

**ASSOCIATION  
OF BAY AREA  
GOVERNMENTS**

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May 28, 2020

Ms. Megan Kirkeby

Assistant Deputy Director for Fair Housing

California Department of Housing & Community Development (HCD)

2020 W. El Camino Ave, Suite 500

Sacramento, CA 95833

RE: Regional Housing Needs Determination – Bay Area Consultation Submission

Dear Ms. Kirkeby:

On behalf of the Association of Bay Area Governments (ABAG), we are pleased to submit the consultation materials associated with the sixth Regional Housing Needs Allocation (RHNA) process to the California Department of Housing and Community Development (HCD). We have appreciated the opportunity to discuss many of the statutory requirements associated with the Regional Housing Needs Determination (RHND) consultation process, as outlined in California Government Code 65584.01(c), through three substantive consultation meetings in recent months.

As outlined in **Attachment 1**, this memorandum should include the full suite of data requested by HCD, including ABAG's Plan Bay Area 2050 Regional Growth Forecast ("Regional Forecast"), key data assumptions related to household formation and vacancy rates, and comparable regions for estimation of the overcrowding and cost burden adjustments. We believe that documenting these submissions provides maximum transparency into the RHND process not only for HCD, but for local and regional policymakers as well as the public at large.

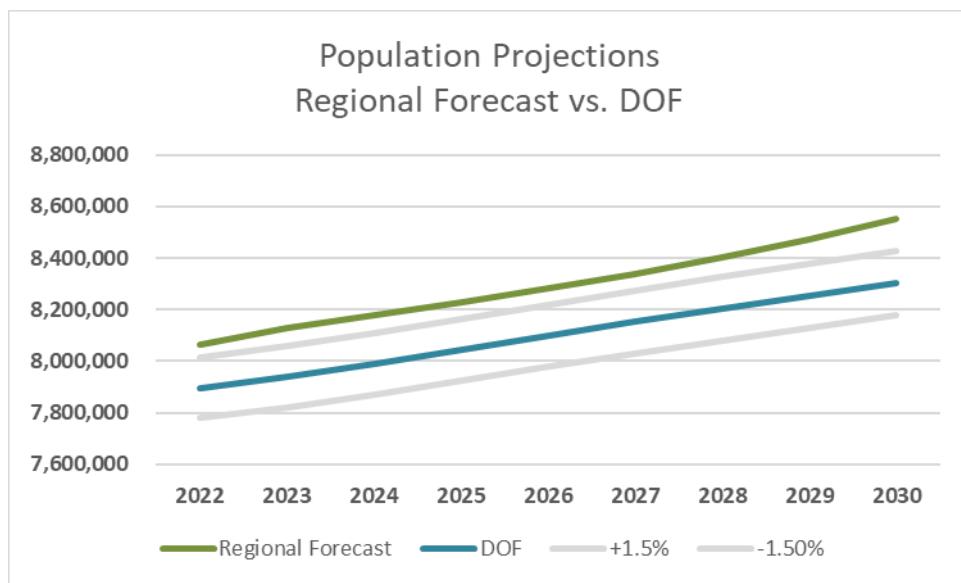
**Plan Bay Area 2050 Regional Growth Forecast (Source: MTC/ABAG, May 2020)**

The California Government Code requires that the Regional Forecast be compared to the forecast made by the California Department of Finance (DOF). If the region's population forecast is different than the DOF population forecast by 1.5 percent or less, then HCD would use the region's forecast. If not, the DOF population forecast would typically serve as the forecast input to the RHND. HCD would make other adjustments to complete the calculation. As discussed in more detail below, the Regional Forecast is outside of the 1.5 percent range; therefore, we recommend that HCD use the DOF forecast as an input to the RHND calculation instead

ABAG has provided the Regional Forecast, and other required information, to HCD staff, as documented in **Attachment 2**. In keeping with the specific methodology adopted by the ABAG Executive Board in September 2019, MTC/ABAG staff uses tools like the REMI regional forecasting model, an expert advisory panel, and widely-accepted data sources to estimate a combined economic-demographic forecast for the region. The results have also been reviewed by various regional committees between January and April 2020. Please note that the Regional Forecast was updated, primarily for years 2020 through 2030, to reflect the economic impacts from COVID-19, an anticipated 2020-21 recession, and a slow economic recovery over much of the decade. We are assuming that the Bay Area would return to the long-term growth trendline previously forecasted by 2030.

