

Commute Equity: An Examination of Bay Area Trends

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Background

- It is common to look at commuting patterns within a metropolitan area from either an economic or environmental perspective, and ask questions like:
 - Is our transportation system efficient?
 - Where are the future capacity bottlenecks as the region grows?
 - Is its environmental burden too great?
- This research looks at Bay Area commuting patterns from a third policy dimension, equity. It asks questions like:
 - Does the transportation system place an equitable burden on different income groups?
 - What causes equity or inequity in commuting?
 - How could we redress inequities if we wanted to?

City-to-City Commute Data is available every 10 years from the Census

To Place	From Place	Total
Alameda	Alameda	9,145
Alameda	Oakland	3,665
Alameda	San Francisco	980
Alameda	San Leandro	840
Alameda	Fremont	635
Alameda	Hayward	610
Alameda	Castro Valley	570
Alameda	Berkeley	565
Alameda	Richmond	370
Alameda	San Jose	335
Alameda	Livermore	290
Alameda	Concord	280
Alameda	Pleasanton	275
Alameda	Antioch	250
Alameda	San Ramon	230
Alameda	San Lorenzo	220
Alameda	Union City	205
Alameda	Walnut Creek	200
Alameda	Ashland	175
Alameda	Danville	170
Alameda	Vallejo	170
Alameda	Dublin	170
Alameda	Newark	135
Alameda	El Cerrito	120
Alameda	Albany	115
Alameda	Novato	115

In 2000, 3,665 workers commuted from Oakland to Alameda



This data also breaks down commute flows by income

To Place	From Place	Total	< \$15,000	\$15,000 - \$30,000	\$30,000- \$40,000	\$40,000- \$50,000	\$50,000- \$60,000	\$60,000- \$75,000	\$75,000- \$100,000	\$100,000+
Alameda	Alameda	9,145	420	950	765	660	940	980	1,580	2,850
Alameda	Oakland	3,665	235	490	390	415	340	520	405	865
Alameda	San Francisco	980	20	75	20	40	85	95	145	495
Alameda	San Leandro	840	4	85	120	85	130	115	125	175
Alameda	Fremont	635	10	35	50	20	45	70	140	270
Alameda	Hayward	610	4	50	55	55	45	75	195	130
Alameda	Castro Valley	570	15	15	35	30	55	100	115	205
Alameda	Berkeley	565	40	15	50	55	55	40	65	245

865 of those 3,665 workers earned over \$100,000

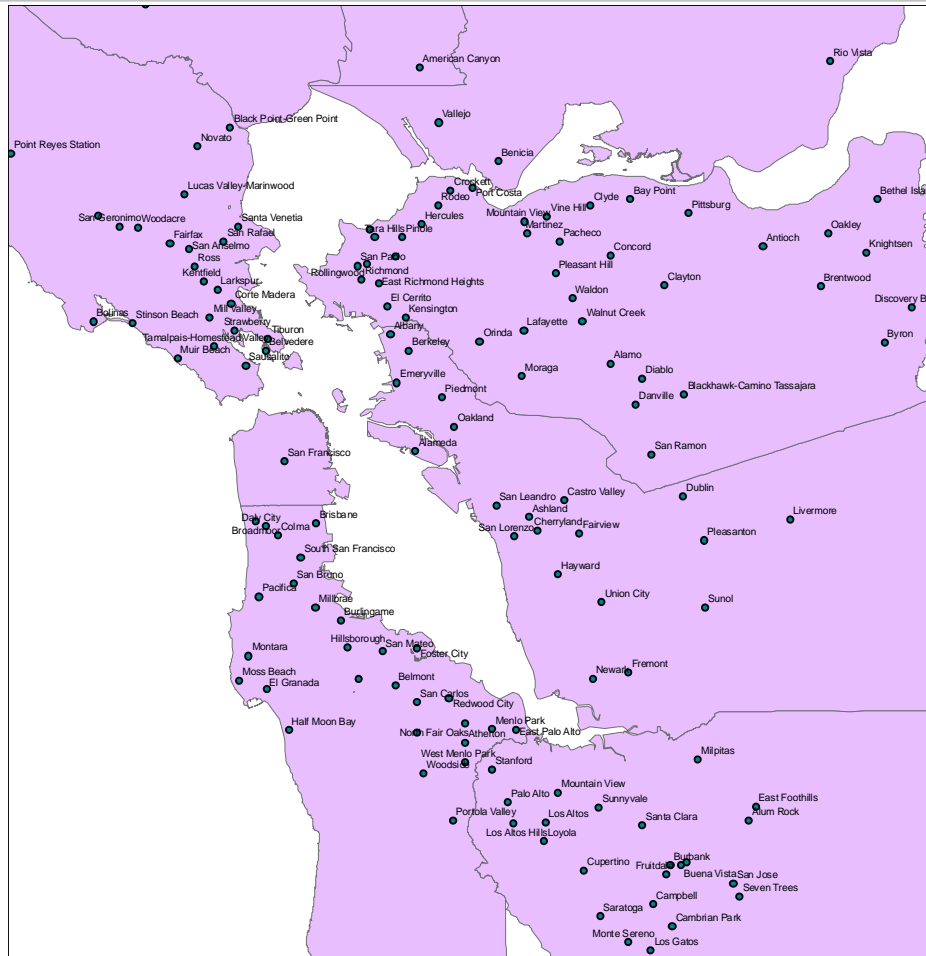


So we know where each city's workers come from, by income category

To Place	From Place	Total	< \$15,000	\$15,000 - \$30,000	\$30,000- \$40,000	\$40,000- \$50,000	\$50,000- \$60,000	\$60,000- \$75,000	\$75,000- \$100,000	\$100,000+
Alameda	Alameda	40%	48%	47%	40%	39%	44%	37%	38%	38%
Alameda	Oakland	16%	27%	24%	21%	24%	16%	20%	10%	11%
Alameda	San Francisco	4%	2%	4%	1%	2%	4%	4%	4%	7%
Alameda	San Leandro	4%	0%	4%	6%	5%	6%	4%	3%	2%
Alameda	Fremont	3%	1%	2%	3%	1%	2%	3%	3%	4%
Alameda	Hayward	3%	0%	2%	3%	3%	2%	3%	5%	2%
Alameda	Castro Valley	2%	2%	1%	2%	2%	3%	4%	3%	3%
Alameda	Berkeley	2%	5%	1%	3%	3%	3%	2%	2%	3%

Equaling 11% of all \$100,000+ workers who worked in Alameda.

From a GIS, we can get the average distance from one city to another



And we can estimate the average length of a commute *within* a city based on its area.

To Place	From Place	Distance in miles
Alameda	Alameda	2.3
Alameda	Oakland	3.4
Alameda	San Francisco	9.6
Alameda	San Leandro	7.2
Alameda	Fremont	22.6
Alameda	Hayward	13.9
Alameda	Castro Valley	11.6
Alameda	Berkeley	7.4

Distance from Oakland to Alameda is 3.4 miles on average.

