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# *Memorandum*

TO: Policy Advisory Council DATE: September 7, 2010

FR: Alix Bockelman and Doug Johnson

RE: TIP Investment Analysis: Focus on Communities of Concern

The 2011 Transportation Improvement Program (TIP) is currently out for public comment with approval scheduled for October 2010.

To further assist in the public assessment of the 2011 TIP, and specifically to address the equity implications of the proposed TIP investments, MTC has conducted an investment analysis with a focus on minority and low-income residents. The key question addressed is: "Are low-income and minority populations sharing equitably in the TIP's financial investments?" To answer this question, the investment analysis uses demographic and geographic criteria to calculate the shares of 2011 TIP investments that will flow to the identified communities, and compares those shares with the proportional size of this group's population and trip-making, relative to that of the general population. The attached report presents the results of that analysis.

Staff welcomes the input of the Council at your meeting on September 8th. We are also extending the public comment period through September 30th to take comments on the investment analysis as well as the 2011 TIP and the Conformity Analysis. Additional public comments and a presentation of that analysis will be provided at the September 22, 2010 Commission meeting. The 2011 TIP is scheduled for adoption by the Commission at the October 27, 2010 meeting.

As this is the first time out the gate for an analysis that has few national models, we expect that future iterations of the investment analysis for the 2013 TIP and its successors can improve on some of the limitations encountered in both the population use-based and geographic-based approaches. Among the improvement areas for consideration:

- Continue to research and identify best practices in the field;
- Improve mapping of GIS data;
- Update and make more consistent available survey data sets for Bay Area travel behavior and demographics; and
- Improve the analytical framework for assessing benefits and burdens to communities of concern for a set of planned infrastructure investments.

# 2011 TIP Investment Analysis:
# Focus on Low-Income and Minority Communities

## Introduction

The 2011 Transportation Improvement Program (TIP) is currently out for public comment with approval scheduled for October 2010. This major programming document lists all Bay Area surface transportation projects that have a federal interest – meaning projects for which federal funds or actions by federal agencies are anticipated – along with locally and state-funded projects that are regionally significant. The 2011 TIP is a voluminous document, but MTC has produced a short, user-friendly guide to the TIP to facilitate public participation in the TIP adoption process. This booklet, *A Guide to the San Francisco Bay Area's Transportation Improvement Program*, is available through the MTC-ABAG Library, or online at http://www.mtc.ca.gov/funding/tip/DRAFT_2011/Guide_to_TIP_8-10.pdf.

To further assist in the public assessment of the 2011 TIP, and specifically to address the equity implications of the proposed TIP investments, MTC has conducted an investment analysis with a focus on minority and low-income residents. The key question addressed is: "Are low-income and minority populations sharing equitably in the TIP's financial investments?" To answer this question, the investment analysis uses demographic and geographic criteria to calculate the shares of 2011 TIP investments that will flow to the identified communities, and compares those shares with the proportional size of this group's population and trip-making, relative to that of the general population. This report presents the results of that analysis.

While this investment analysis is a companion to the 2011 TIP, it is also a follow-up to several related MTC efforts, including the Transportation 2035 Equity Analysis (February 2009) and the more recent Snapshot Analysis for MTC Communities of Concern (June 2010). Together, these efforts are meant to provide accurate and current data to help inform decision-makers and the public, and to inform and encourage engagement in the public participation process. This is the first investment analysis for the TIP, and MTC staff actively seeks your feedback. MTC strives to employ best practices in metropolitan planning, and we constantly seek to refine and improve the analytical work that undergirds our planning processes.

## About the 2011 TIP

The Bay Area's 2011 TIP includes nearly 1,000 transportation projects, and a total of approximately $11.1 billion in committed federal, state and local funding over the four-year TIP period through Fiscal Year 2014. Figure 1 below illustrates the relative share of the 2011 TIP fund sources, with local sources comprising the largest share at nearly one-half of total funding. See Attachment A for a map of projects with costs greater than $200 million.

**Figure 1**

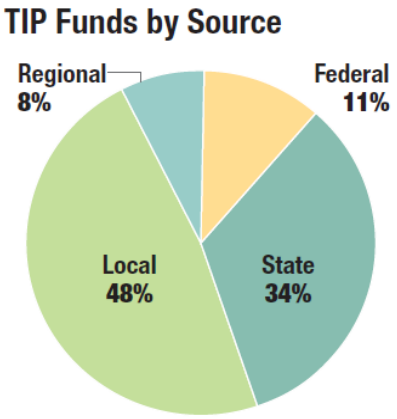
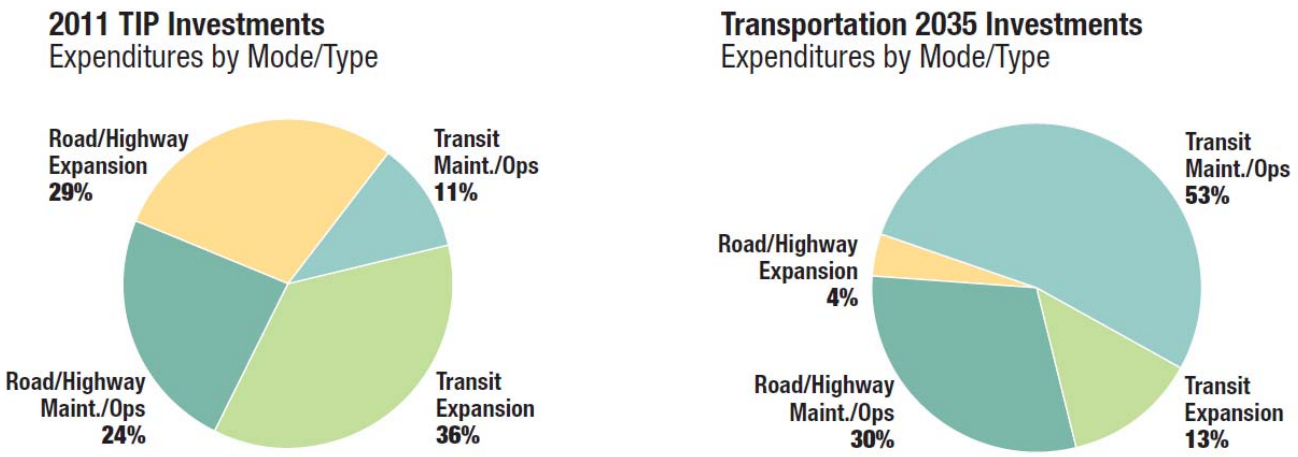


Figure 2 below at left shows the planned investments in the 2011 TIP by transportation mode (road/highway or transit) and type of expenditure (maintenance/operations or capital expansion). As a frame of reference, the Transportation 2035 Plan expenditures by mode and function are shown as well at right.

**Figure 2**




The most striking difference is that the share of capital expansion for both transit and roads/highways is much greater in the 2011 TIP than is the case for the Transportation 2035 Plan. Also, the share of road/highway investments in the 2011 TIP is substantially larger than the counterpart share in the Transportation 2035 Plan.

The main reason for this difference is that the TIP represents only a fraction of Bay Area transportation investments and is only a four-year snapshot. The 2011 TIP accounts for roughly 50 percent of all planned investments captured in Transportation 2035 over the four-year period. Because the TIP is focused on projects that have federal funds, will require a federal action, or are regionally significant, it tends by its nature to be more heavily weighted toward capital projects – such as roads, transit extensions and replacement of transit vehicles. The majority of funds that go to operate and maintain the region's transportation system – both for transit and streets and roads – are not a part of the TIP. For this reason, the TIP investments are not representative of the broader funding picture in Transportation 2035, the region's long-range plan.

Another feature of the TIP that distinguishes it from the region's long-range plan is that it tends to be a more dynamic document – meaning that it is amended frequently to reflect changing fund sources and project changes, and on-going programming efforts. For example, the current 2011 TIP does not yet reflect over $1 billion in Federal Transit Administration (FTA) formula funds because the Commission has not yet adopted a final program. These funds have historically been directed to transit rehabilitation. Once the action occurs, the 2011 TIP will be amended to include the projects and funding. As context, the 2009 TIP has been amended over 50 times since its adoption two years ago.

**Equity and Environmental Justice Considerations**

As the federally designated MPO, MTC is responsible for developing a long-range regional transportation plan and the TIP. The legal, regulatory, and policy framework for addressing equity and environmental justice as it relates to the long-range transportation planning process is included in Appendix A and

includes: 1) Title VI of the Civil Rights Act; 2) Federal Guidance on Environmental Justice; and 3) MTC's Environmental Justice Principles.

These laws, regulations, and policies form the basis of analyzing MTC's Transportation 2035 Plan for equity and inform the 2011 TIP Investment Analysis. However, no specific federal standard, policy or guidance exists related to how an environmental justice assessment or equity analysis should be performed for a long-range plan, nor are there identified standards against which MTC can measure its findings. Similarly, for the 2011 TIP, there is no federal guidance on completing an investment analysis. Therefore MTC is building on the work undertaken in the Transportation 2035 analysis and seeking feedback from stakeholders on the methodology and future enhancements to the methodology.

**Bay Area – Demographic Context**

Before embarking on a discussion of the analysis, it is important to understand demographic and travel patterns for the Bay Area. In terms of overall demographics, roughly 25 percent of the region's households are low-income, defined as households with incomes that fall below 200 percent of the federal poverty level. Also, the Bay Area is now a "majority minority" region with 54 percent of the households in the racial/ethnic minority category. Table 1 provides summary information on demographics.

