

**Economic Recession and Population Projections
in a Regional Planning Context**

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By

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Abstract

This study demonstrates the recent experience of the Southern California Association of Governments (SCAG) in developing the regional population projections as part of updating the 2012 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), and the regional Housing Needs Allocation (RHNA). The SCAG region's population projection update began in January 2009 and is scheduled to be adopted by the Regional Council (RC) in April 2012. The study analyzes several issues observed during the recent population projections update process: 1) the unstable/uncertain nature of economic-demographic behaviors (unemployment rate, migration, labor force participation rate, etc) in the short term framework; 2) the currency and reasonableness of population projections (and assumptions) by US Census Bureau and CA Department of Finance; 3) lack of relevant statistical data in a timely manner; and 4) the significant gap in population estimates between US Census Bureau and CA DOF. The study discusses a couple of ways of addressing the issues. First, the first major challenge is to develop the reasonable short term economic prospect for job growth, unemployment rate, and population growth. A range of the short term economic outlooks (e.g., job growth rate, unemployment rate) could be identified from a list of economic forecasts, a panel of expert meeting, and expert interview. Second, there is need to reassess the traditional top down approach and to promote the bottom up approach. The regional planning agencies might need to be selective in using them and creative in interpreting the forces underlying the current economic recession and demographic changes. The regionally based bottom up demographic assumptions and projections might be the better practice because they might reflect the more realistic trend and short term outlook than the pure top down approach based demographic assumptions and projections. The study identifies the future challenges in a regional planning framework. First, SCAG is required to meet diverse federal and state planning and regulatory requirements (e.g., currency, consistency) for developing reasonable regional population projections. Second, SCAG should promote public involvement and participation during the population projection process, while maintaining the accuracy of the regional population projections. Both promoting the active public involvement and maintaining the accuracy of the regional population projections are not separate but integrated planning goals in a regional planning framework.

Key Words: economic recession, short term population projections, uncertainty, regional planning, Southern California

1. Introduction

Population projections play a key role in determining the future community needs including housing and transportation in a regional planning context. Regional demographers and planners efficiently and regularly develop and update the future population growth using diverse data sources including US Census Bureau, State Statistical Agency, and private vendors. Those federal and state agencies do not frequently update their demographic assumptions, and sometimes might not maintain currency and reasonableness of population projections. For example, we recently have experienced the unexpected economic recession beginning in 2008 across the nation, which would affect the regional population growth, in particular, migration, in the near future. The assumption of existing population projections quickly becomes questionable due to the economic uncertainty in the near future. The traditional long term perspective, which might not reflect the on-going economic trends and the frequently updated short term economic forecast, might result in the serious bias of the short term population projections.

This study demonstrates the recent experience of the Southern California Association of Governments (SCAG) in developing the regional population projections as part of updating the 2012 Regional Transportation Plan (RTP)/Sustainable Communities Strategy (SCS), and the regional Housing Needs Allocation (RHNA). The SCAG region's population projection update began in January 2009 and is scheduled to be adopted by the Regional Council (RC) in April 2012. The study analyzes several issues observed during the recent population projections update process: 1) the unstable/uncertain nature of economic-demographic behaviors (unemployment rate, migration, labor force participation rate, etc) in the short term framework; 2) the currency and reasonableness of population projections (and assumptions) by US Census Bureau and CA Department of Finance; 3) lack of relevant statistical data in a timely manner; and 4) the significant gap in population estimates between US Census Bureau and CA DOF.

The study discusses a few ways of addressing the issues and challenges. First, the short term (5-10 year) population projections can be developed to properly reflect the on-going and plausible short term economic prospect. Second, the uncertainty of economic-demographic assumptions and prospects can be properly addressed through development of a range of population projections and the frequent and regular review of assumptions by a panel of experts. Third, the extrapolation of the region's historical pattern of demographic components (e.g., international migration) should also be considered important along with the demographic assumptions for the national population projections by the US Census Bureau. Fourth, employment forecast is useful in developing regional population projections. It provides regional planners with a persuasive

growth story.

In the following sections, the study will discuss 1) Why does SCAG develop the regional population projections?; 2) economic recession and population projections: issues and challenges; 4) expert approaches to the regional economic-demographic assumptions; 5) regional population projection model: practice and sensitivity analysis; 6) discussion and conclusions

II. Why Does SCAG Develop the Regional Population Projections?

Southern California Association of Governments (SCAG) is the largest of nearly 700 councils of government in the United States, functioning as the Metropolitan Planning Organization for six counties: Los Angeles, Orange, San Bernardino, Riverside, Ventura and Imperial. The region encompasses a population exceeding 18 million persons in an area of more than 38,000 square miles (See figure 1). As the designated Metropolitan Planning Organization, the SCAG is mandated by the federal and state governments to research and draw up plans for transportation, growth management, hazardous waste management, and air quality, housing, hazardous waste management, and waste treatment management. SCAG also acts as an information clearinghouse, providing cities and counties a wide array of demographics, forecasting, mapping and other regional statistics and data.

Why does SCAG develop the regional population projections? First of all, SCAG, with the assistance of counties and cities, is required to prepare and approve the portions of the Air Quality Plan related to regional demographic projections on which emission of pollutants are based. SCAG prepares a consistent socioeconomic data set for Cities, Counties, and other government agencies in the region (California Health and Safety Code Section 40460 (b)). Second, SCAG is mandated to develop population projections as part of developing the Regional Transportation Plan (RTP), pursuant to federal transportation planning requirements 23 CFR 450.322(c) and (e). As part of each RTP update process, SCAG must confirm the RTP's validity and consistency with current and forecasted transportation and land use conditions and trends for the minimum 20-year forecast horizon. Third, SCAG also develops population projections for the Regional Housing Needs Allocation (RHNA) (see 65584.01 of the Government Code 65584.01. (a) For the fourth and subsequent revision of the housing element pursuant to Section 65588).

The SCAG's regional population projections are widely used for the planning purposes by major public agencies and local jurisdictions in the region. For example, the Metropolitan Water

District (MWD) of Southern California is a consortium of 26 cities and water districts in Southern California. It provides its service area with adequate and reliable supplies of water. MWD relies on the SCAG's population projections for projecting future water needs of the service areas for the 50 year projection horizon. Los Angeles County Sanitation Districts consist of 24 independent special districts serving about 5.7 million people in Los Angeles County. The Districts construct, operate, and maintain facilities that collect, treat, recycle, and dispose of domestic and industrial wastewater. The Districts use the SCAG's population projections for estimating the domestic and industrial wastewater of their service areas.

III. Economic Recession and Population Projections: Issues and Challenges

In February 2009 SCAG officially launched its growth forecast process. At the point, the SCAG region was heavily hit by the national economic recession (probably the greatest recession since the great depression!), which formally started in the late 2007. One of the key causes of the recession was the sub-prime loan losses and their impact on other risky loans and over-inflated asset prices (http://en.wikipedia.org/wiki/Late_2000s_recession). The SCAG region's foreclosure data during the period of 2007-2008 reflects the impact of the sub-prime loan losses (Dataquick, 2008). The number of the regional foreclosed units increased from 3,779 units in July 2007 to 12,734 units in August 2008 by 237%.

