the official divorce of the partnership), Toyota was not able to keep NUMMI profitable without the demand created by GM's production vehicles, in particular the relatively popular Pontiac Vibe<sup>2</sup>. Some harshly criticize Toyota for the decision, pointing to the unique unionization of NUMMI's workforce (the only Toyota manufacturing plant with a union)<sup>1</sup> as a likely reason for the plant's closure. However, before shuttering NUMMI, Toyota "ran the mammoth facility at a loss for nine months and solely funded a \$281 million severance package for the plant's 4,700 employees,"<sup>3</sup> making significant criticism somewhat tenuous in comparison with GM's unceremonious abandonment of the facility.

Regardless of acceptance of the official or accusatory (union-stomping) rational, the decision to shutter NUMMI is best understood as a "selective closure" per the Watts and Stafford criteria. No product line was cancelled and no directly-linked expansion undertaken among other

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<sup>1</sup> <http://www.npr.org/templates/story/story.php?storyId=125430405>

<sup>2</sup> <https://www.bloomberg.com/news/articles/2009-06-28/gm-leaves-nummi-toyota-is-left-holding-the-bag>

<sup>3</sup> <http://www.cbsnews.com/news/blame-gm-not-toyota-for-nummi-plant-closure/>

Toyota plants, as lack of demand was, in this case, precisely the motivating factor behind the plant closure.

Following the end of NUMMI, Tesla partially bought the factory for \$42 million, a fraction of the plant's \$1.3 billion valuation<sup>4</sup>, in partnership with Toyota which itself invested \$50 million in Tesla<sup>5</sup>. While superficially a positive development for former workers, Tesla's relatively small size and reliance on automated labor mitigates potential effects on employment in the region. Additionally, the growing firm's vertical structure spells bad news for nearby suppliers: "The 20,000 workers who will be impacted by the NUMMI closure work in direct suppliers, some of which will be totally closed," said UC Berkeley professor Harley Shaiken, "They [sic] also are related workers—the people in the restaurants down the street, the schoolteachers and nurses in hospitals and schools where NUMMI workers live. The impact of this is going to be felt deeply."<sup>1</sup> Tesla, still, continues to grow and hire new workers—50 per month during the facility's opening—and expects to ultimately employ approximately 1,000 at the facility<sup>6</sup>. Though this is a fraction of the 4,700 directly employed by the former incarnation of NUMMI, the deal will attenuate the substantial job loss resulting from the closure, and the high wages provided by such a luxury firm may help to stimulate the service sector of the region's economy.

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<sup>4</sup> <http://kalw.org/post/nummi-five-years-later-inside-tesla#stream/0>

<sup>5</sup> <http://www.bizjournals.com/sanfrancisco/stories/2010/05/17/daily65.html>

<sup>6</sup> <http://www.ktvu.com:80/news/23625639/detail.html>

## Top Employers in the Bay Area

Rank	Company	Local Employees	Geographic Extent	Location Type
1	Kaiser Permanente	30,350	national	headquarters
2	City & County of SF	27,667	local	single location
3	University of California, Berkeley	26,829	local	single location
4	University of California, SF	21,120	local	single location
5	State of California	15,482	local	single location
6	Safeway Inc.	15,199	multinational	branch
7	Wells Fargo Bank	13,580	multinational	headquarters
8	Stanford University	13,387	local	single location
9	Stanford Healthcare	10,012	local	single location
10	United Airlines, Inc.	10,000	multinational	hub
11	PG&E Corp.	9,954	local	headquarters
12	Genentech	9,800	multinational	headquarters
13	U.S. Postal Service	9,489	national	branch
14	Alameda County	9,100	local	single location
15	Contra Costa County	8,557	local	single location
16	San Francisco Unified School District	8,497	local	single location
17	Macy's Inc.	7,000	multinational	branch
18	Gap Inc.	6,761	multinational	headquarters
19	Oracle Corp.	6,750	national	branch
20	Chevron Corp.	6,276	multinational	headquarters