**Table 1. Population Distribution by Income and Race/Ethnicity**

| Population Distribution by Household Income | | |
|---|---|---|
| | **Population** | **% of Total** |
| **Low-Income (≤ $50,000)** | 1,753,180 | 25% |
| **Not Low-Income (> $50,000)** | 5,155,599 | 75% |
| **Total** | 6,908,779 | 100% |
| **Share of Share of Population by Race/Ethnicity** | | |
| | **Number of Households** | **% of Total** |
| **Minority** | 3,721,079 | 54% |
| **White Non-Hispanic** | 3,176,804 | 46% |
| **Total** | 6,897,883 | 100% |

*Sources: American Community Survey (ACS): Public Use Microdata Sample 2008 and 2005-2007 ACS*

Most notably in terms of travel patterns, Figure 3 illustrates that trips by all Bay Area residents are overwhelmingly made by motor vehicle (80 percent) by the population at large, followed by non-motorized trips (12 percent), and transit (7 percent). While there are real differences for travel patterns for minority and low-income populations, motor vehicles are still the primary mode for trips at 65 percent or greater for both groups (see Figure 4).

**Figure 3**

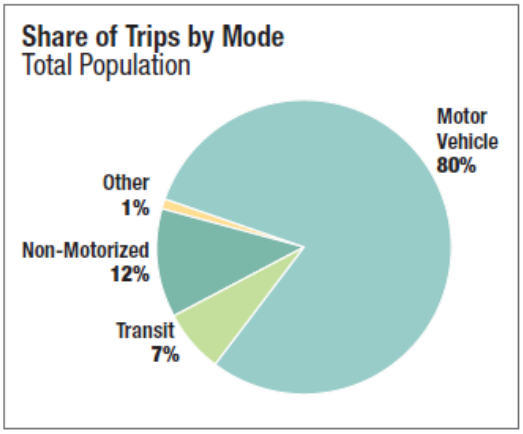
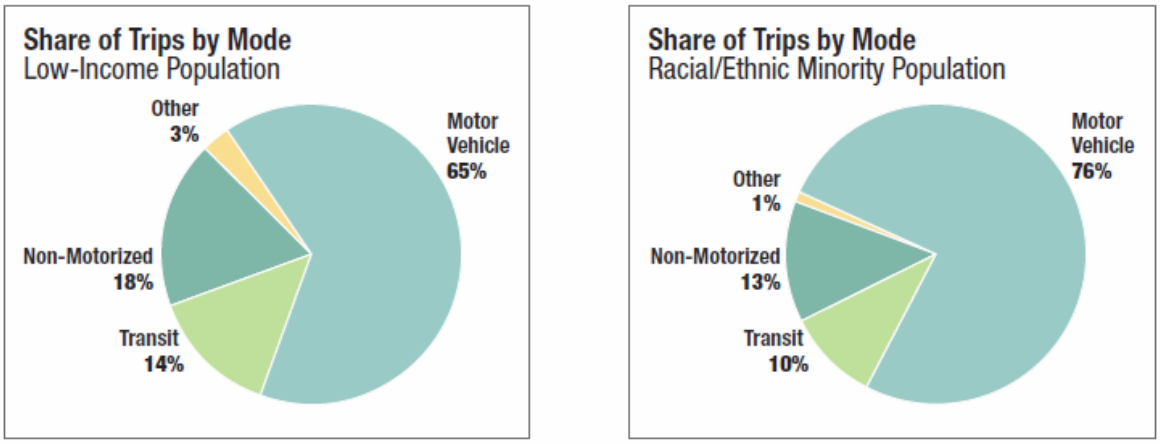


**Figure 4**




**Investment Analysis Overview and Results**

The 2011 TIP Investment Analysis uses two different methodologies to compare how low-income and minority communities may be affected by the proposed investments in the 2011 TIP:

1. **Population Use-Based Analysis:** This analysis is use-based. It compares the estimated percent of investment for low-income and minority populations to the percent of use of the transportation system (both roadways and transit) by low-income and minority populations. In the aggregate, the analysis measures transit and motor vehicle trips using the 2000 Bay Area Travel Survey (2000 BATS). In drilling deeper into the slice of roadway investment alone, the analysis uses vehicle miles traveled (VMT) as the measure of system use from the 2000 BATS. Similarly, for a more refined look at transit investment alone, transit trips are measured using data from MTC's 2006 Transit Passenger Demographic Survey.
2. **Geographic-Based Analysis:** This analysis is location and access-based; it does not take into account system use. It compares the estimated percent of investment in communities of concern (CoCs) to the percent of population or infrastructure located within communities of concern. The analysis relies on MTC geographic information system (GIS) data to assign investments either within or outside of communities of concern. For a local project, the entire investment is either assigned within or outside of a CoC based on its location. For a network/system project, a share of the investment is assigned based on the percent of route miles/stations (transit) or lane miles (state highway, bridge, and local roads) in communities of concern.

Before undertaking this analysis, MTC staff reviewed TIPs prepared by Metropolitan Planning Organizations (MPOs) around the United States for best practices. Most TIPs were not accompanied by an investment or equity analysis. In the few examples found that included an analysis, only a geographic approach was followed. In the interest of broadening the analytical framework for this TIP analysis, staff has undertaken two approaches to better inform decision-makers and the public. The methodologies for each approach and the results are discussed below. Appendix B includes definitions and data sources used in this analysis.

**Population Use-Based Analysis**

The population-based analysis was conducted as follows:

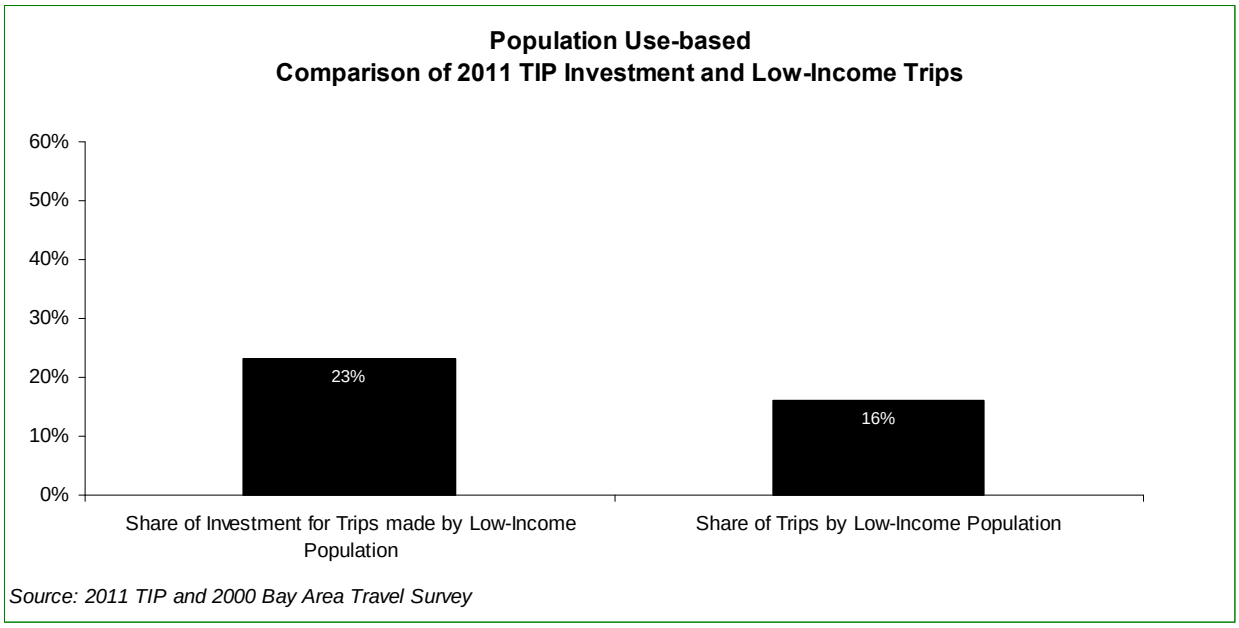
- The 2011 TIP investments were separated into two modes: transit and road/highway.
- Investments were allocated in each category to low-income and minority populations, and other populations according to each groups' usage share of each mode at the county or transit operator level.
    - First, to analyze what share of each mode (transit and roads/highways) low-income and minority populations utilize, the following definitions were used:
        - *Low-Income Households:* Low-income households were defined as households earning $50,000 or less. This is roughly equivalent to 200 percent of the federal poverty level.
        - *Minority Households:* For this analysis, minority households were defined using U.S. Census Bureau definitions.
    - Second, the assignment of investment by usage was performed by multiplying the percent of use of the mode by the investment in that particular mode. This analysis was conducted at the county level for highways and roadways and at the transit-operator level for transit. As an illustrative example, for a $50 million state highway project in Alameda County, 18 percent or $9 million, would have been assigned as a financial benefit to low-income populations and the remaining 82 percent or $41 million to other populations because 18 percent of Alameda County motor vehicle trips are made by low-income populations based on the 2000 BATS. A similar approach was followed for transit investment allocations. For multimodal, aggregate analysis, trip data from the 2000 BATS were used. For the in-depth transit analysis, data came from MTC's 2006 Transit Passenger Demographic Survey. For the focused roadway analysis, vehicle miles traveled (VMT) and 2000 BATS data were used.
- Lastly, the investments by mode (from county or transit operator data) were summed for low-income and minority populations and for all other populations based on each group's usage share of each mode. The percent of usage of the system by the target and other populations was then compared to the percent of investment for trips supporting that population.

