POLICY BRIEF

Jobs-Housing Balance and Fit

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Project Description

This project reviews and summarizes empirical evidence for a selection of transportation and land use policies, infrastructure investments, demand management programs, and pricing policies for reducing vehicle miles traveled (VMT) and greenhouse gas (GHG) emissions. The project explicitly considers social equity (fairness that accounts for differences in opportunity) and justice (equity of social systems) for the strategies and their outcomes. Each brief identifies the best available evidence in the peer-reviewed academic literature and has detailed discussions of study selection and methodological issues.

VMT and GHG emissions reduction is shown by effect size, defined as the amount of change in VMT (or other measures of travel behavior) per unit of the strategy, e.g., a unit increase in density. Effect sizes can be used to predict the outcome of a proposed policy or strategy. They can be in absolute terms (e.g., VMT reduced), but are more commonly in relative terms (e.g., percent VMT reduced). Relative effect sizes are often reported as the percent change in the outcome divided by the percent change in the strategy, also called an elasticity.

Summary

Strategy Description

Jobs-housing balance, as a transportation policy tool, is premised on the idea that when the number of housing units is close to the number of jobs within a given area, people's travel distance to and from work will be reduced. Over time, the research has been refined to emphasize the importance of balancing the number of housing units that are affordable to the people working in the area or the number of available jobs matching resident qualifications, giving rise to jobs-housing *fit*.

Behavioral Effect Size

The research shows that the effect of jobs-housing balance is mixed, ranging from studies that find that a 1 percent increase in jobs-housing balance is associated with a VMT reduction between 0.17 and 0.35 percent to studies that find no statistically significant relationship between jobs-housing balance measures and VMT.

A shift in focus toward a jobs-housing balance that matches workers' wage levels and the housing they can afford (jobs-housing fit) shows that a one standard deviation improvement in fit reduces commute distance by 9%.

Research using an alternative measure of balance based on excess commuting found that lower-wage workers have the greatest balance and least excess commuting.

Strategy Extent

Jobs-housing balance is typically measured within a 6 to 10-mile radius around people's place of residence. Strategies to improve balance require metropolitan-level interventions to broadly change the balance. These changes happen through zoning amendments and large investments in housing

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production near employment centers and, therefore, take time and resources.

Strategy Synergy

Jobs-housing balance benefits from diversified land use. The presence of nearby retail, for example, strengthens the effects of balance. The location of jobs within a region or city can greatly enhance the effect of jobs-housing balance by improving the viability of commuting by transit and reducing commute distances. Teleworking is another potential synergistic strategy that needs further research in relation to how it affects balance (e.g., how do hybrid positions count?).

Equity Effects

People who suffer inequalities from lower wages generally benefit from greater jobs-housing balance, but the potential for this has been eroding in states like California, where housing costs have pushed many to live in locations farther from job centers and transit. In addition, the looser association between the jobs-housing balance and commuting distance for higher-income households means that the pollution and congestion burden of excess commuting falls disproportionately on communities adjacent to highways.

Strategy Description

Jobs-housing balance, as a transportation policy tool, is premised on the idea that when residence and work locations are closer together, people's travel distance to and from work will be reduced. Jobs-housing balance is often measured by the ratio of the number of jobs divided by either the number of employed residents, persons, or houses in a geographic area. Importantly, the balance affects the ease of access to jobs and the cost of housing. An area where jobs vastly outnumber housing will require people to commute from farther away and make housing in the vicinity expensive. This has shifted the research focus to the fit between housing costs and the wages local jobs pay (Benner & Karner, 2016). As such, the concept of jobs-housing balance has become more sensitive to the local context and emphasizes an equitable balance that does not disproportionately burden lower-wage workers by limiting their housing choices and creating for them longer, more expensive commutes. Several additional factors make the choice of jobs-housing balance measure difficult, including those listed below.