Source: <http://sfced.org/wp-content/uploads/2016/03/Largest-Employers-Jan-2016.pdf>

### Wells Fargo

Wells Fargo was first established in San Francisco in 1952, where its headquarters remains. In its long history, it has been at the head of approximately two dozen mergers or acquisitions<sup>7</sup>, and is now among the largest banks in the world (second by market capitalization<sup>8</sup>)

<sup>7</sup> <https://www.wellsfargohistory.com/history/>

<sup>8</sup> <https://www.bloomberg.com/news/articles/2016-09-13/wells-fargo-eclipsed-by-jpmorgan-as-world-s-most-valuable-bank>

with operations in five continents excluding Australia and, obviously, Antarctica. At the international scale, the firm serves local demands (including “checking and savings accounts... small business lending...mortgage and home equity loans [, etc.]”), enterprise (“Business Banking...Corporate Banking, Commercial Real Estate...Wells Fargo Securities”), and retirement investors, all as described in earnings reports<sup>9</sup>.

### Local Employee Wages

Kaiser Permanente generally pays quite well, with registered nurses earning an average of \$48.63/hr, and is primarily staffed with high-skill employees<sup>10</sup>. Many top employers, however, such as Safeway and the U.S. Postal Service, employ a significant number of low-skill, low-wage jobs with highly limited career mobility; such jobs are essentially standard throughout the United States, and do not factor highly (in a comparative sense) into the Bay Area economy.

### Dominant Industries

Among the top 20 employers, the California education system employs an astounding 69,833 while the medical industry (including Genentech in biotechnology) employs a comparable 50,272. These industries essentially feed each other, forming an industrial cluster as the Universities supply the industry with medical professionals, creating a regional expertise resulting in higher demand and facilitating better opportunities for those professionals.

### Leading Firms

The Bay Area houses innumerable established technology firms and small technology startups, being home to the internationally famous Silicon Valley, which employs relatively few professionals but adds both substantial value and renown to the local economy.

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<sup>9</sup> <https://www08.wellsfargomedia.com/assets/pdf/about/press/2017/first-quarter-earnings.pdf>

<sup>10</sup> <https://www.indeed.com/cmp/Kaiser-Permanente/salaries>

## Location Quotient by Industry in the Bay Area

NAICS Code	Description	Quarterly Estbmts	December Employment	Average Weekly Wage	December Employment LQ
22	Utilities	71	11560	2713	1.28
221114	Solar electric power generation	10	260	3130	6.02
31-33	Manufacturing	4176	131566	2050	0.65
311	Food manufacturing	552	16448	1043	0.64
311351	Chocolate and confectionary manufacturing from cacao	18	1317	1504	8.72
333	Machinery Manufacturing	250	8139	2301	0.47
333242	Semiconductor manufacturing	30	3365	2969	11.1
48-49	Transportation and warehousing	2287	79854	1444	0.96
483111	Deep sea freight transportation	13	1017	3686	5.97
4872	Scenic and sightseeing transportation, water	26	583	842	2.78
51	Information	3039	99369	3767	2.16
51121	Software publishers	606	21726	2826	3.67
518	Data processing, hosting and related services	584	17076	4038	3.42
52511	Pension Funds	4	131	1407	5.52
54	Professional and technical services	21463	284760	2865	1.94
5415	Computer systems design and related services	4659	98156	3048	3
541519	Other computer related services	185	12590	3858	6.79
5417	Scientific research and development services	1005	42001	3736	3.71
99	Unclassified	11172	13887	1395	2.45

Source: [https://data.bls.gov/cew/apps/table\\_maker/v4/table\\_maker.htm#type=11&year=2016&qtr=4&own=5&area=C4186&supp=0](https://data.bls.gov/cew/apps/table_maker/v4/table_maker.htm#type=11&year=2016&qtr=4&own=5&area=C4186&supp=0)