The Regional Forecast is significantly higher than the DOF forecast provided by HCD to staff on May 7th, well outside the 1.5 percent range included in statute. This is due, in part, to the set of economic and policy assumptions that are included in the Regional Forecast, whereas the DOF forecast per the State Administrative Manual is characterized as a “baseline” forecast<sup>1</sup> that relies on demographic data. Housing Element Law requires HCD to make adjustments to the baseline DOF forecast to integrate additional housing growth to ameliorate housing markets characterized by below-average vacancy rates and above average rates of overcrowding and cost-burdened households. This way, the RHND consists of both the baseline need as well as additional or unmet need as identified through the adjustments.

**Figure 1.** Population Comparison between MTC/ABAG Regional Forecast (for Plan Bay Area 2050 Blueprint) and DOF



<sup>1</sup> See Cal. State Admin. Manual Section 1100), retrieved at [https://www.dgsapps.dgs.ca.gov/documents/sam/SamPrint/new/sam\\_master/sam\\_master\\_file/Chap1100/Chap1100\(Notebook\).pdf](https://www.dgsapps.dgs.ca.gov/documents/sam/SamPrint/new/sam_master/sam_master_file/Chap1100/Chap1100(Notebook).pdf)

*Source: MTC/ABAG Regional Growth Forecast (May 2020); California Department of Finance P-2, accessed May 2020*

MTC/ABAG's Regional Growth Forecast differs from the DOF forecast in that it assumes a number of regional policies and strategies- in other words, it is not a “baseline” forecast. The Regional Forecast recognizes that, in the long run, the region has a strong economy that will grow significantly, attracting more migration into the region. The Regional Forecast also incorporates key strategies in Plan Bay Area 2050, including those focusing on accelerating housing production at all income levels. Over time, policies and programs have shifted to try and address the housing crisis in the Bay Area. The Regional Forecast recognizes the impacts of those policy changes and expects that substantial progress will be made to address the availability and affordability of housing in the region.

Given that the Regional Forecast (shown in green) is outside of the 1.5 percent range (marked as gray lines above) and that the Regional Forecast already includes policy assumptions to address the region’s unmet housing need, we believe it is appropriate for HCD to use the DOF forecast as an input to the RHND calculation instead. Using the Regional Forecast as the basis for determining the RHND would double count the effects of the adjustments for overcrowding and cost burdened households that HCD must subsequently apply when calculating the RHND.

MTC/ABAG staff would also like to relay the concerns of some regional policymakers, who believe that the DOF forecast should be significantly updated as a result of the COVID-19 pandemic and anticipated recession, leading to changes in the RHND. In addition, we would like to reference a letter dated May 11, 2020 sent by MTC/ABAG Executive Director McMillan to HCD Director Velasquez describing concerns by some Bay Area jurisdictions about the RHNA and Housing Element deadlines, as well as implementation in a financially-constrained environment. With local governments focused on the immediate recovery of their communities from the health and economic crises, it may be more difficult to find the resources to conduct longer-term planning.

## **Comparable Regions**

Housing Element Law now also allows the use of “comparable regions” for comparative analysis of a region’s share of overcrowded and cost-burdened households. The purpose of this is to recognize regions are different and national comparisons may not be appropriate in all cases. ABAG/MTC staff proposes to use a set of seven comparable regions that would be a better benchmark than the United States national average for assessing overcrowding and cost burden in the Bay Area’s housing market. The comparable regions are selected from the 30 largest combined statistical areas in the U.S., based solely on statistical similarity using a number of demographic and labor market variables. Additional technical justification can be found in **Attachment 3**.