As a regional-level analysis, this assessment is quite coarse, and has several limitations. The most significant shortcoming is that the analysis does not directly assess the benefit and burden of specific projects or programs. With respect to assigning investment benefit from expansion projects to households, this analysis is limited to assuming that existing usage demographics apply, since current demographic and travel surveys do not include future riders or drivers who will be attracted to the areas served by these expansions either as origins and destinations. Moreover, the roadway-usage share does not account for the benefit to the region's transit vehicles that share the roads with private automobiles. Also, for simplicity, pedestrian and bicycle projects were assigned to local streets and roads and not specifically assigned based on usage by low-income or minority populations of these facilities, or walk/bike mode share.

## Population Use-Based Results

| Table 2. Population Use-Based<br>Comparison of 2011 TIP Investment and Trips by Low-Income Population | | | |
|---|---|---|---|
| | 2011 TIP Investments | % of Investment | % of Trips |
| **Low-Income Population** | $2,586,489,148 | 23% | 16% |
| **Not-Low Income Population** | $8,525,706,550 | 77% | 84% |
| **Total** | $11,112,195,698 | 100% | 100% |

**Figure 5**

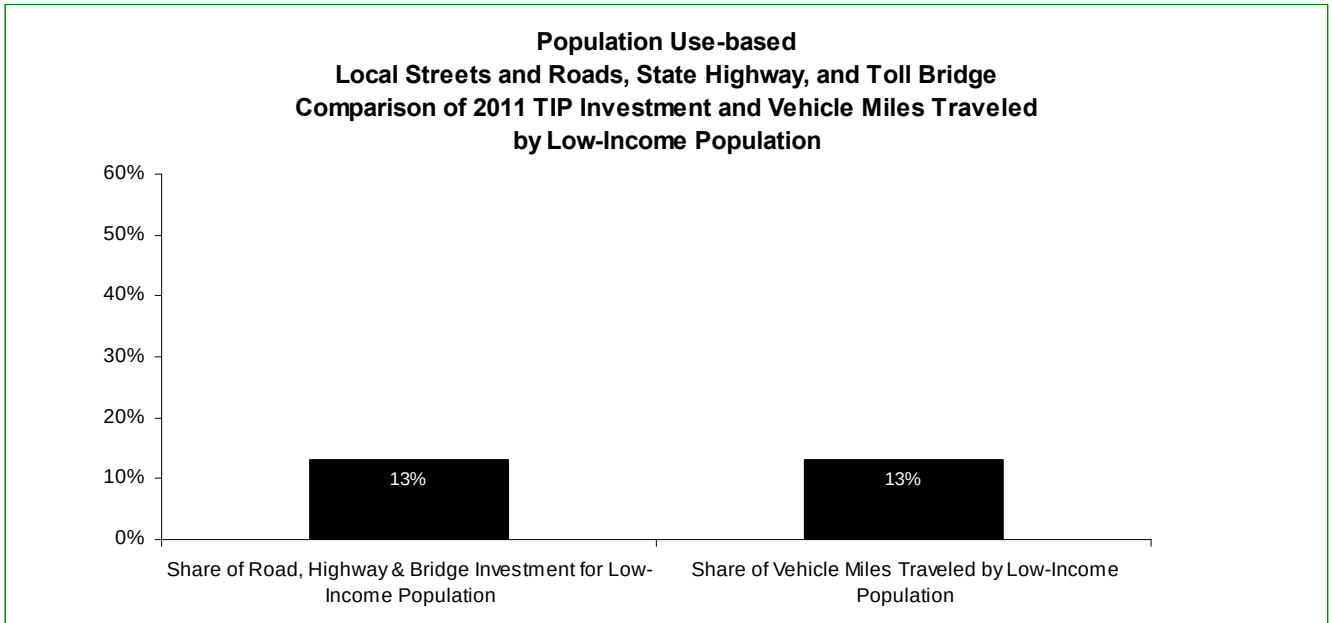



### Observations

- The share of investment in projects that support trips made by the low-income population (23%) is greater than trips made by the proportion of the population that earns $50,000 or less (16%).
- While the low-income population makes up 25% of the population of the Bay Area, this population accounts for only 16% of all trips.

| Table 3. Population Use-Based<br>Local Streets and Roads, State Highway, and Toll Bridge<br>Comparison of 2011 TIP Investment and Vehicle Miles Traveled by Income Distribution | | | |
|---|---|---|---|
| | Road, Highway & Bridge Investment | % of Investment | % of Vehicle Miles Traveled |
| **Low-Income Drivers (<$50k/yr)** | $847,197,350 | 13% | 13% |
| **Not Low-Income Drivers (>$50k/yr)** | $5,606,524,473 | 87% | 87% |
| **Total** | $6,453,721,823 | 100% | 100% |

**Figure 6**



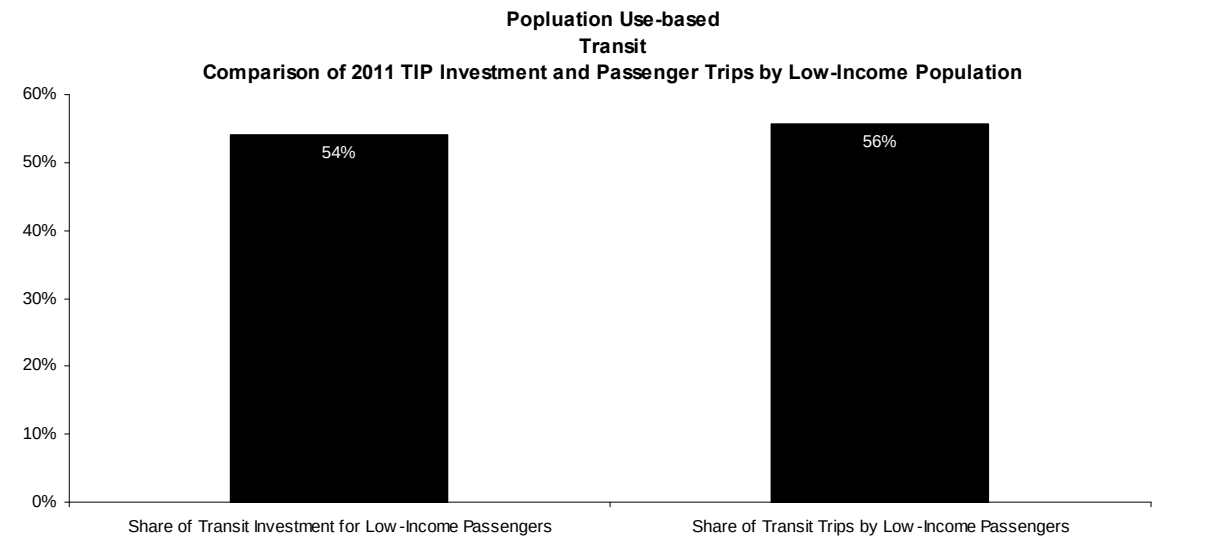

*Source: 2011 TIP and 2000 Bay Area Travel Survey*

## Observations

- The share of investment in local road, state highway and toll bridge systems that benefit the low-income population is equal to the share of total vehicle miles traveled by the low-income population on those systems.
- While the low-income population accounts for 25% of the total population in the Bay Area, this population accounts for 13% of the driving done in the region.

| Table 4. Population Use-Based Transit<br>Comparison of 2011 TIP Investment and Passenger Trips by Income Distribution | | | |
|---|---|---|---|
| | **Transit Investment** | **% of Investments** | **% of Passenger Transit Trips** |
| **Low-Income Passengers (≤$50k/yr)** | $2,521,638,084 | 54% | 56% |
| **Not Low-Income Passengers (>$50k/yr)** | $2,136,835,791 | 46% | 44% |
| **Total** | $4,658,473,875 | 100% | 100% |

**Figure 7**



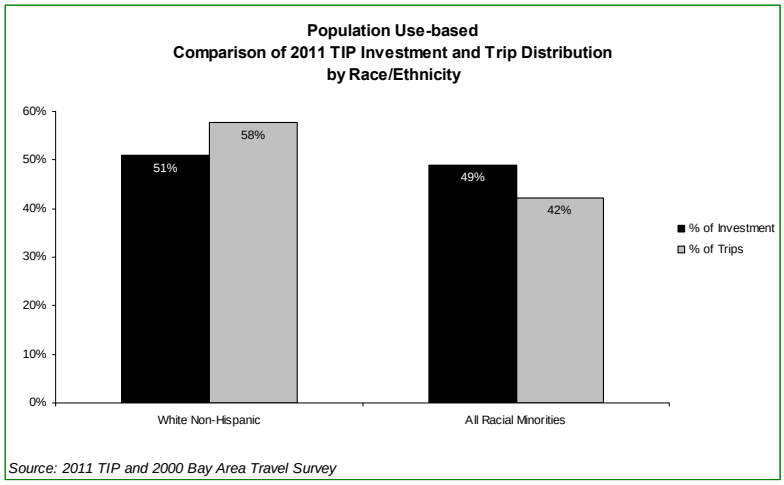

*Sources: 2011 TIP and 2006-2007 Transit Passenger Demographic Survey (Godbe Research)*