[Figure 2 Insert here]

Since the economic recession was so deep that we had difficulty in understanding the near term economic perspective (size of job loss, affected jobs by sector, labor force adjustment, and unemployment rate, etc) and its related population impact. A couple of economic indicators, unemployment rate and job growth rate, are popular ways of measuring the economic condition. The two economic indicators are projected by well-known government agencies and private consulting firms (See table 1). According to table 1, several agencies projected the short term unemployment rate for different levels of geography: nation, state, and county. Nine agencies developed the national level unemployment rate. Although two federal agencies (Federal Reserves Governors and President and OMB) expected the national unemployment rate will be highest in 2009, other seven agencies predict the highest unemployment rate in the nation to occur in 2010. It seems that there is consensus on the perspective of the short term California State's unemployment rate. All of four agencies forecast that the California State's unemployment rate is highest in 2010. Table 1 includes only one agency's short term forecast of the unemployment rate of four counties in the SCAG region. Four counties in the SCAG region

are projected to show the highest unemployment rate in 2010. In addition to unemployment rate projection, job growth rate.

[Table 1 Insert here]

In most of metropolitan regions, the long term regional transportation plan is usually updated every three or four years as required by the federal law. The regularly updated regional plan likely reflects the current and updated planning indicators. Population projections, as a key indicator to determine future travel demand, are also revised upward or downward according to the recent trend or the updated expectation of the future population growth. When a metropolitan region is required to update the population projections during the economic recession, it immediately faces a few issues and challenges in moving forward population projections process.

First, there is lack of timely information of the relevant historical population trends, including components of growth (e.g., births, deaths, and migration). In particular, information of the regional birth rate, death rate, or migration rate by demographic characteristics is not available on time. The mid year county population estimates and components of population change are oftentimes available due to the processing time of administrative records 6 months to 11 months later, and are updated on an annual basis. The update of these demographic is based on administrative records of 17 state and federal departments and agencies (CA DOF, 2009)(<http://www.dof.ca.gov/research/demographic/reports/estimates/e-2/2000-09/>). Due to the delay of the data availability, we might miss the significant demographic changes to occur in turbulent economic condition.

Second, economic-demographic behaviors (e.g., unemployment rate, labor force participation rate, multiple jobholding rate) might be out of the normal range in the short term framework (Campbell, 2008). In particular, unemployment rate in the economic recession is extremely high that the population projection model should be able to reflect its impact on migration in the short term projection.

Third, there is a significant gap in population estimates between US Census Bureau and CA DOF (Wheaton, 2009). According to the Census Bureau's July 2008 estimate for the SCAG region is 17,950,391, while CA DOF's estimate of population is 18,648,406. The Census Bureau's estimate of population is 698,015 persons, 3.9% lower than that of CA DOF. As expected, the major reason for the discrepancy is the estimation of domestic migration. Both agencies use different data bases to estimate domestic migration. The US Census Bureau mainly uses federal

tax returns for tax filers to measure migration, while CA DOF mainly uses the licensed driver's address change. The size of the difference is varying by county. Los Angeles County (485,388) showed the most significant numerical difference in the population estimate between US Census Bureau and CA DOF. Other Counties also showed a numerical difference: Orange (114,997), San Bernardino (45,367), Ventura (32,605), Imperial (13,848), Riverside (5,812). In terms of the percent change, Imperial County showed the most significant difference (8.4%). Other counties' percent change is as follows: Los Angeles (4.9%), Ventura (4.1%), Orange (3.8%), San Bernardino (2.3%), Riverside (0.3%).

Fourth, the existing population projections and related demographic assumptions by US Census Bureau (2008) or CA DOF (2007) might be outdated and should be carefully reviewed for its currency and reasonableness. For example, US Census Bureau's international migration were developed using historical time series information. As with past projections, the international migration assumptions forecast for this series are not constrained to any current or proposed policy or administratively determined immigration levels. (US Census Bureau, 2008)(<http://www.census.gov/population/www/projections/methodstatement.html>). Total annual average of net international immigration is projected to be 1,338,400 (2010-15), 1,434,400 (2015-20), 1,530,200 (2020-25), 1,626,000 (2025-30), 1,721,600 (2030-35). The projected immigration is much higher than that of the recent historical trends (945,000 per year). As of writing this paper, the US Census Bureau (2009) released the supplementary population projections with alternative net international migration assumptions.

IV. Expert Approaches to the Regional Economic-Demographic Assumptions

The SCAG regional job and population projections are divided into two different approaches. The first approach is applied to the national projections: develop national job projections using the population projections. The second approach is applied to the regional projections: develop the regional population projections using the regional job projections. The key steps and concepts for developing the regional job and population projections are described as follows (Levy, 2009): First, the regional job growth projections depend on the number and type of jobs created in the nation and the regional share of these jobs located in the nation and California. Second, the number of jobs in the U.S. depends on the growth in total population and population by age group and projections of labor force participation rates. Unemployment rates and the number of workers holding more than one job are also contributing factors in determining long-term U.S. job growth. Third, projected regional job growth determines regional labor force and workers demand, which will affect labor force and workers supply through mainly migration.

Regional population projections are derived as a result of this labor demand-supply balance process.

Since the economic recession was so deep that we had difficulty in understanding the near term economic perspective (size of job loss, affected jobs by sector, labor force adjustment, and unemployment rate, etc) and its related population impact, we decided to identify a reasonable range of key assumptions and critical issues at the national, state and regional level for developing the 2012 RTP growth forecasts through a panel of expert and expert interview.

1. Panel of Experts

A panel of expert comprised fifteen experts in the field of economy and demography. These experts might have worked on economic or demographic forecasts for a long time or the agencies that they work for might have produced economic or demographic forecasts. They come from a variety of public or private organizations. Nearly 50% of the panel members come from the universities in California (e.g., University of Southern California, University of California Los Angeles, University of California Riverside, University of California Santa Barbara, California State University Long Beach, California State University Fullerton). Other panel members come from the state or local government agencies, private consulting firms (e.g., Los Angeles Economic Development Corporation, South Coast Air Quality management District, California Department of Finance, Regional Economic Models, Inc., Beacon Economics, DB Consulting). Experts were provided with a list of questions regarding assumptions with background information (e.g., historical data and preliminary range of forecast by moderator) a few days before the panel of expert meeting held on May 15, 2009.

The survey questions are focused on short term assumptions of unemployment rate and job growth, and long term assumptions of employment, population, and household forecasts and their relationships (See Appendix A). The survey questions include, not limited to: How deep and long will the recession be?; How will the recession affect the economy and prospects for housing in 2020?; How does the panel evaluate the new Census Bureau U.S. population projections?; Will labor force participation rates continue to increase for older workers?; Will California job growth equal, exceed or lag behind the projected U. S. job growth rate?; Will SCAG region job growth equal, exceed or lag behind California growth rates? (Levy, 2009)

This paper focuses on three major categories of the survey questions: 1) short term economic outlook; 2) economic assumptions (e.g., regional share of the national job projections); 3)

demographic assumptions (e.g., national and regional net international immigration assumption). First, the short term economic outlook is focused on understanding the timing of the bottom of the national and regional economic recession. According to responses of the experts, the economic recession measured in job losses in the SCAG Region would most likely end in 2010 (2 respondents), 2011(7 respondents), or 2012(3 respondents). Once the economy is recovered from the recession, it might take several years for the unemployment rates to be back to a normal range (5% - 8%). Five of seven responded that, after the recession ends, national job growth would be equal to the annual average of U.S. job growth rate (1.04% between 2006 and 2016) from the current 2007 US BLS job projection. Two respondents said that national job growth would be greater than the U.S. job growth rate from the current 2007 US BLS job projection.

