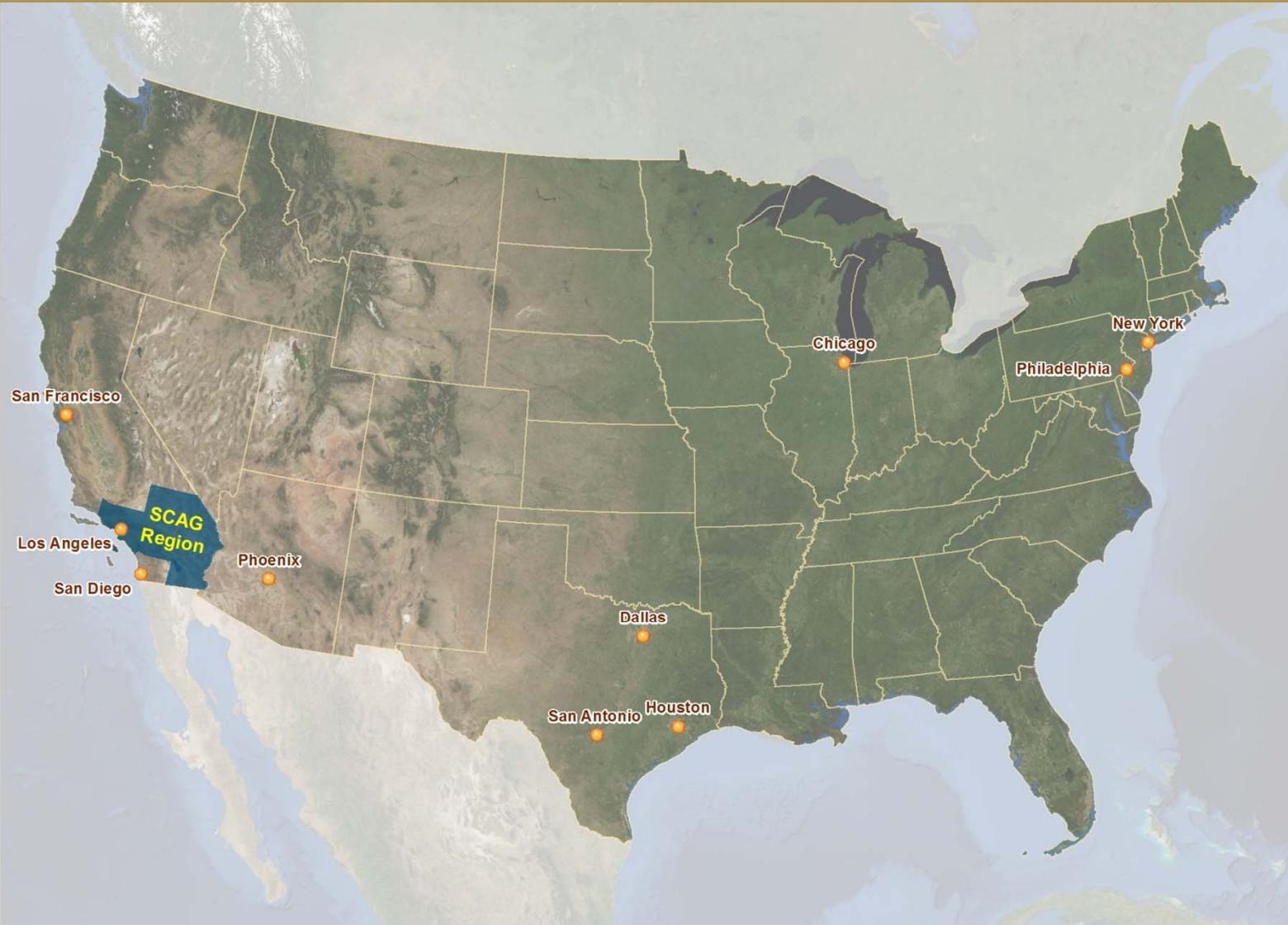


Demonstrating Local Population Projection Portal

Simon Choi, Derek Hung,
Kimberly Clark, Jung Seo, Tom
Vo, JiSu Lee, John Cho, Hsi-Hwa
Hu, Frank Wen, Abhishek Sharma



Overview of SCAG



Quick Facts about SCAG



- Nation's largest Metropolitan Planning Organization (MPO)
- 6 counties and 191 cities
- 15 sub-regions
- 18.7 million people (1.2015)
- 38,000 square miles
- 16th largest economy in the world (GRP: \$924 Billion in 2013)

Research Background

- SCAG develops the long-term population and household growth forecast for the Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) at different levels of geography.
- Local jurisdictions in the SCAG region provide SCAG with the city-level population and household growth forecast with Transportation Analysis Zone (TAZ) level allocations.
- Traditional approach focuses on total population size and household numbers for local jurisdictions.

Research Purpose

- SCAG developed the useful GIS-based tool for local planners working on their local population and household projections.
- The GIS-based tool will easily generate different population growth paths containing demographic characteristics (i.e. age and gender) and components of growth, with housing growth scenarios.
- The local population projections by demographic characteristics will help local jurisdictions to better prepare for diverse community service needs (e.g. school, housing, energy use, hospital, police, transportation, etc.)