The resulting comparable regions are:

1. Washington-Baltimore-Arlington, DC-MD-VA-WV-PA
2. Seattle-Tacoma, WA
3. Boston-Worcester-Providence, MA-RI-NH-CT

4. Denver-Aurora, CO
5. Minneapolis-St. Paul, MN-WI
6. New York-Newark, NY-NJ-CT-PA
7. Chicago-Naperville, IL-IN-WI

## Key Forecasting Assumptions

### Overcrowding

One effect of a tight housing market is that households will double-up in a single unit, or too many people will share a unit. In regions where overcrowding is greater than the comparable regions' overcrowding rate, or in the absence of comparable regions the national average overcrowding rate, an adjustment is made based on the amount the Bay Area's overcrowding rate (6.9 percent) exceeds the comparable regions' rate (3.6 percent). For the San Francisco Bay Area, that difference is **3.3 percent**.

**Table 1.** Bay Area Comparable Regions (*using 2014-2018 PUMS data*)

Measure	Own			Rent			Total		
	Bay Area	Comp. Regions	U.S.	Bay Area	Comp. Regions	U.S.	Bay Area	Comp. Regions	U.S.
Cost Burden (Lower Income)	57.6%	63.7%	51.5%	74.2%	72.5%	71.4%	65.8%	67.3%	60.0%
Cost Burden (Upper Income)	16.8%	13.4%	9.8%	12.8%	11.7%	10.6%	15.4%	12.9%	9.9%
Crowding	3.1%	1.5%	1.7%	11.7%	6.8%	6.4%	6.9%	3.6%	3.4%
Vacancy	0.7%	1.5%	1.7%	3.0%	4.4%	6.0%	1.7%	2.7%	3.3%

*Households below 80% of HUDs Area Median Income are considered Lower Income, all others are Upper Income*

*Source: ABAG/MTC Staff, from U.S. Census Bureau, American Community Survey, 2014-2018 PUMS*

MTC/ABAG staff analysis used data from the most recent 2018 ACS national Public Use Microsample (PUMS) file. Typically, HCD uses a different data set, described as the CHAS (2012-2016 Comprehensive Housing Affordability Strategy) data tabulation. However, the most recent version of that data is from the 2012 to 2016 period. We understand that HCD would prefer all regions use CHAS data for consistency. After performing the analysis with CHAS data, we found very little difference.

### Cost Burdened Households

The cost burden analysis identifies the percentage of households spending more than 30 percent of their income on housing. Like overcrowding, Housing Element Law indicates that a comparison between the Bay Area and comparable regions is appropriate. In this case, the comparison is performed separately for households above 80% of HUD Area Median Income (AMI) and those that are below, in line with HCD's calculation of the RHND by income category.

Using the same group of comparable regions, staff analysis shows the cost burden for low income households is lower in the Bay Area at 65.8 percent than for comparable regions at 67.3 percent. The ratio of housing costs to incomes for lower income households is greater in other regions. So no adjustment is necessary for the Bay Area. However, the cost burden for higher-income households in the Bay Area is 15.4 percent compared to 12.9 percent in comparable regions, therefore a **2.5 percent** adjustment for cost burden of higher income households should be made.

#### Vacancy Rates

The current estimate of the vacancy rate for housing in the Bay Area is 1.7 percent. Housing Element Law states “the vacancy rate for a healthy rental housing market shall be considered no less than 5 percent.” While there is no language in the statute about vacancy rates by tenure, initial discussions with HCD indicate that 5 percent should be used for the entire housing stock, resulting in an adjustment of **3.3 percent** of the housing stock.

#### **Conclusion**

In conclusion, we wish to thank HCD staff for their professionalism and cooperation during the consultation process. We look forward to receiving the RHND in a timely manner, ideally in early June. Should any follow-up questions arise, please contact Paul Fassinger at [pfassinger@bayareametro.gov](mailto:pfassinger@bayareametro.gov).

Sincerely,



Alix A. Bockelman  
Deputy Executive Director, Policy

AB: PF

Attachment 1: Statutory Requirements in Consultation Process

Attachment 2: Plan Bay Area 2050: Regional Growth Forecast (May 2020)

Attachment 3: Defining Comparable Regions for the Purpose of Calculating Overcrowding and Cost Burden

## **Attachment 1**

### **Information ABAG/MTC is Required to Provide to HCD**

As part of the consultation process outlined in Government Code Section 65584.01(c), ABAG/MTC is required to provide a variety of information to HCD, if available. The Government Code asks for the regional population forecast for the projection year, developed by the council of governments and used for the preparation of the regional transportation plan.

