

Blog Post



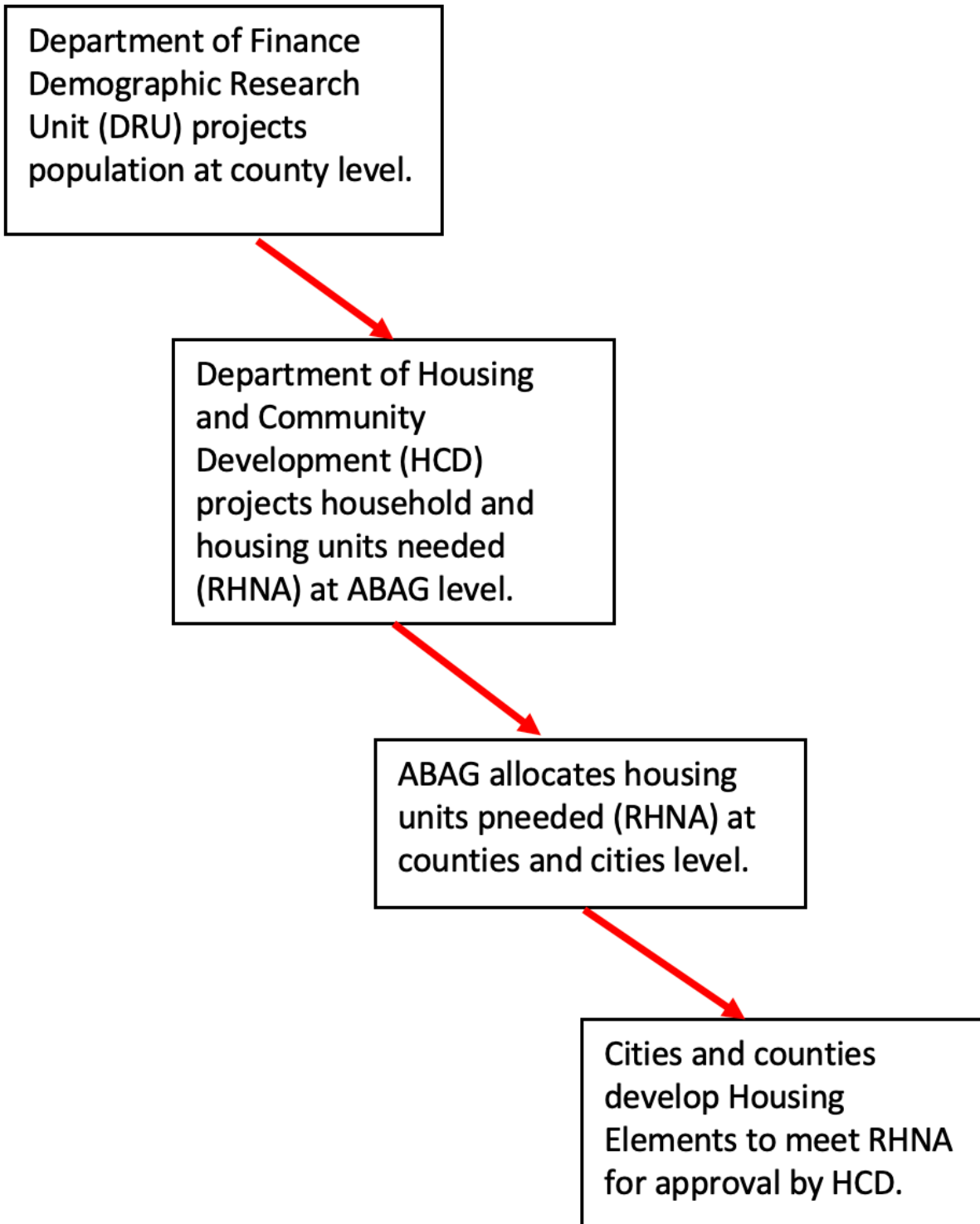
RHNA and ABAG demographic projections are way too high

Posted by: [Gaetan Lion](#) - January 9, 2023 - 7:25am

California agencies make demographic projections that are way too high. In turn, they result in housing units to be developed that are also way too high.

The sequence of demographic projections and their implications work as follows:

1. First, the California Department of Finance Demographics Research Unit (DRU) develops a population forecast at the County level that projects out 40 years;
2. Next, the DRU communicates its population projections to the Department of Housing and Community Development (HCD). And, the HCD turns the DRU county population forecasts into county household and housing units needed forecasts, also called Regional Housing Need Assessment (RHNA) over the next decade or so;
3. Next, the HCD communicates their respective county housing units needed forecasts to local Councils of Government. For the SF Bay Area, the latter is the Association of Bay Area Governments (ABAG). And, ABAG allocates the RHNA housing units needed to be developed for each county and city. And, the latter develop their respective Housing Elements detailing their plans to build the necessary housing units to satisfy RHNA. And, in turn, the HCD approves (or not) the counties' and cities' proposed Housing Elements;
4. Independently, ABAG also generates its own forecast of households, jobs, and housing units needed out to 2050. However, this independent ABAG forecast has no housing mandate implications. And, as we will see this is a very good thing. That is because the ABAG 2050 is by far the most detached from demographic reality.