## San Francisco-Oakland-Hayward Industry Profile

Many aspects of Bay Area industry location quotient are unsurprising with respect to the area's most public characteristics. The disproportionately prolific water transport industry in both shipping (deep sea freight transportation  $LQ = 5.97$ ) and tourism (scenic and sightseeing transportation  $LQ = 2.78$ ) are consequent to the area's geography, being situated on a large bay. The information, software, and data processing elements of the region's economy correspond to its second moniker—"Silicon Valley." Despite a smaller-than-average manufacturing industry (less than half the national average with  $LQ = 0.47$ ), in fact, the semiconductor industry is clearly booming in area with a multiplier of 11.1 times the national average. A similar if somewhat less exaggerated story can be seen vis-à-vis the confectionary manufacturing from cacao industry's significant size ( $LQ = 8.72$ ) in comparison with the low levels of food manufacturing to be expected from a highly urban area ( $LQ = 0.64$ ). Though the medical industry is highly ranked by top employers, it is not significantly represented by location quotient excepting "scientific research and development studies" which the universities also contribute to. This could be attributed to an even higher locational presence of the industry in other areas or a fragmentation of the industry into several sectors (insurance, research, treatment, etc.). Reinforcing the insignificance of certain common top employers with respect to the nation as a whole (Safeway and USPS in particular), these industries are not ranked highly by location quotient despite their high levels of employment.

## Software Location Quotient With Respect To California as a State

Unsurprisingly, four of the five top software publishing counties in California (excluding Santa Barbara County) are located in the Bay Area. In keeping with Silicon Valley's southerly concentration, San Francisco ranked lowest in both measurements of location quotient, and is

County	Quarterly Establishments	December Employment	Total Quarterly Wages	Average Weekly Wage	December Employment Location Quotient	Total Quarterly Wages Location Quotient
	V Λ	V Λ	V Λ	V Λ	V Λ	V Λ
San Mateo County, California	152	11,610	\$414,944,673	\$2,723	11.59	6.25
Santa Clara County, California	353	18,971	1,351,411,278	5,507	7.10	6.77
Santa Barbara County, California	15	2,192	70,963,349	2,493	4.55	4.44
Marin County, California	36	1,085	45,965,464	3,422	3.75	3.64
San Francisco County, California	256	4,160	157,233,973	2,903	2.32	1.34

only higher in wages as compared to Santa Barbara much further south. The wage gradient (increasing to the southeast) is further established by the comparative quarterly wages of San Mateo (just south of San Francisco County and lower) and Santa Clara at the southerly base of the bay with an astonishing \$1.35 billion in quarterly wages. This trend is even more greatly exaggerated when comparing the weekly wages of Santa Clara at over double that of San Mateo which it directly borders to the northwest.

## Cost of Living in the Bay Area

### Occupations by Absolute Employment

Occupation code	Occupation title (click on the occupation title to view its profile)	Level	Employment	Employment RSE	Employment per 1,000 jobs	Location quotient	Median hourly wage	Mean hourly wage	Annual mean wage	Mean wage RSE
00-0000	<b>All Occupations</b>	total	2,263,090	0.6%	1000.000	1.00	\$24.90	\$33.23	\$69,110	0.8%
43-0000	<a href="#">Office and Administrative Support Occupations</a>	major	332,300	1.1%	146.836	0.94	\$21.35	\$22.78	\$47,370	0.6%
41-0000	<a href="#">Sales and Related Occupations</a>	major	213,270	1.4%	94.237	0.91	\$17.00	\$25.29	\$52,610	1.6%
35-0000	<a href="#">Food Preparation and Serving Related Occupations</a>	major	210,310	0.9%	92.930	1.01	\$12.84	\$14.76	\$30,690	1.2%
13-0000	<a href="#">Business and Financial Operations Occupations</a>	major	177,570	1.4%	78.465	1.51	\$40.62	\$46.32	\$96,340	0.9%
11-0000	<a href="#">Management Occupations</a>	major	162,760	1.3%	71.917	1.42	\$64.42	\$72.04	\$149,840	0.9%
15-0000	<a href="#">Computer and Mathematical Occupations</a>	major	135,380	2.2%	59.822	2.02	\$53.52	\$54.04	\$112,410	0.7%
53-0000	<a href="#">Transportation and Material Moving Occupations</a>	major	126,020	5.9%	55.684	0.80	\$17.59	\$22.22	\$46,230	5.6%
25-0000	<a href="#">Education, Training, and Library Occupations</a>	major	125,180	1.5%	55.312	0.90	\$26.30	\$30.95	\$64,370	4.9%
29-0000	<a href="#">Healthcare Practitioners and Technical Occupations</a>	major	104,720	2.4%	46.274	0.78	\$49.48	\$51.75	\$107,650	2.1%
51-0000	<a href="#">Production Occupations</a>	major	91,780	6.3%	40.556	0.63	\$17.11	\$20.51	\$42,660	1.8%