Second, the regional share of the national job projections is indirectly surveyed through two different but related questions about 1) California's share of U.S. jobs for 2020 and 2035 and 2) SCAG Region's share of California jobs for 2020 and 2035. Twelve experts responded to both questions above. The survey results imply that the regional share of the national job projection ranges from 4.3% (minimum) to 5.3% (maximum) in 2020 and 3.8% (minimum) to 5.5% (maximum) in 2035 (See table 2). The gap between the minimum and maximum is much bigger in 2035 than in 2020. The median regional share remains constant at 5% for both 2020 and 2035, which is 0.2% point lower than the most current regional share (5.2%). The overall survey response is not optimistic about the SCAG region's relative economic competitiveness in the national economy.

[Table 2 Insert here]

Third, the national immigration assumption of the Census Bureau is reviewed and discussed by the panel of experts. In fact, the Census Bureau released one set of long-term population projections for the nation in August 2008. These baseline projections included higher immigration projections than previously, which resulted in an increase in projected population growth to 2050. The key question is whether SCAG adjusts the current international immigration upward in light of the higher Census Bureau projections. Ten of the thirteen responded experts said No to the upward adjustment of the international immigration assumption.

2. Expert Interview

SCAG also made interviews with five experts specialized in the county or subregion's demographic and economic analysis and forecasting, and planning process in the SCAG region.

Five experts are comprised of two demographers, two economists, and one subregional planning executive. One demographer also participated in the panel of experts meeting. According to the expert interviews, the on-going economic recession is widely felt and might not be fully recovered in the coming years. Responses to two major questions: 1) economic recession and recovery 2) migration are summarized (Doche-Boulos, 2009).

The Regional and Subregional Economic Outlook:

1) Ventura County has been hit harder than the rest of the State because of the presence of Country Wide. The companies providing stability to Ventura County were weakened. The recession in the County will not end before 2010. The recovery will start in 2011. Until then the County will remain in recession like the rest of the State. When the recession will be over the County will rebound faster than the State because there are fewer foreclosures in the County than in the rest of the State.

2) Economic recession of Orange County will bottom out in 2010 or 2011. The job growth in 2010 and 2020 will be much lower than what is currently projected. The economy will rebound but not to the same levels as 3 years ago. The 2020/2035 targets will be pushed out to later years. The numbers forecast for 2020 might happen in 2035. Economist can project the shares of the national economy but we will not know what local economies are going to be until we get a clearer picture of the national economy.

3) Fast economic growth and a return to post WW II situation will not happen. The political process and climate in the state and region is not favorable. The ballot initiative system leads to totally contradictory results. There is also the potential for the ballot initiative results to be overturned. There is no long term predictability. Voters opt for bonds to provide certain services but not for augmenting revenues to pay for such services. The state and region might have an advantage as they have a large share of the fast growing industries but if the political process and climate do not change, there is a potential for those industries to leave the state. The region cannot be a retail center, it should also produce items. If the economic and political climate does not change, business can leave.

4) Unemployment in the Inland Empire (Riverside and San Bernardino Counties) is among the highest in the nation at 12.9%, the highest after Detroit. Construction of new homes has to compete with foreclosures. There will be 5 years at a minimum of suppressed growth. Housing and logistics are not what they used to be in the Inland Empire. When they bounce back the economy will pick up again. It will take a long time for the economy to fully recover from the recession and that there will be a need for restructuring.

5) The gateway subregion, once home to 13 growing industry clusters, has lost a lot of it's

economic base and is down to 4 clusters, 3 of them not growing and the 4th (logistics) in trouble. The Industry Cluster study might help to promote the economic development for the subregion and for the region.

The Regional and Subregional Perspective of Migration:

- 1) The skills levels for certain jobs and the skills of the local labor force do not match. Workers commute from Santa Barbara and Los Angeles Counties. With Los Angeles County, the commute is in both directions. This is detrimental to the economy. Migration and commuting will continue unless the skills of the local labor force are improved.
- 2) Fewer jobs mean fewer migrants drawn to Orange County. Asian immigrants will continue to be pulled to Orange County because neighborhoods like Little Saigon are developing their neighborhoods. Other ethnic enclaves will grow in the County.
- 3) Southern California region no longer has the same pull to attract immigrants and domestic migrants. Other areas of the nation are becoming more attractive.
- 4) Migration to the Inland Empire has almost come to a halt according to CA DOF figures. But the demand for housing will rebound and there will be more migration to the area.

A panel of experts and an expert opinion play an important role in determining the reasonable assumptions of the region's future economic and population growth in an extremely volatile economic context.

V. Regional Population Projection Model: Practice and Sensitivity Analysis

1. Regional Population Projection Model

Population projections are required as key input to develop federal and state mandated plans and programs. Employment projections are also developed along with population projections because of their importance in developing regional economic strategy and measuring traffic attractiveness of the destination areas. As a result, the future population and employment size should be determined considering the relationship of two variables. An example is to use population to employment (P/E) ratio to develop population or employment projections. The P/E ratio can be effectively used to link population to employment.

Given the requirements of developing both population and employment projections, SCAG has developed a type of economic-demographic models. The following is a brief description of

SCAG regional population projection model (SCAG, 1998) (See figure 3).

[Figure 3 Insert here]

Two major components (five minor components: births, deaths, net international immigration, domestic in-migration, domestic out-migration) account for population growth: natural increase (which is the balance between births and deaths) and net migration (which is the balance between the number of people coming and leaving the region). Net migration is further divided into three components: domestic in-migrants (people moving into the region from the rest of the country), domestic out-migrants (people moving into the rest of the country from the region), and net international immigrants (legal and undocumented immigrants minus legal and undocumented international emigrants).

SCAG initially develops regional population projections using the cohort-component model. The model computes the population at the future point in time by adding to the existing population the number of group quarters population, births and persons moving into the region during a projection period, and by subtracting the number of deaths and the number of persons moving out of the region. Two region gross migration approach is used to develop two domestic migration components for its theoretical soundness, less data needs, and easy applicability (Isserman, 1993). This process is represented as the demographic balancing equation.

$$P_t = P_0 + B - D + DIM - DOM + NIM$$

where P_t is the population at time t , P_0 is the population at time 0, B is births between times 0 and 1, D is deaths between times 0 and 1, DIM is domestic in-migrants, DOM is domestic out-migrants, and NIM is net international migrants.