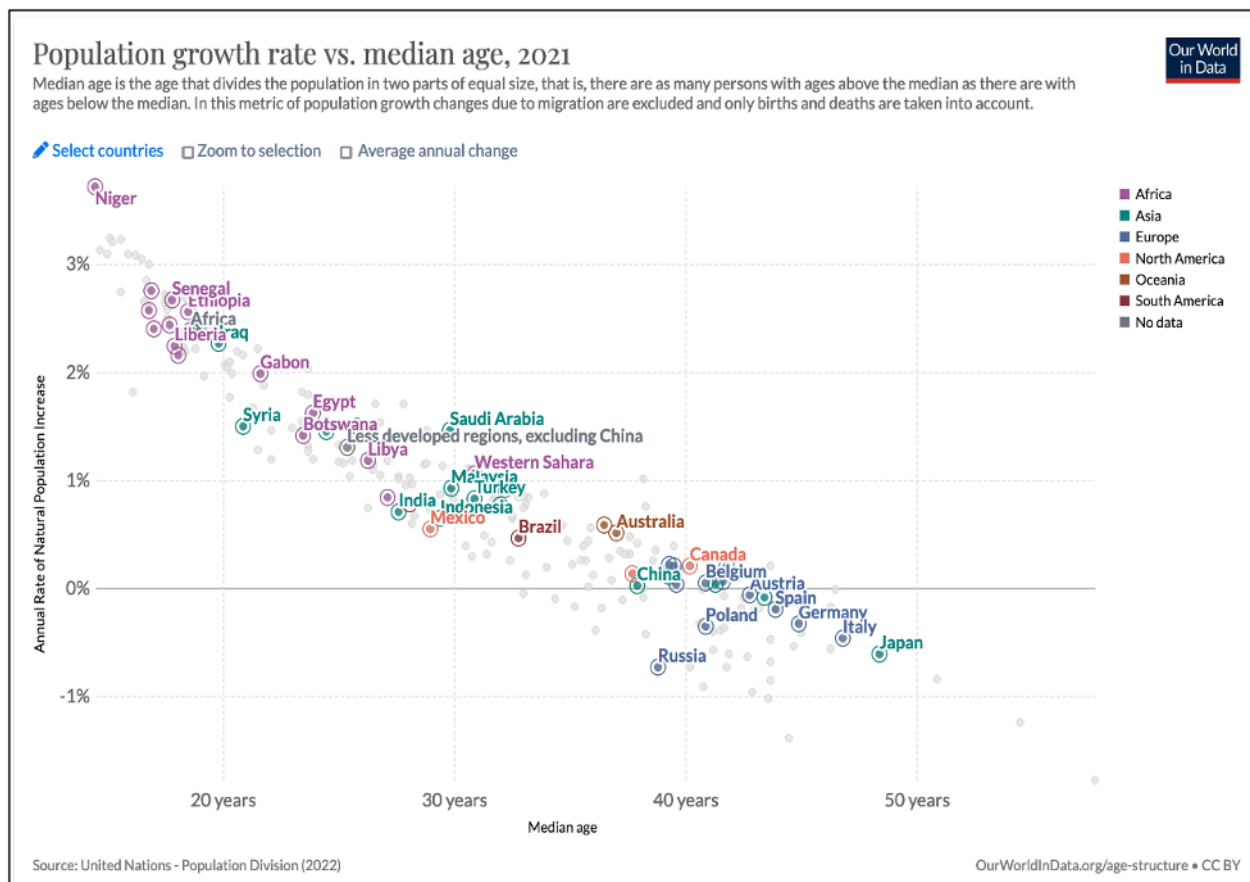
Focusing on the San Francisco Bay Area, I will review the following demographic forecasts:

1. DRU population forecast to 2030 as it pretty much drives everything else. It is the original demographic engine that ultimately translates into housing needed to be developed at each city and county level.
2. HCD household and housing units needed forecast to 2030. It is the transformer of the DRU population forecast into ultimately the housing mandates (RHNA).
3. ABAG household forecast to 2050 simply to uncover how detached it is from demographic trends.

But, first, let me convey basic concepts in demographic growth so we can better understand and assess the validity of the mentioned demographic projections.

Demographic growth basics

The scatter plot below shows the median age on the X-axis and the demographic growth on the Y-axis for the most recent year available (2021) for various countries and regions.