- The appropriate size of the geographic area, or "commute-shed," over which balance is measured requires judgment. Areas that are too small will be out of balance even if commutes are short, while large areas (for example metropolitan areas) can be in balance even if persons commute long distances.
- A focus on spatial proximity ignores the influence of access to transit or traffic congestion on commute time. Spatially separated jobs and houses in uncongested locations or with efficient transit links could potentially allow faster commutes than shorter job-residence distances in more congested locations (see Sultana, 2002).
- The idea of balance, in its simplest form, ignores factors such as school quality and other amenities, which may influence a person's decision to live distant from their nearest job opportunity (Giuliano & Small, 1993). From a VMT reduction perspective, this creates difficulties as increasing overall balance may have little effect on the people who drive the most, who also tend to be more affluent households with the greatest housing choice.
- The relationship between jobs-housing balance and commuting is non-linear. Deviations from the balance in either direction (i.e., toward a job or housing

dominance) are likely to be associated with more driving.

Strategy Effects

Behavioral Effect Size

The literature on jobs-housing balance spans several decades and was most active in the 1990s and early 2000s. The 2014 version of this brief reported a range of effects from insignificant to a 0.29-0.35% decline in VMT associated with a 1% increase in the jobs-housing ratio. Statistically significant results converged on the 0.29-0.35% reduction despite using various methods and outcomes (e.g., commute-related VMT as opposed to overall VMT).

Table 1 includes recent studies that have directly investigated the jobs-housing ratio in the US context. The study by Cervero and Duncan (2006) is included as a link to earlier work. Lee and Lee (2020) find that a 1% increase in the average jobs-housing ratio is associated with a 0.17 to 0.26% reduction in VMT. Lee and Lee (2020) use annual household VMT and a multilevel model for their analysis. The decline in VMT is the result of an increase in the urbanized area's average jobs-housing ratio measured within 10 miles of individuals' residential locations. Blumenberg and Siddiq (2023) found that a one standard deviation increase in the jobs-housing fit was associated with a 9% decrease in commute distance. They define jobs-housing fit as the balance between lower-wage jobs and housing affordable to workers in those jobs. Bai et al. (2020), while not examining VMT directly, found that a one-unit change in the jobs-housing ratio within 7 miles of the residential location decreased the super commuting (commutes longer than 90 minutes one way) rate by 0.083 percentage points (from an average rate of 3.39%). Mitra and Saphores (2019) similarly find a small decrease in very long commutes associated with greater jobs-housing balance but find a greater effect from housing affordability, suggesting that fit is more impactful.

The 2014 brief reported that some studies found no significance between the jobs-housing ratio and VMT, a result that has persisted. A meta-analysis (including only four studies focused on job-housing balance) found no significant effect on VMT (Ewing & Cervero, 2010). Islam and Saphores (2022) find no significant effect of the jobs-housing ratio on VMT (measured at the census tract scale) when measured at the residential location but find a small increase (0.6%) in VMT for a one-unit increase in the ratio at the workplace location.

Since the 2000s, there has been a significant decline in US-based research linking the jobs-housing ratio to VMT (see Technical & Background information for a brief overview of international research). Research has shifted to using alternative measures to the jobs-housing ratio. Excess commuting compares actual travel distances, averaged or summed for a city or metropolitan area, to the minimum travel distance required if all residents worked in the nearest available job. The minimum travel distance is, in effect, a measure of jobs-housing balance in that a balanced environment would lead to short commutes for all workers. Self-containment generally refers to the share of people who live and work in the same area (with the area varying in scale). This measure is more useful for studies focusing on politically meaningful units of analysis like cities.