The fertility, mortality and migration rates are projected in five year intervals for eighteen age groups, for two sexes, for four mutually exclusive ethnic groups: Non-Hispanic White, Non-Hispanic Black, Non-Hispanic Asian and Others, and Hispanic. The birth rates are also projected by population classes: residents (domestic migrants) and international immigrants. The regional migrations are derived using: 1) three component approach (domestic in-migration, domestic out-migration, net international migration), 2) structural model for domestic migration, extrapolation for international migration, 3) bottom-up model linked to employment assumptions, and 4) two region gross migration model. The future labor force supply is computed from the population projection mode by multiplying civilian resident population by projected labor force

participation rates. This labor force supply is compared to the labor force demand based on the number of jobs by the shift share employment projection model. The labor force demand is derived using three step processes. The first step is to develop independent job projections using diverse economic models, including export-base models, input-output models, or shift-share techniques (Smith et al, 2001). The second step is to convert jobs into workers using the worker to job ratio. The application of the worker to job ratio is intended to reflect the proportion of workers holding two jobs or more. The third step is to convert workers into labor force demand using the ideal implied unemployment rate. If any imbalance occurs between labor force demand and labor force supply, it is corrected by adjusting the migration assumptions of the population projection model. This kind of equilibrium model is relatively less costly and easy to implement (George et al, 2004). Adjustment of migration assumption is translated into total population changes using the established conversion ratio.

2. Sensitivity Analysis

Although key demographic assumptions are primarily processed through complex mathematical techniques, these assumptions are open to reviews of peers, experts, or other interested individuals during the regional forecast and plan process. The key demographic assumptions include fertility rate, survival rate, and migration rate (e.g., domestic in-migration rate, domestic out-migration rate, net international migration) by age, gender, and race/ethnic group. Migration is the most volatile variable and hard to project. SCAG uses the externally developed employment projection as a way to estimate the reasonable size of domestic migration.

In the SCAG regional population projection framework, the regional share of the national job projections and the net international immigration and the related nation population projections can make a significant difference in deriving the regional population projections. The following two sensitivity analyses are designed to understand the possible impact of different assumptions on the regional population.

2-1. Regional Share of National Job Projections and Population Projections

This sensitivity analysis shows the impact of three alternative regional shares of national job projections on population projections during the projection horizon (2010-2035), while maintaining other key demographic and economic assumptions (e.g., fertility rate, survival rate, international migration, labor force participation rate, unemployment rate, multiple jobholding rate). The regional share of national job projections plays an important role in determining the

regional employment projection in the shift share projection model. The future regional share of national job projections is linked to regional competitiveness. In this demonstration, the future regional share is developed by using the extrapolation technique. This sensitivity analysis maintains other key regional demographic and economic assumptions (e.g., fertility rate, survival rate, regional share of national net immigration, labor force participation rate, unemployment rate, multiple jobholding rate) except the regional share of national job projections. B1 is the fast growth scenario. Its regional share of national job projections increases over time than the current regional share of national job projections. The regional share of national job projections grows from 5.2% in 2010 to 5.6% in 2035. B2 is the baseline scenario. Its regional share of national job projections is consistent with the recent regional share of the national job projections. The regional share of national job projections grows from 5.2% in 2010 to 5.4% in 2035. B3 is the slow growth scenario. Its regional share of national job projections remains constant at 5.2% during the projection horizon. The higher regional share of the national population projections results in more regional jobs, then more regional population via more net domestic migration. The lower regional share of the national population projections shows a different implication. The lower regional share of the national population projections results in less regional jobs, and then less regional population via less net domestic migration. Table 3 presents the impact of three different regional shares of national job projections on population projections between 2010 and 2035. The difference in population projections between B1 and B3 increased from 251,457 (1.2% of B2) in 2015 to 748,662 (3.6% of B2) in 2020 and 1,272,079 (5.3% of B2) in 2035. It is found that the small change in the regional share of national job projections might greatly change the regional population projections. For example, there was only 0.3% difference in the regional share of national job projections in 2020, but the resulting population difference is 748,662 (3.6% of B2).

[Table 3 Insert here]

2-2. Net International Migration and Population Projections

The purpose of this sensitivity analysis is to show the impact of the different size of national net international migration on the national and regional job projections, and then regional population projections via the labor balance model during the projection horizon (2010-2035). The US Census Bureau released the relatively high net international migration assumption (C1) as part of the national population projections in August 2008, but it realized that the actual international migration did not keep pace with the high level of international migration due to serious economic recession. The US Census Bureau developed two supplementary net international

migration assumptions (low(C2) and constant(C3)) to reflect the recent low immigration trend in December 2009. The national immigration assumption affects 1) regional job projections using the regional share of the national job projections derived from national population projections 2) regional net immigration using the regional share (12.5%) of the national immigration. This sensitivity analysis maintains other key regional demographic and economic assumptions (e.g., fertility rate, survival rate, regional share of national net immigration, labor force participation rate, unemployment rate, multiple jobholding rate, regional share of national job projections). The sensitivity analysis result indicates that regional net international migration and regional job projections are translated into regional population projections (See table 4). As a sensitivity analysis result, the difference in regional population projections between C1 and C3 increased from 262,717 (1.3% of C2) in 2015 to 429,929 (2.1% of C2) in 2020 and 1,144,795 (4.9% of B2) in 2035. The single important contribution to different regional population projections is the different national net international migration assumption, which affect population based national job projections. Although the different regional net international migration assumptions are applied with a fixed regional share (12.5%) of the national net international immigration, they will not affect population size but the relative composition of international migration and domestic migration, and demographic characteristics (e.g., age composition and ethnic distribution).

[Table 4 Insert here]

VI. Discussion and Conclusions

While the economic recession officially begins in December 2007 and has been getting more serious over the year with no clear sign of economic recovery, SCAG region has been hit hard with loss of jobs and high unemployment rate. In February 2009, SCAG, as one of the largest MPOs in the nation, began updating the existing population projections for diverse regional planning activities including regional transportation plan (RTP), regional housing needs allocation (RHNA), sustainable communities strategy (SCS), etc.

Unlike the routine update of the regional population projections in the context of usual economic or business environment, the serious economic recession increased the uncertainty of the immediate future economic outlook for job growth, unemployment rate, and population growth through migration. What would be the best practice of developing the reasonable regional population projections? The uncertain and gloomy economic outlook will influence the population projections through mainly domestic migration and partly international migration.

There are several challenges and proposed regional approach to population projections. First, the first major challenge is to develop the reasonable short term economic prospect for job growth, unemployment rate, and population growth. A range of the short term economic outlooks (e.g., job growth rate, unemployment rate) could be identified from a list of economic forecasts, a panel of expert meeting, and expert interview.

