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Affordability for Whom?

Introducing an Inclusive Affordability Measure

AUTHORS:

Daniel Shoag, MetroSight | **Issi Romem**, MetroSight & Turner Affiliate |

Carolina Reid, Turner Center

Introduction

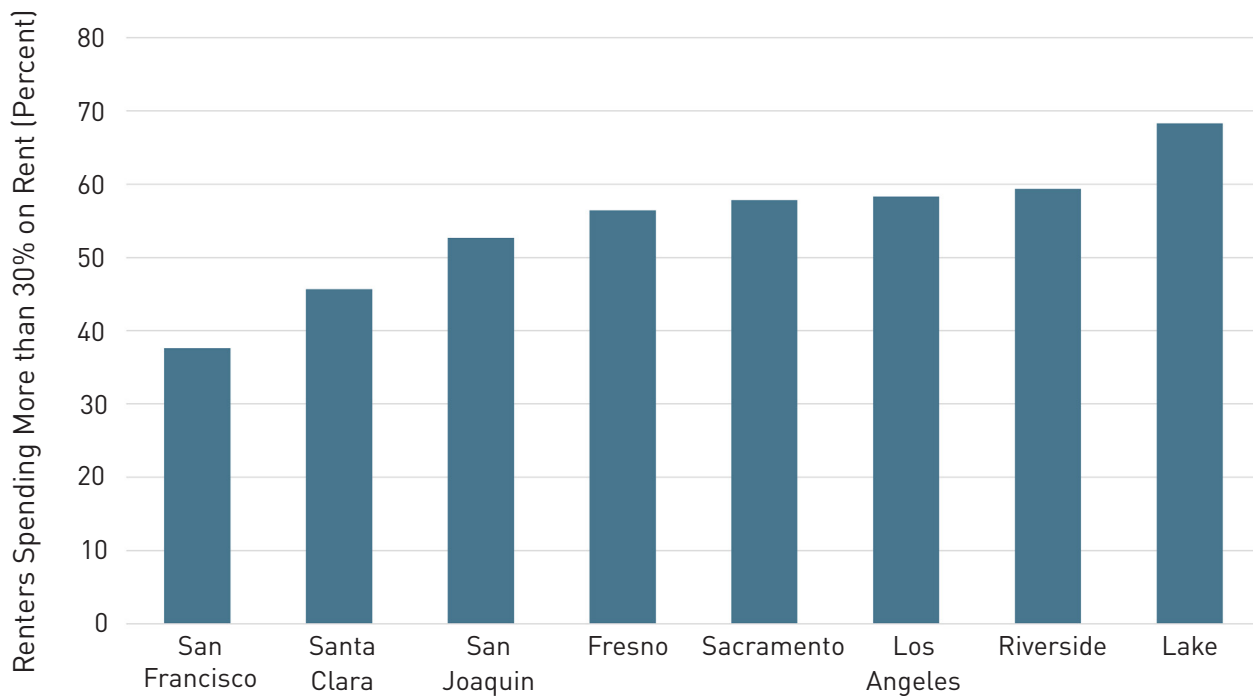
The concept of housing affordability plays a pivotal role in a range of housing policies, including subsidized housing, inclusionary zoning, density bonuses, and others. Conceiving of and defining it appropriately—and applying that definition to measures such as Area Median Income (AMI)—could impact the applicability, operation, and outcomes of those policies, with potentially significant implications.

Housing affordability is typically defined as the percent of household income that goes towards rent or a mortgage. Households that spend more than 30 percent of their income on housing are considered cost-burdened, while those who spend more than 50 percent are considered severely cost-burdened. There are long-standing critiques of this approach. For

example, it does not take into account the fact that someone who earns \$1 million can probably afford to pay 50 percent of their income in housing, especially compared to someone who makes \$24,000.¹

But there's another downside to traditional ways of calculating affordability that has received less attention: measures of housing affordability tend to focus on the people who already live in a place. As a result, they understate the extent to which certain places are exclusionary because their housing costs prevent others from living there.² In a city like San Francisco, for example, fewer households are housing cost-burdened than in Fresno or Lake County, not because San Francisco is more affordable, but because the people who currently live there tend to be higher income (Figure 1).

Figure 1: Rental Housing Cost Burdens, Selected Counties, 2022



Source: American Community Survey, 1-Year Estimate, 2022, Table B25070.

The extent to which the lack of housing affordability constrains people’s ability to move has significant implications for household well-being, reducing access to economic opportunities and lengthening commute times. These negative impacts are greatest for low-income workers and people of color. For example, recent research has found that more expensive and segregated housing markets contribute to longer commutes for Black households.³ It can also affect a region’s economic growth. A lack of housing affordability limits labor mobility and can keep companies from locating in places where these conditions exist.⁴ This growing body of evidence—in addition to concerns over fair housing, gentrification, and displacement—suggest the importance of reconsidering the measurement of affordability.

In this paper, we present a new approach to measuring housing affordability—one that seeks to provide a better indicator of what counties in California are affordable, and for whom. Specifically, we propose a new inclusive measure that considers whether a location is affordable *not* to those who live there, but rather to those *who might potentially live there*.

In essence, we reframe the question. It is not “Is a place affordable?”—meaning for the people who live there now—but rather “Who can afford this place?” This question matters, not only for how we measure affordability, but also for policies that seek to expand the supply of new housing in places that have long been exclusionary to low- and moderate-income households.

We begin by explaining the problems with the way current affordability measures are constructed, and detail how we address those problems in our alternative inclusive affordability measure. We then

introduce *Affordability for Whom?*—a web-based interactive tool that enables detailed examination of how this measure impacts affordability at the county level. We conclude with a discussion of policy implications. An appendix outlines our data and methodology in more detail.

Addressing the Problems with Current Affordability Measures

The conventional approach to measuring housing cost burdens and affordability does not derive from science. Its origins lie in a rule of thumb that emerged in the 1920s: “a week’s wages for a month’s rent”—or a 25 percent cost-to-income ratio—was seen as a suitable way to assess a household’s ability to afford a mortgage.⁵ A long history of political debate has ensued since then, regarding what the threshold should be, particularly in the context of how much households receiving government assistance should pay for housing.

Researchers and advocates have long pointed to problems with this measure, noting that it does not accurately reflect differing levels of housing need or how the share of income spent on housing costs has different implications for lower- versus higher-income households. Another shortcoming is that the measure fails to account for housing size or quality: households may find living in San Francisco worth crowding into a smaller unit with more people. A third issue is that standard measures of affordability do not account for commuting costs, nor the higher costs of fixed household expenses that vary across places, such as childcare.