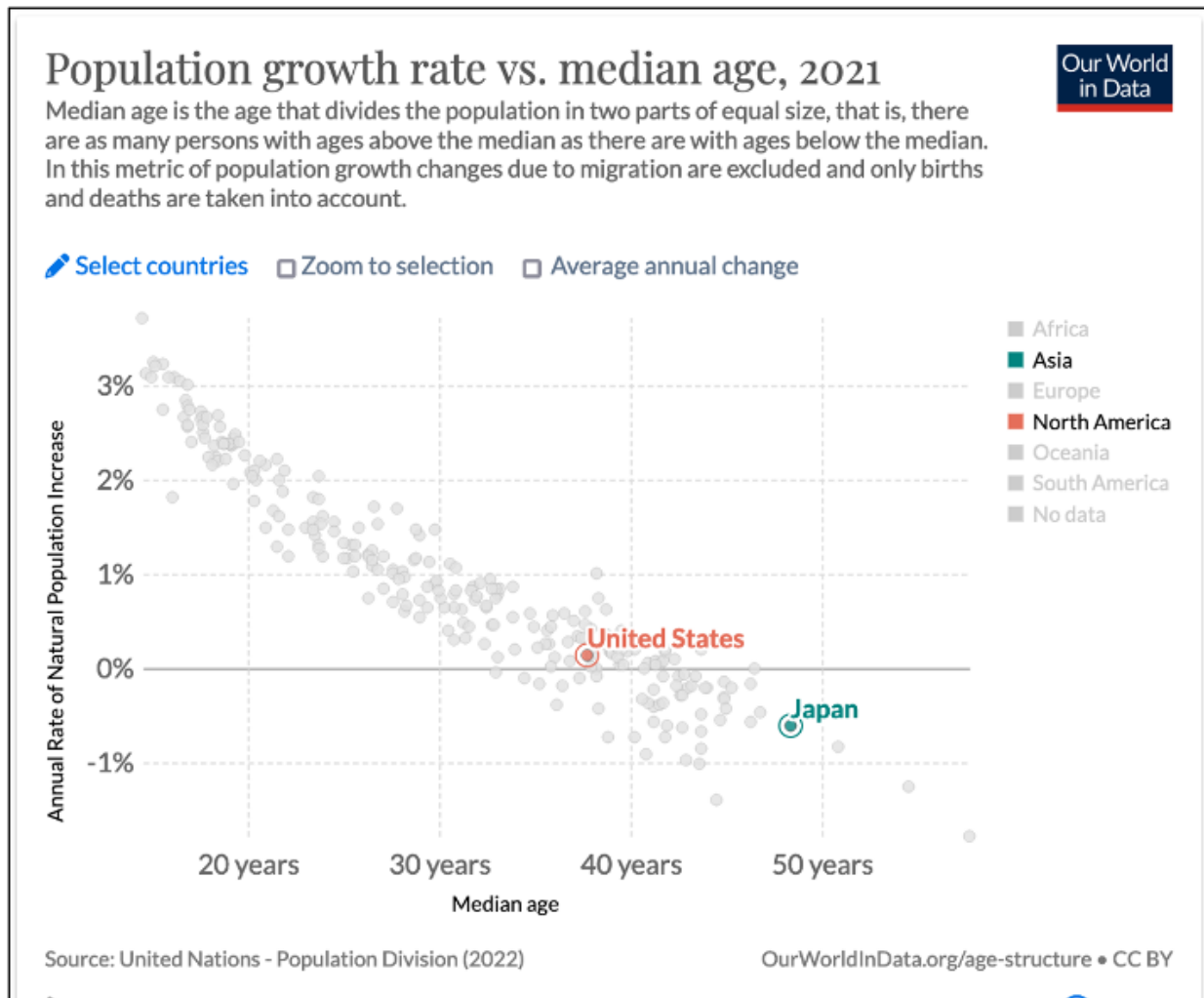


What the above chart tells you is that only countries in Africa and the Middle East are associated with population growth of 1.00% or more per year. Similarly, these same

countries have very young populations with typically a median age of 30 or less. US, Canada, and China have at present population growth not much above 0.00% associated with much older populations fairly close to 40 years old.

Meanwhile, just about all of Europe, Japan, and Russia are already experiencing declining population growth and have much older populations.

Focusing on the US and Japan only is pretty informative.



In 2021, the US had a population growth of only 0.13% and a median age of 38.8 years. Meanwhile, Japan had a negative population growth of - 0.61% and a median age of 48.4 years.

Some of the Bay Area counties, Marin County in particular, look a lot more like Japan than the US. Marin County has already experienced negative population growth over the past 5