The studies in Table 2 show results for each of the alternative measures. The study by Schleith et al. (2016) uses a measure of excess commuting for different age, income, and industry groups. They find that lower-income and younger workers have the greatest job-housing balance as measured by the minimum commute distance. In contrast, the higher-income workers not only have a minimum commute distance of 12% to 35% higher than the metropolitan average but also have an excess commute of 0 to 10% higher than the

average. Blumenberg and King (2021) find little evidence of a link between jobs-housing balance and self-containment, but find that high housing cost significantly decreases self-containment, a relationship that has worsened over time. Stoker and Ewing (2014), also using a measure of self-containment, find that a 1% increase in jobs-housing balance was associated with a 0.3% increase in internal capture (workers staying within jurisdictional boundaries).

Co-Benefits

Jobs-housing balance has specific benefits that other built environment variables are less likely to capture. Even without significant reductions in VMT, the co-location of housing and employment can greatly expand the job choices people have, especially for lower-income households if the balance makes more affordable housing available in job-rich areas (Levine, 1998). An important related question is whether improving the jobs-housing balance at a larger scale improves the supply of affordable housing in cities where high-wage industries dominate and that have accumulated large housing deficits, as in much of California (Rodríguez-Pose & Storper, 2020). Policies advancing jobs-housing fit, on the other hand, may have a clearer effect on housing security, quality, and access to opportunities (Benner & Kaner, 2016).

Extent

Scale of application: The scale at which jobs-housing balance is measured varies across studies, but most researchers agree that it should reflect the scale of the typical commute shed (generally between 6 and 10 miles around residential locations). However, the literature on jobs-housing fit emphasizes the metropolitan scale because a focus on commute sheds may neglect the macro factors that affect affordability (Benner & Karner, 2016). The relevant scale must reflect average balance (as in Lee & Lee, 2020) and for whom there is balance. A jurisdiction can look balanced but generate high VMT if it concentrates jobs in industries where the wages do not enable workers to live in the same jurisdiction (Blumenberg & King, 2022).

Efficiency: Changes to the jobs-housing balance can happen as part of urban development. The decentralization of jobs, for example, can improve the balance nearer the urban frontier. However, imbalance coupled with longer driving (in terms of time and distance) happens primarily in large highly urbanized regions and, in California, is associated with a high ratio of jobs to housing. Rectifying this imbalance would involve substantial changes to land use planning to curb trends toward worsening balance associated with residential developments happening at and beyond the urban frontier (e.g., high growth at the northern edge of Los Angeles County or in San Joaquin County) (Schleith el al., 2016) paired with investments in housing to reverse exclusionary housing *practices* (Blumenberg & Siddiq, 2023). While the scale of the imbalance in some metropolitan areas (e.g., San Jose) is high and the cost of development can limit the number of developments, strategies such as upzoning and rezoning underutilized locations to residential uses, streamlining affordable housing development, and incentives for transportation oriented development can significantly bolster investments (Boarnet et al., 2023).

More efficient and piecemeal approaches include programs to incentivize workplace and worker relocations to improve the balance (Lee, 2012). If the effect of the balance is calculated based on commuting time, infrastructure investments can also lead to significant improvements (Levinson et al., 2017).

Time: There is a fundamental limit on how fast the jobs-housing balance can be rectified because much of it depends on the regional growth rate. Fast-growing regions have opportunities to significantly affect the balance

through planning and opportunities for investment, especially if coordinated at the regional and megaregional scales. The effect of remote work on the jobs-housing balance is an emerging research question and, depending on how one treats telework, may become a tool to rapidly change the balance (Li et al., 2023; see also telecommuting brief).

Locational characteristics: Jobs-housing ratios vary substantially within metropolitan areas, but the localized balance itself may say little about the relationship to travel without more information on the match between residents and types of jobs and the relative location of jobs within the region. Hu and Schneider (2017) show that the location of jobs within different industries affects how far people travel and the mode they choose.

Differences between regions: There is significant variation across regions based on urban form. Sprawling, low-density regions, particularly in the US South, have lower jobs-housing balance as measured by minimum commute distance (Schleith et al., 2016). Long et al. (2022), while they do not examine driving distance directly, find that geographic barriers, such as bays, displace commute flows and create spillover making other areas more congested.