### Occupations by Location Quotient

Occupation code	Occupation title (click on the occupation title to view its profile)	Level	Employment	Employment RSE	Employment per 1,000 jobs	Location quotient	Median hourly wage	Mean hourly wage	Annual mean wage	Mean wage RSE
53-4041	<a href="#">Subway and Streetcar Operators</a>	detail	2,810	3.9%	1.242	14.11	\$28.64	\$28.78	\$59,850	5.1%
19-3041	<a href="#">Sociologists</a>	detail	450	17.9%	0.199	9.71	\$45.66	\$46.71	\$97,170	3.8%
47-2231	<a href="#">Solar Photovoltaic Installers</a>	detail	1,020	24.3%	0.451	7.15	\$19.82	\$21.22	\$44,130	3.8%
27-1014	<a href="#">Multimedia Artists and Animators</a>	detail	2,500	21.6%	1.103	5.19	\$41.26	\$43.05	\$89,540	2.8%
29-9092	<a href="#">Genetic Counselors</a>	detail	220	47.0%	0.098	5.07	\$35.86	\$39.82	\$82,820	6.5%
19-1042	<a href="#">Medical Scientists, Except Epidemiologists</a>	detail	8,230	7.6%	3.639	4.69	\$49.27	\$53.28	\$110,820	10.1%
19-1021	<a href="#">Biochemists and Biophysicists</a>	detail	2,190	16.0%	0.967	4.65	\$50.93	\$55.39	\$115,210	4.6%
19-1099	<a href="#">Life Scientists, All Other</a>	detail	520	6.0%	0.228	4.06	\$56.26	\$57.59	\$119,780	5.0%
27-2032	<a href="#">Choreographers</a>	detail	330	49.6%	0.145	3.95	\$40.76	\$41.81	\$86,960	8.0%
49-3091	<a href="#">Bicycle Repairers</a>	detail	760	42.4%	0.334	3.74	\$18.30	\$18.16	\$37,770	5.4%



## Industry Profile of Desire Field

Occupation code	Occupation title (click on the occupation title to view its profile)	Level	Employment	Employment RSE	Employment per 1,000 jobs	Location quotient	Median hourly wage	Mean hourly wage	Annual mean wage	Mean wage RSE
15-0000	<a href="#">Computer and Mathematical Occupations</a>	major	135,380	2.2%	59.822	2.02	\$53.52	\$54.04	\$112,410	0.7%
15-1111	<a href="#">Computer and Information Research Scientists</a>	detail	900	13.1%	0.399	2.11	\$58.31	\$60.36	\$125,550	3.6%
15-1121	<a href="#">Computer Systems Analysts</a>	detail	18,190	6.4%	8.037	1.98	\$51.44	\$53.75	\$111,790	1.2%
15-1122	<a href="#">Information Security Analysts</a>	detail	2,320	18.8%	1.025	1.49	\$54.80	\$53.70	\$111,700	1.4%
15-1131	<a href="#">Computer Programmers</a>	detail	9,410	9.5%	4.156	2.15	\$51.82	\$51.30	\$106,710	2.2%
15-1132	<a href="#">Software Developers, Applications</a>	detail	36,350	4.7%	16.064	2.84	\$59.37	\$59.86	\$124,510	1.5%
15-1133	<a href="#">Software Developers, Systems Software</a>	detail	18,810	10.7%	8.314	2.85	\$63.67	\$64.17	\$133,480	0.8%
15-1134	<a href="#">Web Developers</a>	detail	5,640	5.8%	2.493	2.70	\$46.99	\$48.19	\$100,240	2.0%
15-1141	<a href="#">Database Administrators</a>	detail	2,710	8.7%	1.198	1.48	\$52.21	\$50.84	\$105,750	1.9%
15-1142	<a href="#">Network and Computer Systems Administrators</a>	detail	9,260	4.8%	4.090	1.52	\$51.49	\$51.66	\$107,460	1.8%
15-1143	<a href="#">Computer Network Architects</a>	detail	4,050	9.6%	1.792	1.60	\$64.10	\$64.96	\$135,110	2.0%