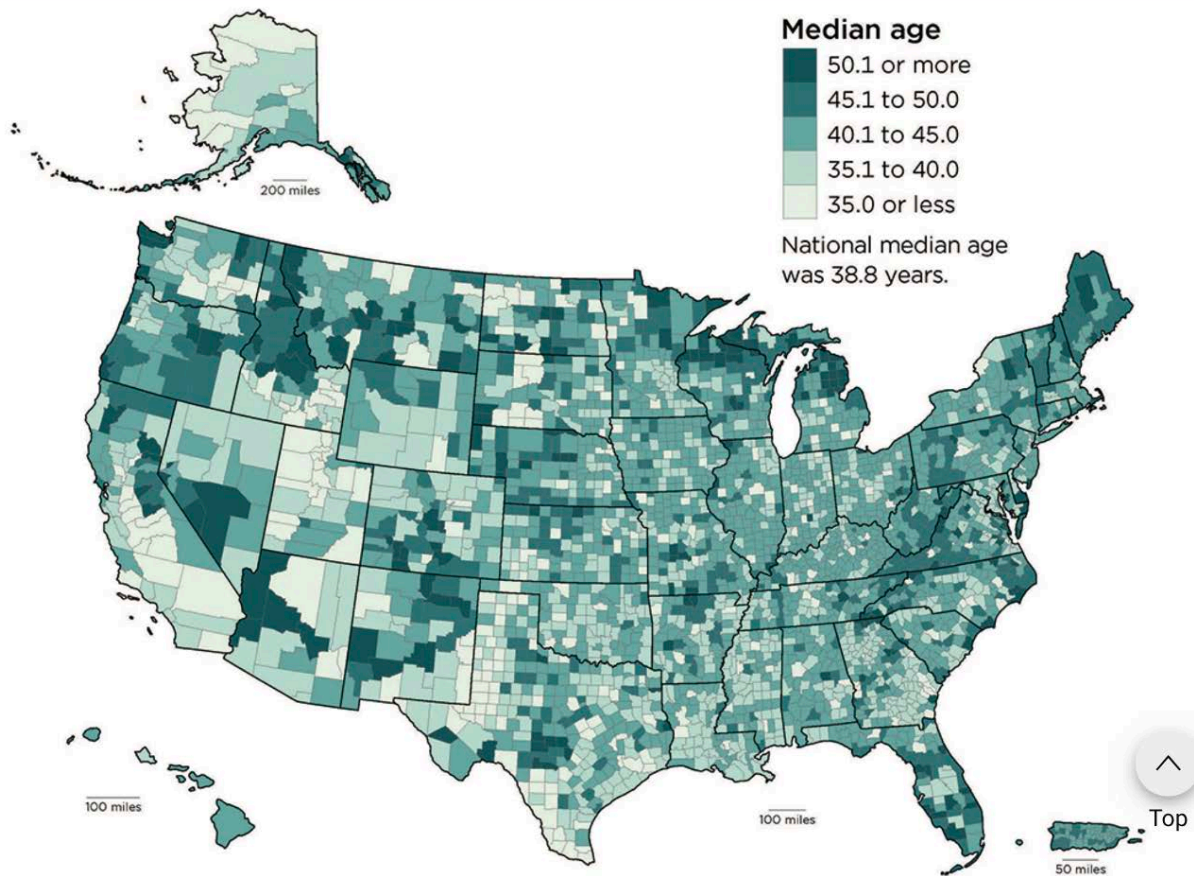
years. And, its population is rapidly aging. Its median age is now 46.9 years, very close to Japan's.

An old median age entails a low fertility rate and low or even negative demographic growth. The logical negative relationship between median age and demographic growth is explicitly visible on the scatter plots above. Within those plots, you can easily draw a regression trend line with a negative slope. The resulting regression would have a very high R Square, very low standard error, etc. This denotes the strength of this negative relationship.

On the map below, you can observe that the Bay Area counties typically have a much older median age than the National median of 38.8 years.

An Aging Nation

Median Age by County: July 1, 2021

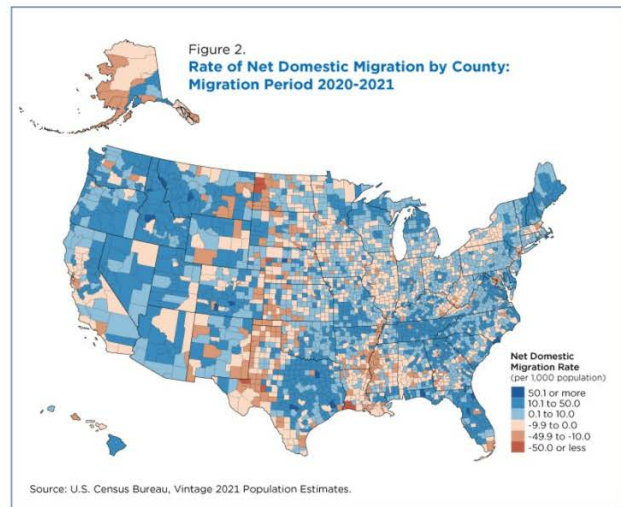
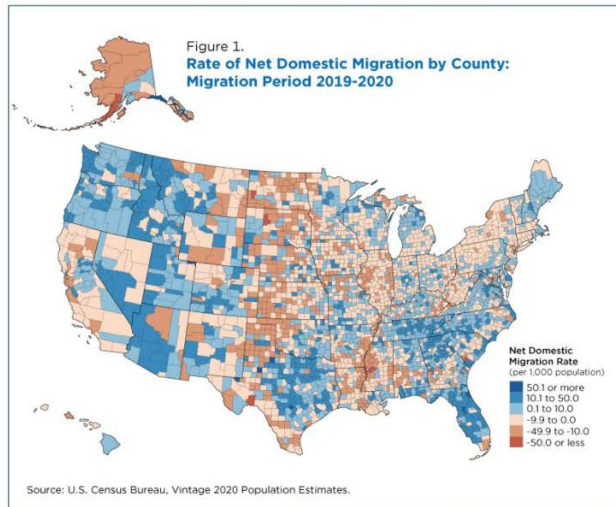


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Source: Vintage 2021 Population Estimates

Next, let's look at migration patterns for the two most recent years of available data from the US Census.