In addition, “[the] council of governments shall provide data assumptions from the council’s projections, including, if available, the following data for the region:

- Anticipated household growth associated with projected population increases.
- Household size data and trends in household size.
- The percentage of households that are overcrowded and the overcrowding rate for a comparable housing market. For purposes of this subparagraph:
  - The term “overcrowded” means more than one resident per room in each room of a dwelling.
  - The term “overcrowded rate for a comparable housing market” means that the overcrowding rate is no more than the average overcrowding rate in comparable regions throughout the nation, as determined by the council of governments.
- The rate of household formation, or headship rates, based on age, gender, ethnicity, or other established demographic measures.
- The vacancy rates in existing housing stock, and the vacancy rates for healthy housing market functioning and regional mobility, as well as housing replacement needs. For purposes of this subparagraph, the vacancy rate for a healthy rental housing market shall be considered no less than 5 percent.
- Other characteristics of the composition of the projected population.
- The relationship between jobs and housing, including any imbalance between jobs and housing.
- The percentage of households that are cost burdened and the rate of housing cost burden for a healthy housing market. For the purposes of this subparagraph:
  - The term “cost burdened” means the share of very low, low-, moderate-, and above moderate-income households that are paying more than 30 percent of household income on housing costs.
  - The term “rate of housing cost burden for a healthy housing market” means that the rate of households that are cost burdened is no more than the average rate of households that are cost burdened in comparable regions throughout the nation, as determined by the council of governments.
- The loss of units during a state of emergency that was declared by the Governor pursuant to the California Emergency Services Act (Chapter 7 (commencing with Section 8550) of Division 1 of Title 2), during the planning period immediately preceding the relevant revision pursuant to Section 65588 that have yet to be rebuilt or replaced at the time of the data request.”

**Attachment 2**  
**Plan Bay Area 2050: Regional Growth Forecast (May 2020)**

**Plan Bay Area 2050: Regional Growth Forecast (May 2020)\***

	<b>2015</b>	<b>2020</b>	<b>2025</b>	<b>2030</b>	<b>2035</b>	<b>2040</b>	<b>2045</b>	<b>2050</b>
Total Population	7,660,000	7,930,000	8,230,000	8,550,000	9,000,000	9,490,000	9,930,000	10,330,000
Total Employment	4,010,000	4,080,000	4,150,000	4,640,000	4,830,000	5,050,000	5,230,000	5,410,000
Total Households	2,680,000	2,760,000	2,950,000	3,210,000	3,500,000	3,710,000	3,890,000	4,040,000
Total Housing Units	2,710,000	2,840,000	3,060,000	3,370,000	3,670,000	3,900,000	4,080,000	4,250,000
Population Age 0-4	443,000	424,000	409,000	401,000	417,000	447,000	465,000	472,000
Population Age 5-19	1,336,000	1,365,000	1,369,000	1,356,000	1,368,000	1,401,000	1,453,000	1,514,000
Population Age 20-4	2,750,000	2,792,000	2,832,000	2,854,000	2,919,000	3,060,000	3,239,000	3,324,000
Population Age 45-6	2,040,000	2,082,000	2,131,000	2,235,000	2,415,000	2,551,000	2,599,000	2,660,000
Population Age 65+	1,086,000	1,272,000	1,490,000	1,707,000	1,884,000	2,028,000	2,169,000	2,357,000

Source: MTC/ABAG

Note: May 2020 forecast integrates impacts from COVID-19 and a likely 2020 recession on the early years of the forecast (2020 to 2030).