Our proposed affordability measure addresses these shortcomings in the following ways:

The 30 percent cost-to-income threshold.

As noted above, 30 percent is arbitrary (is someone paying 29 percent not cost-burdened?), and has different implications for a household earning \$24,000 than one earning \$1 million. Rather than relying on a discrete percentage cutoff, we develop our measure of affordability based on self-assessed financial well-being from the Federal Reserve’s Survey of Household and Economic Decisionmaking.⁶ The survey includes a question that asks, “Overall, which one of the following best describes how well you are managing financially these days?” Respondents can answer:

1. *Finding it difficult to get by*
2. *Just getting by*
3. *Doing okay*
4. *Living comfortably*

While qualitative in nature, these categories provide a better indication of whether a household feels they are financially stable, and how well they can manage different expenses after paying for housing costs. As detailed in the appendix, we calculate the average cost-to-income ratios for respondents to this question. Unsurprisingly, higher cost ratios are associated with less financial comfort. We then use the average housing cost ratios at each comfort level as cutoffs, and sort ACS households into comfort levels based on their cost ratio.

The problem of economic exclusion.

People do not live where they do at random. Instead, they live in places based on their ability to afford the location, which economists refer to as selection bias.⁷ Instead, what would affordability levels look like if we considered how hard or easy it would be for non-residents to live in that place? Of course, people could choose to adapt in numerous ways to make living in a particular place work. They could rent a smaller home, or make different choices about having children, whether to work, and what type of work to do. What is more important is whether someone could choose to move to a place without having to make those difficult tradeoffs; for example, whether a teacher could move to San Francisco and stay a teacher, choose to have children, and live in a home suited to their family size.

Our inclusive affordability measure keeps residents’ family and occupational choices independent of location.⁸ Specifically, we calculate what a household’s cost burden would be if they moved to a county in California, and whether they would then feel like they were living comfortably or finding it difficult to get by. Although we assume the workers in the household keep their same jobs, we do scale their income based on the higher or lower wages they could expect to receive. For example, a household moving from Humboldt County to San Francisco County would be projected to receive roughly a 64.2 percent wage increase. This increase reflects differences in wages after adjusting for occupation and education. Differences in affordability therefore reflect not just differences in house prices but also projected housing costs over and above projected wage gains.⁹

We also consider whether potential residents can afford a home typical for households of their size across the nation. In other words, we ask whether a family could afford the same home in San Francisco that they could elsewhere, without compromising on space, i.e., an apples-to-apples comparison in terms of the dwelling size.

Transportation and childcare costs.

Transportation and childcare costs represent a significant share of household budgets, and are shaped by where people live. Nationally, transportation is the second largest household expenditure after housing, approximately 17 percent.¹⁰ However, researchers have found that the type of urban area can impact those costs: ranging from less than 10 percent of the average household's expenditures in transit-rich areas to nearly 25 percent in more suburban or car-centric places.¹¹ To account for these costs, we include data from Center for Neighborhood Technology's Housing and Transportation (H+T®) Affordability Index, which estimates transportation costs based on housing location.

Similarly, for households with young children, childcare spending can place further stress on household budgets. Among working families that pay for childcare with children under 5, average spending amounts to nearly 10 percent of family income. These costs are increasing over time.¹² Because the ACS does not include childcare expenses, we estimate locational differences in those costs using data from the U.S. Department of Labor's National Database of Childcare Prices.