## Comparative Cost of Living

San Francisco is notoriously expensive, and that reputation is borne out by the numbers.

As compared to the Denver metro area, San Francisco requires a 60.95% wage increase to maintain an equivalent lifestyle<sup>11</sup> while a 50<sup>th</sup> percentile rent of \$2,418/mo<sup>12</sup> renders housing costs prohibitively expensive. Extrapolating from this number, one must earn a minimum of \$46.50/hr (\$96,720/yr) to avoid being “rent burdened,” making a six-figure salary essentially necessary to live a middle-of-the-road lifestyle. Only three of the ten most common forms of employment (management, computer and mathematical, and healthcare practitioner occupations) meet this high standard by either median or mean wage. Despite a remarkably low Gini coefficient of 0.49<sup>13</sup>, many are likely unable to afford the housing expected of such high pay.

<sup>11</sup> <http://www.bankrate.com/calculators/savings/moving-cost-of-living-calculator.aspx>

<sup>12</sup> <https://www.huduser.gov/portal/datasets/50per.html> (row 230, column C first mention, column D second mention)

<sup>13</sup> <http://www.governing.com/gov-data/economy-finance/Metro-Area-Gini-Index-Map.html>

## Overview

By the numbers, San Francisco is exactly as one would expect. Remarkably high pay is offset by concomitantly high cost of living, such that one may earn well over the national mean for annual wage and only just afford housing at the expected percentage of income. In fact, a worker earning the national median hourly wage (\$17.81<sup>14</sup>) and working a standard full-time 40 hour work week would devote over 50% of their income to housing just to afford housing in the first quintile (\$1,641/mo<sup>2</sup>). Workers in the sales, food service, transportation, and production industries in the Bay Area (all among the top occupations by absolute number of employees) all earn under this wage, and so must either commute impractically far or work long hours in order to afford rent. Comparing such positions with the average tech worker paints a grimly past-gentrified picture, as every single computer or mathematical occupation surpasses the necessary income for median housing.

The [governing.com](#) income inequality page uses confusing terminology, indicating either a lack of understanding of the measurement it reports on or perhaps an overly-literal author. Referring to the map of metro areas with over one million residents, it states the New York metro area to have the “highest income inequality in 2012 [at 0.5049]” as compared to the “lowest,” Virginia Beach, at 0.4387. However, the nature of the measurement sets perfect equality at 1.0 with greater values of inequality being higher (more poor) or lower (more rich), meaning that, in the typical sense of the word, Virginia Beach would actually have “higher” inequality despite being signified by a lower value—sort of a 1/3 pound burger being “smaller” than a 1/4 pound burger-type situation—really egregious for such a simple measurement. Together with multiple