Multiplying the two and summing gets a average commute length by income

To Place	From Place	Distance in miles	To Place	From Place	Total	< \$15,000	\$15,000 - \$30,000	\$30,000 - \$40,000	\$40,000 - \$50,000	\$50,000 - \$60,000	\$60,000 - \$75,000	\$75,000 - \$100,000	\$100,000 +
Alameda	Alameda	2.3	Alameda	Alameda	40%	48%	47%	40%	39%	44%	37%	38%	38%
Alameda	Oakland	3.4	Alameda	Oakland	16%	27%	24%	21%	24%	16%	20%	10%	11%
Alameda	San Francisco	9.6	Alameda	San Francis	4%	2%	4%	1%	2%	4%	4%	4%	7%
Alameda	San Leandro	7.2	Alameda	San Leandr	4%	0%	4%	6%	5%	6%	4%	3%	2%
Alameda	Fremont	22.6	Alameda	Fremont	3%	1%	2%	3%	1%	2%	3%	3%	4%
Alameda	Hayward	13.9	Alameda	Hayward	3%	0%	2%	3%	3%	2%	3%	5%	2%
Alameda	Castro Valley	11.6	Alameda	Castro Valle	2%	2%	1%	2%	2%	3%	4%	3%	3%
Alameda	Berkeley	7.4	Alameda	Berkeley	2%	5%	1%	3%	3%	3%	2%	2%	3%

X

Average one-way commute length, in miles

To Place	Total	< \$15,000	\$15,000 - \$30,000	\$30,000 - \$40,000	\$40,000 - \$50,000	\$50,000 - \$60,000	\$60,000 - \$75,000	\$75,000 - \$100,000	\$100,000+
Alameda	8.9	6.0	6.6	7.6	7.4	8.0	8.5	10.3	10.0
Alamo	7.8	12.6	10.0	9.2	10.5	9.5	8.5	7.9	6.3
Albany	6.5	5.1	6.8	4.0	7.1	5.2	6.6	6.5	7.2
Alum Rock	3.7	2.3	2.7	3.9	3.4	2.2	2.3	5.5	3.6
American Canyon	6.5	7.5	6.3	6.3	5.8	9.3	5.6	6.7	6.9
Angwin	5.5	1.6	6.4	5.9	3.3	1.6	1.6	9.3	5.3
Antioch	7.0	7.8	7.0	6.8	7.1	6.2	7.5	6.5	7.3
Ashland	6.0	5.5	4.5	5.1	5.0	5.9	7.1	5.4	7.0
Atherton	7.3	8.0	8.4	10.3	8.5	10.1	7.1	6.2	6.9
Bay Point	5.9	4.2	3.7	5.3	5.3	8.7	5.5	6.3	6.8

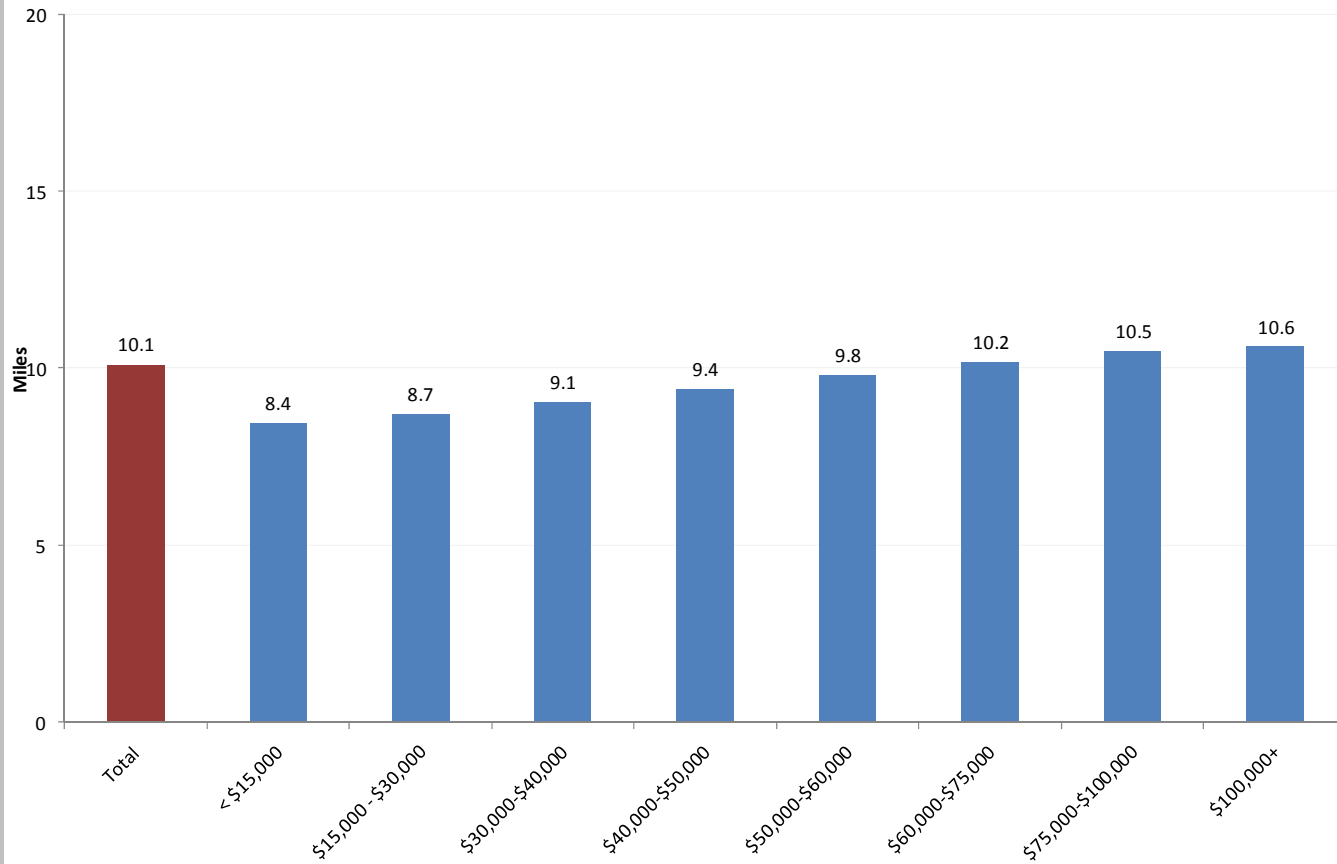
Across all places of residence, the average commute length for a \$100,000 worker in Alameda is 10 miles