## Observations

- The share of transit investment for low-income passengers (54%) is slightly less than the share of transit trips taken by low-income passengers (56%).
- While the share of the total population that is low-income is 25%, low-income passengers account for 56% of transit trips in the Bay Area.

| Table 5. Population Use-Based Comparison of 2011 TIP Investment and Trip Distribution by Race/Ethnicity | | | |
|---|---|---|---|
| **Race/Ethnicity** | **Investment by Trips** | **% of Investment** | **% of Trips** |
| **White Non-Hispanic** | **$5,673,464,310** | **51%** | **58%** |
| **All Racial Minorities** | **$5,438,731,388** | **49%** | **42%** |
| *Black/African-American* | *$1,075,939,122* | *10%* | *6%* |
| *Asian or Pacific Islander* | *$2,035,565,264* | *18%* | *16%* |
| *Hispanic/Latino* | *$1,618,662,659* | *15%* | *14%* |
| *Other/Multiple Races* | *$708,564,343* | *6%* | *6%* |
| **Total** | **$11,112,195,698** | **100%** | **100%** |

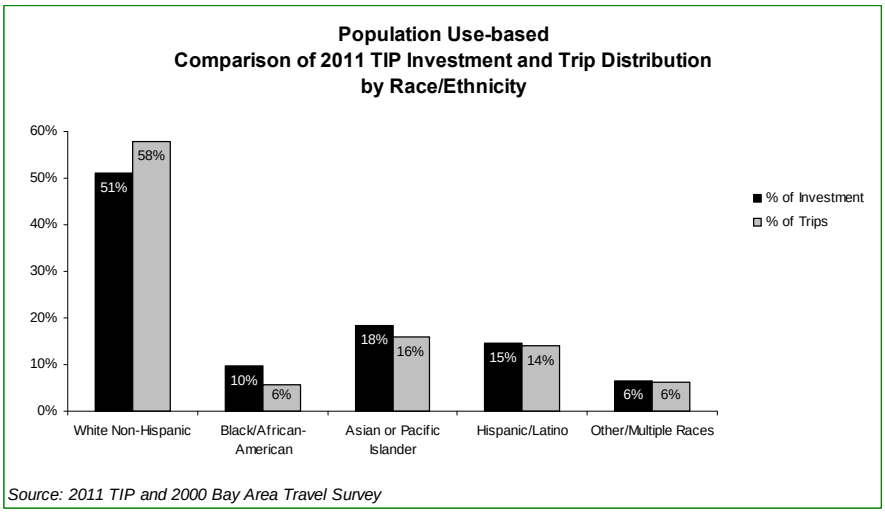
**Figure 8**




## Observations

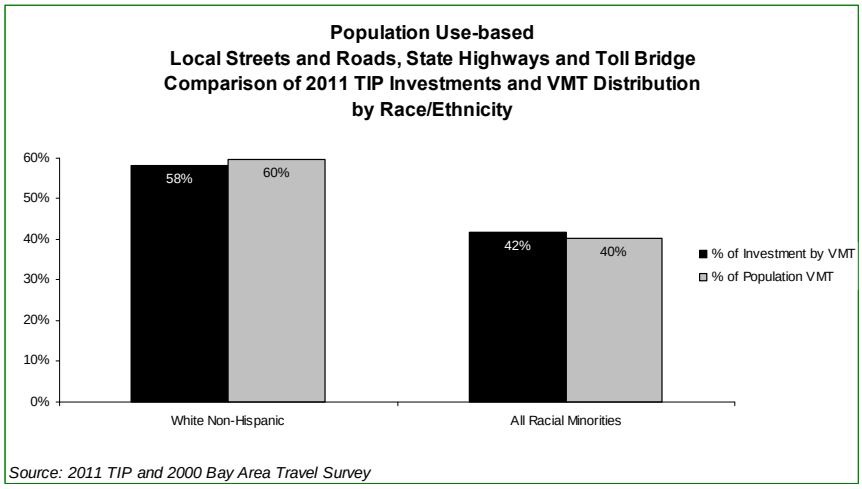
- While the white, non-Hispanic population of the Bay Area is 46% of the total population, this population's share of trips is 58% of the total.
- Minority households make up 54% of the population in the Bay Area, but take only 42% of all trips.
- The share of transportation investment in the Bay Area that supports minority population trips is greater than the share of trips taken by these communities (see Figure 8 above), and this is a uniform result among all racial minority populations (see Figure 9 below).

**Figure 9**



| Table 6. Population Use-Based<br>Local Streets and Roads, State Highways and Toll Bridge<br>Comparison of 2011 TIP Investments and VMT Distribution by Race/Ethnicity | | | |
|---|---|---|---|
| **Race/Ethnicity** | **Investment by Trips** | **% of Investment** | **% of VMT** |
| **White Non-Hispanic** | **$3,761,895,184** | **58%** | **60%** |
| **All Racial Minorities** | **$2,691,826,639** | **42%** | **40%** |
| *Black/African-American* | *$337,650,593* | *5%* | *5%* |
| *Asian or Pacific Islander* | *$1,132,463,028* | *18%* | *16%* |
| *Hispanic/Latino* | *$870,477,102* | *13%* | *14%* |
| *Other/Multiple Races* | *$351,235,915* | *5%* | *5%* |
| **Total** | **$6,453,721,823** | **100%** | **100%** |

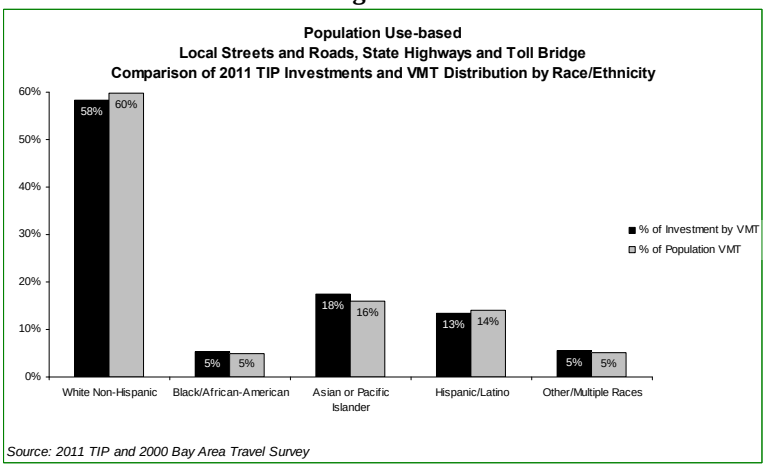
**Figure 10**




## Observations

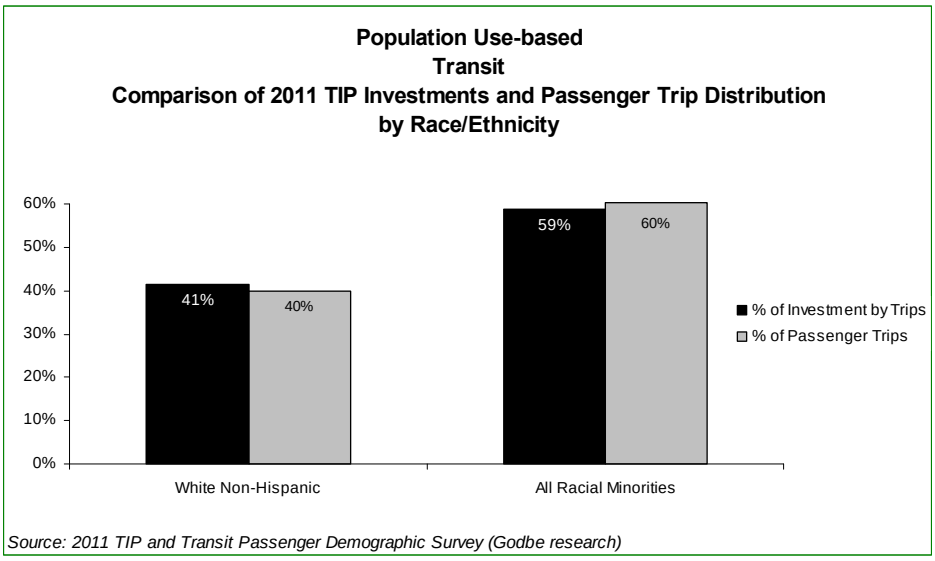
- While the white, non-Hispanic population of the Bay Area is 46% of the total population, this population's share of vehicle miles traveled is 60% of the total.
- Minority households make up 54% of the population in the Bay Area, but account for only 40% of the vehicle miles traveled in the Bay Area.
- The share of local streets and roads, state highway, and toll bridge investment that supports trips by minority communities in the Bay Area at 42% is slightly greater than the share of vehicle miles traveled by minority populations at 40% (see Figure 10 above), and this holds true for nearly all minority groups (see Figure 11 below).