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<sup>14</sup> [https://www.bls.gov/oes/current/oes\\_nat.htm](https://www.bls.gov/oes/current/oes_nat.htm)

letter-swap typos and a closing sentence straight from the keyboard of a recovering stroke victim (“while higher values represents metro areas with more poorer households”), one hopes the explanatory portion of the article was written by a hungover intern so as to excuse the regular staff, and wonders why said intern refused to use a text editor more advanced than notepad. Anyway, the San Francisco metro exhibits high inequality in a slightly non-traditional sense, assuming the “traditional” sense to signify extreme values on either end (many rich, many poor, few in the middle). The Bay Area exclusively skews wealthy, rather, with a 24.6-25.5-49.8% split—middle-earning households slightly more numerous than low-earning, and approximately twice as many high-earning households. Prosperity is, as such, defined by a higher base rate, while the lowest earners suffer. In short, prospective Safeway employees are advised to look for openings in Grand Junction, Colorado (Gini index = 1.31) instead.

## The Tech Industry Teeter-Totter

From gold to silver to beatniks to hippies to dotcom to the wide umbrella (more like gazebo) of “tech”, San Francisco has historically been a boom-and-bust town (Pedersen). Currently, the city is in the midst of the most prosperous and protracted boom yet seen, but workers outside of the affected industry see disproportionately slow wage increases as their industries comparatively stagnate.

The closure of New United Motor Manufacturing Inc. (NUMMI), discussed in detail in the included “Tesla Replaces GM in Partnership with Toyota at Former NUMMI Site,” is emblematic of the economic and social patterns on display throughout the Bay Area’s recent past. NUMMI, in its profitable years, served as an example of the American auto industry adapting to new models—lean production and kaizen or “continuous improvement”—in order to accommodate changing times (Glass and Langfitt). However, while the Toyota-GM partnership was intended to aid GM’s profitability, its 2010 closure occurred, somewhat ironically, as a result of Toyota’s inability to retain profitability on its own in the modern day. In order to squeeze out the remaining potential value of the property, Toyota formed a new partnership with Tesla, the firm which now operates the facility. At a surface level, this appears to be a classic example of capitalism in proper function—one dying form of an industry is supplanted by a new, more profitable form, capable of keeping the engine of consumption running. However, Tesla relies largely on multi-purpose machines (among the largest and most advanced ever made) to do the work of dozens of human workers who would have found employment in the industry’s previous incarnation. In fact, Tesla anticipates a maximum of 1,000 employees to staff the facility at full production volume, approximately a fifth of the 4,700 formerly directly employed at NUMMI.

Tesla's vertical integration additionally caps the indirect effect of the factory's operation on regional employment, as many factories formerly supplying NUMMI will have their operations supplanted further up the tech company's chain.

The advent of fully-electric and soon self-driving cars, of course, allows the market to function somewhat as expected, as new employment opportunities open up in research and manufacturing of necessary technologies such as RADAR/LIDAR. However, these opportunities require a level of investment in time and education which is unattainable for the disadvantaged. Those employed at NUMMI, in particular, have very little chance of being re-hired under Tesla due to their outdated experience. As such, they are left behind with rising rent and a skillset inapplicable to modern manufacturing. These appear to be the standard effects of the unparalleled tech agglomeration radiating outwards from Silicon Valley: former employees are replaced by machinery or software and left to find work in industries with nationally-defined pay (Safeway, USPS, etc.) in a region with costs increasingly defined by professions paying approximately twice to three times the median wage.

Minimum wage was recently increased in San Francisco to \$14/hr (Redell), whereas the first quintile of housing costs in the area sits at \$1,641/mo, or \$19,692/yr ("50<sup>th</sup> Percentile Rent Estimates"). At current minimum wage, then, in order to avoid rent burdening, a resident would have to work over 80 hours per week. In descriptive terms, assuming a 16 hour waking day and no commute, a minimum-wage worker would need to work from the time they woke to the time they fell asleep every single business day in order to afford an un-renovated two-bedroom apartment outside of the city. Even so, they would come out 3.79% over the 30%-of-income rent line—before taxes.