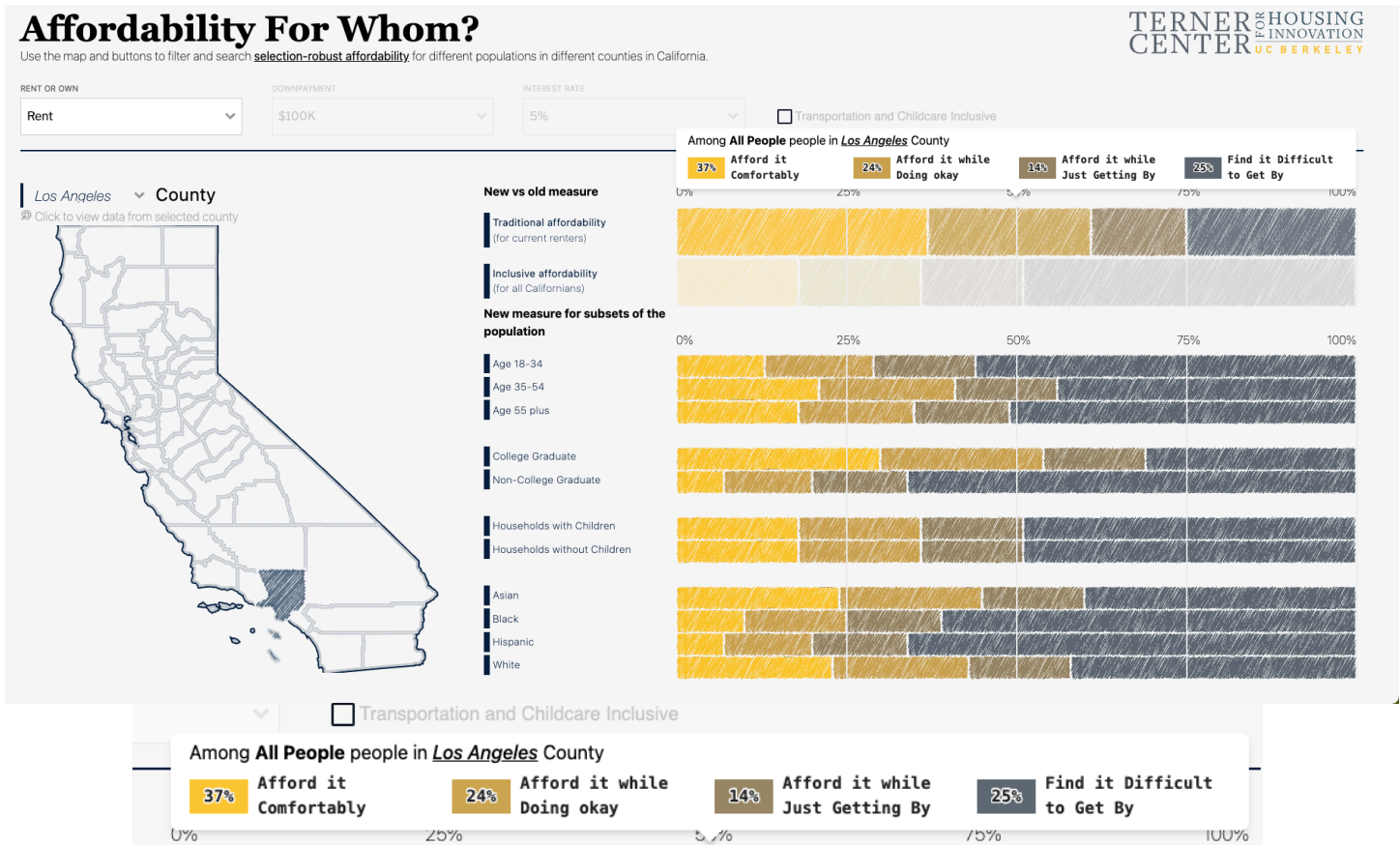
The Affordability for Whom? Tool

The *Affordability for Whom?* tool presents this new measure in an interactive, web-based format. The tool defaults to data for "All California households," but can also be broken down by the age, race and ethnicity, or education level of the head of household, as well as the presence of children. All the data, the traditional affordability measure, our alternative measure, and the results for subpopulations are downloadable from the website.

Users can choose a target county either by clicking on the map at the bottom left or by selecting the name in the bar immediately above the map. Then, they can select either renters or owners by clicking the drop down menu at the top left. For each choice, and for each subpopulation of potential Californians, the tool reports the share of people we forecast would be able to afford to live there and be financially stable, as per the four categories: *living comfortably, doing okay, just getting by, or finding it difficult to get by*. The tool also presents this new measure of affordability against the traditional measure that just considers existing residents.

To better simulate housing affordability levels for owners, users can toggle the possible down payment from \$100,000 to \$400,000. The down payment size influences the size of the mortgage and monthly payments, which is used to calculate the resulting affordability levels. Users can also toggle mortgage interest rates, and they can elect to include transportation and childcare costs. These can have a significant impact on affordability levels, particularly for more suburban and rural counties where higher transportation costs offset the lower costs of housing.

Figure 2: Illustration of Affordability for Whom? Tool



Housing Affordability in Los Angeles

Walking through an example for Los Angeles County illustrates how the tool works. Selecting Los Angeles County and Rent, the tool calculates the share of people who could afford to rent there. The resulting data show how traditional measures of affordability understate housing costs: in Los Angeles, 51 percent of current renters living there can do so at a level of living comfortably or doing okay. However, when the affordability measures take into account all California households, this drops to 39 percent. The tool also shows differences across different demographic and socio-economic groups. For example, households headed by someone with a college degree are significantly more likely to be able to afford Los Angeles County at the level of living comfortably or doing okay than non-college graduates (66 versus 22 percent). Choosing the transportation and childcare inclusive measure changes the results to account for how those costs vary, not only by location but also by household type. For example, these measures make Los Angeles look less affordable for families with children.

Key Insights

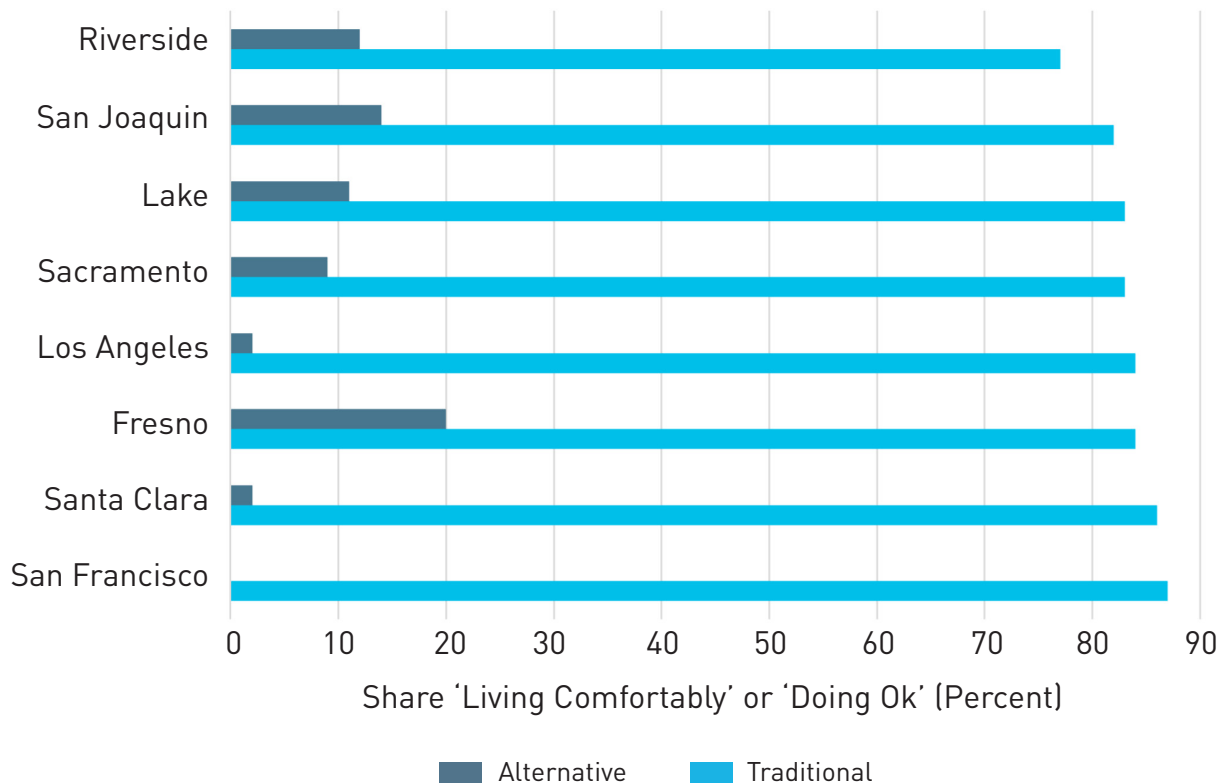
Reframing housing affordability in this way leads to important insights into the dynamics of housing markets and household residential choices. First, it highlights the challenges households face in accessing homeownership in California. With a \$100,000 down payment—which is beyond the reach of most households—homeownership is essentially unaffordable in many parts of the state for all but the smallest share of people. For example, we estimate that less than 5 percent of Californians can afford to purchase a home in San Francisco, Santa Clara, or Los Angeles counties even with such a down payment, and still be living comfortably or doing okay financially (Figure 3). This is a much lower share than under traditional measures of affordability, which estimate

that roughly 83 to 86 percent of residents can afford ownership at those levels.