Research Purpose

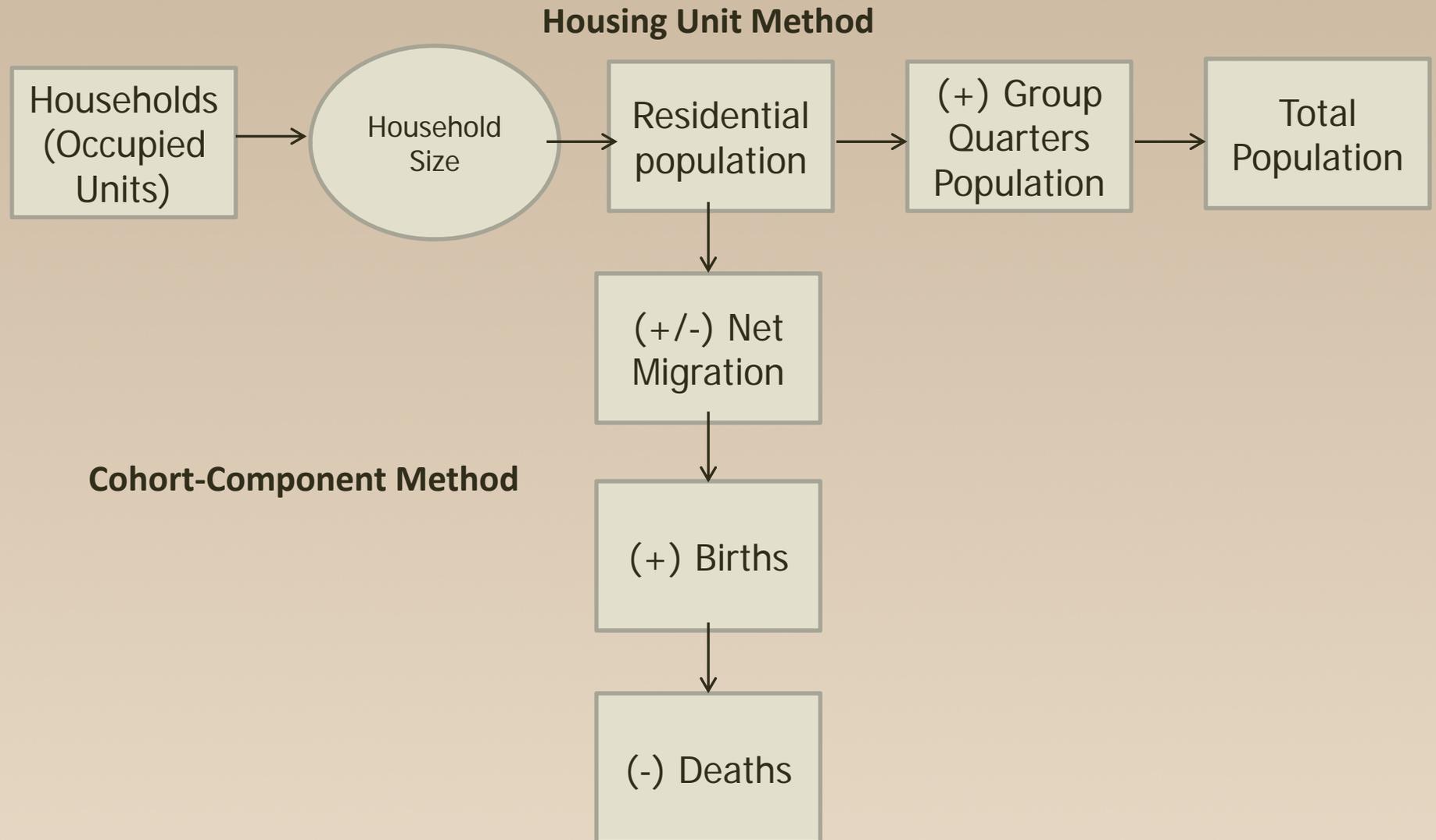
This research demonstrates the Local Population Projection Portal, which allows local planners to:

1. Develop their own housing growth scenario
2. Produce the population projections with key demographic characteristics, components of population growth, share of the county growth, demographic rates.

Local Population Projection Portal

- Modeling framework (*Choi, Projecting Small Area Population Size and Components, Presented for Western Regional Science Association (WRSA) Annual Meeting, 2013*):
 - Housing unit method
 - Cohort-component method
 - Local household forecast (demand vs. supply/land use method)
- Data optimization:
 - Developed in Microsoft Excel and Visual Basic for Applications
- Web-based GIS integration and editable web map:
 - Esri ArcGIS Add-Ins
 - Esri ArcGIS Online

Modeling Framework



Modeling Framework: Strengths

1. Provides detailed demographic characteristics of projected populations
2. Is technically sound and easy to understand
3. Is easy to learn and apply
4. Is consistent with the metropolitan (county) demographic assumptions (fertility rate, survival rate)

Estimating City-Level Birth & Death

- Birth and death data at Zip Codes from 1989 to 2012 are obtained from California Department of Public Health.
- The city level birth and death data are estimated by applying residential area-weighted interpolation method to Zip code data.

Residential Area-Weighted Interpolation

- City-level birth and death estimates based on ratio of residential area in Zip Code to residential area in entire City.

$$P_{t_{2012}}^{Zip\ 1\ in\ City\ 1} = P_{t_{2012}}^{Zip\ 1} \times (RA_{t_{2012}}^{Zip\ 1\ in\ City\ 1} / RA_{t_{2012}}^{Zip\ 1})$$

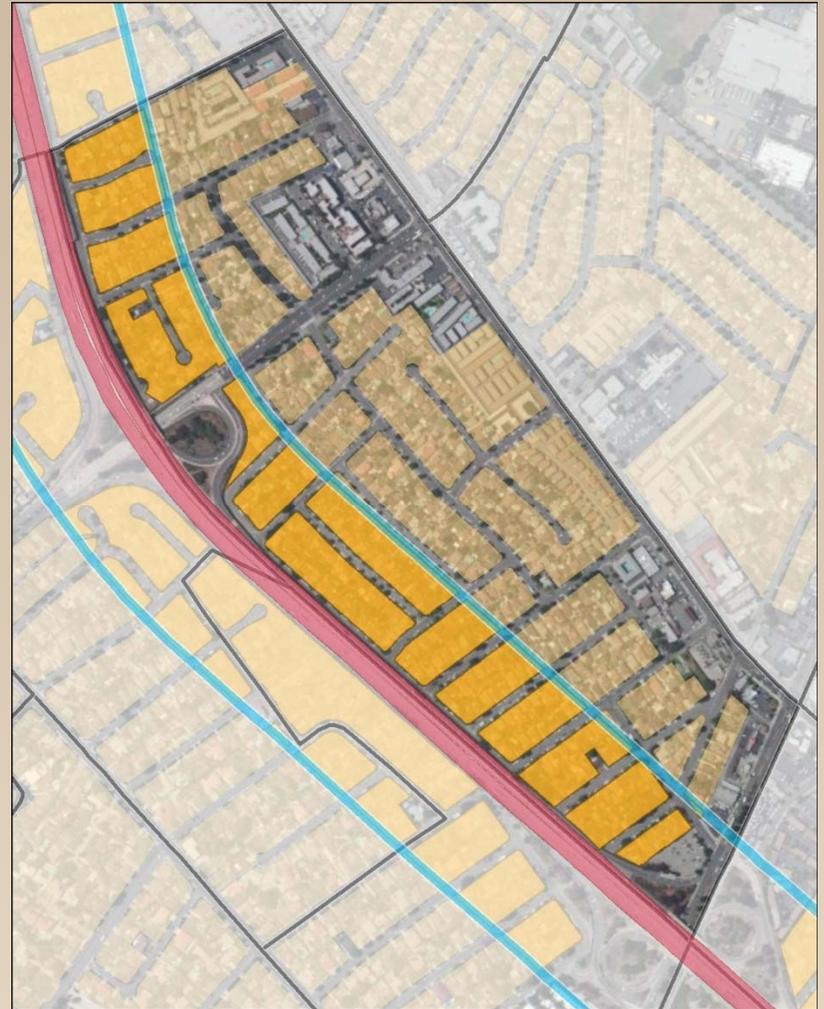
where:

$$P_{t_{2012}}^{Zip\ 1\ in\ City\ 1} = \text{Births and deaths of Zip Code 1 included in City 1}$$