Equity

Lower-income workers generally benefit from greater jobs-housing balance than higher-income workers, but the balance deteriorated for all workers between 2003 and 2013 (Schleith, 2016). Jobs-housing balance is not a guarantee of high accessibility to jobs, especially in a specialized economy such as that of the San Francisco Bay Area where the high concentration of technology jobs means many people may find few jobs fitting their skills locally. The lack of jobs-housing fit in combination with high wage inequality and high housing cost can lead to longer commutes. Blumenberg and Siddiq find that in Los Angeles a one standard deviation increase in jobs-housing fit is associated with a 20% increase in commute distance. The increase, while from a lower level, has a disproportionate effect on lower-income workers for whom time spent traveling is relatively more costly. Analysis of distance and time shows that despite shorter commutes, lower-income households spend more time traveling (Islam and Saphores, 2022).

Improving the jobs-housing balance can quickly lead to gentrification and displacement. For example, large-scale housing developments in job-rich central cities have often been to the detriment of lower-rent housing and, in the absence of strong protections for existing residents and the affordable housing stock, can lead to displacement. These developments rarely benefit local residents through reduced congestion and pollution because people who work in central cities tend to commute longer distances (Islam & Saphores, 2022). Without consideration for fit, the dispersion of jobs can worsen accessibility for lower-wage workers and lead to greater reliance on car travel.

Teleworking is another strategy through which the job-housing balance can improve. The high rate of remote work in California means that the burden of excess commuting is falling more inequitably on lower-wage workers who work almost exclusively in industries with low remote work rates (Dingel & Neiman, 2022). Zhang et al. (2021), based on data from Shanghai, show that commute frequency is a critical factor in assessing not just commuting efficiency (commuting distance and time), but also commuting equity (commuting cost). The bifurcation of the economy between high-wage, low-commuting jobs, and low-wage, high-commuting jobs (or driving-based jobs, such as ride-hail drivers) risks greatly exacerbating the inequities associated with driving costs.

The indirect effect of poor jobs-housing balance is that it worsens congestion and increases the number of long commutes that lead to congestion on freeways. Lower job-housing ratios, for example, are associated with higher

rates of super commuting (Bai et al., 2022). While the burden of super commuting does not fall disproportionately on lower-wage commuters, the lack of housing has lengthened the average commute for many low-wage workers (Wander & Blumenberg, 2024). Longer commutes can worsen congestion and pollution on highways that often pass through historically marginalized communities. Vehicles that congestion slows down can emit up to 80% more than if they were moving at flow speed (Xu et al., 2024) and the burden of increased pollution falls disproportionately on residents (Nardone et al., 2020). Greater congestion also means that commute time increases. Despite having shorter commutes by distance, lower-income people rely more on transit and are more likely to commute from highly congested areas, resulting in spending more time commuting.

While jobs-housing fit has begun to integrate measures of job quality (as measured by wages), there is a lack of research on fit that goes beyond housing affordability conditional on wages. Neighborhoods that were historically marginalized through redlining, infrastructure development, and housing renewal tend to have low jobs-housing balance (e.g., South Los Angeles, [Blumenberg & Siddiq, 2023]).

Synergy

Jobs-housing balance is an important part of the broader set of built environment factors affecting how much people drive (see other briefs on the built environment). Retail-housing balance, the ratio of retail locations to residents, has a smaller impact but can further reduce VMT (Duncan & Cervero, 2006, estimate an elasticity of -0.17). The location of jobs is another important factor in that, for the same jobs-housing balance, *where* certain jobs are concentrated may affect how people travel to jobs. Hu and Schneider (2017), for example, show that the location of jobs in centralized locations matters more for mode choice than income.

Confidence

Evidence Quality

The persistent lack of consistent evidence regarding the relationship between jobs-housing balance and VMT reflects important methodological issues. The indeterminacy of the scale at which the jobs-housing ratio should be measured has undermined research on the topic and prompted a shift to excess commuting as a scale-independent measure. However, excess commuting measures based on aggregate data cannot easily match workers and jobs and rely on certain assumptions that may distort the results (Kuehnel et al., 2023).