In contrast, places like the city of Fresno and San Joaquin and Riverside counties do still provide opportunities for people to move there and buy a home. Note that this insight is not available under the traditional measure, through which overall affordability levels look relatively similar across counties.

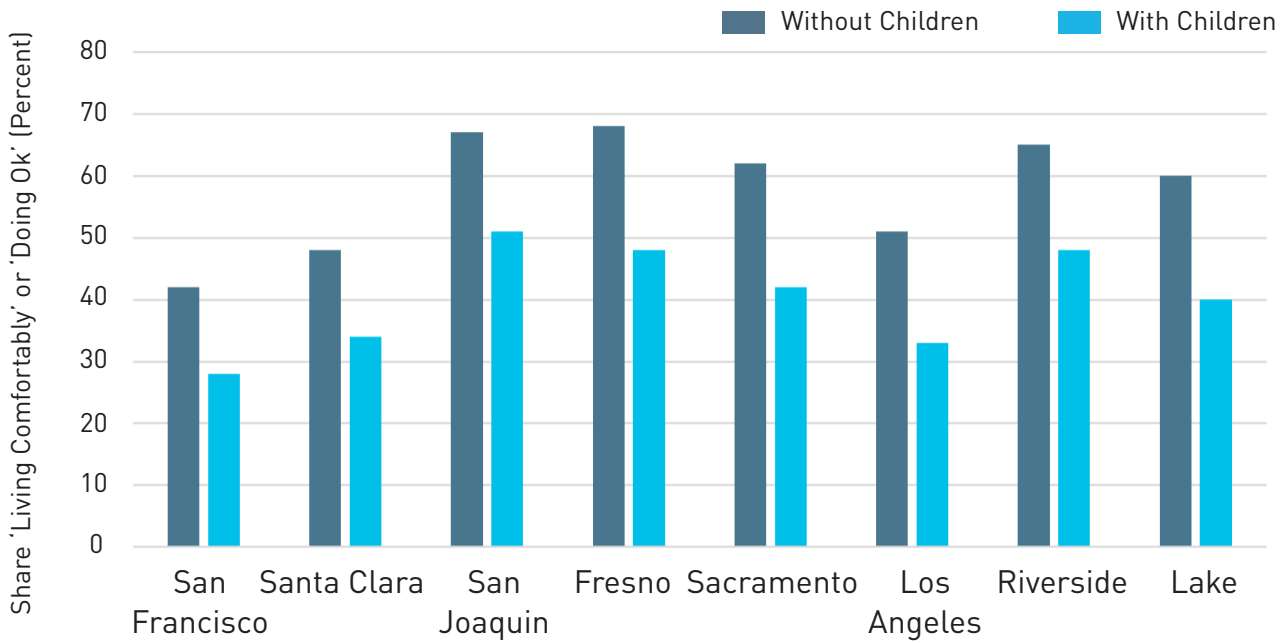
Second, the measure highlights that families with children are bearing the brunt of the affordability crisis. Affordability rates for them are much worse when viewed through the lens of the new measure (Figure 4). Affordability levels are approximately 20 percentage points lower for renters with children, in both urban centers and more suburban and rural counties.

Figure 3: Homeownership Affordability Estimates with a \$100,000 Down Payment, Traditional vs. Alternative



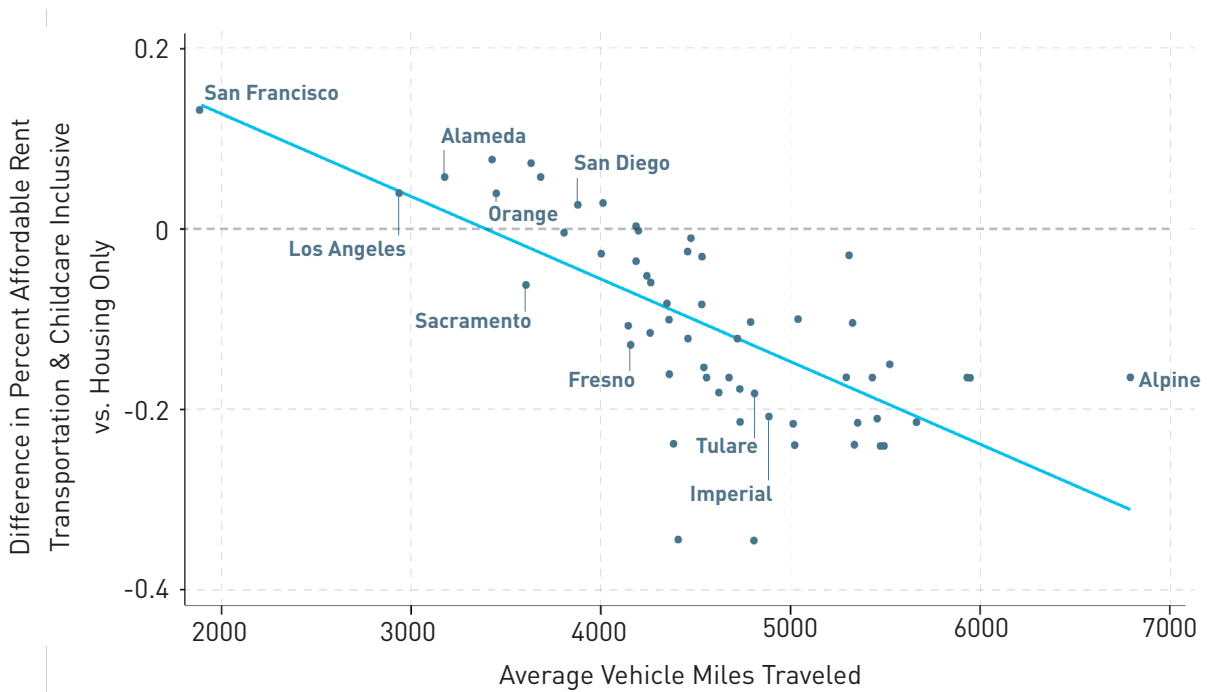
Source: Affordability for Whom? tool.

Figure 4: Rental Affordability for Households with Children, Traditional vs. Alternative



Source: Affordability for Whom? tool.