You can observe that during the two reviewed years, the Bay Area counties were among the ones who experienced the most rapid rate of out-migration. The Work-From-Home (WFH) phenomenon has had a profound and most probably permanent impact on the Bay Area population. Because of WFH, employees do not need to work at big tech companies' headquarters located in the Bay Area. Similarly, the mentioned companies can save a ton in expenses by hiring talented employees nationwide who WFH. By doing so, the big tech companies save much on salaries and even more so on office space. This is a permanent shift that is very unlikely to fully reverse itself.

In view of all of the above, what can we expect for the Bay Area counties' demographic growth?

Given that the Bay Area is associated with a much older population (lower fertility rate) than the US as a whole, we can expect its natural growth rate to be much slower than the US.

Given the WFH phenomenon, including the recent out-migration trends experienced within the Bay Area, we can expect the Bay Area to grow much slower than the US.

In view of the above, when looking at any demographic forecast the US will provide an interesting benchmark. If a Bay Area demographic forecast is much faster than the US, you can assess that such a forecast is not realistic.

We will look at US population projections from the UN Population Division. This organization includes a leading demographic team of experts that is not affected by any Sacramento pro-growth bias, RHNA mandates, etc. Additionally, when working on a

country-level scale such politically driven State level housing mandates become less relevant.

San Francisco Bay Area DRU forecast to 2030

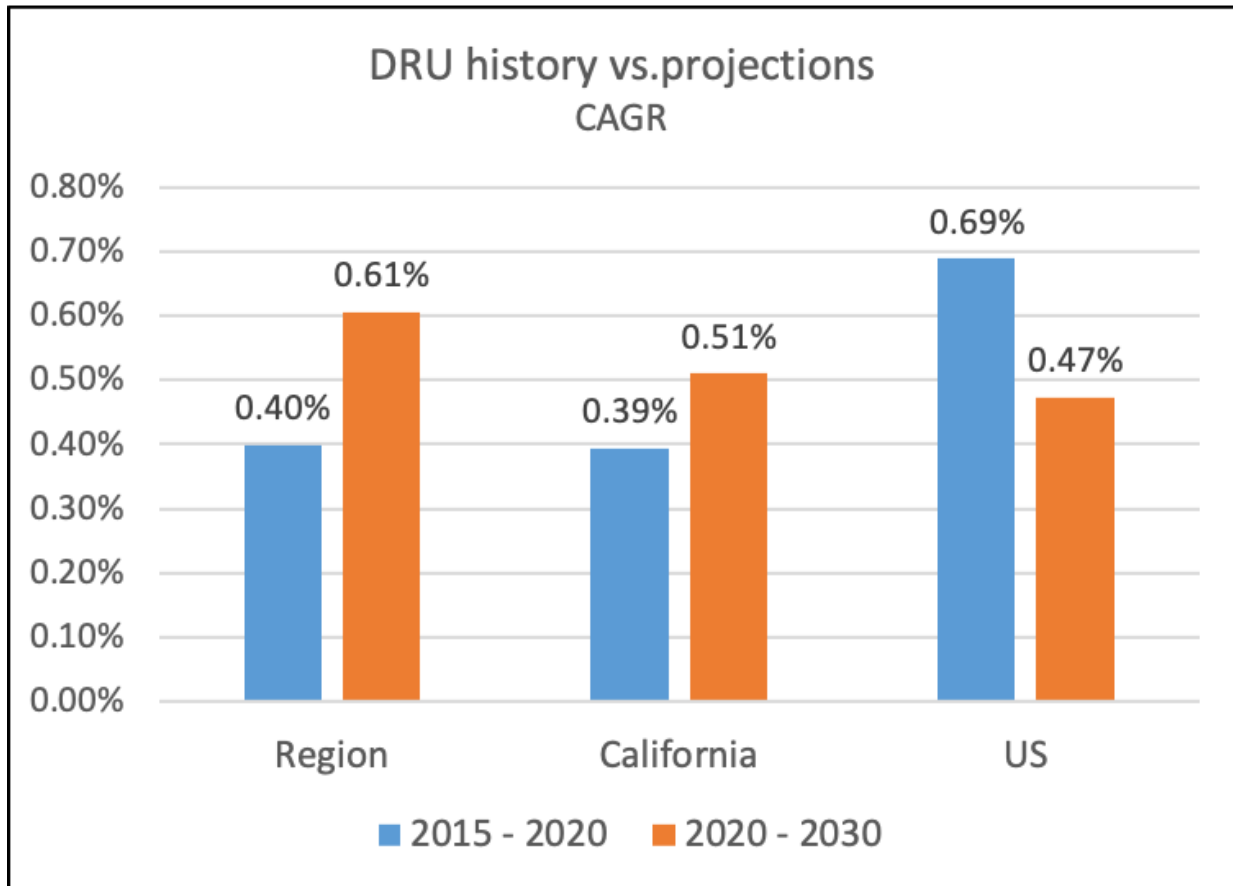
Of the three organizations conducting demographic forecasting (DRU, HCD, ABAG), DRU is by far the most grounded in demographic trends. It is less influenced by Sacramento's pro-growth agenda.

The tables below look at historical population growth between 2015 and 2020 (left) and projected population growth between 2020 and 2030 for the San Francisco Bay Area counties.