Second, there is need to reassess the traditional top down approach and to promote the bottom up approach. In a usual projection environment, diverse demographic estimates, assumptions, and projections from the federal and state governments are widely used as a reference or a guide. They are of limited help in such an uncertain economic environment. The recent demographic data plays a limited role in understanding the immediate future status through the rapidly changing economic environment due to unavailability of the timely data base. The currently available demographic assumptions and projections by the US Census Bureau, US Bureau of Labor Statistics, and CA DOF are also of limited use because they are already outdated or overestimated, and might need to be updated. Instead of fully relying on the authoritative federal and state data sources, the regional planning agencies might need to be selective in using them and creative in interpreting the forces underlying the current economic recession and demographic changes. The regionally based bottom up demographic assumptions and projections might be the better practice because they might reflect the more realistic trend and short term outlook than the pure top down approach based demographic assumptions and projections. The successful example of using the bottom up approach is CA DOF's current practice of developing migration assumptions. California Department of Finance Demographic Research Unit (DOF) is designated as the single official source of demographic data for state planning and budgeting (<http://www.dof.ca.gov/research/>). The DOF develops population projections for the State and the counties for 50 year projection horizon. The population projections are developed using the cohort-component model and are available for age, sex, and race/ethnic groups. It is worth noting that the DOF depends on local input to develop county level net migration assumptions. Local input is usually provided by local or regional planners or demographers of local jurisdictions, COGs, MPOs in California. The local input process significantly reduced the gap in the long term population projections. For example, the most recent DOF population projections (July 2007) for the SCAG region were 24.3 million in 2035, while the SCAG regional population projections (July 2007) were 24 million in 2035 (See tables 5A-5D). The difference in regional population projections was only 277,000 at 1.2%. While there is a wide variation of the difference in population projections by county, the regional difference was extremely low, considering that the typical mean absolute percent error for 30 year population projections at the State level is eighteen percent (Smith et al, 2001, p.340). The major cause of such small gap in

population projections between SCAG and DOF must be related to the local input process that DOF uses to develop the net migration assumptions.

The study identifies the future challenges in a regional planning framework. First, SCAG is required to meet diverse federal and state planning and regulatory requirements (e.g., currency, consistency) for developing reasonable regional population projections. According to the federal transportation and air quality law, the SCAG is required to use the most “current” planning assumptions to develop the regional transportation plan. The currency requirement is not specifically defined in the law, but might be applied to the whole planning process and might be interpreted in a broad way. When this currency requirement is applied to the population projection process, demographic assumptions used for population projections should readily reflect the recent trend and the plausible growth trajectory. The reasonable and realistic demographic assumptions are easily found to be true or false within a short time period. In addition to the currency requirement, the “consistency” requirement is also an important consideration for developing demographic assumptions in a regional planning framework. The first example is California Senate Bill 375 enacted in 2008. The SB 375 is an implementation law of AB 32 – the Global Warming Solution Act of 2006. SB 375 integrates three key planning elements: SCS, RTP, and RHNA to achieve the regional GHG emissions target, and one set of demographic assumptions and population projections are required to consistently serve the above planning activities. The long-term transportation plan (planning horizon of minimum 20 years) and the short term housing needs allocation plan (8.5 year planning horizon) are linked each other through SCS and prepared on the “same” planning cycle (every four years). Once these two different temporal perspectives (e.g., short term and long term) can be discussed together on the same planning cycle, the demographic assumptions and population projections might be dealt with in a more integrated way. The second example is a potential reconciliation process of population projections during the RHNA process. The reconciliation occurs if there is a significant difference in population projections between SCAG and DOF during the RHNA process. For example, if the total regional population growth of both agencies for the planning period (8.5 years) is within a range of 3 percent, SCAG’s population projections for RTP shall be the basis for calculating projected housing need in the region. If the total regional population growth of both agencies for the planning period is greater than 3 percent, SCAG will further discuss HCD on an appropriate methodology. If there is still no agreement SCAG and HCD, then HCD bases the RHNA on the DOF projections, but may modify the projections as a result of its discussions with SCAG.

Second, SCAG should promote public involvement and participation during the population

projection process, while maintaining the accuracy of the regional population projections. Public involvement and participation is vital to the regional planning process. Participation by local jurisdictions, the general public, the business community, community groups, and other governmental agencies is encouraged during the forecast and planning process. Public participation should be a proactive and meaningful public involvement process, including access to complete technical and policy information, timely notices, full access to key decisions, and support for early and continuing involvement in regional population projection development.

The public outreach is a part of developing a reasonable population projection at different levels of geography in a regional planning framework. As part of developing a growth forecast for 2012 Regional Transportation Plan, SCAG conducted the local input process between August 2009 and October 2009 to get growth projection input from local jurisdictions. When asked for an input on small area population projection during the recent growth forecast outreach process, a local planner asked about an ideal accuracy level of the 27 year population projection (2008-2035) at the census tract or transportation analysis zone level. The local planner already knew the high uncertainty level of the small area projection, and was comfortable in providing his input on growth projection after confirming that the typical mean absolute projections errors (MAPE) might be very high at approximately 50% according to demographers (Smith et al, 2001, pp. 339-340). As the smaller geography or the smaller population size generates the higher forecasting uncertainty, the longer projection horizon also does the higher forecasting uncertainty.

Table 6 calculates the forecasting accuracy of regional population and employment projections in the SCAG region using MAPE as of 2008. SCAG has produced 11 series of the regional population and employment projections since the early 1970s, and the projection results were compared with the available estimates from CA DOF and California Employment Development Department (EDD). The MAPEs of the regional population projections are higher with the longer length of projection horizon, and is consistent with the typical MAPEs for population projections at the State level (Smith, Tayman, Swanson, 2001, p. 340). The MAPEs of the regional employment projections are overall higher than those of the regional population projections, and are higher with the longer length of projection horizon, except for the 20 year projection horizon. Regional employment projection for the year 2000 in the SCAG, SCAG82 Growth Forecast Policy (adopted in October 1982) was 7.6 million jobs, while the 2000 employment estimates were 7.4 million jobs. The margin of errors for the 20 year employment projection was very low at approximately 3%, which has improved the overall accuracy of the 20 year employment projection from the possibly 15% MAPE to 8% MAPE.

[Table 6 Insert here]

As observed in table 6, the SCAG regional population projections are overall found reasonable and accurate and are within an acceptable range of errors. Probably the regular update of the regional population projections every three or four years might have helped in avoiding the further enlargement of the errors. The population projection does not usually become an issue during the normal economic condition. In the economic recession, local communities are financially affected by lack of building permits and housing construction and loss of retail and service sector jobs. In particular, the serious set back of the building permits is easily translated into lower population projections in terms of both the short term and long term perspectives. Economic aspects are naturally embedded in the discussion of components of population growth, and used to develop a coherent growth story of the local jurisdictions, subregions, and the region.

Both promoting the active public involvement and maintaining the accuracy of the regional population projections are not separate but integrated planning goals in a regional planning framework.