Figure 5: Change in Housing Affordability and Vehicle Miles Traveled



Source: Affordability for Whom? tool. The Y-axis compares the change in the percentage of all Californians able to afford to rent in a location comfortably or while doing okay when using the transportation and childcare inclusive measure versus the measure determined solely by housing expenses and wages. The X-axis measures the average vehicle miles traveled for households in the county via the H+T® Index.

Finally, transportation costs vary greatly across counties. In some denser locations, such as San Francisco and Los Angeles, transportation-inclusive measures show the county to be more affordable. Rural areas look less affordable. This difference correlates strongly with the amount of driving done by the typical household. Figure 5 shows that areas become less affordable after accounting for transportation costs. Places like Fresno or Tulare show a significant decrease in affordability after accounting for vehicle miles traveled (VMT), while San Francisco sees a slight increase. This suggests that there are important alignments between housing affordability and the state's efforts to decrease carbon emissions from driving.¹³

Conclusion and Policy Implications

In spite of long-standing criticisms of how housing affordability is measured, there have been few efforts to develop new measures that capture whether a place is affordable to a broad segment of households, and not just for the people who already live there. The inclusive measure presented in our *Affordability for Whom?* tool corrects for this. It shows that many counties in California are becoming the exclusive domain of wealthier households who can afford to stay, and do not provide sufficient housing options for households who might want or need to live there.

What are the implications of this new measure? First, the tool highlights the importance of aligning housing affordability metrics with their policy goals, and to not take rules of thumb for granted in setting administrative or legislative policies. Although regional measures of cost burdens are rarely used to set policies

directly, metrics such as AMI similarly rely on the income of existing residents in an area (i.e., the few who can afford to live there). The self-selection and sorting effect means that AMIs are rising in many California cities, with significant implications for affordable housing policies and whom they benefit. One illustrative example: in San Francisco, the AMI for a family of four is \$175,000.¹⁴ As a result, in 2023, the income eligibility for a unit in a new LIHTC building targeted at a 4-person household earning 60 percent of AMI was \$111,480, and the corresponding rent for a 2-bedroom unit was \$2,509 a month.¹⁵ While still well below market rents in the city, these rent levels are too high to accommodate many people who work in San Francisco, including health care aids, janitors, and teachers.

Second, the tool demonstrates the importance of refining the methodologies used by policymakers to drive the supply of affordable housing to the places that most need that housing, such as California's Regional Housing Needs Allocation (RHNA) process. Senate Bill 828 (2018, Wiener) first introduced the concept of including cost burden into the methodology for allocating growth targets to cities and counties in California's RHNA. Recent research suggests that recent RHNA reforms are increasing rezonings for new housing even in exclusive cities.¹⁶ As the State prepares to update its RHNA methodology in advance of the seventh cycle over the next two years, it may wish to consider refining its approach in the ways described here. Although reforms such as these may take time to develop, efforts to refine growth targets for local housing needs and to hold cities accountable for planning for more housing in the places where it is most needed are critically important steps.

The tool also demonstrates the need for additional efforts to increase the affordability of homeownership, such as making it easier to build smaller, lower-cost units. Assembly Bill 1033 (Ting), which passed in 2023, is a first step in that direction, in that it enables accessory dwelling units to be conveyed as condos. Still, the cost to build for-sale homes has been hindered by California’s relatively strict construction defect liability laws, which can require builders to purchase costly insurance to protect against future litigation. Reforms to these laws, as well as to the Subdivision Map Act, could help spur the production of more affordable homeownership options. Extending and expanding California’s Dream for All program can also help lower-income households to overcome the down payment constraints to buying a new home.

The axiom “we value what we measure” has resonance for measures of housing affordability as well. Measures that do not account for who can live or work in a city, or that fail to acknowledge the range of household expenses tied to where a person lives, fail to capture how housing policies are contributing to broader goals. Expanding affordability for all in more places will ensure that California moves forward on important goals such as racial equity in neighborhood access, economic growth across regions, and environmental sustainability.

Appendix: Detailed Methodology

Empirically measuring affordability in a way that overcomes the limitations of local cost burden measures described above requires multiple datasets, assumptions, and analytical steps. In this appendix, we describe how we calculate our alternative measure of housing affordability. While we have calculated it for California and its counties, and for specific subpopulations such as age, education, and race/ethnicity, it would be possible to replicate this methodology nationally as well as for other groups.

Data

We use four separate datasets in our analysis. Information on tenure, household composition and size, and housing costs come from the 2021 1-year American Community Survey, a large representative sample managed by the Census Bureau. As discussed above in the main report, data on self-assessed financial positions are taken from the 2022 Survey of Household and Economic Decision Making. Information on transportation costs by county are taken from the H+T® Affordability Index, and information on childcare costs from the U.S. Department of Labor's National Database of Childcare Costs.¹⁷ The H+T® Affordability Index data was originally created as part of the Brookings Institution's Urban Markets Initiative and is now maintained by the Center for Neighborhood Technology.¹⁸ The Childcare Cost data are collected from public sources and from a market rate survey of regulated child care providers.

Methodology

Conceptually, our algorithm begins by determining a target population (for example all Californians) and a target destination (say San Francisco County).¹⁹ We take each household in the American Community Survey in this population and forecast its required housing consumption cost in San Francisco County. We do this by taking the average number of rooms associated with a household of a given size multiplied by the cost per room in San Francisco County. This procedure assumes room sizes are constant and that household composition does not change.²⁰ We also assume that occupation stays the same, though as we describe below, we adjust income to reflect differences in income per occupation across different counties.

Housing Size and Price

To determine the required housing size for households of different sizes, we calculate the median number of rooms in California by household size. We then calculate the mean rent and house value per room by county.