On a social level, this selective prosperity plays out with respect to race as well as class. Per Miriam Zuk and Karen Chapple's case study on San Francisco's predominately Latino Mission District for UC Berkeley, "the dotcom boom in the late 1990s fundamentally changed the character of the Mission District," with a "decrease in family households...accompanied by a decrease in the Latino population, shifting from 44% in 1980 to 38% in 2013 while the White population increased from 36% to 43%" (26, 27). Deregulation (or lack of regulatory enforcement) extends the displacing effects of the tech boom. Google-run shuttles effectively encourage Google employees to live in cheaper neighborhoods serviced by said shuttles, driving housing costs up in a significantly wider radius than necessary, as "40% of riders would move closer to their place of employment should the program be discontinued" (Berkeley City Planning Dpt., qtd. in "Anti-Displacement Activists..."). This lack of regulation predominately affects people of color, as the "Last Three Percent" referenced as being displaced in the above article refers to the remaining black portion of the San Francisco population (3%), less than a quarter of the 12.42% of 1980 ("Population by Race/Ethnicity and County").

Software developers are almost exclusively white and Asian ("Software developers, applications & systems software"), so displaced black or Latino residents are unlikely to be replaced by a member of their race, leading to an increasing racial homogeneity of the affected areas of San Francisco. San Francisco being a hub of technological innovation, this uniformity can have wide-ranging effects as libraries of reusable code (often originating the region purely by virtue of its prolific output) are shared on the internet, and therefore internationally. In an infamous recent example, facial recognition technology has been shown to have trouble

recognizing black faces due to the frequency of white faces in training data used to build the software (Townsend).

While predominately poor and non-white populations suffer most from the unprecedented tech agglomeration of Silicon Valley, the impact is so large that it has begun to stifle tech companies themselves. Many established firms looking to relocate or open new locations in San Francisco cannot find employees willing to deal with the high cost of relocation and living in the area (Castillo), while some companies go so far as to offer employees packages to move away from the city (Robinson). Past a certain point, the positive effects of industrial clustering (in the case of tech in San Francisco, mostly availability of industry expertise) are outweighed by the bloat of inflationary levels of growth. In response, many companies are choosing to relocate to newly-expanding tech centers within California such as Los Angeles and Santa Barbara.

Modern tech being highly politically influenced by progressivism, many companies have attempted to respond to the issues they create with various forms of community outreach. Zendesk, for example, mandates community service for all employees in addition to attendance of educational programs intended to bring the workforce closer to and more aware of the community they work within (Shattuck). However, the deregulation lobbied for by tech companies in the name of growth can stifle the positive effects of this outreach. Airbnb, for example, recently “sued San Francisco, Santa Monica and Anaheim over ordinances that force the company to remove or refuse bookings that violate city laws,” (Kendall) particularly those laws, in San Francisco, which outlaw short-term booking in order to prevent residential property being used in place of hotels, exacerbating already egregious housing costs. The lawsuit was recently settled with an agreement mandating Airbnb to provide data about its users to the San

Francisco government; the city government will then examine that data to determine which users of the service are properly registered and to notify Airbnb of improper use, and reserves the right to fine Airbnb for allowing unregistered hosts to continue renting their properties. This regulatory burden on Airbnb will certainly be seen as a step in the right direction to those displaced by rising housing costs, but the underlying cause of such costs (local tech industry growth) shows no signs of letting up.

While accusations of unfairness regarding gentrification and displacement are difficult to dodge, the San Francisco local government is forced to contend with a difficult regulatory balance between maintaining quality of life for its poorer residents and discouraging lock-in, allowing new business models with potentially huge productivity to emerge and add value to the region's economy. Significant attention has gone into finding solutions for such problems but only to underwhelming degrees of success. Assuming the role of local government to be one of improving the lives of residents, one is forced to face the potential reality of an inevitable tradeoff between encouraging economic growth—a means of improving those lives—and displacement, which physically removes the intended beneficiaries of said growth and thereby its entire purpose. By analogy, San Francisco's economy might be seen as a teeter-totter with the wealthy on one side and the poor on the other—the rise of one end is part and parcel to the other's fall.



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