Population history					DRU population projection				
County	2015	2020	% growth	CAGR	County	2020	2030	% growth	CAGR
San Francisco	869,403	899,891	3.5%	0.69%	San Francisco	899,891	936,862	4.1%	0.40%
San Mateo	765,820	775,132	1.2%	0.24%	San Mateo	775,132	800,006	3.2%	0.32%
Santa Clara	1,924,097	1,962,251	2.0%	0.39%	Santa Clara	1,962,251	2,105,066	7.3%	0.71%
Alameda	1,622,375	1,671,855	3.0%	0.60%	Alameda	1,671,855	1,785,496	6.8%	0.66%
Contra Costa	1,118,662	1,149,800	2.8%	0.55%	Contra Costa	1,149,800	1,244,173	8.2%	0.79%
Solano	428,906	440,198	2.6%	0.52%	Solano	440,198	479,372	8.9%	0.86%
Napa	141,390	138,711	-1.9%	-0.38%	Napa	138,711	143,223	3.3%	0.32%
Sonoma	501,512	491,134	-2.1%	-0.42%	Sonoma	491,134	521,303	6.1%	0.60%
Marin	262,041	258,956	-1.2%	-0.24%	Marin	258,956	257,024	-0.7%	-0.07%
Region	7,634,206	7,787,928	2.0%	0.40%	Region	7,787,928	8,272,525	6.2%	0.61%
California	39,007,121	39,782,419	2.0%	0.39%	California	39,782,419	41,860,549	5.2%	0.51%
US in mm (UN)	325	336	3.5%	0.69%	US in mm (UN)	335.9	352.2	4.8%	0.47%

Notice in both cases that Marin County is already incurring a decrease in population that is directionally a lot more similar to Japan than the US. That is no surprise given that Marin County's median age is a lot closer to Japan than the US as reviewed earlier.

So, what can we say about DRU 2030 population projections? They are actually already much too fast.



Notice that the UN forecast for the US captures current demographic trends (ongoing aging, drop in fertility rate, etc.). And, the UN forecasts that the US population's annual growth rate will drop from 0.69% over the 2015 - 2020 period down to 0.47% during the projected 2020 - 2030 period.

Remember, given the current reviewed demographic trends we would expect the US population to grow much faster than the Bay Area region. However, as shown on the graph the DRU expects the Bay Area region population growth over the next decade to accelerate vs. the recent past. While the Bay Area region was growing 42% slower than the US over the 2015 - 2020 period, DRU forecasts that it would be growing 30% faster than the US-UN projections over the 2020 - 2030 timeline.

You have to ask yourself is there any reason why the Bay Area population could possibly grow much faster than the US as a whole given that it has an older population and has experienced much out-migration?

Why would the Bay Area grow 30% faster than the US going forward while it grew 42% slower in the recent past?

The sensible answer is that there are no reasons that support the DRU forecast. The DRU forecast is too high. This is especially true if you consider updated current Census data as of April 2020 and July 2021 showing the early impact of COVID and WFH on the Bay Area.

Recent population trend					DRU population projection using July 2021 as input				
County	Apr-20	Jul-21	% chg.	CAGR	County	Jul-21	2030	% growth	CAGR
San Francisco	873,965	815,201	-6.7%	-5.4%	San Francisco	815,201	936,862	14.9%	1.56%
San Mateo	764,442	737,888	-3.5%	-2.8%	San Mateo	737,888	800,006	8.4%	0.90%
Santa Clara	1,936,259	1,885,508	-2.6%	-2.1%	Santa Clara	1,885,508	2,105,066	11.6%	1.23%
Alameda	1,682,353	1,648,556	-2.0%	-1.6%	Alameda	1,648,556	1,785,496	8.3%	0.89%
Contra Costa	1,165,927	1,161,413	-0.4%	-0.3%	Contra Costa	1,161,413	1,244,173	7.1%	0.77%
Solano	453,491	451,716	-0.4%	-0.3%	Solano	451,716	479,372	6.1%	0.66%
Napa	138,019	136,207	-1.3%	-1.1%	Napa	136,207	143,223	5.2%	0.56%
Sonoma	488,863	485,887	-0.6%	-0.5%	Sonoma	485,887	521,303	7.3%	0.78%
Marin	262,321	260,206	-0.8%	-0.6%	Marin	260,206	257,024	-1.2%	-0.14%
Region	7,765,640	7,582,582	-2.4%	-1.9%	Region	7,582,582	8,272,525	9.1%	0.97%
Source: US Census									

The table on the left shows the impact of COVID and WFH on the Bay Area. All 9 counties experienced population contraction between April 2020 and July 2021.

The table on the right revises the DRU 2030 forecast by using the actual population as of July 2021 as the starting point. When you do that, the DRU 2030 forecast is associated with a population annual growth rate close to 1.00%. This nearly meets the very high population growth rates that nowadays are only experienced in Africa and Middle Eastern regions. That the Bay Area population would grow so much faster out to 2030 vs. the most recent past level is highly unrealistic.

To keep things in perspective, you can't blame forecasters for not factoring in future events that were not captured in the historical data (COVID, WFH) they work with. But, you can blame them for not revising and updating their forecasts in order for such forecasts to remain relevant.