**Headship Rates**

Year	Race / Ethnic Group	Ages 15-19	Ages 20-24	Ages 25-29	Ages 30-34	Ages 35-39	Ages 40-44	Ages 45-49	Ages 50-54	Ages 55-59	Ages 60-64	Ages 65-69	Ages 70-74	Ages 75-79	Ages 80-84	Ages 85+
2015	Black-NonHispanic	0.020	0.142	0.323	0.400	0.483	0.535	0.556	0.611	0.582	0.641	0.671	0.738	0.724	0.663	0.678
	Hispanic	0.014	0.111	0.245	0.370	0.413	0.447	0.477	0.489	0.493	0.485	0.478	0.510	0.493	0.534	0.543
	Other-NonHispanic	0.014	0.131	0.274	0.401	0.466	0.483	0.496	0.490	0.475	0.444	0.442	0.429	0.442	0.443	0.478
	White-NonHispanic	0.010	0.153	0.342	0.475	0.508	0.532	0.559	0.570	0.577	0.596	0.624	0.652	0.665	0.701	0.749
2020	Black-NonHispanic	0.020	0.142	0.323	0.400	0.483	0.535	0.556	0.611	0.582	0.641	0.671	0.738	0.724	0.663	0.678
	Hispanic	0.014	0.111	0.245	0.370	0.413	0.447	0.477	0.489	0.493	0.485	0.478	0.510	0.493	0.534	0.543
	Other-NonHispanic	0.014	0.131	0.274	0.401	0.466	0.483	0.496	0.490	0.475	0.444	0.442	0.429	0.442	0.443	0.478
	White-NonHispanic	0.010	0.153	0.342	0.475	0.508	0.532	0.559	0.570	0.577	0.596	0.624	0.652	0.665	0.701	0.749
2025	Black-NonHispanic	0.020	0.143	0.324	0.402	0.484	0.536	0.556	0.611	0.583	0.642	0.672	0.738	0.724	0.664	0.678
	Hispanic	0.014	0.111	0.245	0.370	0.413	0.448	0.478	0.490	0.493	0.485	0.478	0.511	0.494	0.535	0.543
	Other-NonHispanic	0.014	0.131	0.275	0.401	0.466	0.483	0.496	0.490	0.475	0.444	0.442	0.429	0.442	0.444	0.478
	White-NonHispanic	0.010	0.154	0.343	0.475	0.509	0.533	0.560	0.570	0.577	0.597	0.625	0.652	0.665	0.701	0.749
2030	Black-NonHispanic	0.023	0.177	0.365	0.444	0.512	0.554	0.574	0.624	0.609	0.660	0.681	0.742	0.733	0.688	0.687
	Hispanic	0.015	0.125	0.264	0.377	0.424	0.463	0.488	0.496	0.500	0.487	0.481	0.521	0.529	0.539	0.543
	Other-NonHispanic	0.019	0.151	0.284	0.407	0.457	0.482	0.499	0.491	0.483	0.448	0.439	0.432	0.454	0.473	0.484
	White-NonHispanic	0.013	0.190	0.382	0.490	0.521	0.544	0.569	0.582	0.588	0.613	0.637	0.658	0.678	0.715	0.757

Note: Headship rates vary by year, starting with observed rates from U.S. Census Bureau, American Community Survey 2014-2018 sample, and are transitioned to higher rates found in U.S. Census Bureau, Census 2000 PUMS. Transition is from 2022-2038.

## **Housing Units Lost During the Recent State of Emergency**

ABAG/MTC staff provided information from the survey of jurisdictions to HCD through a separate communication. Staff shared that in 2017 Santa Rosa lost 3,043 housing units lost. To date, 2,323 units have been completed or are in the construction/permitting process.

In 2017 unincorporated Sonoma County lost 2,200 units in the 7 Sonoma Complex Fires. 1,235 units have been rebuilt or are under construction as of 2/4/2020. About 120 of the units lost in 2017 were multi-family; 95 have been rebuilt (single project). The remainder of homes lost were single family.

In the 2019 Kincade fire, the county lost 176 units. As of 2/4/2020, only 4 are in the process of being rebuilt. All of the units lost in 2019 were single family.

### **Attachment 3** **Defining Comparable Regions** **for the Purpose of Calculating Overcrowding and Cost Burden**

California Housing Element Law provides for consultation between the Council of Governments (COG) and California Department of Housing and Community Development (HCD) regarding the preparation of the Regional Housing Needs Determination, or RHND (CA Government Code §65584.01). The RHND has in previous cycles been based on projected end-of-period populations to which household formation rates were applied. To obtain the number of occupied units to be added, the estimated beginning-of-period number of households was subtracted from the end of period estimate. In RHNA Cycle 5, adjustments or allowances were made for vacancy rates, in order to secure vacancy levels to “facilitate availability and mobility” in the housing market. Given the relatively high vacancy rates at the time, this adjustment reduced the overall RHND for the region.