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[List of Tables and Figures]

Table 1. Survey of Economic Outlook/Forecasts

Forecast/Outlook for the U.S.	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
<i>Unemployment rate</i>												
Federal Reserve Governors & Presidents		8.65%	8.15%	7.10%	(Longer run: between 4.8% to 5.0%)							
OMB	5.80%	8.10%	7.90%	7.10%	6.00%	5.20%	5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
CBO	5.70%	8.30%	9.00%	8.00%	6.80%	5.80%	5.10%	4.90%	4.80%	4.80%	4.80%	4.80%
February Bluechip Consensus	5.80%	8.30%	8.70%	5.80%	5.50%	5.30%	5.20%	5.10%	5.10%	5.10%	5.10%	5.10%
UCLA Anderson Forecast (3/25/09)	5.80%	9.20%	10.40%	9.80%								
UC Santa Barbara Economic Forecast	5.80%	9.70%	10.90%	10.30%								
Governor's Budget January 2009)	5.70%	7.70%	8.20%									
LA EDC	5.80%	8.70%	9.50%									
<i>Non-farm job growth</i>												
UCLA Anderson Forecast (3/25/09)	-0.40%	-3.60%	-1.00%	1.50%								
UC Santa Barbara Economic Forecast	-0.30%	-3.60%	-2.40%	0.00%								
Governor's Budget	-0.10%	-1.50%	0.10%									
LA EDC	-0.30%	-3.20%	-0.90%									
Economy.com	-0.40%	-3.66%	-0.37%	2.70%	3.60%	3.31%	1.09%	0.60%	0.70%	0.76%	0.73%	0.70%
Forecast/Outlook for California												
<i>Unemployment rate</i>												
UCLA Anderson Forecast (3/25/09)	7.20%	11.00%	11.70%	10.80%								
UC Santa Barbara Economic Forecast	7.20%	12.00%	13.80%	13.00%								
Governor's Budget	7.10%	9.10%	9.40%									
LA EDC	7.20%	10.5	11.70%									
<i>Non-farm job growth</i>												
UCLA Anderson Forecast (3/25/09)	-1.20%	-4.10%	-1.00%	1.70%								
UC Santa Barbara Economic Forecast	-1.10%	-4.80%	-2.80%	0.10%								
California Economic Forecast	-1.16%	-4.14%	-1.00%	1.74%	1.89%	1.53%	1.34%	1.25%				
Governor's Budget	-0.60%	-1.60%	-0.50%	1.40%								
LA EDC		-3.00%	-1.00%									
Economy.com	-1.08%	-3.73%	-0.58%	2.41%	3.33%	2.53%	0.92%	0.51%	0.57%	0.60%	0.58%	0.57%
Forecast/Outlook for SCAG Region												
<i>Non-farm job growth</i>												
LA EDC												
5-county area	-1.07%	-2.54%	-1.46%									
Los Angeles	-0.43%	-2.17%	-1.62%									
Orange	-1.94%	-2.91%	-0.86%									
RiwSB	-1.84%	-3.16%	-1.59%									
Ventura	-2.16%	-3.25%	-1.75%									
CSU-Long Beach												
5-county area	-1.90%	-1.50%	-0.90%	0.30%								
Los Angeles	-1.30%	-1.30%	-0.80%	-0.10%								
Orange	-2.00%	-1.20%	-0.40%	1.40%								
RiwSB	-3.80%	-2.60%	-1.70%	0.30%								
Ventura	-2.50%	-1.30%	-0.10%	1.00%								
California Economic Forecast												
Los Angeles	-1.28%	-5.05%	-1.73%	2.53%	4.06%	2.47%	0.40%	0.08%				
Orange	-2.04%	-2.72%	-0.46%	1.70%	1.74%	1.69%	1.33%	1.17%				
Ventura	-2.17%	-2.79%	-0.74%	1.09%	1.12%	1.59%	1.76%	1.75%				
UC Santa Barbara Economic Forecast												
Los Angeles	-1.30%	-6.40%	-4.00%	-0.30%								
Dr. John Husing Forecast												
RiwSB		-6.70%										
Economy.com												
6-county area	-1.87%	-5.22%	-1.14%	2.71%	3.98%	2.72%	0.70%	0.35%	0.51%	0.49%	0.42%	0.44%
Note: Economy.com job information is for total wage & salary jobs, all others are non-farm wage & salary jobs.												
Governor's budget was issued in December 2008, job information was based on 2008 benchmark.												
Source: SCAG Forecasting staff compiled from various sources												

Table 2. The Regional Share of the National Job Projections

	2020			2035		
	Low	Mid	High	Low	Mid	High
Minimum	4.3%	4.6%	4.8%	3.8%	4.0%	4.3%
Maximum	5.3%	5.3%	5.3%	5.4%	5.4%	5.5%
Mean	4.8%	4.9%	5.1%	4.7%	4.9%	5.1%
Median	4.8%	5.0%	5.2%	4.8%	5.0%	5.2%
Mode	4.7%	4.9%	5.1%	4.7%	4.9%	5.3%
Quartile (25%)	4.8%	5.0%	5.2%	4.8%	5.0%	5.2%
Quartile (75%)	5.0%	5.1%	5.3%	5.1%	5.2%	5.3%

Table 3. Regional Share of National Job Projections and Population Projections

	Scenario	2010	2015	2020	2025	2030	2035
Regional share of national job projections	B1	5.2%	5.3%	5.5%	5.5%	5.5%	5.6%
	B2	5.2%	5.3%	5.4%	5.4%	5.4%	5.4%
	B3	5.2%	5.2%	5.2%	5.2%	5.2%	5.2%
	Difference (B1-B3)	0%	0.1%	0.3%	0.3%	0.3%	0.4%
Regional Domestic Migration (Annual Average)*	B1		-78648	-105369	-59157	-63162	-65753
	B2		-85525	-152700	-74929	-76512	-88265
	B3		-123680	-191201	-80587	-82457	-93377
	Difference (B1-B3)		45032	85831	21430	19296	27624
Regional Population Projections	B1	19089002	20206095	21189741	22404357	23566419	24671834
	B2	19089002	20167693	20884332	21990059	23054477	24010609
	B3	19089002	19954638	20441079	21487478	22494165	23399756
	Difference (B1-B3)	0	251457	748662	916879	1072254	1272079

Note: * Note: Data on domestic migration refer to events occurring during the preceding five years of the indicated year

Table 4. Regional Net International Migration and Population Projections

	Scenario	2010	2015	2020	2025	2030	2035
Regional Net International Migration (Annual Average)	C1		167300	179300	191275	203250	215200
	C2		143600	153900	164175	174425	184700
	C3		121875	121875	121875	121875	121875
	Difference (C1-C3)		45425	57425	69400	81375	93325
Regional Job Projections	C1	7457860	8191954	8735268	9071288	9420213	9782539
	C2	7457860	8112209	8618819	8916510	9222958	9538409
	C3	7457860	8079848	8549400	8797285	9039449	9275444
	Difference (C1-C3)	0	112106	185868	274003	380764	507095
Regional Population Projections	C1	19089002	20204413	20943002	22068928	23151747	24118227
	C2	19089002	20024219	20682048	21715529	22700027	23567122
	C3	19089002	19941696	20513073	21428241	22263288	22973432
	Difference (C1-C3)	0	262717	429929	640687	888459	1144795

Note: * Note: Data on net international migration refer to events occurring during the preceding five years of the indicated year

Table 5-A. DOF Population Projections

Unit: Thousands

COUNTY	2010	2015	2020	2025	2030	2035
Imperial	190	214	239	262	284	309
Los Angeles	10,515	10,840	11,214	11,593	11,920	12,218
Orange	3,228	3,373	3,520	3,619	3,705	3,781
Riverside	2,239	2,562	2,905	3,205	3,507	3,800
San Bernardino	2,178	2,378	2,581	2,774	2,959	3,133
Ventura	856	905	956	1,004	1,050	1,093
SCAG	19,205	20,272	21,416	22,456	23,425	24,333

Source: State of California, Department of Finance, Population Projections for California 2007. and Its Counties 2000-2050, July 2007.