Lots of complicating factors are ignored

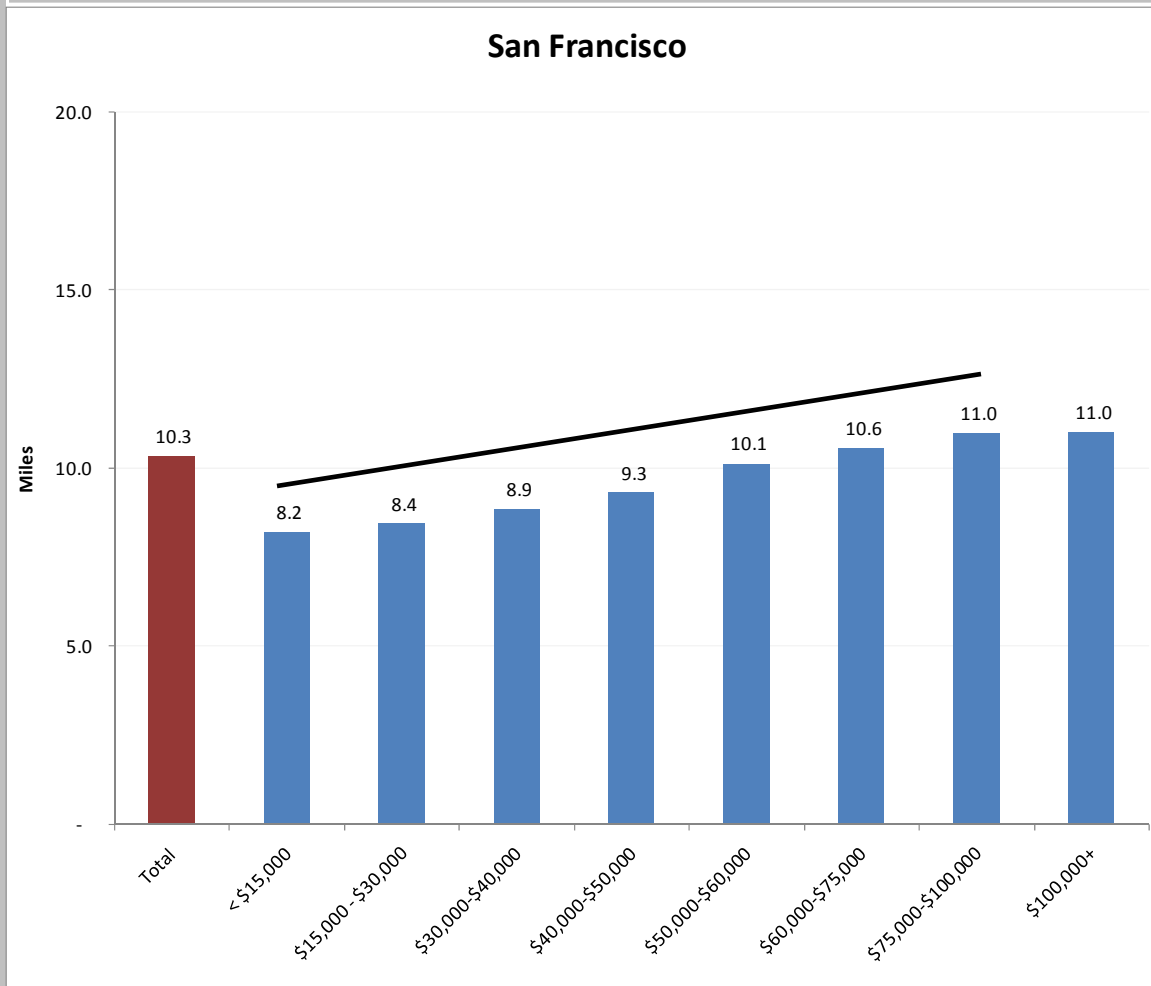
- Straight-line vs. route distance.
- Means of transportation: transit or autos.
- Other variable costs of moving a given distance, including:
 - Congestion
 - Tolls
 - Cost-sharing, e.g. carpooling
- These complications mean we are probably understating the actual differences in time- and dollar-costs of commuting experienced by different income groups.

The Region-Wide Picture

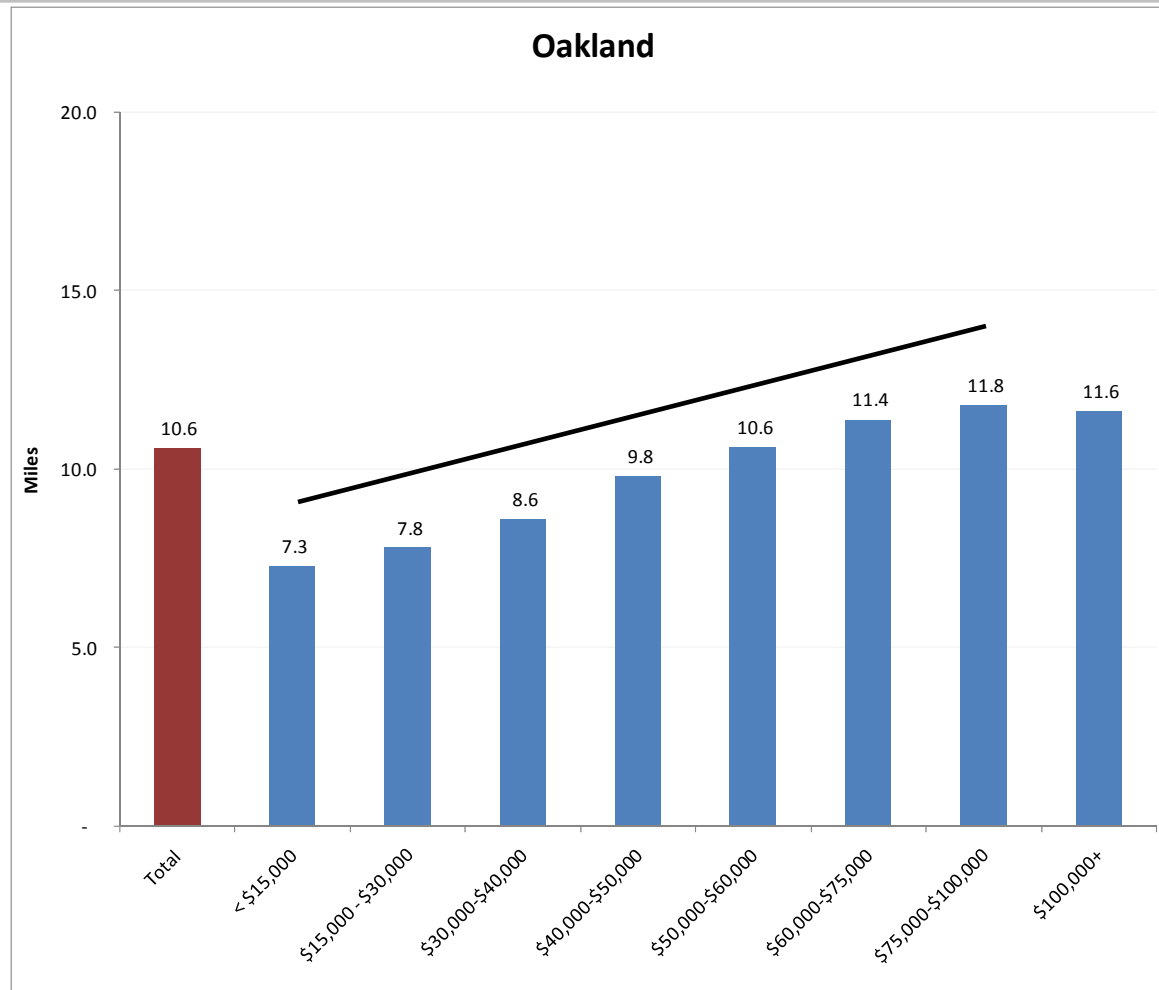
Average One-Way Commute Distance by Income Category:
Bay Area, 2000