During RHNA Cycle 6, with the passage of AB 1771 (2018), new adjustment factors were added to better account for tight existing conditions in regional housing markets: regions with above average overcrowding and cost-burdened households would need to address such challenges by adding extra housing to the RHND such that those shares of cost-burdened households and overcrowded households would be no higher than the rates for a reference group. The statute does not specify how to identify this group of “comparable regions,” leaving this to the discretion of the COG. Staff has accordingly worked to be responsive to this requirement and identify an approach for selecting comparable regions.

#### **Identifying Comparable Regions**

There are many ways to identify peer regions, depending on purpose, focus and data considerations. Most simply, an approach could be to identify regions based on anecdotal similarities or assumed connections. Such anecdotally identified peer regions to the Bay Area could include Seattle, WA, Denver, CO and Austin, TX, each of which is characterized by the presence of technology economies, not unlike the Bay Area. Yet the limitations of anecdotal comparisons are that they are not systematic, exaggerate similarities and downplay differences. Accordingly, these regions may differ in other respects related to their geographies, populations, or housing markets. The Brookings Institution in 2016 released a classification of regions from the perspective of their economic ecosystems based on statistical classification,<sup>2</sup> an approach that was later carried out for the Sacramento, CA area to identify mid-sized peer regions. The limitation in that approach for our purposes is not so much in the method used (see footnote 2) but rather in the types of data points used to classify regions from the perspective of the regional economic position.

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<sup>2</sup> They used a combination of the data reduction technique known as principal components, and then a k-means cluster algorithm to relate classes. The data points were focused on infrastructure, broadband access, foreign direct investment, patents, venture capital, air travel passengers, to name a few. See Parilla, J., & Trujillo, J. L. (2016). Redefining Global Cities: The Seven Types of Global Metro Economies. Washington, D.C. Retrieved from [https://www.brookings.edu/wp-content/uploads/2016/09/metro\\_20160928\\_gctypes.pdf](https://www.brookings.edu/wp-content/uploads/2016/09/metro_20160928_gctypes.pdf), and Parilla, J., Liu, S., & Gootman, M. (2018). Charting a Course to the Sacramento Region’s Future Economic Prosperity. Washington, D.C.: Brookings Institution, Metropolitan Policy Program.

Staff approached identifying comparable regions in stages. First, we compiled demographic data on U.S. regions using the 2018 American Community Survey PUMS data file. We used regions described as Combined Statistical Areas, recognizing that some regions, like the Bay Area, are made up of smaller statistical areas. These larger, more complex regions are a more relevant comparison. Because the Bay Area is one of the largest regions in the country, we further limited our candidate regions to the 30 largest metro areas by population.

Staff then identified a list of demographic variables that best characterized regions. They included a variety of income factors, age factors, and factors that describe the local housing markets.

*Table 1 Key Measures Used to Profile Regions*

Variable	Measure	Comment / Reason for Inclusion
fpl2x	Share of households two times above FPL	Higher share of households in poverty means more precarity in the housing market
hhinc_high	Share of households earning more than \$200,000	High income individuals may, absent supply, put pressure on other parts of the housing market, causing gentrification and displacement
hhinc_low	Share of households earning below \$50,000	Low and middle-income households is the core policy focus of RHNA
Gini	GINI coefficient measures inequality in a region	The shares in high and low income groups are distorted by cost of living differences. A Gini measure is more readily comparable.
movestatus	Share of households moved during the past year	Movers indicate housing churn, with higher mobility signaling more liquid markets
occ_prof	Share of workers in professional jobs	Professional workers may have more housing options
occ_svcs	Share of workers in service jobs	Service workers may have fewer housing options
post2005	Share of housing units built since 2005	Potentially indicative of a supply constrained market
seniors	Share of population who are 65+ years	While much focus is on jobs-housing fit, seniors have unique challenges
youth	Share of population who are 20-29 years	Regions with higher shares of young populations may face more immediate household formation
slf_15_65_mf	Share of 15-64 year olds in labor force	How many people are economically active?
slf_21_30_mf	Share of 21-30 year olds in labor force	Regions with higher shares of young populations may face more immediate household formation challenges

From the candidate list of 30 regions, we select seven which statistically differ the least from the Bay Area, where the difference is assessed for each variable in turn.<sup>3</sup> For example, if the percentage of workers in professional jobs is 33 percent for the Bay Area, a region with 30 percent of its workers in professional jobs will score as closer than a region with 25 percent of its jobs in that category.