While this approach is relatively straightforward for rent, it is more complicated for a home purchase due to the need to specify a down payment. We consider four levels of down payments (\$100,000, \$200,000, \$300,000, and \$400,000). Given the down payment and required housing cost, we determine whether the down payment is equal to 20 percent of the home value. If so, we assume a conventional mortgage at the user-defined mortgage rate, e.g. 8 percent per year (or .0071 per monthly period), for the amount

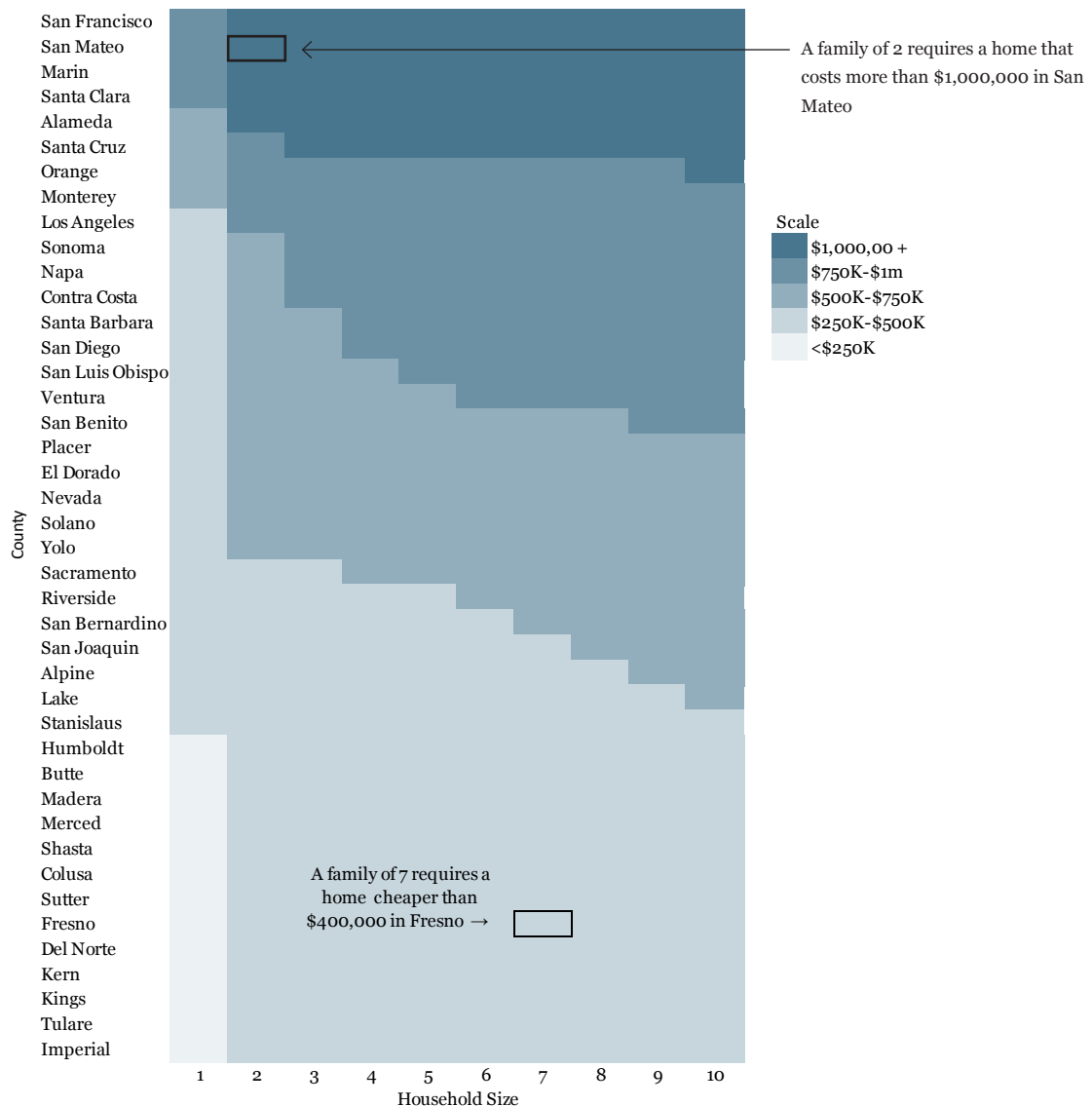
not covered by the down payment. Monthly costs equal

$$mortgage = amount * \frac{r(1+r)^{360}}{(1+r)^{360} - 1}$$

We then add in 1/12 of the county property tax average. If the down payment is less than 20 percent but greater than 5 percent of the required housing value, we add in a 1.5 percent upfront mortgage insurance premium (MIP) for an FHA loan (financed out of the down payment) and then an additional monthly payment of .55 percent of the original loan amount as ongoing MIP. In practice, the ongoing amount is not usually constant, but this represents affordability at the time of purchase. Finally, if the down payment selected is less than 5 percent of the purchase price, all households are automatically put into the difficult to afford bucket.²¹

The appendix figure below illustrates the results of this analysis by showing the required price in each county for each household size.

Figure A1: Shaded Heatmap of Required House Price for Households Sizes 1-10 for All Counties



Household Income

To calculate household income, we consider both non-labor and labor income. We assume there would be no change in the household's non-labor income. For the labor income, we adjust the person's wages using the ratio of the origin county and target county fixed effects in the wage regression specified in equation (1).

$$\ln(\text{inc_wage}) = \alpha_{\text{occupation}} + \alpha_{\text{education}} + \alpha_{\text{county}} + e \quad (1)$$

We keep the county fixed effects to project incomes for potential movers. For example, a household from Sacramento County moving to San Francisco County would be projected to have a 22.8 percent increase in their wage income.

Transportation and Childcare Costs

To account for differences in average transportation costs, we add in the average costs for the target county from the H+T® Affordability Index as a fixed amount for all households.

To calculate childcare costs, we account for differences in costs for children 5 and under and for children between the ages of 6 and 11. We multiply the number of children in each age bracket for the household by, alternately, the average target county childcare cost for children under 5 or those ages 6 to 11. We assume households do not incur childcare costs for children 12 and older. This means housing becomes relatively more affordable for households without children since they can allocate a larger share of their budget for housing.

Cost Burdens and Target Populations

With these projected housing costs and incomes in the target county, we calculate a forecasted cost burden. We apply this forecasted cost burden estimated for households in the ACS to the cost burden cutoffs established for the four self-assessed affordability levels in the Survey of Household and Economics Decisionmaking. In other words, we can now say who would fall in the categories difficult to get by, just getting by, doing okay, or living comfortably in any given target county.

We consider several target populations, all based in California. First, we consider all California households. Then we segment this by the age (18 to 34, 35 to 54, 54+), race and ethnicity (white, Black, Asian, Hispanic), and household head's educational attainment (college, no-college). We also segment the analysis for households with and without children.