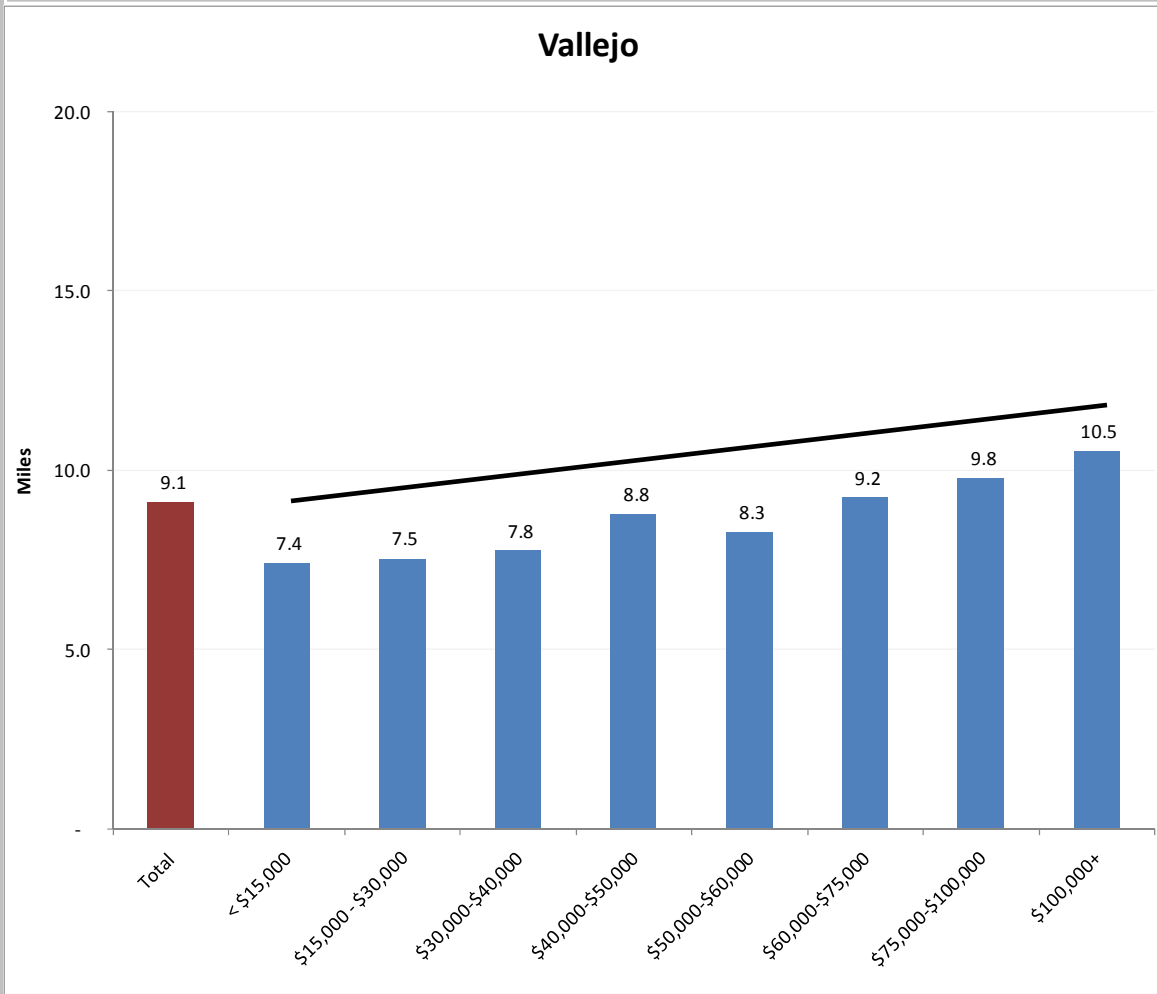
At the City Level, Three Stories Emerge: 1. Older Core Cities like San Francisco