As our focus is more demographic and related to the housing market, we originally included key outcome measures of direct interest such as crowding itself. It could be argued that the list should include housing-related outcome measures such as crowding and vacancy to the extent we are looking for regions like the Bay Area but with more liquid housing markets. However, we were advised by HCD during our consultation that they felt the inclusion of these variables in selecting comparable regions was not appropriate, so they were omitted. In the end, this change did not affect the regions in the comparable group.

*Table 2 Summary of Analysis Results*

#### **Profile variable descriptives**

Regions/variable	San Francisco Bay Area	Washington -Baltimore-Arlington	Seattle-Tacoma	Boston-Worcester-Providence	Denver-Aurora	Minn. - St. Paul	New York-Newark	Chicago-Naperville
GINI coefficient	.48	.45	.45	.48	.45	.45	.51	.48
recent move to region	6%	4%	6%	3%	5%	3%	2%	2%
households below 2x FPL	18%	18%	19%	21%	21%	20%	24%	25%
units built since 2005	7%	11%	14%	6%	13%	9%	6%	7%
professional occupations	32%	31%	27%	26%	28%	26%	23%	22%
service occupations	35%	35%	35%	38%	37%	37%	40%	39%
low income households	27%	29%	32%	35%	34%	35%	37%	39%
high income households	19%	14%	10%	11%	9%	8%	12%	8%
laborforce 21-30 yrs	82%	84%	83%	83%	86%	88%	79%	83%
laborforce 15-65 yrs	76%	77%	76%	77%	78%	81%	74%	75%
seniors	15%	13%	14%	16%	12%	13%	15%	14%
youth	14%	14%	14%	14%	14%	14%	14%	14%

#### **Findings**

Per the described approach, staff found the following regions to be most comparable to the Bay Area, in order of similarity:

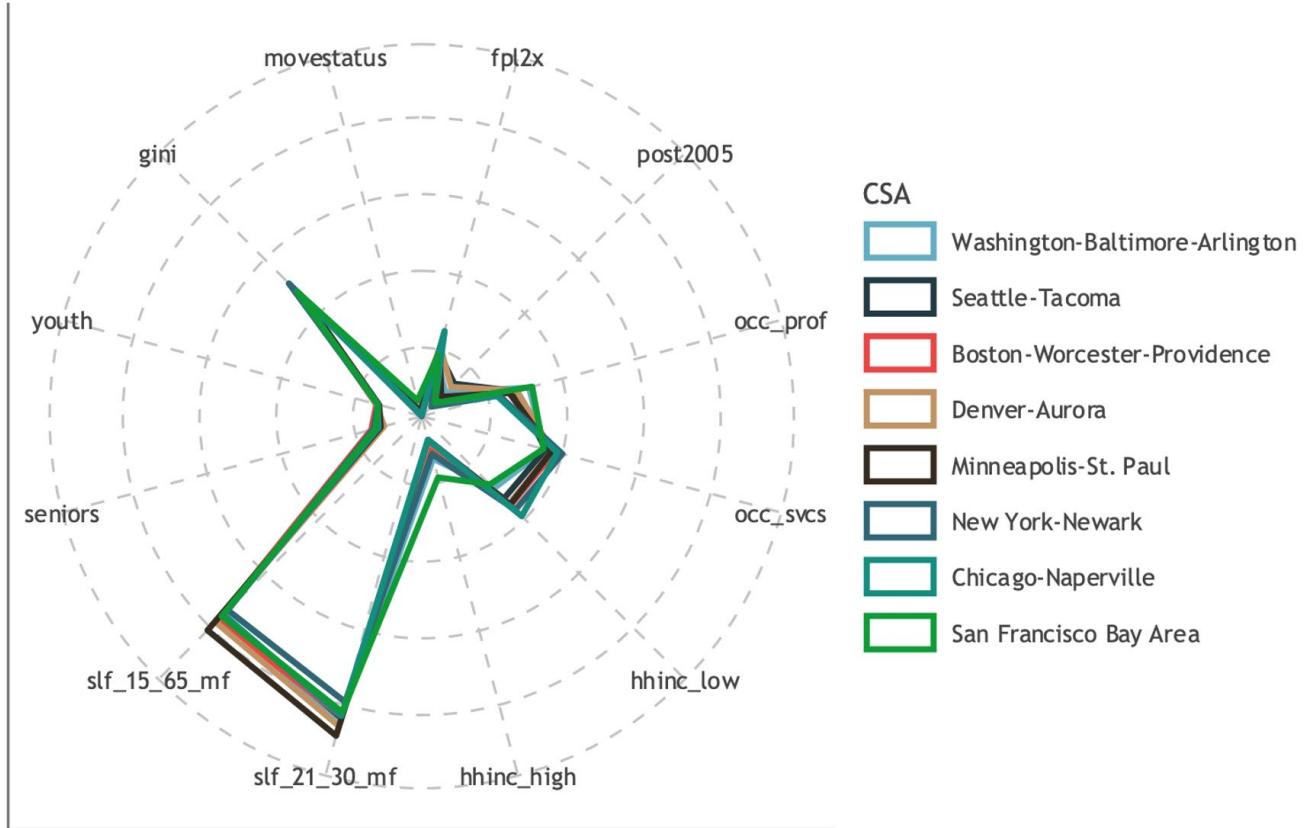
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<sup>3</sup> Staff used a KDTree search algorithm, Euclidean distance to find regions statistically most similar across the list of measures. The algorithm examines the distance across the range of measures for a region and keeps track of the difference across the measures. Two similar regions will have very small distances on most variables, whereas very different regions will have a larger distance. We picked the closest ones on the distance measure.

1. Washington-Baltimore-Arlington, DC-MD-VA-WV-PA
2. Seattle-Tacoma, WA
3. Boston-Worcester-Providence, MA-RI-NH-CT
4. Denver-Aurora, CO
5. Minneapolis-St. Paul, MN-WI
6. New York-Newark, NY-NJ-CT-PA
7. Chicago-Naperville, IL-IN-WI

### Bay Area CSA most similar regions on a number of demographic variables

Sources: MTC/ABAG analysis, from ACS PUMS 2018 5-Year



### Crowding and Cost Burden for Comparable Regions

Using the identified comparable regions, we get the following mean crowding (more than one person per room) and cost burden (share of households paying more than 30 percent of income) rates. The results were very similar when we performed the same analysis using CHAS data. The analysis suggests that an adjustment should be made for crowding and for the cost burden for high income households. But it shows that no adjustment for the cost burden for lower income households is required.

Table 2 Crowding and burden rates by tenure, different geographies

### Bay Area Comparable Regions Housing Indicators

Measure	Own			Rent			Total		
	Bay Area	Comp. Regions	U.S.	Bay Area	Comp. Regions	U.S.	Bay Area	Comp. Regions	U.S.
Cost Burden (Lower Income)	57.6%	63.7%	51.5%	74.2%	72.5%	71.4%	65.8%	67.3%	60.0%
Cost Burden (Upper Income)	16.8%	13.4%	9.8%	12.8%	11.7%	10.6%	15.4%	12.9%	9.9%
Crowding	3.1%	1.5%	1.7%	11.7%	6.8%	6.4%	6.9%	3.6%	3.4%
Vacancy	0.7%	1.5%	1.7%	3.0%	4.4%	6.0%	1.7%	2.7%	3.3%

Source: ABAG/MTC Staff, from U.S. Census Bureau, American Community Survey, 2014-2018 PUMS

Figure 1: Comparative Housing Market Indicators: Bay Area, Comparable Regions, and U.S

### Comparative housing market indicators

Source: ABAG/MTC staff, from U.S. Census Bureau, American Community Survey PUMS data, 2014-2018