Table 5-B. SCAG Preliminary Baseline Population Forecasts+A34

Unit: Thousands

COUNTY	2010	2015	2020	2025	2030	2035
Imperial	202	247	276	298	312	320
Los Angeles	10,616	10,971	11,329	11,678	12,015	12,338
Orange	3,315	3,452	3,534	3,586	3,630	3,654
Riverside	2,243	2,509	2,809	3,090	3,344	3,597
San Bernardino	2,182	2,386	2,583	2,774	2,958	3,134
Ventura	861	900	937	969	996	1,014
SCAG	19,418	20,465	21,468	22,394	23,254	24,056

Source: SCAG, Preliminary Baseline Population Forecasts for Counties in the SCAG Region 2000-2035, July 2007.

Table 5-C. Difference between DOF Projections and SCAG Forecasts

Unit: Thousands

COUNTY	2010	2015	2020	2025	2030	2035
Imperial	-13	-33	-37	-36	-29	-12
Los Angeles	-101	-131	-115	-84	-95	-120
Orange	-87	-79	-14	32	76	127
Riverside	-4	53	96	115	164	203
San Bernardino	-4	-8	-1	0	1	0
Ventura	-5	5	19	36	54	79
SCAG	-213	-192	-52	62	171	277

Table 5-D. % Difference between DOF Projections and SCAG Forecasts (Difference / SCAG Forecasts)

COUNTY	2010	2015	2020	2025	2030	2035
Imperial	-6.2%	-13.2%	-13.4%	-12.1%	-9.2%	-3.6%
Los Angeles	-1.0%	-1.2%	-1.0%	-0.7%	-0.8%	-1.0%
Orange	-2.6%	-2.3%	-0.4%	0.9%	2.1%	3.5%
Riverside	-0.2%	2.1%	3.4%	3.7%	4.9%	5.6%
San Bernardino	-0.2%	-0.3%	-0.1%	0.0%	0.0%	0.0%
Ventura	-0.5%	0.5%	2.0%	3.7%	5.4%	7.8%
SCAG	-1.1%	-0.9%	-0.2%	0.3%	0.7%	1.2%

Table 6. Forecasting Accuracy of Regional Population and Employment Projections in the SCAG Region: Mean Absolute Percentage Errors as of 2008

	Projection Horizon			
	5 year	10 year	15 year	20 year
Population	3%	5%	9%	11%
Employment	6%	9%	13%	8%
Observations	11	9	7	5

Note: The intermediate years' projections were calculated using the compound growth rate.

Sources: SCAG, SCAG Development Guide - Growth Forecast Selection, Jan. 1974 (SCAG90 adopted in 1972); SCAG, SCAG Development Guide - Growth Forecast Selection, Jan. 1974 (D/E 2a adopted in 1974); SCAG, SCAG-76 Growth Forecast Policy, Jan 1976 (adopted in December 1975); SCAG, SCAG78 Growth Forecast Policy (adopted in January 1979); SCAG, SCAG82 Growth Forecast Policy (adopted in October 1982); SCAG, Growth Management Plan (adopted in February 1989); SCAG, Regional Comprehensive Plan and Guide (adopted in June 1994); SCAG, 1998 RTP Growth Forecast (adopted in April 1998); SCAG, 2001 RTP Growth Forecast (adopted in April 2001); SCAG, 2004 RTP Growth Forecast (adopted in April 2004); SCAG, 2008 RTP Integrated Growth Forecast (adopted in April 2008)