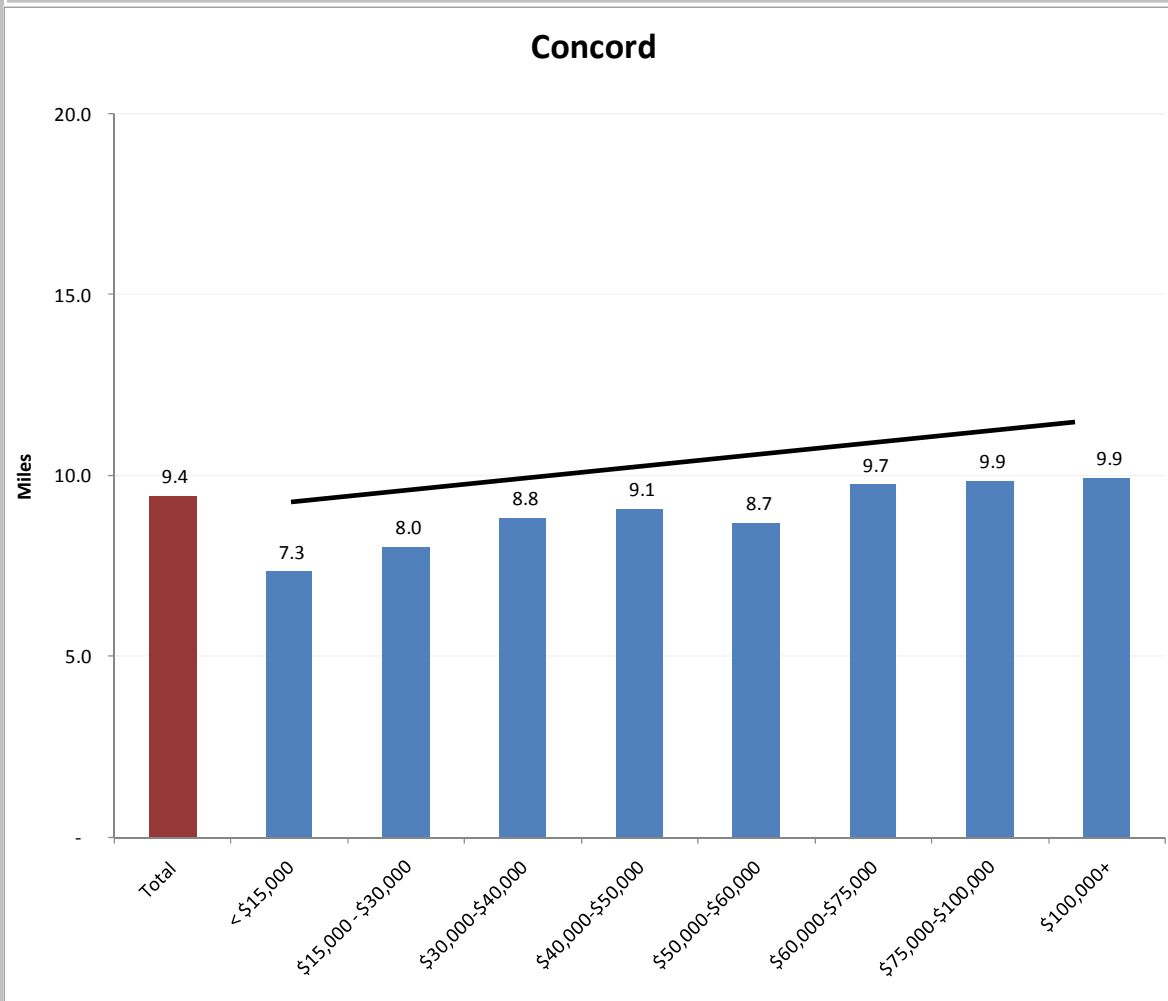
Oakland



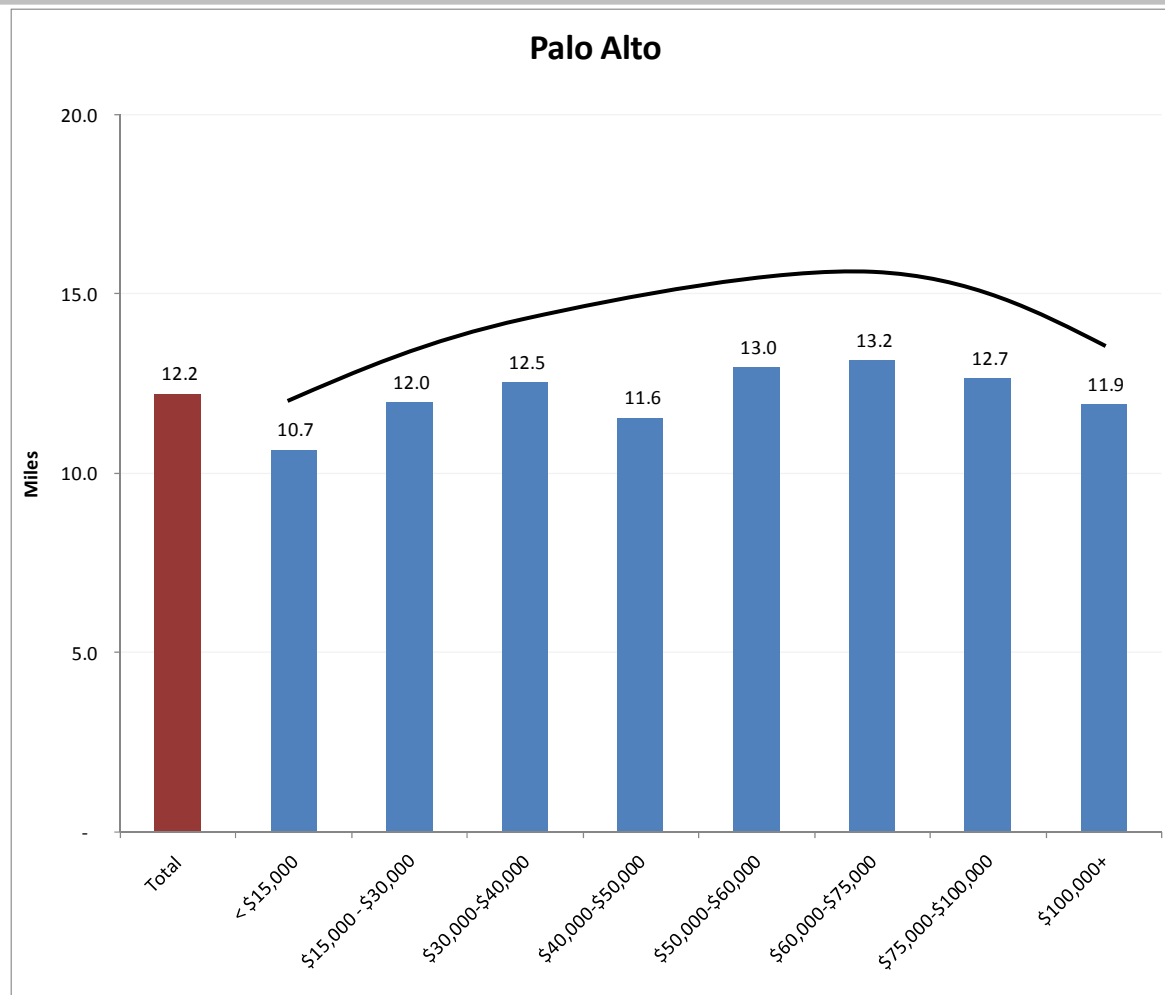
Vallejo



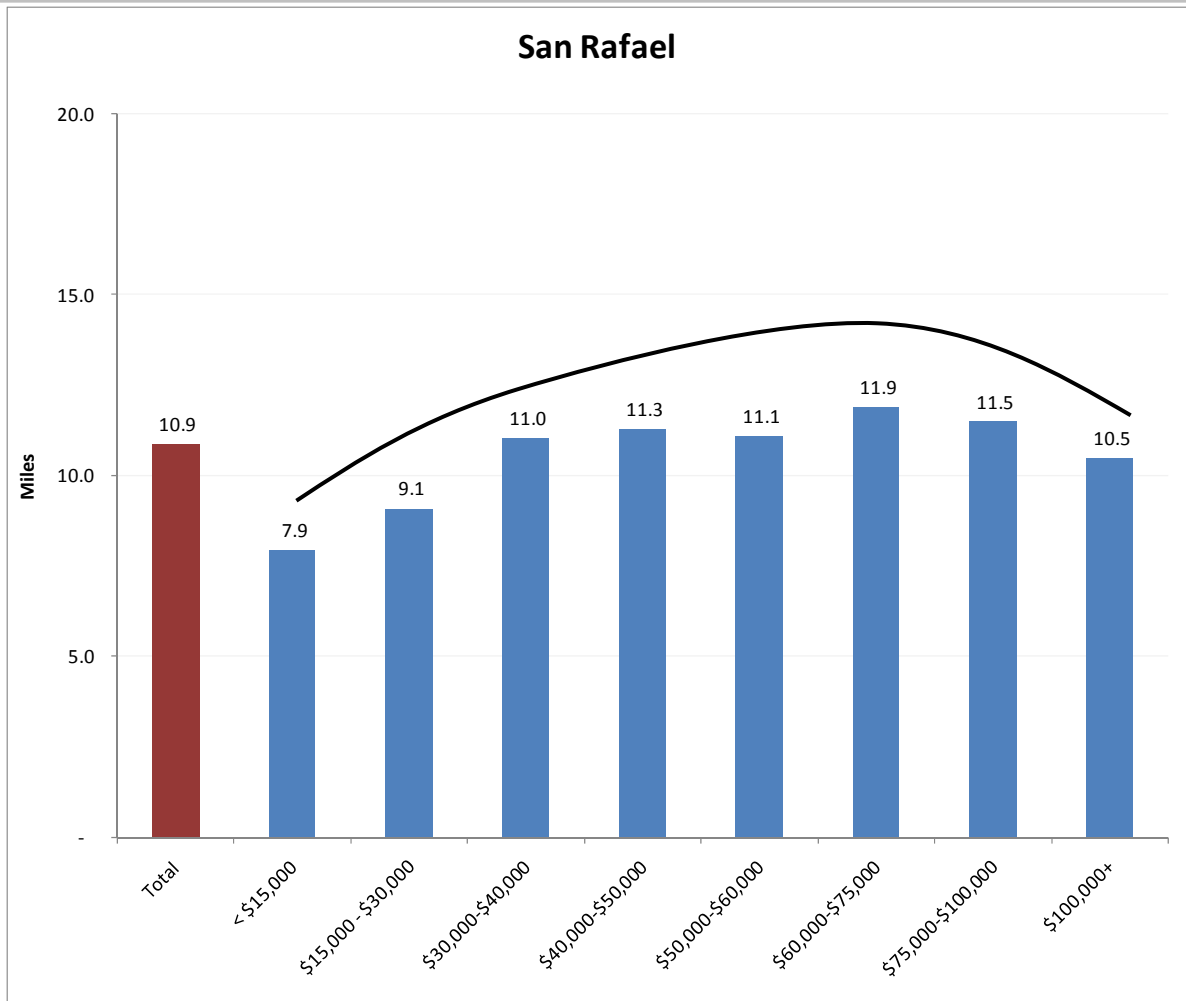