Testing the Metric

To explore how the proposed new affordability measure compares to the traditional one, we ran a regression on the difference in the percent of households who could live in a county at a level of doing okay and living comfortably according to each of the measures. We find a clear relationship between the change in affordability the measures reflect and an area's median income. As expected, selection is making the richest places in California

seem more affordable according to the traditional measure than they are, most notably for San Francisco but also as a general rule. In the regression, this shows up as the difference between the new and traditional affordability measures being inversely related to local income levels (holding square footage fixed).

Second, we find that square footage is also predictive of the difference in affordability measures. As expected, places with larger dwellings look relatively more affordable under the new measure. Whereas the traditional measure was predicated on the financial well-being of people living in an area's typically over- or under-sized homes, the new measure renders home size only as a function of household size, i.e., an apples to apples comparison.

Table A1: Regression Model

	Affordability (New minus Traditional)
Median Square Feet ('000s)	0.147 ** (-0.062)
Median Household Income in 2021 (\$'000s)	-0.0038 *** (0.0005)
Constant	-0.003 (0.107)
Observations	58
R ²	0.527

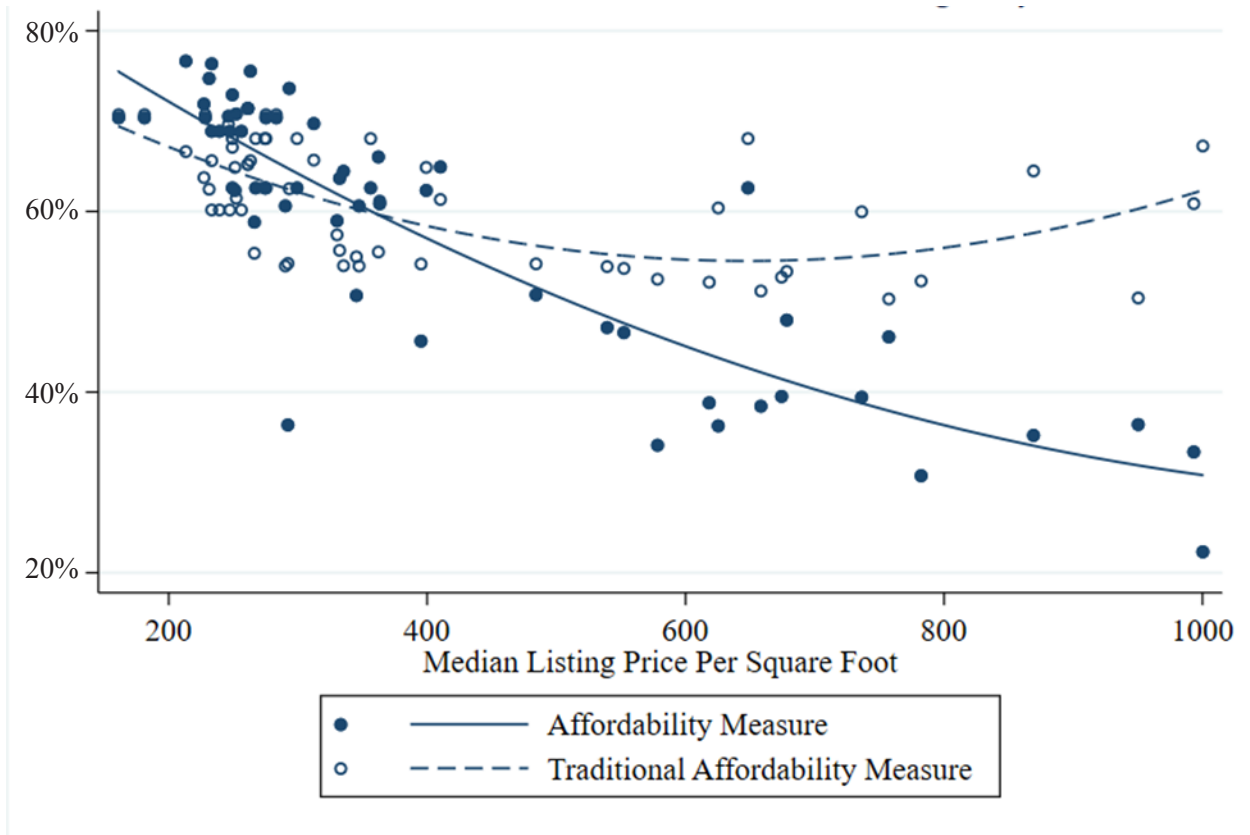
Source: The American Community Survey and Realtor.com Economic Research (<https://www.realtor.com/research/data/>).

Notes: Robust standard errors in parentheses. ***, **, and * indicate statistical significance at the 1, 5, and 10 percent levels respectively.

Figure A2 provides another visualization of this relationship. The traditional measure does not correlate strongly with price per square foot across counties because expensive places have richer people and may have smaller units. Additionally, it is based on existing payments and therefore potentially stale prices and mortgages. The new measure correlates much more strongly with current listing price per square footage throughout the distribution. Note that this is true even though we did not factor current listings into the measures.

Finally, note that the new measure is more than just a complicated way of saying that places with more expensive homes are less affordable. If we were to simply use a measure of local housing prices to gauge affordability, we would fail to account for wage differences across locations,²² for differences in the housing stock across locations,²³ and for differences in the cost of transportation and childcare.²⁴

Figure A2: Percent of Californians Able to Afford Rent While “Doing Okay” or Better