$$P_{t_{2012}}^{Zip\ 1} = \text{Births and deaths in Zip Code 1}$$

$$RA_{t_{2012}}^{Zip\ 1\ in\ City\ 1} = \text{total residential area of Zip Code 1 in City 1}$$

$$RA_{t_{2012}}^{Zip\ 1} = \text{total residential area in Zip Code 1}$$



Local Household Forecast: Method Options

- Demand Method
- Supply & Land Use Capacity Methods
 - General Plan
 - Envision

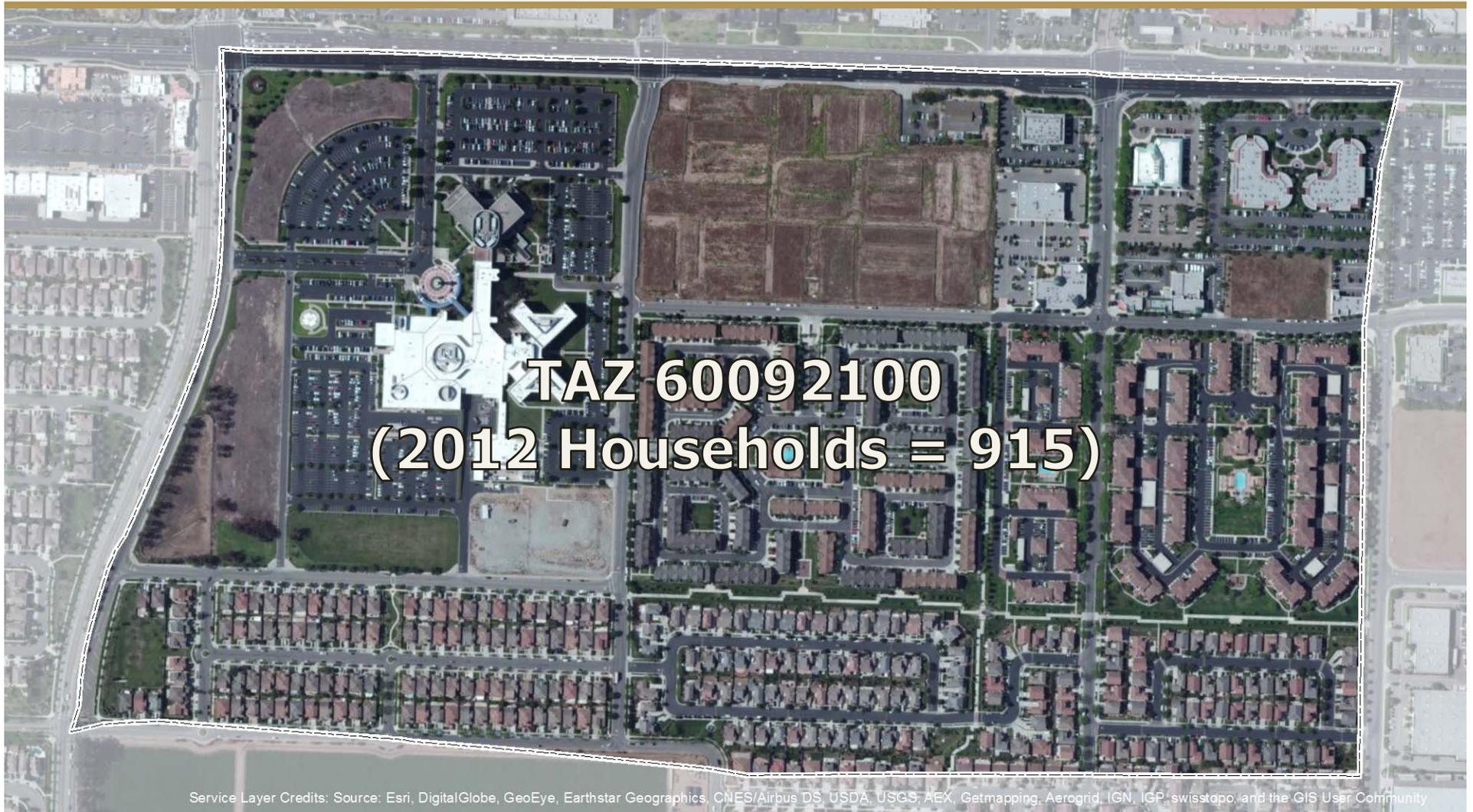
Demand Method

- Benefits
 - Easy-to-use interface
 - No GIS knowledge required
 - Uses recent (2000 & 2010) data as baseline

Supply & Land Use Capacity Methods (GIS)

- Possibilities
 - Target specific areas of expected intense increases in housing stock
 - e.g. Transit-Oriented Developments
 - e.g. Areas of adaptive reuse
 - Focus on areas of infill development