Concord



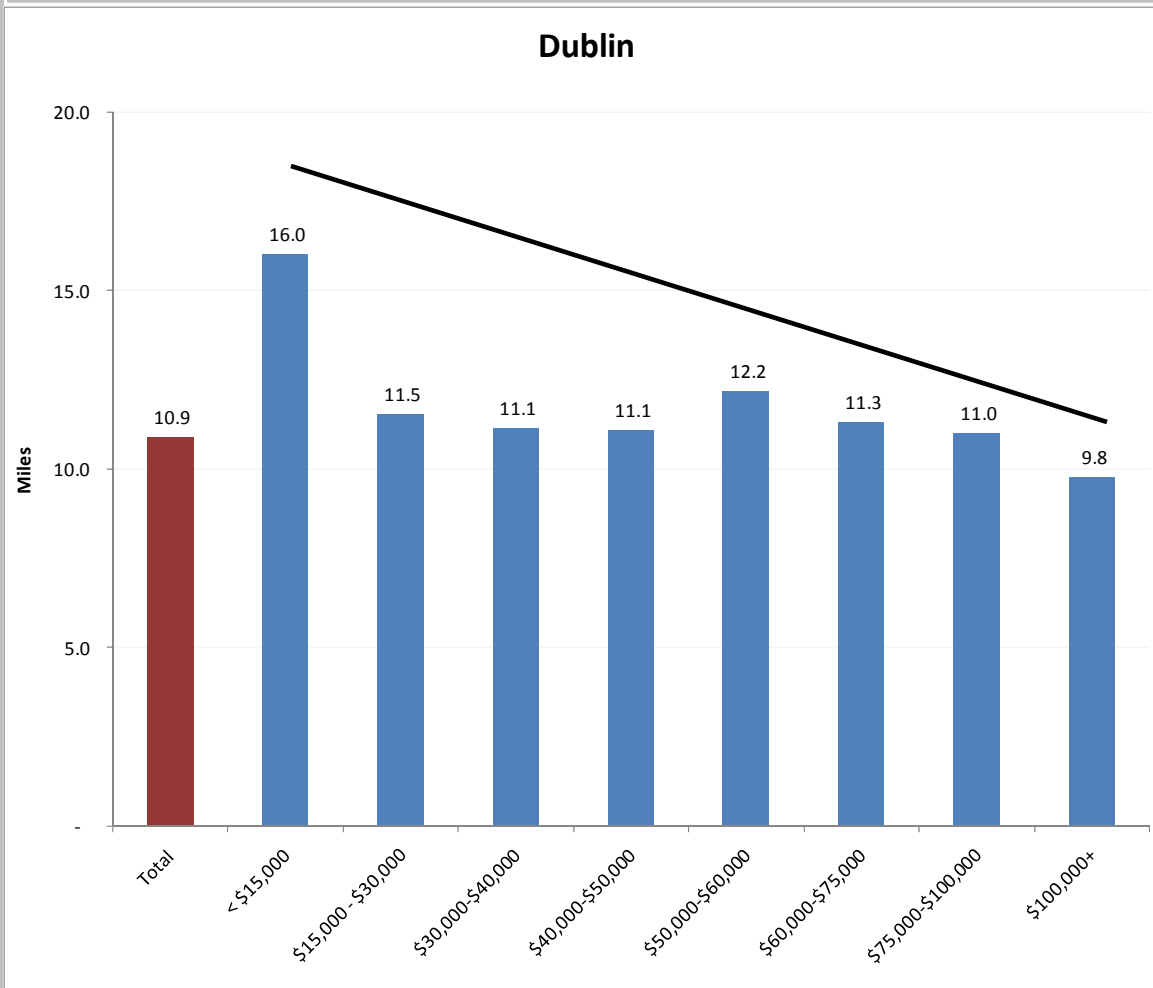
2. Suburban Centers of the 1960s and 1970s, like Palo Alto