ENDNOTES

1. U.S. Department of Housing and Urban Development, Office of Policy Development and Research. (2014). “Rental Burdens: Rethinking Affordability Measures.” Retrieved from: https://www.huduser.gov/portal/pdredge/pdr_edge_featd_article_092214.html. Additionally, the desired share of income spent on housing likely changes with income (see for example: Albouy, et. al. “Housing Demand, Cost-of-Living Inequality, and the Affordability Crisis.” NBER. Retrieved from: https://www.nber.org/system/files/working_papers/w22816/w22816.pdf).
2. Researchers have provided evidence that lower-income households tend to sort out of higher-price metropolitan areas and that household sorting can affect traditional measures of housing affordability if local incomes are used. See Gyourko, J., et al. (2013). “Superstar Cities.” *American Economic Journal: Economic Policy* 5(4): 167–99; Molloy, R. (2017). “The Effect of Housing Supply Regulation on Housing Affordability: a Review.” Federal Reserve Board. Retrieved from: <https://www.aei.org/wp-content/uploads/2017/04/Overview-Talk-Panel-5.pdf>.
3. bunten, d, m., et al. (2023). “The Problem Has Existed Over Endless Years: Racialized Difference in Commuting, 1980–2019.” *Journal of Urban Economics*. 103542. March 22, <https://doi.org/10.1016/j.jue.2023.103542>.
4. Anthony, J. (2023). “Housing Affordability and Economic Growth.” *Housing Policy Debate* 33(5): 1187–1205, <https://doi.org/10.1080/10511482.2022.2065328>; Saks, R. E. (2008). “Job Creation and Housing Construction: Constraints on Metropolitan Area Employment Growth.” *Journal of Urban Economics* 64(1): 178–95, <https://doi.org/10.1016/j.jue.2007.12.003>; Hsieh, C-T. & Moretti, E. (2019). “Housing Constraints and Spatial Misallocation.” *American Economic Journal: Macroeconomics* 11(2): 1–39, <https://doi.org/10.1257/mac.20170388>.
5. Pelletiere, D. (2008). “Getting to the Heart of Housing’s Fundamental Question: How Much Can a Family Afford? A Primer on Housing Affordability Standards in U.S. Housing Policy.” SSRN Scholarly Paper (Rochester, NY), <https://doi.org/10.2139/ssrn.1132551>.
6. Federal Reserve Board of Governors. (2022). “Survey of Household Economics and Decisionmaking, 2022.” Retrieved from: https://www.federalreserve.gov/consumer-communities/shed_publications.htm.
7. We use the term self-selection broadly, to include people’s inherited choices.
8. The only exception is with respect to home size, where we assign households the typical number of rooms for the county conditional on their household size.
9. We believe that this may overstate the potential wage gains to many households. One reason is that many jobs will experience below-average wage growth, and this may be especially true for lower wage workers (see, e.g., Autor, D. (2020). “The Faltering Escalator of Urban Opportunity.” The Aspen Institute: Economic Strategy Group. Retrieved from: https://economics.mit.edu/sites/default/files/publications/Autor_Urban-Opportunity.pdf). Second, households observed to have moved or not moved may have made that



choice based on their specific prospects for potential wage gains, which we as researchers cannot observe. In that case, the movers are likely to have greater potential wage gains than the non-movers (self-selection), and if that's true, the gains from migration might be overstated.

10. Authors' calculations of the Survey of Consumer Expenditures; see: Meyers, S., et. al. (2023). "Consumer expenditures in 2022." U.S. Bureau of Labor Statistics, BLS Reports. Retrieved from: <https://www.bls.gov/opub/reports/consumer-expenditures/2022/home.htm>.

11. Brookings Institution, Center for Transit-Oriented Development and Center for Neighborhood Technology. (2006). "The Affordability Index: A New Tool for Measuring the True Affordability of a Housing Choice." Retrieved from: https://www.brookings.edu/wp-content/uploads/2016/06/20060127_affindex.pdf.

12. Malik, R. (2019). "Working Families Are Spending Big Money on Child Care." Center for American Progress. Retrieved from: <https://www.americanprogress.org/article/working-families-spending-big-money-child-care/>.

13. Reid, C., et. al. (2024). "Housing + Climate Policy: Building Equitable Pathways to Sustainability and Affordability." Turner Center for Housing Innovation at UC Berkeley. Retrieved from: <https://turnercenter.berkeley.edu/research-and-policy/climate-housing-overview/>, Reference new housing/climate brief.

14. California Department of Housing and Community Development. "Memo on State Income Limits." Retrieved from: <https://www.hcd.ca.gov/sites/default/files/docs/grants-and-funding/income-limits-2023.pdf>.

15. California State Treasurer. "California Tax Credit Allocation Committee: 2023 Income and Rent Limits." Retrieved from: <https://www.treasurer.ca.gov/ctcac/2023/supplemental.asp>.

16. Monkkonen, P., et. al. (2023). California's Strengthened Housing Element Law: Early Evidence on Higher Housing Targets and Rezoning? NYU Furman Center. Retrieved from: (https://furmancenter.org/files/California's_Strengthened_Housing_Element_Law_508.pdf).

17. See H+T® Index, <https://htaindex.cnt.org/>. We used the 2019 HTA Index data and the 2008–2018 estimates of childcare costs from <https://www.dol.gov/agencies/wb/topics/featured-childcare>.

18. For a discussion of the merits of this index, see Guerra, E. & Kirschen, M. (2016). "Housing plus transportation affordability indices: Uses, opportunities, and challenges." International Transport Forum. Discussion Paper 2016, 14. <https://doi.org/10.1787/a1fc9b79-en>.

19. We face a choice between observing existing residents in a location—post-selection and post-adaptation—or observing potential alternative residents pre-selection and pre-adaptation. One might argue that the relevant measure of affordability would reflect



potential alternative residents pre-selection and post-adaptation, but that is something we cannot observe. Modeling potential alternative residents' adaptation choices comprehensively is beyond the scope of this study.

20. Choices affecting household size such as, e.g., determining the number of roommates, whether to have more or fewer children, or whether to have multiple generations in the household are all forms of adaptation, falling within the scope of the previous footnote.

21. For a very small number of very large households in the most expensive areas, it is possible that even a \$100,000 down payment would not cover 5 percent of the required purchase price. Since this is such a small number of families, we include them in the “difficult” category.

22. For example, a household moving from Humboldt County to San Francisco County would be projected to receive roughly a 64.2 percent increase in their wage income. This increase reflects differences in wages after adjusting for occupations and education, i.e., the wage differences are for similar work. Differences in affordability therefore reflect not just prices but projected housing costs over and above projected wage gains to any movers. (Note that if people have already sorted based on prospective wages, these wage gains from migration might be overstated. In other words, since the estimated wage gain to moving to San Francisco is based on those who already live there, if locations are selected, the gains to movers might be smaller. This would tend to make high wage places look even less affordable.)

23. Whereas typical housing prices in an area reflect the nature of the housing stock (to some extent, even when shifting to price per square foot, especially in areas with constrained supply), the new measure estimates the cost for households' housing needs, as observed through the average number of bedrooms for households of each size in the nation.

24. Differences in the cost of transportation reflect not only what a car or a transit ride costs in different areas, but the likelihood of needing an additional vehicle or of finding transit sufficient given the geographic layout of a location. All else being equal, those living in dense places are likely to need fewer vehicles and rely more on transit.



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The Turner Center formulates bold strategies to house families from all walks of life in vibrant, sustainable, and affordable homes and communities. Our focus is on generating constructive, practical strategies for public policy makers and innovative tools for private sector partners to achieve better results for families and communities.

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