Supply & Land Use Capacity Methods



Supply & Land Use Capacity Methods



Supply & Land Use Capacity Methods

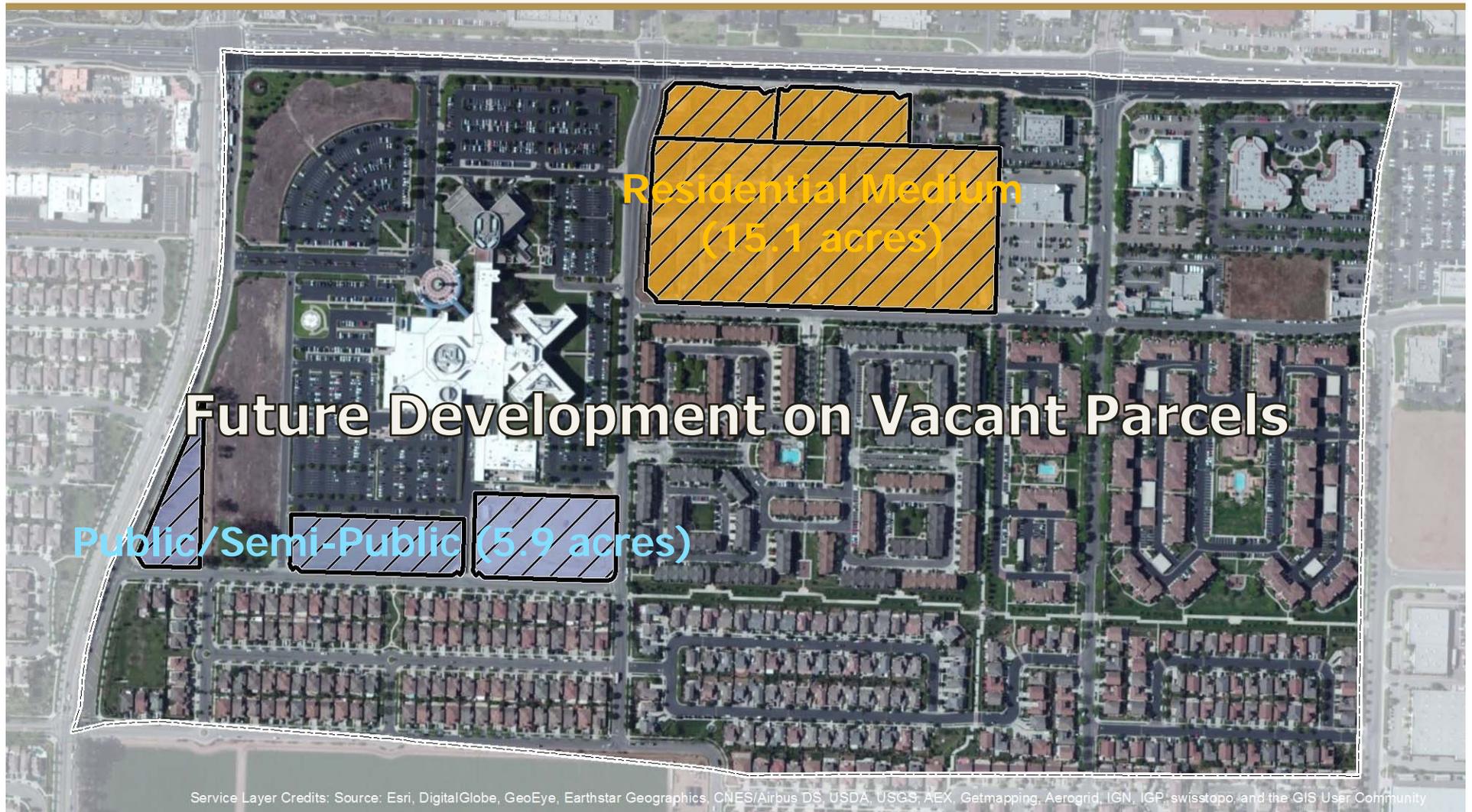


Supply & Land Use Capacity Methods



Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Supply & Land Use Capacity Methods



Supply & Land Use Capacity Methods



Modeling Process – Calibration

1. Prepare local demographic and household data (2000, 2010 Census) with County's projected population and households with demographic rates.
2. Determine the household growth (2010-2040) using method options (demand vs. supply)
3. Local household figures for intermediate years (2015-2035) are determined using the multi-period share of growth method (*Choi, Maintaining Spatial and Temporal Consistency of Small Area Population Forecasts Using the Multi-Period Share of Growth Method, Presented for Association of Collegiate School of Planning (ACSP) Conference, 2002*).
4. Local household size for 2015-2040 is determined using the County's household size change ratio for 2015-40.

Modeling Process – Calibration

5. Local residential population is derived multiplying household figures by household size for 2015-40.
6. Local group quarters population for 2015-40 is determined using the County's group quarters population change ratio for 2015-40.
7. Local total population for 2015-40 is derived by adding group quarters population to residential population.
8. Calibrate local demographic rates for 2000-2040 by
 - 1) adjusting County's age specific fertility rate
 - 2) adjusting County's age-sex specific survival rate
 - 3) Deriving local age-sex specific net migration rate (total net migration is derived as a residual)

User Interface Demonstration



Local Population Projection Portal
July 2015

Launch Demo

Initial State

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < | >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Selecting a County

Local Population Projection Portal

Inputs

County:

City:

- Imperial
- Los Angeles
- Orange
- Riverside
- San Bernardino
- Ventura**

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < | >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Run Reset Close Save Scenario As... Save PDF Summary As...

Selecting a City

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < | >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Run Reset Close Save Scenario As... Save PDF Summary As...

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Calibrating Local Demographic Rates

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. <|>

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Microsoft Excel

The application will now begin calibrating.

Calibrating Local Demographic Rates

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < | >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Microsoft Excel

Ready! Please select a projection method.

Selecting a Preset Scenario [Demand Method]

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < | >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Entering a Custom Scenario [Demand Method]

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < | >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Entering a Custom Scenario [Supply & Land Use Methods]

Local Population Projection Portal

Inputs

County:

City:

Calibrate

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Run Reset Close Save Scenario As... Save PDF Summary As...

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

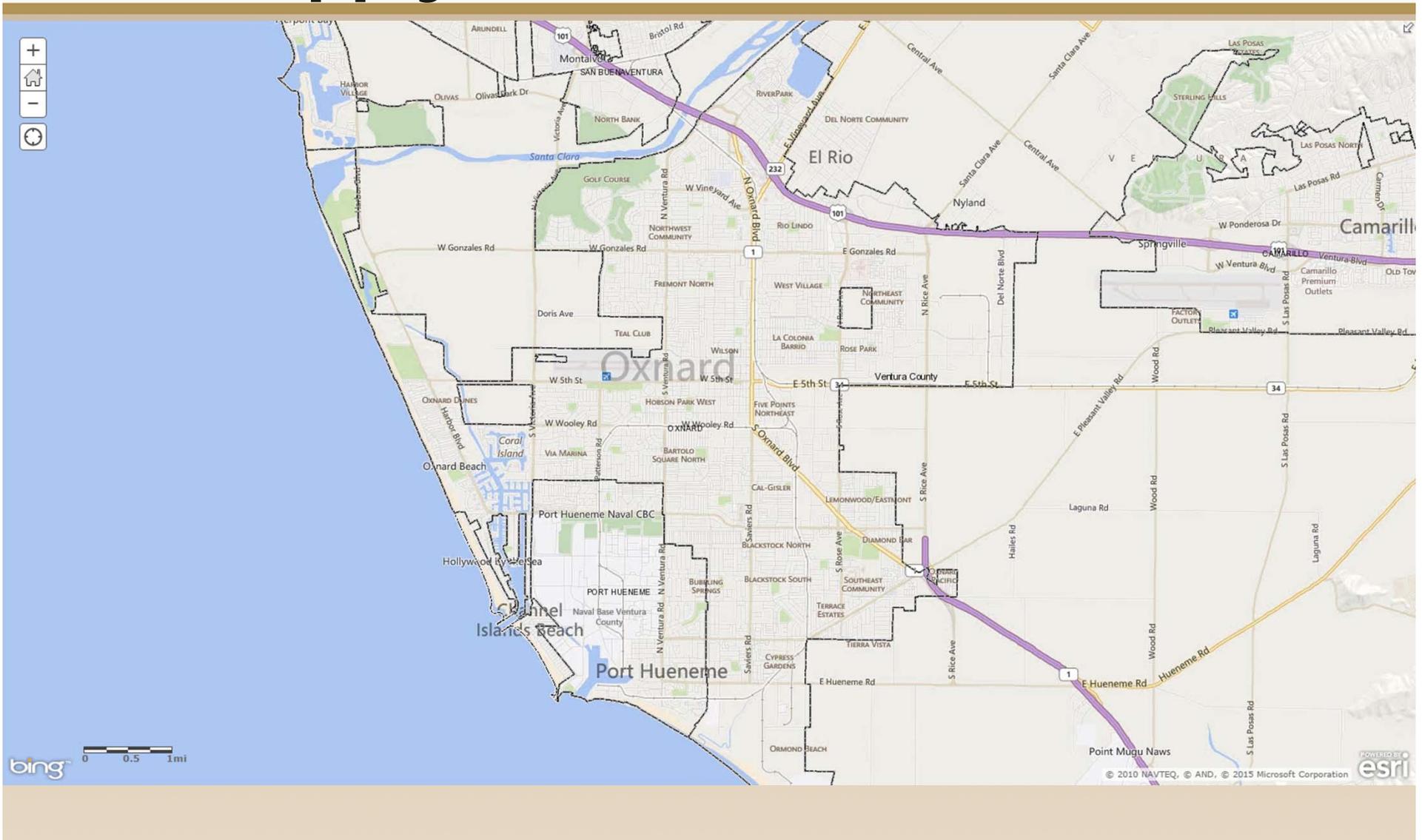
Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Microsoft Excel