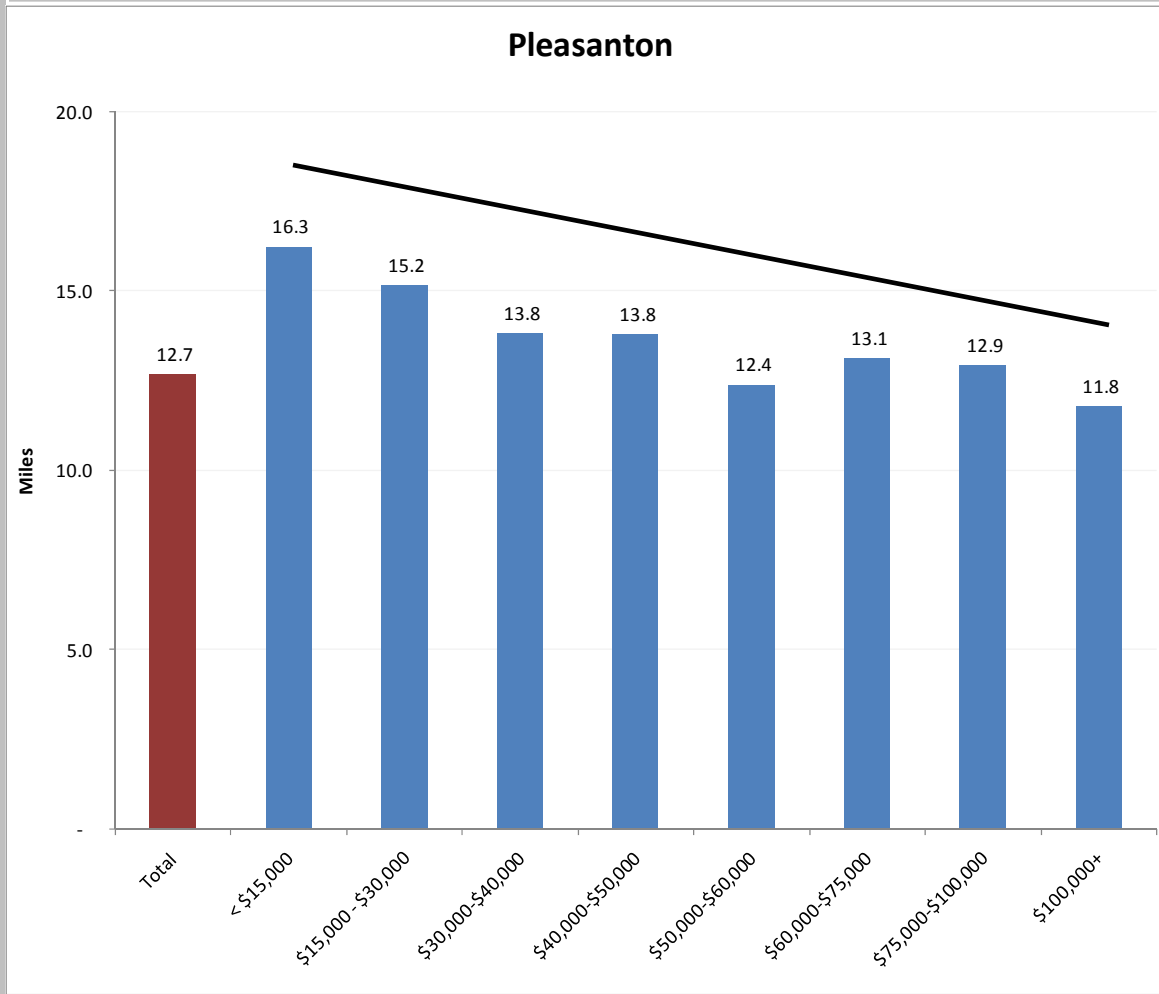
San Rafael



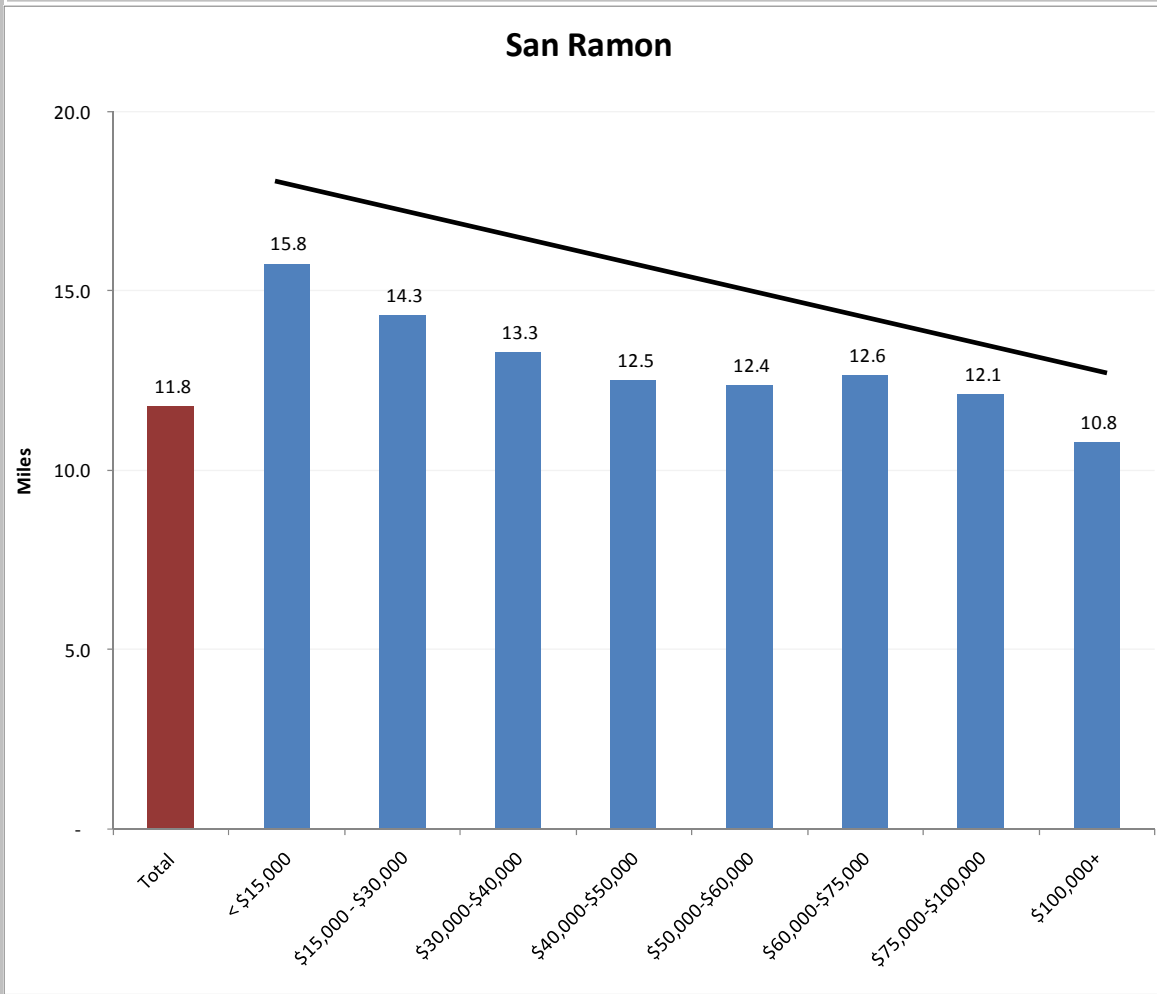
3. Emerging Employment Centers of the 1990s and beyond