Much of the US-based research relies on the Longitudinal Employer-Household Dynamics data, which has several issues pertinent to measuring VMT and job locations (Wander & Blumenberg, 2024). Those issues have been well documented and assessed and do not pose a critical issue for research at the scale of the metropolitan area (the case for all cited studies in this brief).

Cutting-edge research relevant to jobs-housing balance has largely taken place in China and, to a lesser extent, in Europe based on individual-level mobile phone data and large-scale administrative data that allow for fine-grained spatial matching and scale definition (see Technical & Background Information section). These data are rarely available to researchers in the United States, but there are opportunities to replicate and validate the methods developed since 2020 in the US context.

Caveats

The job housing balance is most relevant to commuting behavior, which typically accounts for no more than 30% of all VMT (Bricka et al., 2022). Researchers have expressed skepticism about the potential of the balance to meaningfully reduce VMT because households prioritize accessibility differently in choosing where to live (or choose to stay put despite

changing jobs to a farther location, see Ma et al., 2025) and commuting may not be the most important factor (Giuliano & Small, 1993), and more comprehensive measures of the built environment like land use diversity are often better indicators of the potential to reduce VMT (Duncan and Cervero, 1996).

One of the major limitations of the jobs-housing balance framework is that it generalizes poorly. For example, researchers have long argued that the standard for what constitutes a balanced system should be context-specific (Stoker & Ewing, 2014). Areas of high concentration of employment are beneficial to transit usage (where high-quality transit is available) despite skewing the balance for surrounding areas and the city within which large employment centers are located (Hu & Schneider, 2017; Islam & Saphores, 2022).

Technical & Background Information

Study Selection

Only studies based on United States data were included, with a focus on California specifically. While international studies provide sophisticated methodological innovations, jobs-housing balance is context-specific, and cases like Shenzhen differ from the California context in important ways. However, the methods employed in the studies summarized in Table 3 provide insights into possible relationships between different measures of jobs-housing balance and travel demand. The greatest source of innovation comes from disaggregation to the individual level and the use of cell phone-derived data. The measures of jobs-housing balance have stayed largely the same, with greater emphasis on the excess commuting approach.

In addition to a focus on US studies, we also selected studies that were broad in their scope. Some of the more recent analyses of jobs-housing balance have focused on demographic subgroups (younger or older people, see Blumenberg & King, 2024 and Horner et al., 2015) or specific conditions (Great Recession, see Kim & Horner, 2021). These studies have important implications for questions of equity and planning. They shed light on how different groups navigate the evolving urban landscape (for example how much younger people who may struggle to afford housing and transportation commute) and how events like times of high unemployment during the Great Recession or, more recently, the COVID-19 pandemic, affected jobs-housing balance and commuting in the short term. However, the narrower scope of these studies limit their applicability to understanding the overall relationship between jobs-housing balance and VMT.

We included studies using a variety of methods going beyond elasticity estimates because there has been a shift away from using jobs-housing ratio as a measure and as an independent, explanatory variable. The increasing use of methods based on minimum and excess commuting has expanded the set of questions researchers are considering but decreased interest in uncovering a relationship between the jobs-housing ratio and VMT.

Methodological Considerations

The primary methodological considerations regarding the jobs-housing balance are the scale at which it is studied and the measure of balance. Researchers have moved away from using a straight jobs-housing ratio, opting instead to use industry-disaggregated ratios (e.g., Ling et al., 2024) and excess commuting frameworks (see Kuehnel et al., 2023). Regardless of the measure employed, research shows that disaggregation makes a substantial difference in effect size whether measuring the magnitude of excess commuting or how the effect of the jobs-housing ratio varies across industries, locations, and other attributes. In short, it has become clear that the jobs-housing ratio is not only context-dependent but

also depends on sub-locations (it can vary within the same region and depending on the geography of the region, e.g., Long et al., 2023), is industry-specific, and is even time-of-day dependent (e.g., Cui et al., 2023).