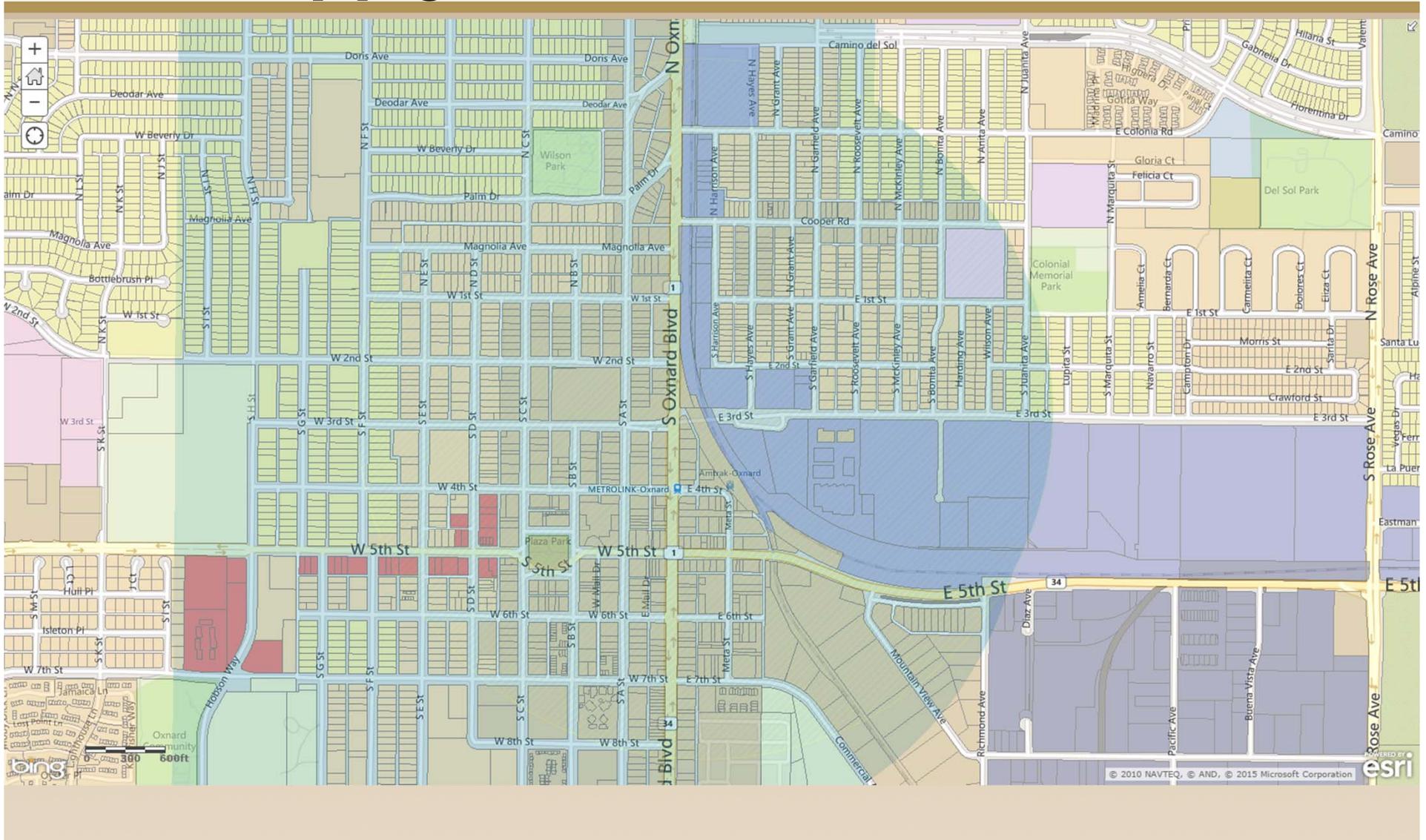
Now redirecting to SCAG's socioeconomic data webmap