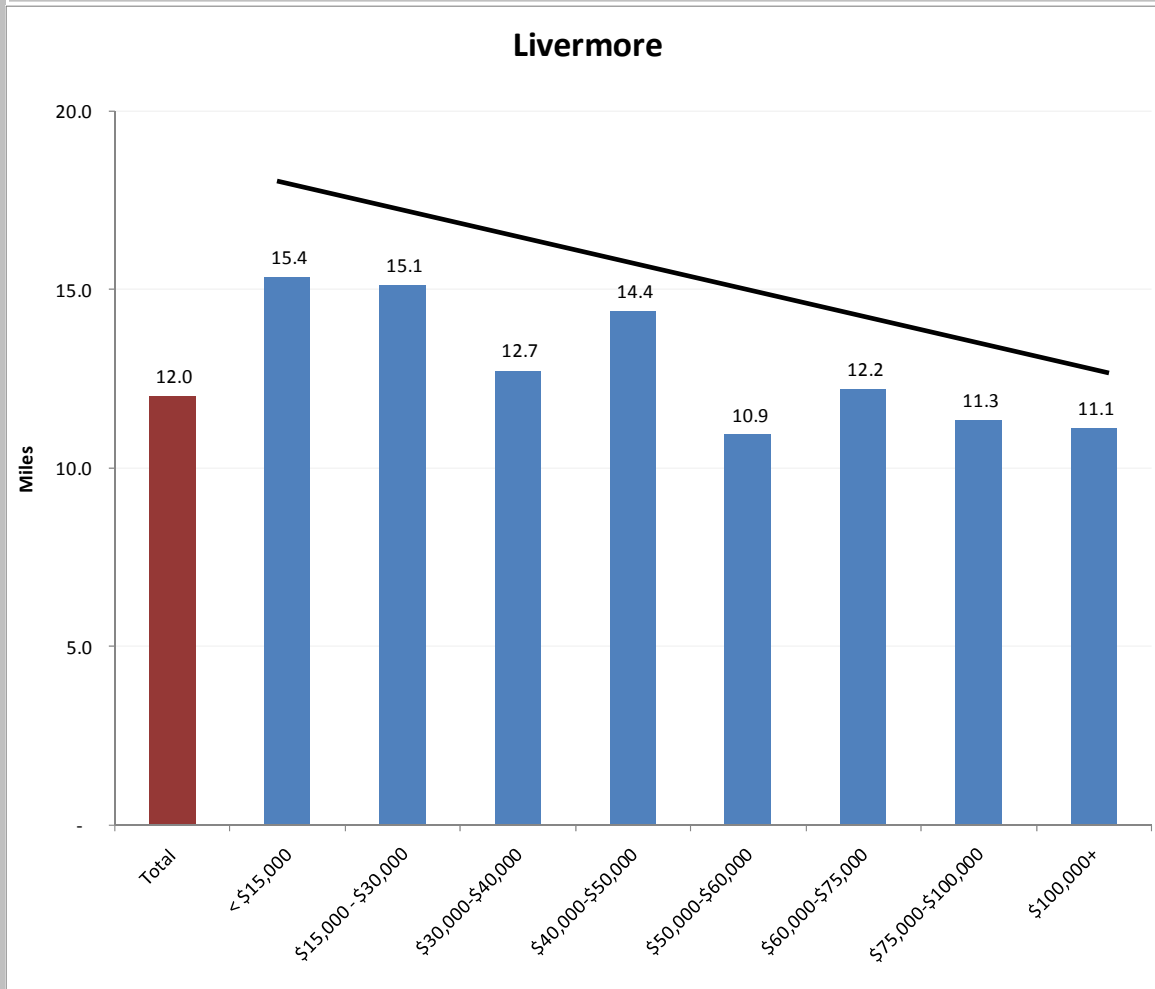
Pleasanton



San Ramon



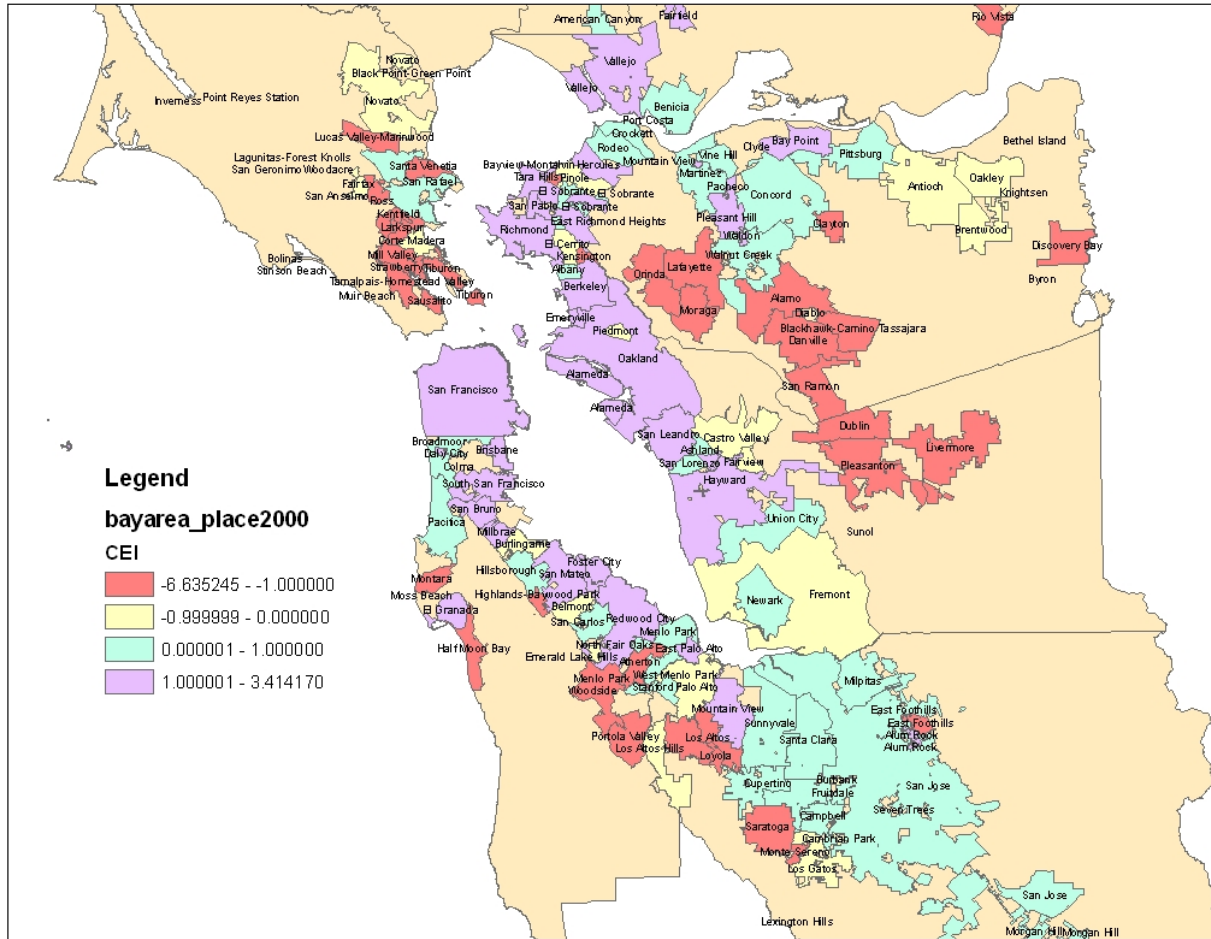
Livermore



A Commuting Equity Index (CEI)

- We can understand the commute equity offered by different places of work by constructing a simple index:
- $CEI = \text{Average Commute Distance of } > \$75,000 \text{ workers} - \text{Average Commute Distance of } < \$75,000 \text{ workers.}$
- A positive CEI is relative equitable – a negative one is not.

CEIs around the Bay Area



Commute Equity in Economic Context

- Example: a worker making \$25,000 working in San Ramon travels 3.5 miles further than a worker making \$100,000, each way.
- Over a 250-day work year, that is 1,750 additional miles traveled. At federal mileage reimbursement rates, that equals \$1,020 in excess vehicle costs, for workers driving alone.
- In addition, every additional mile of commute adds about 2.2 minutes of commute time, on average.
- This translates into 3% of total working time in a year, or \$750 in time costs for a worker making \$25,000.
- Overall excess commute costs: $\$1,020 + \$750 = \$1,770$ or 7% of gross income.

Implications for Regional Equity

- Although the Bay Area still retains, on average, a relatively equitable commute pattern, the trends are not good.
- Suburbanization of employment has not just moved jobs away from transit-served locations to auto-dependent office parks.
- It has also moved them away from low- and mixed-income cities, towards high-income, more exclusive cities, that are poorly-matched to the wide income level of jobs they typically host.

Policy Approaches to Improve Commute Equity

- Two alternative policy directions could address commute inequities:
 - Encourage the decentralization of affordable housing to new job centers, or
 - Encourage the recentralization of jobs to older cities with a mix of housing.
- There are two major shortcomings to a *housing decentralization* approach:
 - Affordable housing does not directly incentivize shorter commutes.
 - Too little affordable housing can be developed to reverse the trends.
- On the other hand, *job recentralization* can be more readily effected by:
 - Taxing carbon, which would advantage dense, transit-accessible, walkable downtowns;
 - Cost-effective regional transit investments.
 - Redevelopment of existing employment areas.

1. Decentralizing Affordable Housing Does Not Directly Incentivize Shorter Commutes

- The five major job centers with the lowest CEI are adjacent to one another in the Tri-Valley. In 2000, only 33% of low-wage residents of those areas worked in their city of residence. Only 58% worked anywhere in the Tri-Valley.
- This suggests that building affordable units in these cities will not lead to all of their working occupants making short commutes, and could subsidize long commutes.

	< \$75k Residents	< \$75k residents working in same city	Percent	< \$75k residents working in Tri-Valley	Percent
Danville	3,232	865	27%	1,612	50%
Dublin	4,997	1,055	21%	2,799	56%
Livermore	12,328	4,600	37%	7,745	63%
Pleasanton	8,411	3,370	40%	4,915	58%
San Ramon	5,854	1,680	29%	3,134	54%
Total	34,822	11,570	33%	20,205	58%



2. Too Little Affordable Housing Can Be Developed in Time

- To take one example: San Ramon. ABAG projects it to add 12,340 jobs between 2010-2035, and 9,010 housing units.
- At current (2000) trends, and an aggressive 40% inclusionary target, that could mean 4,000 jobs paying less than \$75k a year (2000 \$s) and 3,600 affordable units.
- Per the last point, 30% or about 3,600 units, or 1,100, would be occupied by low-income workers who actually work in San Ramon.
- Even under this aggressive inclusionary policy, the city would be creating 4,000 lower-wage jobs, and only 1,100 affordable units, and commute equity would get worse during the 25 year period.

Conclusions: Equity Benefits of Job Recentralization

- Commute inequity is not simply about a disproportionate burden placed on low-income workers. It is fundamentally about access to the labor market itself.
- Most of the affordable housing in the Bay Area is older housing in the oldest cities in the region. Given reasonable assumptions about housing development and how much affordable housing an inclusionary program can produce, this fact will not change.
- Ultimately, it will likely be more easy to move jobs than housing.