**Figure 11**



| Table 7. Population Use-Based Transit Comparison of 2011 TIP Investments and Passenger Trip Distribution by Race/Ethnicity | | | |
|---|---|---|---|
| **Race/Ethnicity** | **Investment by Trips** | **% of Investment** | **% of Passenger Trips** |
| **White Non-Hispanic** | **$1,924,343,073** | **41%** | **40%** |
| **All Racial Minorities** | **$2,734,130,802** | **59%** | **60%** |
| *Black/African-American* | *$652,360,591* | *14%* | *18%* |
| *Asian or Pacific Islander* | *$812,963,001* | *17%* | *14%* |
| *Hispanic/Latino* | *$1,065,715,287* | *23%* | *23%* |
| *Other/Multiple Races* | *$203,091,923* | *4%* | *5%* |
| **Total** | **$4,658,473,875** | **100%** | **100%** |

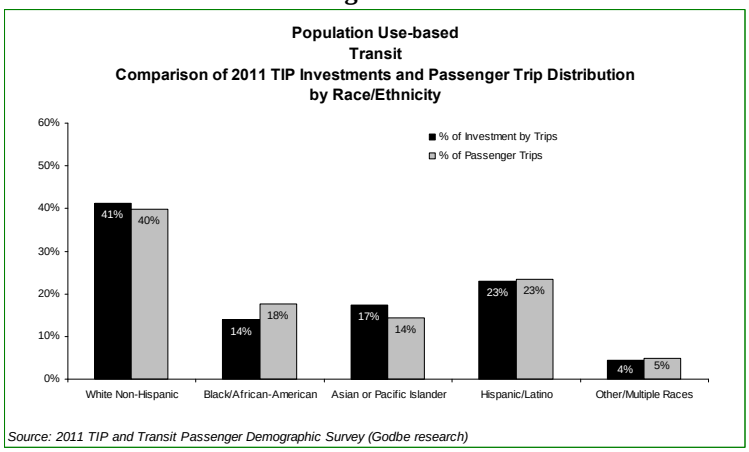
**Figure 12**




## Observations

- While minority groups make up 54% of the Bay Area population, this population accounts for 60% of all transit trips.
- The share of investment in minority transit trips at 59% is slightly less than the share of transit trips made by minority populations (see Figure 12 above).
- The share of investment in minority transit trips is not uniform among different minority groups (see Figure 13 below).

**Figure 13**



**Geographic-Based Analysis**

The geographic-based analysis was conducted as follows:

- The 2011 TIP investments were assigned as either "in" communities of concern (CoCs) or "outside" of CoCs based on the approach below. By communities of concern, we mean Bay Area communities that have concentrations of either minority of low-income residents. For a more detailed definition of "communities of concern," see Appendix B, "Definitions and Data Sources."
    - All projects in the analysis were classified into two groups: 1) Local mapped projects; and 2) Network/system projects. Table 8 shows the relative split with the majority of both dollars (74 percent) and projects (69 percent) associated with network/system projects.

**Table 8. Summary of TIP Investments**

| Project Type | TIP Investment Only ($Billions) | % | # of Projects | % |
|---|---|---|---|---|
| **Local Mapped Projects** | $2.9 | 26% | 187 | 31% |
| **Network/System Projects** | $8.2 | 74% | 407 | 69% |
| **Total** | **$11.1** | **100%** | **594** | **100%** |

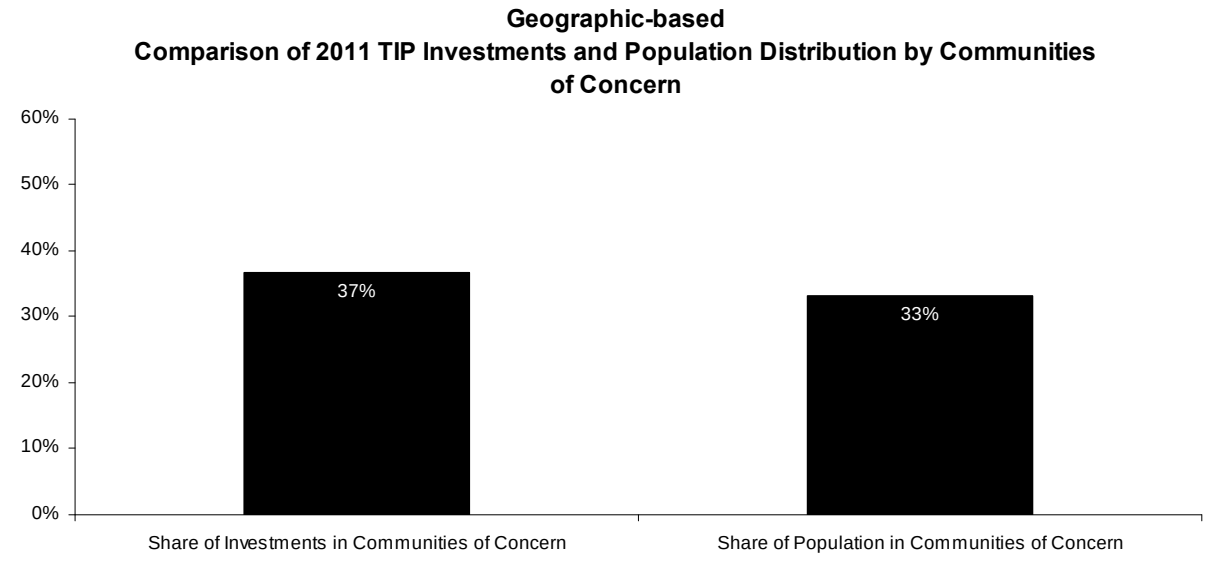
    - Local mapped projects are compared against the physical locations of the CoCs. Funding for projects that are located in a CoC boundary have their funding amounts assigned to CoCs; those that do not intersect a community of concern are assigned to outside of communities of concern.
    - Projects that are network or system-based are subdivided by mode (state highways, local roads, and transit) and have a share of funding assigned either in or outside of CoCs using percentages derived from MTC's geographic information system (GIS) as follows:
        a. State highway projects: based on the percentage of *each county's total state highway lane-miles* in or outside of CoCs.
        b. Local streets and roads projects: based on the percentage of *each county's total local streets and roads lane-miles* in or outside of CoCs.
        c. Transit projects: For rail and ferry, based on the percentage of *each operator's total number of stations and terminals* in or outside of CoCs. For bus and multi-modal systems, based on the percentage of *each operator's total route-miles* in or outside of CoCs.
        d. Regional projects (freight/toll bridge): based on the regional aggregate of either state highway miles or road miles in or outside of CoCs.

The approach described above is used to partially address some of the limitations of a geographic analysis. Of the limited examples of TIP investment analysis found around the country, most MPOs used a geographic framework. However, in first applying a similar geographic methodology to the 2011 TIP, the findings suggested an over-weighting of investment benefit to communities of concern based on the location of several large infrastructure projects in the 2011 TIP. The hybrid approach taken here for the Bay Area is meant to more accurately portray the broader effect projects can have beyond just the immediate community, especially when the investment is to a state highway or road network, or regional transit system.

## Geographic-Based Results

| Table 9. Geographic-Based Comparison of 2011 TIP Investments and Population Distribution by Communities of Concern | | | | |
|---|---|---|---|---|
| | 2011 TIP Investments | % of Total | 2000 Population | % of Total |
| In Communities of Concern | $4,088,709,142 | 37% | 2,253,155 | 33% |
| Outside Communities of Concern | $7,023,486,556 | 63% | 4,530,607 | 67% |
| Total | $11,112,195,698 | 100% | 6,783,762 | 100% |

**Figure 14**



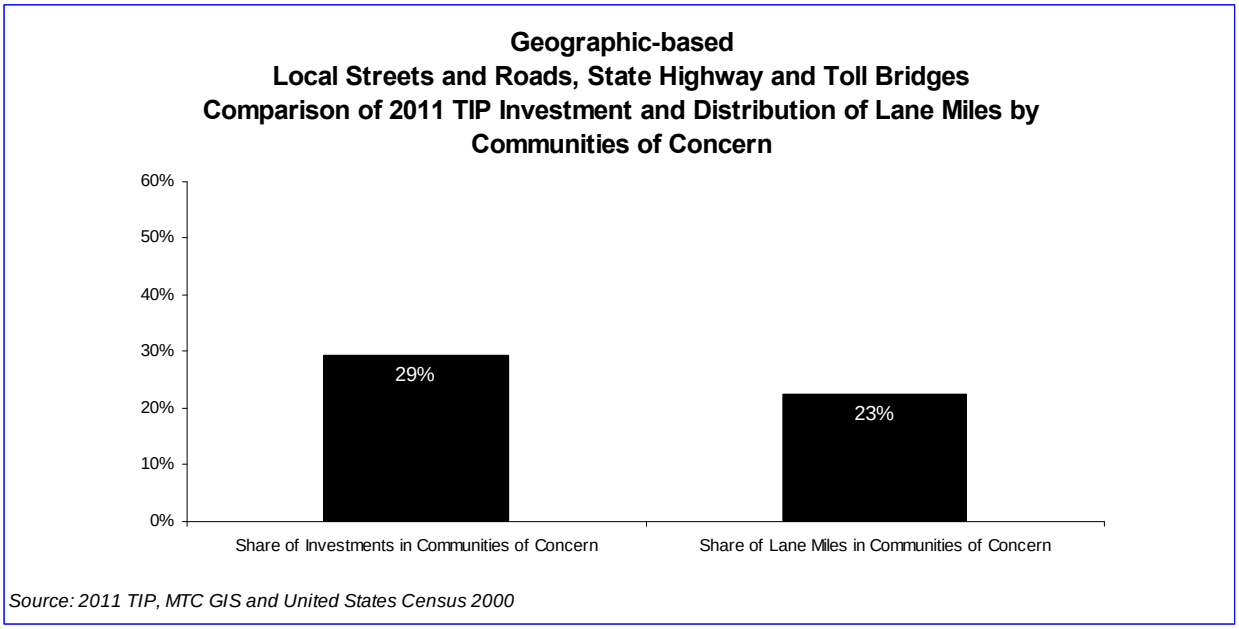

*Source: 2011 TIP, MTC GIS and United States Census 2000.*

## Observations

- The share of TIP investments attributed to Communities of Concern (37%) is greater than the share of the population living in Communities of Concern (33%).