OK

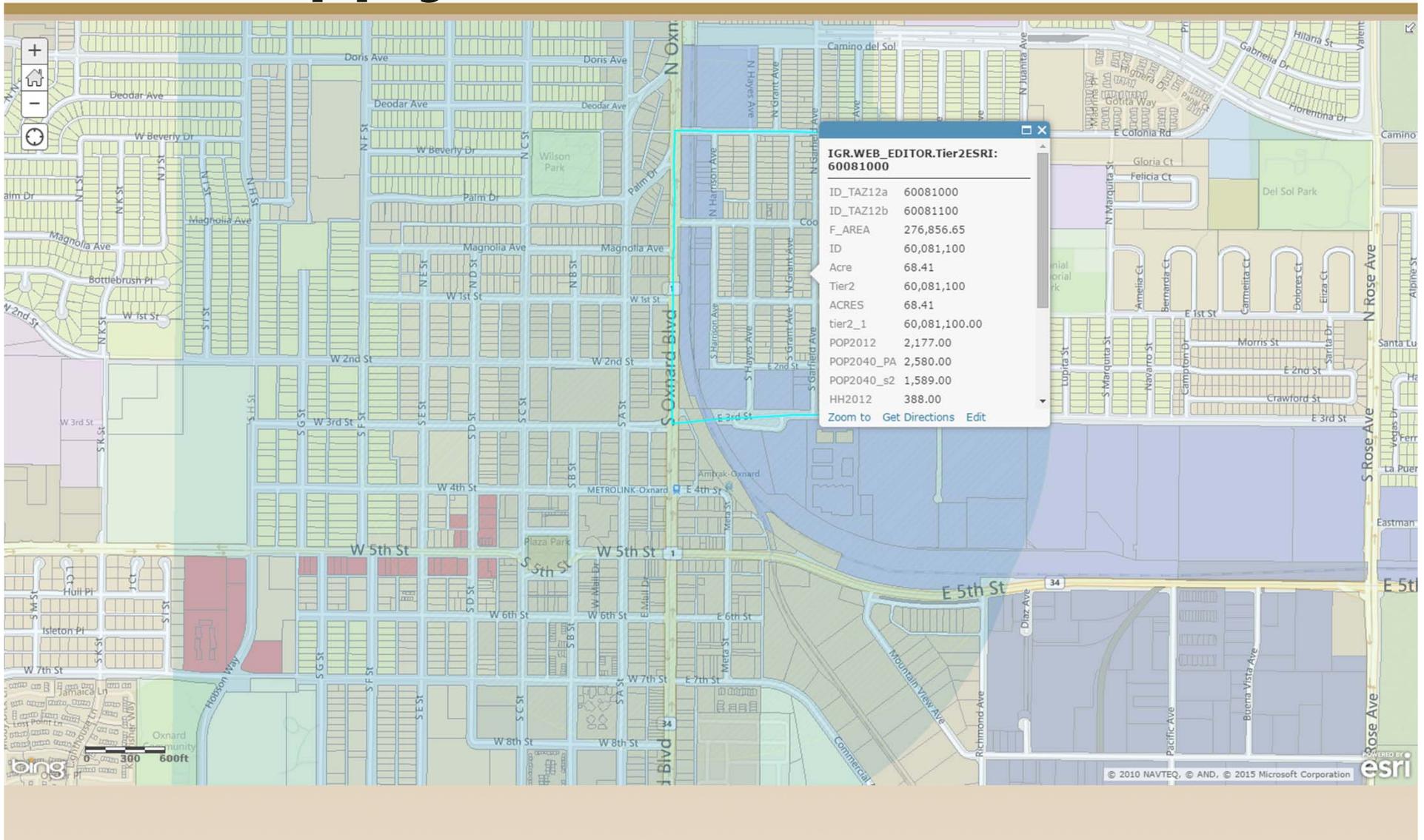
Entering a Custom Scenario [Supply & Land Use Methods]



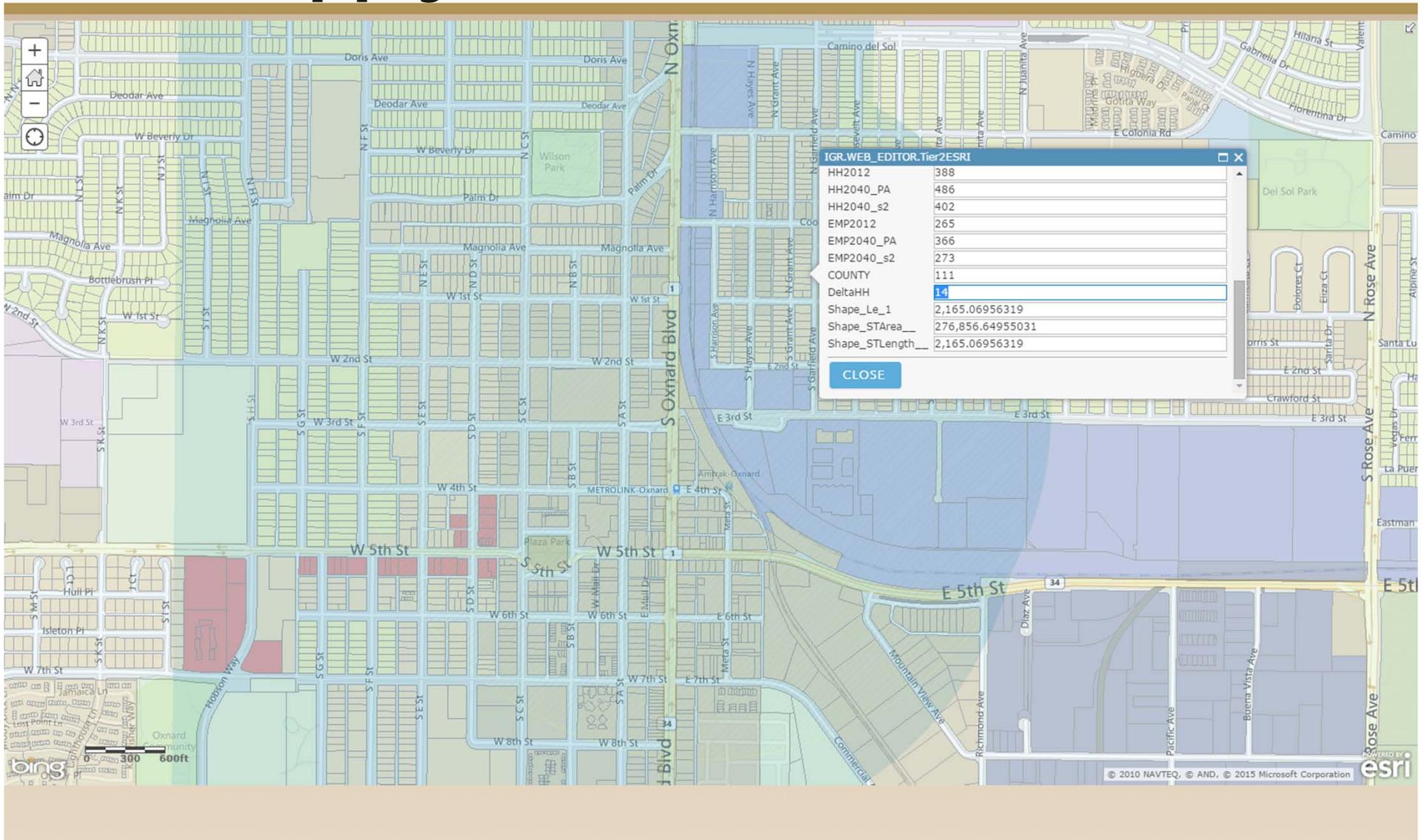
Entering a Custom Scenario [Supply & Land Use Methods]



Entering a Custom Scenario [Supply & Land Use Methods]



Entering a Custom Scenario [Supply & Land Use Methods]



Entering a Custom Scenario [Supply & Land Use Methods]

Local Population Projection Portal

Inputs

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. <|>

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Recalibrating the Data Based on Scenario

Local Population Projection Portal

Inputs

County:

City:

Calibrate

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Outputs

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Run Reset Close Save Scenario As... Save PDF Summary As...

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Microsoft Excel

The migration rate will recalibrate based on your selections.

OK

Viewing Outputs [In Application]

Local Population Projection Portal

County:

City:

Projection Method:

Demand Method

Select the 2010 - 2040 household growth as a percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

Selecting either the "General Plan" or "Envision" option will redirect you to SCAG's editable socioeconomic data webmap.