San Francisco Bay Area HCD household and housing units 2030 forecast

While the DRU makes a reasonable effort to come up with a sensible demographic forecast, the HCD has a strong Sacramento pro-growth housing mandate bias. Through a bit of alchemy, they turn the DRU population projections into extremely high housing units

needed to be developed by 2030. See below the output of the HCD 2030 forecast for the San Francisco Bay Area counties in aggregate.

ATTACHMENT 2

HCD REGIONAL HOUSING NEED DETERMINATION: ABAG June 30, 2021 through December 31, 2030

Methodology

ABAG: PROJECTION PERIOD (8.5 years) HCD Determined Population, Households, & Housing Unit Need		
Reference No.	Step Taken to Calculate Regional Housing Need	Amount
1.	Population: December 31 2030 (DOF June 30 2030 projection adjusted + 6 months to December 31 2030)	8,273,975
2.	- <i>Group Quarters Population: December 31 2030 (DOF June 30 2030 projection adjusted + 6 months to December 31 2030)</i>	-169,755
3.	Household (HH) Population	8,159,280
4.	Projected Households	3,023,735
5.	+ Vacancy Adjustment (3.27%)	+98,799
6.	+ Overcrowding Adjustment (3.13%)	+94,605
7.	+ Replacement Adjustment (.50%)	+15,120
8.	- <i>Occupied Units (HHs) estimated June 30, 2022</i>	-2,800,185
9.	+ Cost-burden Adjustment	+9,102
Total	6th Cycle Regional Housing Need Assessment (RHNA)	441,176

Detailed background data for this chart is available upon request.

I have contacted the HCD and I suggested three corrections.

The first one is to change the number of occupied units on line 8 from 2,800,185 to the number of units in the Census as of July 1st, 2021 which is 2,982,918. Doing so brings the RHNA (housing units needed) from 441,176 down to 258,443.

The second one is to correct for the double counting HCD inserts when factoring vacancy and overcrowding adjustments that are already factored within the DRU projections, as studied by Gab Layton, Ph.D., and President of the Embarcadero Institute. I am attaching her work to this article (Double Counting.pdf). Eliminating double counting further reduces RHNA by another 158,176 housing units. So, now the adjusted RHNA is down to 100,267.

The third adjustment a demographer would consider is revising the underlying population growth estimate. The Bay Area's population per Census data was 7,582,582 on July 1, 2021. In turn, the DRU and HCD project that this population will grow to 8,273,975 by 2030. This corresponds to a CAGR of 0.97% which is way too high. Again such a growth

rate is pretty much nonexistent within the developed world. You have to go to Africa and the Middle East to get such growth rates. Also, this growth rate is far higher than the projected one for the US overall.

The Bay Area is just not going to grow so much faster than the US. Instead, given the Bay Area's aging demographic profile and out-migration current trends (due , it is most likely to grow a lot slower than the US.

If you used a CAGR of 0.44% which is the long-term trend between 2015 and 2050 estimated by DRU, you get 7,888,192. Doing so would in turn further reduce RHNA closer to a very small number. And, this number may be still too high. Between 2015 and 2020, the CAGR for the region was only 0.40% (mainly before COVID). And, between April 2020 and July 2021, it was negative - 1.89%.

Once you adjust the RHNA housing units needed by 2030 for all three corrections mentioned above (correct household starting point, double counting, slower demographic growth), you get to an RHNA figure that is getting pretty close to Zero... instead of 441,176. This confirms that the RHNA housing unit target for the Bay Area is driven by Sacramento's pro-growth agenda that has nothing to do with the actual demographic and migration trends affecting the Bay Area.

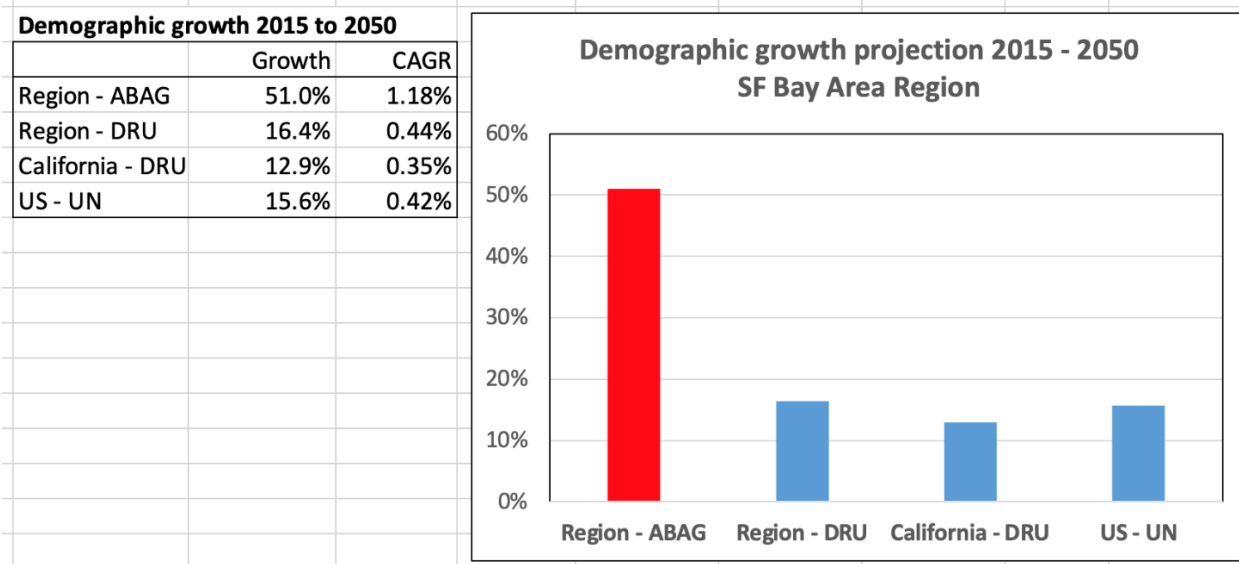
San Francisco Bay Area ABAG 2050 forecast