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Table 1. Jobs-Housing Balance and Fit and VMT

Study	Study Location	Study Year(s) and data	Focal variable	Result
Cervero and Duncan (2006)	San Francisco Bay Area	2000 travel diary data	1% increase in the number of total jobs within 4 miles of one's residence	0.299% reduction in commute VMT
			1% increase in the number of jobs in the same occupational category within 4 miles of one's residence	0.329% reduction in commute VMT
Lee and Lee (2020)	National	2009 travel survey data	1% change in urbanized area average jobs-housing balance within a 10-mile buffer of every census tract	0.171 to 0.262% reduction in VMT
Blumenberg and Siddiq (2022)	Los Angeles Metro	Census Longitudinal Employer-Household Dynamics (LEHD) 2015	A one standard deviation increase in jobs-housing fit (ratio of affordable housing to low- or medium-wage jobs)	9% decrease in commute distance
Islam and Saphores (2022)	Los Angeles County	2012 Travel diary	One unit change in jobs-housing ratio at the workplace	0.6% increase in travel distance
Cervero and Ewing (2010)	Meta-analysis	Multiple years	Weighted average of four studies including measures of jobs-housing ratio	No significant association
Bai et al. (2020)	Puget Sound Area	2012-2016 Census Transportation Traveling Package	One unit change in the jobs-housing ratio within a 7-mile radius	0.083% decrease in the supercommuting rate

Table 2. Studies of jobs-housing balance using alternative metrics

Study	Study Location	Study Year(s) and data	Result
Schleith et al. (2016)	26 metro areas	Census Longitudinal Employer-Household Dynamics (LEHD), 2003-2013	● Younger and lower-income workers have the greatest jobs-housing balance as measured by minimum commute distance ● Minimum commute distance for higher income workers is 12% to 35% longer than the average. ● Only lower-income workers have consistently lower excess commute distances, 0% to 14% lower than the average. Higher-income workers' excess commute is 0% to 10% longer than the average.
Blumenberg and King (2022)	California cities	Census Longitudinal Employer-Household Dynamics (LEHD), 2015	Insignificant to small association between jobs-housing balance and self-containment (ratio of work trips within city boundaries to outgoing trips)
Stoker and Ewing (2014)	National	2000 Census Transportation Travelling Package	1% increase in the job-worker balance associated with a 0.312% increase in internal capture, 0.236% in multilevel model

Table 3. International studies of jobs-housing balance

Study	Study Location	Study Year(s) and data	Focal variable	Result
Cui et al., 2023	Shenzhen, China	2019 administrative and cell phone-derived data	One unit change in the jobs-employee ratio of the transportation analysis zone (TAZ)	0.07 to 0.83 kg decrease in road segment carbon emissions in a TAZ
Kuehnel et al., 2023	Munich Metro Area, Germany	2017 national household travel survey and simulation	Change from observed excess commute to optimized micro-simulated minimum commute distance	Increase in active transportation from 19% of all trips to 64% of all trips
Ling et al., 2024	Shenzhen, China	Cell phone-derived location-based data from 2017 to 2021	One unit change in jobs-housing ratio disaggregated by industry	Insignificant effect overall with some industries seeing a large decrease in driving.
Zhang et al., 2023	Hong Kong	2011 Hong Kong Travel Characteristics Survey	One percentage point increase in the share of residents living in a jobs-poor tertiary planning unit	40.5 odds ratio a resident will belong to a grouping of people who travel extensively
Zhou et al., 2022	Shenzhen, China	2019 cell phone derived location data	One unit change in the share of commercial and industrial floor area	0.3% to 0.55% increase in self-containment. Greater self-containment for industrial activity in the suburbs.