| Table 10. Geographic-Based<br>Local Streets and Roads, State Highways and Toll Bridges<br>Comparison of 2011 TIP Investment and Distribution of Lane Miles by Communities of Concern | | | | |
|---|---|---|---|---|
| | **2011 TIP Investments** | **% of Total** | **Lane Miles** | **% of Total** |
| **In Communities of Concern** | $1,895,889,381 | 29% | 7,071 | 23% |
| **Outside Communities of Concern** | $4,550,061,623 | 71% | 24,238 | 77% |
| **Total** | $6,445,951,004 | 100% | 31,310 | 100% |

**Figure 15**



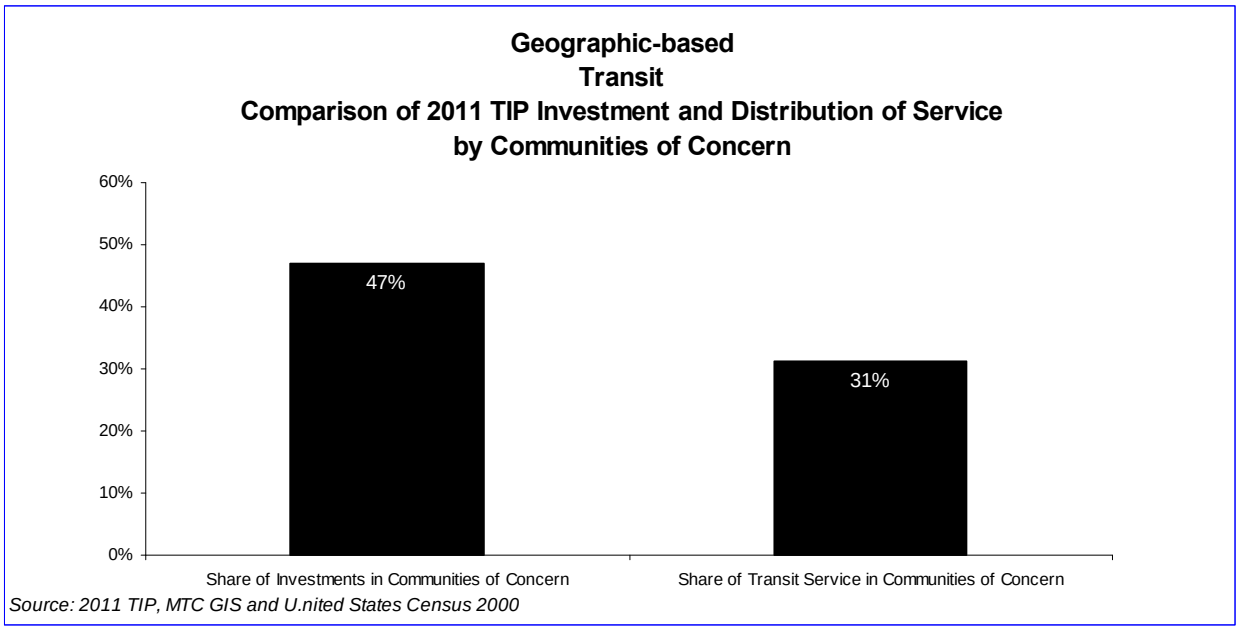

## Observations

- The share of local streets and roads, state highway and toll bridge investments attributed to Communities of Concern (29%) is greater than the share of existing lane miles in Communities of Concern (23%).
- The share of existing lane miles in Communities of Concern (23%) is less than the share of the population living in Communities of Concern (33%).

| Table 11. Geographic-Based Transit<br>Comparison of 2011 TIP Investment and Distribution of Stops and Route Miles in Communities of Concern | | | |
|---|---|---|---|
| | 2011 TIP Investments | % of Total | % of Transit Service* |
| In Communities of Concern | $2,192,819,761 | 47% | 31% |
| Outside Communities of Concern | $2,473,424,933 | 53% | 69% |
| Total | $4,666,244,694 | 100% | 100% |

* Bus and light-rail service is measured by share of route miles, heavy-rail and ferry service is measured by share of stops

**Figure 16**




## Observations

- The share of transit investment attributed to Communities of Concern (47%) is significantly greater than the share of existing transit service in Communities of Concern (31%).
- The share of existing transit service in Communities of Concern (31%) is somewhat less than the share of the population living in Communities of Concern (33%).

**Key Findings**

The purpose of this investment analysis is to compare the allocation of 2011 TIP investments between low-income and minority and all other populations. The key question addressed is: "Are low-income and minority populations sharing equitably in the TIP's financial investments?"

This analysis attempts to take a relatively conservative approach to assigning investments (or "benefit") to low-income households given some of the limitations of the analysis. The results suggest that according to several indices, the 2011 TIP invests greater public funding to the benefit of low-income and minority communities than their proportionate share of the region's population or trip-making as a whole.

- The two approaches both concluded in the aggregate that there is a relatively higher proportional investment in the 2011 TIP than either the proportionate share of trips taken by minority and low-income populations, or communities of concern populations. Table 12 summarizes these results.

**Table 12. Findings for Aggregate Analysis**

| | Share of 2011 TIP Investment | Share of Total Trips/Population |
|---|---|---|
| **Population Use-Based** | | |
| ***Low-Income*** | **23%** | **16% (total trips)** |
| ***Minority*** | **49%** | **42% (total trips)** |
| **Geographic-Based** | **37%** | **33% (population - community of concern)** |

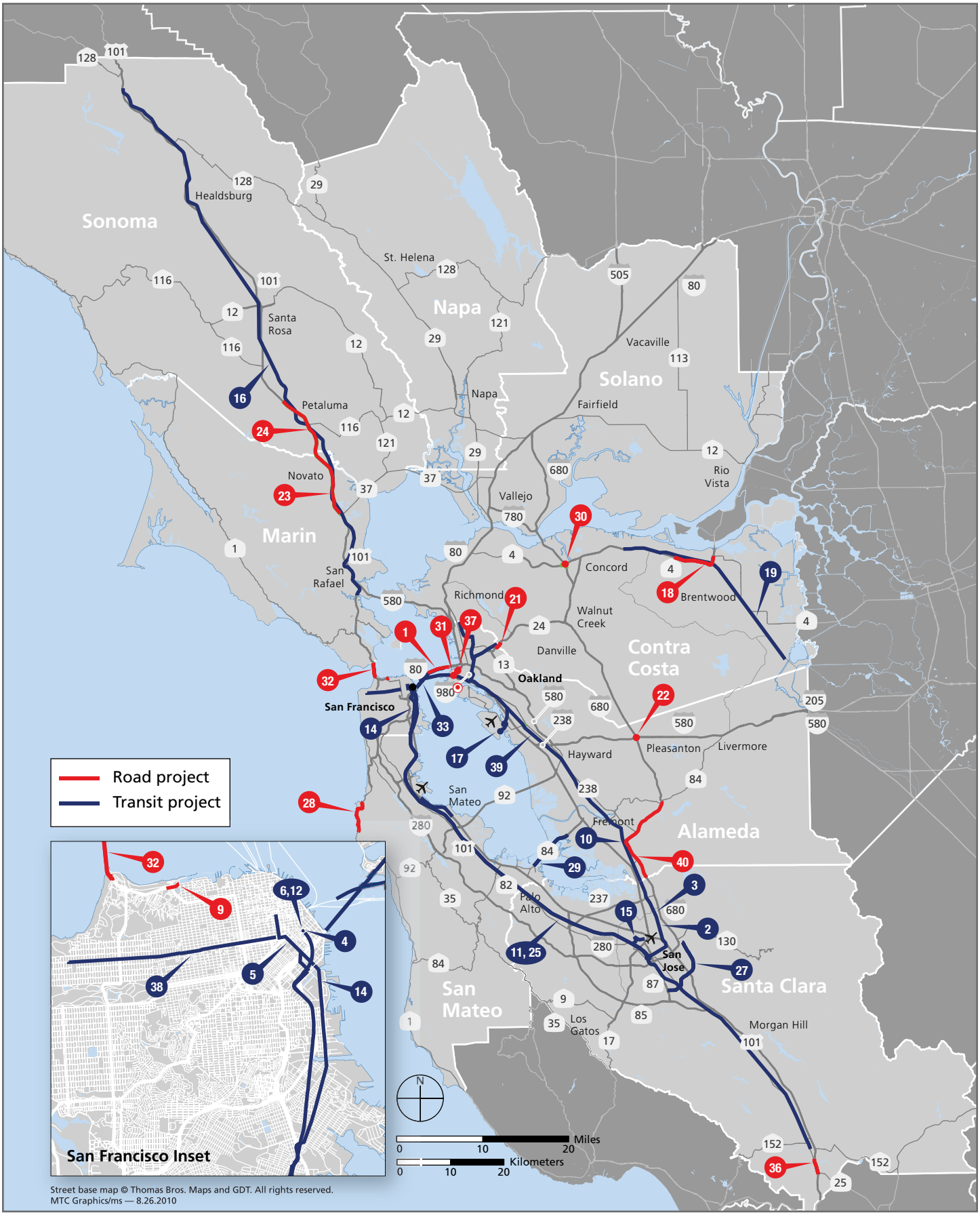
- In delving deeper into the investments by mode, one finds that the results are more mixed. For example, within the population use-based analysis for transit, the results showed that for low-income populations, the share of investment (54 percent) was slightly lower than the share of trips (56 percent). The share of investment in minority transit trips (59 percent), while greater than the minority share of the total population, was also slightly less than the share of transit trips made by minority populations (60 percent). The results were not uniform across all racial minority groups. For streets and road investments, the findings were generally reversed, with a greater or equal share of investment as compared to trips for both low-income and minority populations. In no case, however, do the results appear to demonstrate a systematic disbenefit to low-income or minority populations.