This forecast is independent of the first two (DRU 2030 and HCD 2030). It is also the most detached from any demographic realities. ABAG's demographic projections focus on households. Meanwhile, the other projections I use for comparison (DRU for California and UN for the US) focus on population. When looking at demographic growth rates, whether one looks at household growth or population growth does not make that much difference. So, when focusing on actual growth rates, the two demographic units are readily comparable.

The table below compares the demographic growth between 2015 to 2050 for the San Francisco Bay Area region as projected by ABAG (left) vs. DRU (right). As benchmarks, it also includes DRU projections for California and the UN projections for the entire US.

ABAG Household projection					DRU and UN population projection				
County	2015	2050	% growth	CAGR	County	2015	2050	% growth	CAGR
San Francisco	366,000	578,000	57.9%	1.31%	San Francisco	869,403	1,004,943	15.6%	0.41%
San Mateo	265,000	394,000	48.7%	1.14%	San Mateo	765,820	814,643	6.4%	0.18%
Santa Clara	623,000	1,075,000	72.6%	1.57%	Santa Clara	1,924,097	2,343,610	21.8%	0.57%
Alameda	552,000	847,000	53.4%	1.23%	Alameda	1,622,375	1,933,085	19.2%	0.50%
Contra Costa	383,000	551,000	43.9%	1.04%	Contra Costa	1,118,662	1,342,620	20.0%	0.52%
Solano	142,000	177,000	24.6%	0.63%	Solano	428,906	530,874	23.8%	0.61%
Napa	50,000	56,000	12.0%	0.32%	Napa	141,390	146,050	3.3%	0.09%
Sonoma	188,000	220,000	17.0%	0.45%	Sonoma	501,512	529,338	5.5%	0.15%
Marin	109,000	146,000	33.9%	0.84%	Marin	262,041	243,838	-6.9%	-0.21%
Region	2,678,000	4,044,000	51.0%	1.18%	Region	7,634,206	8,889,001	16.4%	0.44%
					California	39,007,121	44,049,015	12.9%	0.35%
					US in mm (UN)	324.6	375.4	15.6%	0.42%

Below, I just summarize the main growth metrics from the table above.



As shown above the San Francisco Bay Area Region - ABAG projections really stand out. If the UN projected the US would grow as fast as the San Francisco Region as forecasted by ABAG, its population would increase from 324.6 million in 2015 to 490.1 million in 2050, instead of the 375.4 million projected by the UN. This divergence reaches an absurd level.

As mentioned earlier, every demographic characteristic (population aging, out-migration, etc.) suggests that the San Francisco Region will grow a lot slower than the US instead of more than 3 times as fast. The ABAG's forecast is truly unhinged. It confuses the San Francisco Bay Area with an African or Middle Eastern one. No other regions in the world grow as fast as the projected growth rates by ABAG.

Six years into the ABAG forecast, we can already observe that it is way off. From 2015 - 2021, the Region has actually lost population for the mentioned demographic reasons (population aging, out-migration, COVID, WFH).

San Francisco Bay Area Region historical growth			
County	2015	2021	CAGR
San Francisco	869,403	815,201	-1.07%
San Mateo	765,820	737,888	-0.62%
Santa Clara	1,924,097	1,885,508	-0.34%
Alameda	1,622,375	1,648,556	0.27%
Contra Costa	1,118,662	1,161,413	0.63%
Solano	428,906	451,716	0.87%
Napa	141,390	136,207	-0.62%
Sonoma	501,512	485,887	-0.53%
Marin	262,041	260,206	-0.12%
Region	7,634,206	7,582,582	-0.11%
Source: DRU and Census data			

Conclusion

I have communicated with the various agencies suggesting revisions to their respective forecasts. Although the respective staffers were courteous and communicative, the agencies had no interest in correcting their forecasts. Regarding HCD in particular, the error in the forecast has drastic implications for the RHNA housing mandates, Housing Elements, etc.

Many others have communicated similar concerns regarding these flawed forecasts without ultimately having any influence on the agencies revising such forecasts. That is clearly a State and Local level governance concern.

In California and the Bay Area, in particular, we are at the hi-tech cutting edge including AI, etc. Yet, when it comes to straightforward demographic forecasts our State Government at all levels pretty much ignores the science and the simple math in order to impose dictatorial housing mandates.

From a demographic standpoint, we may increasingly resemble Japan (an aging society). From a Government standpoint, are we increasingly resembling China?