Once on the webmap, manually update the household growth by Transit Analysis Zone (TAZ). Then copy the city's total 2010 - 2040 household growth from the online summary into this text box ----->

Outputs

City of Oxnard

Population and Household Growth, 2000-2040

Year	Population	Households
2000	170,000	45,000
2005	190,000	48,000
2010	200,000	50,000
2015	205,000	51,000
2020	208,000	52,000
2025	209,000	53,000
2030	210,000	54,000
2035	210,000	54,000
2040	210,000	55,000

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < >

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Viewing Outputs [As PDF]

Local Population Projection Portal

County: Ventura
City: Oxnard

Calibrate

Projection Method:

Demand Method

Select the 2010 - 2040 household growth percentage of the 2000 - 2010 growth:

Low (150%)
 Moderate (300%)
 High (450%)
 Or enter the number of expected new households between 2010 and 2040:

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan
 Envision

and enter the number of expected new households between 2010 and 2040:

City of Oxnard

Household Growth, 2000-2040

Year	Population	Households
2000	170,000	45,000
2005	185,000	48,000
2010	195,000	50,000
2015	198,000	51,000
2020	200,000	52,000
2025	202,000	53,000
2030	203,000	54,000
2035	204,000	54,500
2040	205,000	55,000

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp. < >

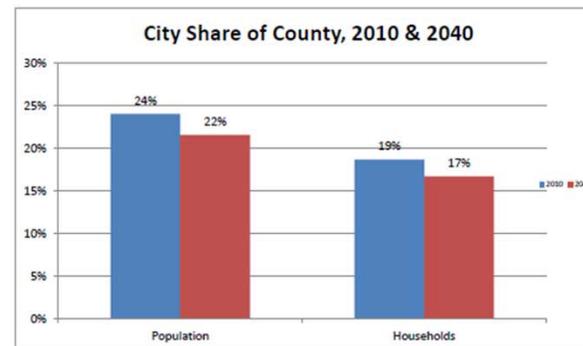
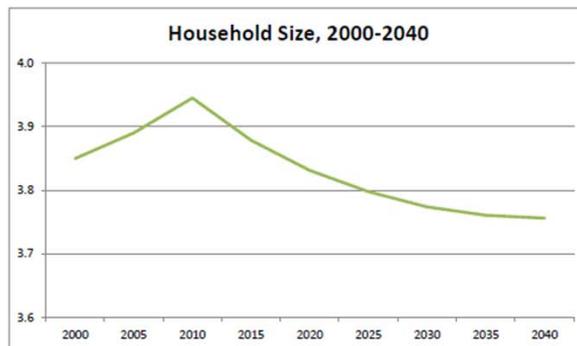
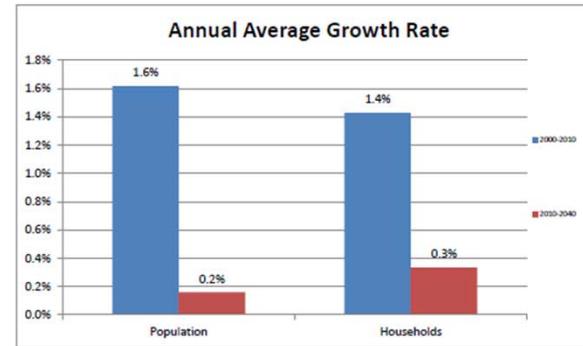
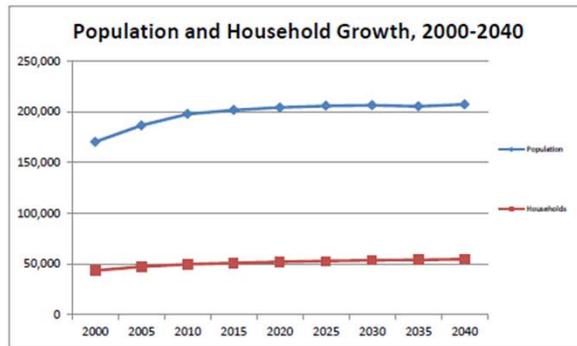
Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Run Reset Close Save Scenario As... Save PDF Summary As...

Save As...
Enter the filepath to which you would like to save: OK Cancel
C:\My Documents\Oxnard Scenario 1.pdf

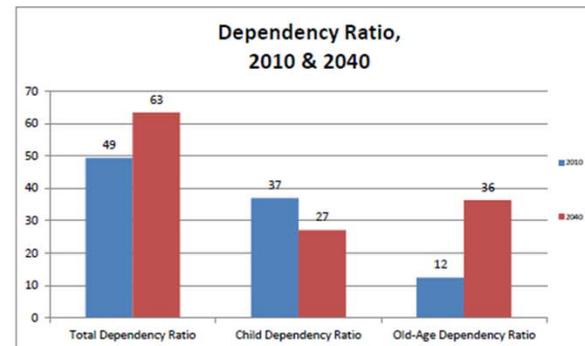
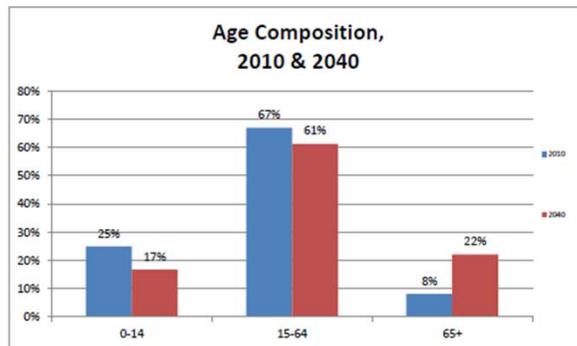
Viewing Outputs [As PDF]

Oxnard Population and Households

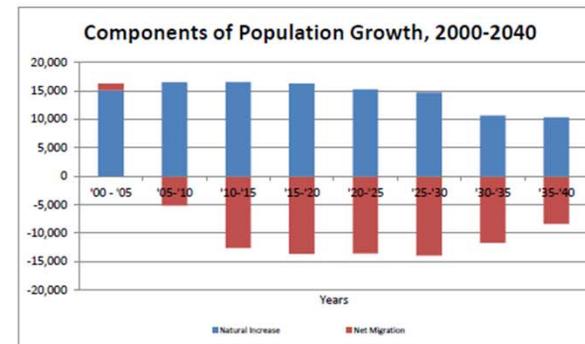


Viewing Outputs [As PDF]

Oxnard Demographics



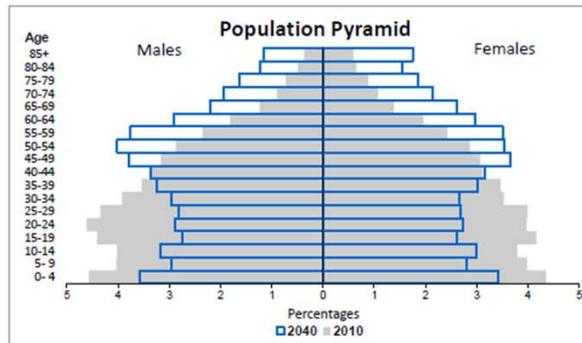
CBR: Crude Birth Rate (births per 1,000 population)
 CDR: Crude Death Rate (deaths per 1,000 population)
 NMR: Net Migration Rate (net migrants per 1,000 population)
 TFR: Total Fertility Rate (births per woman of childbearing age)