**Next Steps**

As this is the first time out the gate for an analysis that has few national models, we expect that future iterations of the investment analysis for the 2013 TIP and its successors can improve on some of the limitations encountered in both the population use-based and geographic-based approaches. Among the improvement areas for consideration:

- Continue to research and identify best practices in the field;
- Improve mapping of GIS data;
- Update and make more consistent available survey data sets for Bay Area travel behavior and demographics; and
- Improve the analytical framework for assessing benefits and burdens to low-income and minority populations for a set of planned infrastructure investments.

# Projects in the 2011 TIP With Costs Greater Than $200 million



# List of Projects in the 2011 TIP Over $200 Million

**BLUE** Transit Project
**RED** Road Project

1. **San Francisco-Oakland Bay Bridge East Span Replacement**
   Alameda County
   **$5.66 billion**
2. **BART – Berryessa to San Jose Extension**
   Santa Clara County
   **$5.01 billion**
3. **BART – Warm Springs to Berryessa Extension**
   Santa Clara County
   **$2.57 billion**
4. **Transbay Terminal/ Caltrain Downtown Extension – Ph.1**
   San Francisco County
   **$1.58 billion**
5. **SF Muni Third St LRT Ph. 2 Central Subway**
   San Francisco County
   **$1.57 billion**
6. **Transbay Transit Center – TIFIA Loan Debt Service**
   San Francisco County
   **$1.18 billion**
7. **BART Seismic Retrofit Program****
   Multiple Counties
   **$1.06 billion**
8. **BART Railcar Replacement Program****
   Multiple Counties
   **$1.02 billion**
9. **US-101 Doyle Drive Replacement**
   San Francisco County
   **$954.8 million**
10. **BART – Warm Springs Extension**
    Alameda County
    **$890 million**
11. **Caltrain Electrification**
    Multiple Counties
    **$785 million**
12. **Transbay Terminal/Caltrain Downtown Extension – Ph. 2**
    San Francisco County
    **$637 million**
13. **BART Car Exchange (Preventive Maintenance) ****
    Multiple Counties
    **$618.5 million**
14. **3rd St LRT: Ph. 1 & Metro E. Rail Facility**
    San Francisco County
    **$595 million**
15. **San Jose International Airport People Mover**
    Santa Clara County
    **$508 million**
16. **Sonoma Marin Area Rail Corridor**
    Sonoma County/Marin County
    **$490.8 million**
17. **BART Oakland – Airport Connector**
    Alameda County
    **$484.3 million**
18. **SR-4 East Widening from Somersville Rd. to SR-160**
    Contra Costa County
    **$464.4 million**
19. **E-BART – East Contra Costa County Rail Extension**
    Contra Costa County
    **$463.25 million**
20. **Valley Transportation Authority: Preventive Maintenance****
    Santa Clara County
    **$430.9 million**
21. **SR-24 – Caldecott Tunnel 4th Bore**
    Alameda County/ Contra Costa County
    **$420.3 million**
22. **I-580/I-680 Improvements**
    Alameda County
    **$392.5 million**
23. **US-101 HOV Lanes — Marin-Sonoma Narrows (Marin)**
    Marin County
    **$372.7 million**
24. **US-101 Marin-Sonoma Narrows (Sonoma)**
    Sonoma County
    **$372.7 million**
25. **Caltrain Express: Ph. 2**
    Multiple Counties
    **$368.5 million**
26. **AC Transit: Preventive Maintenance Program****
    Alameda County
    **$346.5 million**
27. **Capitol Expressway LRT Extension**
    Santa Clara County
    **$334 million**
28. **SR-1 Devils Slide Bypass**
    San Mateo County
    **$322.8 million**
29. **Dumbarton Rail Service**
    Alameda County/San Mateo County
    **$301 million**
30. **I-680/SR-4 Interchange Reconstruction – Phases 1-5**
    Contra Costa County
    **$297.5 million**
31. **Outer Harbor Intermodal Terminals**
    Alameda County
    **$274.3 million**
32. **Golden Gate Bridge Seismic Retrofit, Ph. 1-3A**
    Marin County/San Francisco County
    **$274 million**
33. **BART Transbay Tube Seismic Retrofit**
    Multiple Counties
    **$265.3 million**
34. **Freeway Performance Initiative (FPI)****
    Multiple Counties
    **$243.9 million**
35. **El Camino Real Bus Rapid Transit****
    Santa Clara County
    **$233.4 million**
36. **SR-25/Santa Teresa Blvd/US-101 Interchange**
    Santa Clara County
    **$233 million**
37. **7th Street Grade Separation and Roadway Improvement**
    Alameda County
    **$220.5 million**
38. **Geary Bus Rapid Transit**
    San Francisco County
    **$219.8 million**
39. **Enhanced Bus – Telegraph/International/ East 14th**
    Alameda County
    **$209.2 million**
40. **I-680 Sunol Grade – Alameda SB HOV, Final Phase**
    Alameda County
    **$203 million**

** *These projects not shown on map*

## Appendix A: Regulatory and Policy Context for Environmental Justice in Long-Range Transportation Planning

The legal, regulatory, and policy framework for environmental justice as it relates to the long-range transportation planning process is below:

Title VI of the Civil Rights Act: The federal Civil Rights Act of 1964 has two key provisions that are the basis of environmental justice. Section 601 of Title VI states: *"No person in the United States shall, on the grounds of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance."* Section 602 also empowers federal departments and agencies (such as the Department of Transportation and its various agencies) to promulgate rules and regulations that implement this provision.

Federal Guidance on Environmental Justice: In 1994, President Clinton signed Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, which states, *"Each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."* The identification of low-income populations is an additional distinction to the provisions of the Civil Rights Act, which prohibits discrimination on the basis of race, color, or national origin only.

The U.S. Department of Transportation incorporated all these populations into its guidance on environmental justice. In particular, DOT directs its agencies to adhere to three environmental justice principles outlined by the Executive Order:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process.
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations.

Furthermore, in addition to these directions required of all DOT agencies, in 1998 the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), two agencies within DOT, jointly issued guidance specifying responsibilities for metropolitan planning processes, which includes MTC's development of the region's long-range transportation plan (other directives apply to activities carried out by state DOTs and public transit agencies). Under this FHWA/FTA guidance, MPOs must:

- Enhance analytical capabilities to ensure that the long-range transportation plan and transportation improvement program comply with Title VI.
- Identify residential, employment, and transportation patterns of low-income and minority populations, identify and address needs, and assure that benefits and burdens of transportation investments are fairly distributed.

- Improve public involvement processes to eliminate participation barriers and engage minority and low-income populations in transportation decision-making.

MTC carries out each of these directives by (a) continually gathering and analyzing regional demographic and travel data and refining its analytical capabilities; (b) supporting locally based needs assessments in low-income and minority communities through the Community Based Transportation Planning program, funding projects targeting low-income communities through the Lifeline Transportation Program, and conducting an equity analysis of each long-range Regional Transportation Plan (which this report summarizes); and (c) examining and refining the agency's public involvement process to ensure full and fair participation in decision-making. The 2011 TIP investment analysis is an expanded effort related to these directives.

MTC'S Environmental Justice Principles: As noted at the outset, in 2006, MTC adopted two Environmental Justice Principles advanced by its Minority Citizens Advisory Committee to serve as the environmental justice framework for the Commission's activities. They are:

- 1. Create an open and transparent public participation process that empowers low-income communities and communities of color to participate in decision making that affects them.
- 2. Collect accurate and current data essential to defining and understanding the presence and extent of inequities, if any, in transportation funding based on race and income.

## Appendix B: Definitions and Data Sources

### Definitions

Minority
MTC uses the U.S. Census Bureau's definitions of different racial and ethnic populations to determine minority status among the Bay Area population. Minority persons are those who identify as Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, some other race or multiple races, or Hispanic/Latino of any race. The "non-minority" population includes those persons who identify as white and not Hispanic or Latino. The white, non-Hispanic population is no longer a "majority" in the Bay Area, but at 46% of the region's population it remains the largest racial/ethnic group in terms of total population share.

Low-Income
Defining individuals, households, populations, or communities as "low-income" is challenging. A person or a household can be "low-income" in the sense that they do not earn enough money to meet a basic standard of living, or they can be "low-income" in relation to other people or households that earn more money. Either determination is subjective to some extent, which makes it more difficult to characterize the low-income population as a whole than, for example, the minority population. In this report, two different definitions of "low-income" are used. While they are not strictly equivalent, they both represent roughly the lowest 20 to 25% of the region's population/households in terms of income.