SCAG REGION



Figure 1. The SCAG Region Map

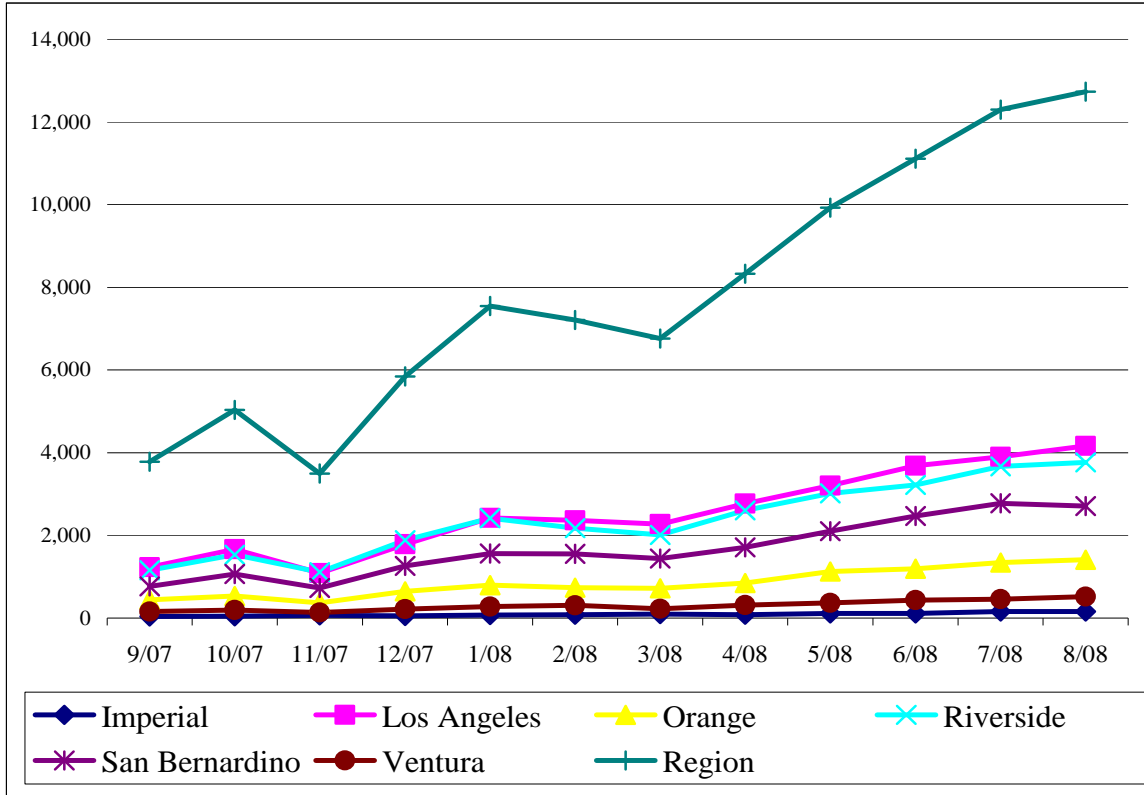


Figure 2. Foreclosures by County in the SCAG Region, 7/07-8/08

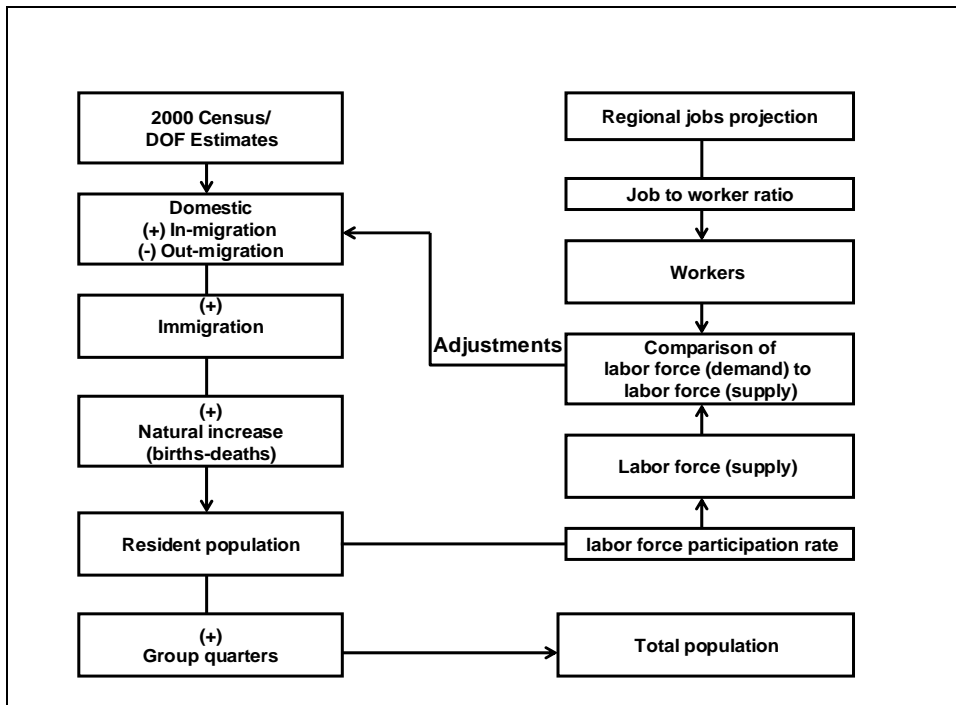


Figure 2. Population Projection Model in an Economic-Demographic Model

Appendix A

**Survey Questions on Major Assumptions for
2012 RTP Regional Growth Forecasts for SCAG Panel of Experts,
May 15, 2009**

Thank you for taking time to respond to questions on major assumptions for 2012 RTP Regional Growth Forecasts. We will not disclose the respondents and their professional opinion of forecasting assumptions. The respondent's opinion should be personal and does not represent the affiliated organization's current official forecast assumptions. The survey response will be used only for statistical and analytical purpose. Feel free to skip any questions you are not comfortable answering. We will provide time in the meeting to answer the survey or you can submit your survey response to Steve Levy (slevy@ccsce.com) by the end of May 15 (Friday).

Name:

Organization:

1. How deep the economic recession measured in job losses in the SCAG Region will be and when it might end?

The economic recession measured in job losses in the SCAG Region will most likely end in:

a) 2009 b) 2010 c) 2011 d) 2012 e) Others ()

What is the likely range of the SCAG Region's unemployment rate for 2020?

a) 5%-6% b) 6%-7% c) 7%-8%, d) Others ()

What is the likely range of the SCAG Region's unemployment rate for 2035?

a) 5%-6% b) 6%-7% c) 7%-8%, d) Others ()

Do you think that the economic recession will have impact on the regional growth forecast in 2020 and 2035 for jobs, population and households? If there is an impact, why will it occur and what will be the direction of change on SCAG region growth?

2. After the recession ends, will national job growth be equal to, greater than or less than the U.S.

job growth rate from the current US BLS projection? According to US BLS projection released in November 2007, US jobs are projected to grow at an annual average growth rate of 1.04% between 2006 and 2016.

3. Please assess the U.S. population assumptions in the CCSCE memo. U.S. population growth—the new Census Bureau projections will push the growth forecast up if all other comparisons to the 2008 RTP are roughly the same.

4. Do you agree that workers will retire later as outlined in the CCSCE memo?

5. Do you think California's share of U.S. jobs will remain the same, increase or decrease to 2020 and 2035? CCSCE's initial assumptions are shown on page 8 of the background memo.

California's share of U.S. jobs for 2020 will be:

a) 10.5%-11% b) 11%-11.5% c) 11.5%-12% d) Others (%)

California's share of U.S. jobs for 2035 will be:

a) 10.5%-11% b) 11%-11.5% c) 11.5%-12% d) Others (%)

6. Do you think the SCAG Region's share of California job growth will remain the same, increase or decrease to 2020 and 2035? See page 12 of the background memo.

SCAG Region's share of California jobs for 2020 will be:

a) 43%-44% b) 44%-45% c) 45%-46% d) Others (%)

SCAG Region's share of California jobs for 2035 will be:

a) 43%-44% b) 44%-45% c) 45%-46% d) Others (%)

7. Please provide your opinion on the future birth rates (total fertility rates) in the SCAG region. Average total fertility rate for 2000-2005 was 2.1. See slide 7 in the demographic presentation.

Average total fertility rate for 2020 will be:

a) 1.8-2.0 b) 2.0-2.2 c) 2.2-2.4 d) Others ()

Average total fertility rate for 2035 will be

a) 1.8-2.0 b) 2.0-2.2 c) 2.2-2.4 d) Others ()

8. *Should SCAG adopt the life expectancy trends in the new Census Bureau projections? See slide 8 in the demographic presentation.*

9. *Should SCAG expect more international immigration in light of the higher Census Bureau projections? International net immigration was assumed to be 125,000 per year. See slide 9 in the demographic presentation. a) Yes b) No*

If yes, please quantify the percentage of additional international immigration to 2008 RTP assumptions of net international immigration.

a) 0%-25% b) 25%-50% c) 50%-75% d) 75%-100% e) Others (%)

10. *Will the SCAG region experience the same changes in labor force participation rate (retirement) trends that have been discussed for the nation? See slide 10 in the demographic presentation.*

11. *Please provide your opinion on future headship rates in the SCAG region for 2035. According to 2007 American Community Survey, the overall headship rate in the SCAG Region is 41%. See slide 12 in the demographic presentation.*

Please identify the possible range of overall headship rates.

a) 37%-39% b) 40%-42% c) 43%-45% d) Others ()

12. *Do you think that Asian and Hispanic headship rates in 2035 will be closer to White headship rates in 2035 than now? See slide 12 in the demographic presentation.*

a) Yes b) No

If yes, please identify how much the headship rates gap between Non-Hispanic White group and Non-Hispanic Asian and Hispanic groups in 2035 will be reduced due to assimilation, when compared with the current gap.

The headship rates gap between Non-Hispanic White group and Non-Hispanic Asian group will be reduced by (%):

a) 25% b) 50% c) 75% d) 100% e) Others ()

The headship rates gap between Non-Hispanic White group and Non-Hispanic Asian group will

be reduced by (%):

a) 25% b) 50% c) 75% d) 100% e) Others ()

13. Please provide your comments on other significant factors influencing the SCAG region's employment, population, and household projections for 2020 and 2035.