Natural Increase = births - deaths
 Net Migration = in-migrants - out-migrants

Viewing Outputs [As PDF]

Oxnard Demographics



Summary of Demographic Measures

	2010	2040	Difference	% Change
Population, % Change (2010-2040)	197,899	207,382	9,483	5%
Households, % Change (2010-2040)	49,797	54,797	5,000	10%
Household Size*	3.9	3.8	-0.2	
City Share of County Population	24%	22%	-2%	
City Share of County Households	19%	17%	-2%	
Age Composition				
Persons under 15 years old (%)	25%	17%	-8%	
Persons 15-64 years old (%)	67%	61%	-6%	
Persons 65 years old and over (%)	8%	22%	14%	
Total dependency ratio**	49	63	14	
Child dependency Ratio	37	27	-10	
Old-Age dependency Ratio	12	36	24	
Components of Population Growth				
Natural increase (2005-10, 2035-40)	16,475	10,317	-6,158	
Net migration (2005-2010, 2035-2040)	-5,210	-8,429	-3,219	
Demographic Rates				
Births per 1,000 population	112.3	77.8	-34.5	
Total fertility rate (per woman)	3.0	2.8	-0.2	
Deaths per 1,000 population	24.1	27.6	3.6	
Migrants per 1,000 population	-27.9	-41.0	-13.1	

Note: * residential population / households
 ** persons (age 0-14 and 65+) per 100 working age population

Actual and Projected Population Growth, 2000 - 2040									
Age	2000	2005	2010	2015	2020	2025	2030	2035	2040
0-4	15,213	17,784	17,649	17,408	17,176	16,377	16,077	12,713	13,295
5-9	16,129	14,082	15,853	13,848	13,610	13,380	12,590	12,654	9,877
10-14	14,276	14,984	15,459	13,880	11,896	11,661	11,434	10,832	11,172
15-19	14,184	14,646	16,977	13,455	11,894	9,932	9,701	9,665	9,359
20-24	14,484	14,863	16,993	16,834	13,354	11,810	9,869	9,735	9,845
25-29	14,194	16,365	16,487	16,808	16,657	13,211	11,684	9,937	10,071
30-34	13,468	15,932	14,750	16,307	16,630	16,480	13,070	11,995	10,935
35-39	13,045	13,817	13,854	14,595	16,141	16,460	16,311	13,336	12,882
40-44	12,078	13,024	12,875	13,713	14,451	15,981	16,297	16,266	13,499
45-49	10,056	11,789	12,326	12,610	13,445	14,176	15,690	16,078	16,162
50-54	8,382	9,727	11,338	12,091	12,380	13,206	13,930	15,450	15,867
55-59	6,071	8,085	9,456	11,016	11,769	12,054	12,872	13,610	15,147
60-64	4,948	5,787	7,464	9,074	10,617	11,359	11,642	12,470	13,223
65-69	4,304	4,540	5,168	7,066	8,636	10,138	10,869	11,166	12,001
70-74	3,720	3,886	3,922	4,605	6,411	7,909	9,351	10,092	10,434
75-79	2,924	3,181	3,175	3,315	3,954	5,818	7,006	8,377	9,122
80-84	1,618	2,345	2,253	2,472	2,621	3,192	4,654	5,914	7,188
85+	1,264	1,797	1,900	2,647	2,666	2,962	3,551	5,203	7,302
TOTAL	170,358	186,634	197,899	201,743	204,308	205,906	206,596	205,495	207,382

2000 and 2010 population are based on the 2000 and 2010 decennial census

Saving the Data as a New Workbook

The screenshot displays the 'Local Population Projection Portal' interface. On the left, the 'Inputs' section includes dropdown menus for 'County: Ventura' and 'City: Oxnard', a 'Calibrate' button, and a 'Projection Method' section with radio buttons for 'Demand Method' (Low (150%), Moderate (300%), High (450%), or 'Or enter the number of expected new households between 2010 and 2040:' with a text box containing '5000'). Below this is a 'Supply and Land Use Capacity Methods' section with radio buttons for 'General Plan' (selected) and 'Envision', and another text box for '5000'. A 'Run' button is at the bottom left. On the right, the 'Outputs' section shows a line graph titled 'City of Oxnard Household Growth, 2000-2040' with two series: 'Population' (blue line with diamonds) and 'Households' (red line with squares). The x-axis represents years from 2000 to 2040, and the y-axis represents counts from 0 to 200,000. A 'Save As...' dialog box is open over the graph, with the text 'Enter the filepath to which you would like to save:' and a text box containing 'C:\My Documents\Oxnard Scenario 1.xls'. 'OK' and 'Cancel' buttons are visible. At the bottom right, there are buttons for 'Save Scenario As...' and 'Save PDF Summary As...'. A tabbed interface at the bottom of the graph area shows 'Pop. & Household Growth' as the active tab, with other tabs for 'Annual Avg. Growth Rate', 'Household Size', 'City Share of County', and 'Age Comp'. A note below the tabs reads: 'Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.'

Local Population Projection Portal

County: Ventura

City: Oxnard

Calibrate

Projection Method:

Demand Method

Select the 2010 - 2040 household growth percentage of the 2000 - 2010 growth:

Low (150%)

Moderate (300%)

High (450%)

Or enter the number of expected new households between 2010 and 2040:

5000

Supply and Land Use Capacity Methods

Select one of the following methods:

General Plan

Envision

and enter the number of expected new households between 2010 and 2040:

5000

Run

Reset

Close

City of Oxnard

Household Growth, 2000-2040

Population

Households

2000 2005 2010 2015 2020 2025 2030 2035 2040

200,000

150,000

100,000

50,000

0

Pop. & Household Growth | Annual Avg. Growth Rate | Household Size | City Share of County | Age Comp

Click on a tab to view the corresponding aspects of the projected population growth. Click the arrows on the right to view more options.

Save Scenario As...

Save PDF Summary As...

Save As...

Enter the filepath to which you would like to save:

OK

Cancel

C:\My Documents\Oxnard Scenario 1.xls

Future Improvements

- A web-based version of the demand method application
- Complete integration with ArcGIS Online
- Parcel-level household growth editing

Conclusion

- The newly developed modeling framework for local population projections can be a useful scenario testing tool for urban and regional planners.
- The housing unit method offers urban and regional planners the opportunity to seriously discuss the different scenarios of housing development and population size together with their implication on the components and demographic characteristics of local population growth.

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