*Persons living below 200% of the Federal Poverty Level*
This definition is used in the poverty-concentration threshold to identify "communities of concern," where at least 30% of residents have incomes below 200% of the federal poverty level. The population this definition represents is based on an *individual-level* determination of poverty status in relation to family income, family size, and a basic standard of living defined by the Census Bureau each year. Poverty status is not forecast, since there is no regionally established method of accounting for changing standards of living; defining a basic standard of living implies the consumption of a wide variety of goods to meet one's needs, and it is difficult to forecast the future costs of all these various goods. As a reference, for a single-person household 200% of the poverty level in 2007 was $21,180. For a two-adult, two-child household, the 200% threshold was $42,054. By way of comparison, a full-time worker earning California's minimum wage would have earned $15,600 in 2007.

*Households with Income Less Than $40,000*
The other low-income definition used in some of the equity indicators in this analysis is for *households* rather than individuals, and is based on household income level regardless of household size; ABAG does forecast the number of households by income group for the horizon year 2035, and thus it is the definition used in this report for forecast data for "low-income households" in the accessibility and affordability analyses. In addition, some indicators also account for a broader grouping of all low plus moderately low income households, creating a group of households earning less than $75,000.

Communities of Concern

MTC defines communities that have concentrations of either minority or low-income residents (below 200% of the federal poverty level) as communities of concern for the purpose of analyzing regional equity.

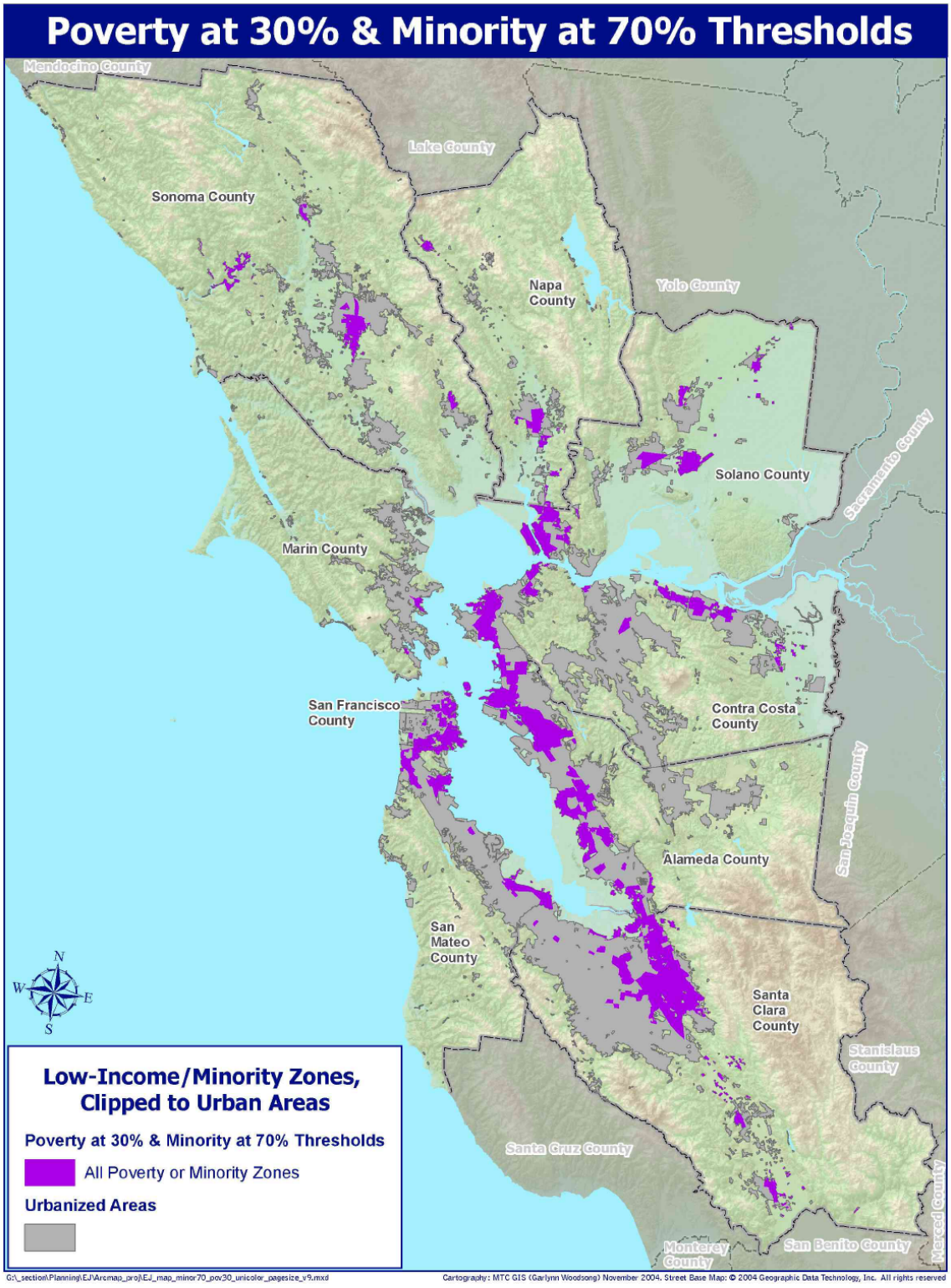
Residents of all communities of concern together were 76.9% minority and 34.5% low income in 2000. By comparison, the region as a whole in 2000 was 50.1% minority and 20.6% low-income. (At the region-wide level, for which MTC has more recent 2007 data available from the Census Bureau, these shares had grown to 54.5% minority and 22.2% low-income.)

As a whole, residents of communities of concern represented 33.2% of the region's 2000 population and 33.7% of the region's travel analysis zones. These totals include the entire populations living in communities of concern, including those who are non-minority and not defined as low-income. For the purposes of analyzing equity at a regional scale, this analysis compares all communities of concern to the remainder of the region's communities. Figure B-1 shows the location of MTC's communities of concern within the region.

While the identification of communities of concern emphasizes regional *concentrations* of poverty, most residents of communities of concern (65.5% of the total) are *not* defined as low-income. Moreover, nearly half of the region's low-income residents live *outside* communities of concern. In terms of 2000 population, 777,000 low-income people lived in communities of concern (55.4% of the region's total low-income population of 1.4 million), while 625,000 lived in the remainder of the region (44.6% of the region's total low-income population). This finding raises a relevant question as to what impacts of the Transportation 2035 Plan are being experienced by the remaining low-income population outside of communities of concern, a point this equity analysis attempts to address in several ways.

The location of most of the region's communities of concern notably ring the San Francisco Bay's cities and inner suburbs, including where the region's road and transit networks are densest. Farther out in the region, locations of communities of concern become more scattered, with fewer connections to the region's transportation network.

**Figure B-1**


Poverty at 30% & Minority at 70% Thresholds
Mendocino County
Lake County
Sonoma County
Napa County
Yolo County
Solano County
Sacramento County
Marin County
San Francisco County
Contra Costa County
San Joaquin County
Alameda County
San Mateo County
Santa Clara County
Stanislaus County
Santa Cruz County
Monterey County
San Benito County
Merced County
N
S
E
W
Low-Income/Minority Zones, Clipped to Urban Areas
Poverty at 30% & Minority at 70% Thresholds
All Poverty or Minority Zones
Urbanized Areas
G:_section\Planning\EJ\Arcmap_proj\EJ_map_minor70_pov30_unicolor_pagesize_v9.mxd
Cartography: MTC GIS (Garlynn Woodsong) November 2004. Street Base Map: © 2004 Geographic Data Technology, Inc. All rights reserved

**Data Sources**
This section describes the various data sources used to perform the 2011 TIP 2035 Equity Analysis.

Decennial Census
The decennial Census provides a complete count of all persons in the United States, including age and race/ethnicity, every 10 years. In addition, past Censuses have surveyed one in six households to produce sample socioeconomic characteristics such as household income, poverty status, vehicle availability, employment characteristics, and commute mode, which are available down to the block group level of geography. As explained in the preceding section, data from the 2000 Census was used to identify MTC's low-income and minority communities of concern; it remains the most recent Census data available at the census tract/TAZ (i.e. neighborhood) level.

American Community Survey
The American Community Survey (ACS) is a newer Census Bureau data product, which replaces the "long form" questionnaire used in previous decennial Censuses to sample household socioeconomic characteristics. Whereas the decennial Census long-form data was previously released once every 10 years, the American Community Survey data is an ongoing survey, updated annually. Currently, data is available for larger geographic areas of more than 65,000 population, including 2005, 2006, and 2007 data for all nine Bay Area counties and the region as a whole. The five-year accumulation of ACS data for 2005–2009 will be released at the census tract and block group level perhaps by fall 2010. This will be the soonest that updated socioeconomic data for people and households in designated communities of concern will be available.

Bay Area Travel Survey (BATS)
The Bay Area Travel Survey is MTC's periodic regional household travel survey, the most recent of which was conducted in 2000. BATS2000 is an activity-based travel survey that collected information on all in-home and out-of-home activities, including all trips, over a two-day period for more than 15,000 Bay Area households. The survey provides detailed information on many trip characteristics such as trip purpose, mode, origins and destinations, as well as household characteristics.

MTC Transit Passenger Demographic Survey
In 2006 MTC conducted a comprehensive survey of all Bay Area transit operators to collect consistent demographic and socioeconomic data for all the region's transit riders. Data collected included race/ethnicity, age, fare payment information, household income, and vehicle availability. Results for this survey were used in the financial analysis of RTP investments to determine transit-spending benefits to low-income households based on these households' share of transit use in the region.