FAQ: Metro 2060 Population Forecast

Race, Ethnicity, Age and Gender Forecast for the Portland MSA and 3 counties

What's new?

A new population forecast series has been developed around Metro's official baseline population forecast (adopted under the 2015 Urban Growth Management Decision). This regional forecast series uses the baseline "middle-growth" population forecast as a control for projecting population by gender race/ethnicity, and age. There are five race categories: white, black, Native American, Asian, and Pacific Islander. In addition, Hispanic or Latino population is included as a mutually exclusive category as its own separate "race". Age is estimated in single year age brackets up to 100 or older years of age, though summarized in 5-year age brackets.

What is the population forecast for the region?

According to the Census, in 2010, 2,226,009 residents lived inside the MSA (metropolitan statistical area). Metro's latest adopted Urban Growth Report has MSA-level population rising to 3,052,100 residents in 2040. By 2060, the population in the 7-county MSA is expected to reach 3,534,400 residents. Portland State University, Population Research Center estimates the current (2015) population of the MSA is 2,362,655 residents (note: counties in Washington State are estimated by the Office of Financial Management).

How fast is the region (MSA) expected to grow as compared to historically?

(Annual average percent growth)

HISTORY						FORECAST			
1960-70	1970-80	1980-90	1990-00	2000-10	2010-15	2015-30	2030-40	2040-50	2050-60
2.1%	2.2%	1.3%	2.4%	1.4%	1.2%	1.2%	0.8%	0.7%	0.7%

Source: Census and Metro

How does the latest regional forecast compare to the population forecast from 5-years ago?

MSA Population Forecast, 2010 to 2040

(Portland-Vancouver-Hillsboro, OR-WA Metropolitan Statistical Area

	Current Forecast (2014)	Prior Forecast (2009)
2010	2,226,009	2,265,500
2020	2,519,200	2,703,600
2030	2,814,100	3,050,100
2040	3,052,100	3,371,500
2050	3,284,400	3,669,300
2060	3,534,400	3,993,400

Source: 2010 Census and Metro (Sep. 2009 and Sep. 2014 forecast releases from UGR.)

Note: 2010 figure in the prior forecast was a projection as the 2010 Census wasn't yet available.

Why is there a difference in regional population forecasts between the 2010 and 2015 releases?
Metro strives to utilize the latest information and assumptions available in preparing each forecast. During the last 5 years, several factors have arisen that has altered the outlook for future regional growth. First, expected population growth in the region slowed during the Great Recession. The full impact of the recession is integrated into the latest regional forecast. Second, the Census Bureau recently revised and lowered its birth rate projections; this is reflected in the regional population outlook. Third, the Census Bureau lowered its immigration outlook for the U.S. and this also was incorporated into Metro's regional migration assumptions going forward (although immigration is only a small part of overall migration in the region).

What's the forecast horizon for the new forecast series?
Year 2060, and it starts with the 2010 Census as its base year. A so-called range forecast had been prepared for long-range planning (UGB management decision) purposes. The Metro Council opted to discard the low and high growth scenarios. Only the middle-growth regional forecast carries forward with population by race, gender, and age.

What's the geography of the new race and gender population forecast?
MSA level: the most demographic detail of population by race/ethnicity, gender, and age. MSA is a federal census designation. Present delineation includes Clackamas, Clark (WA), Columbia, Multnomah, Skamania (WA), Washington, and Yamhill counties of Oregon and Washington State.

County level: some aggregation of population details – gender is combined, age bracket in 5-year cohorts, Asian and pacific islander races are combined. Counties are Clackamas, Multnomah, Washington and the remaining MSA counties are lumped together as "other".

Is there a county-level forecast?
Yes.

In fact there are 4 series alternatives based on the middle-growth regional forecast.

Because we are unsure how minority (and white) populations may settle and divide out by county, we have prepared 4 alternative county-level population growth scenarios based on future dispersal patterns by race / ethnicity. These county-level population series alternatives are based on these 4 variations on future settlement assumptions:

1. "Status quo county trend" - assumes steady increase in minority share between counties by race while adjusting for the rising percentage of minorities in the MSA.
2. Faster share of minorities shifting outward to live in suburban and exurban counties (i.e. urban area fringes)
3. Minority shift to urban fringe & white "flight" into central city (same as #2 and at the same time increasing the share of whites into living in Portland city)
4. Metro UGB "captures" proportionally higher share of minority population growth of the MSA

Why prepare 4 series alternatives for the county-level forecast?

Because of uncertainty. Frankly, we just aren't very sure how future development patterns would change over time, and have few forecast indicators that can be relied on to point a most likely direction. We could prepare more series alternatives, but these seem to be plausible alternatives that we think many people would be interested in understanding.

In the MSA, which racial/ethnic group (in total) is expected to grow the fastest during the next 50 years (2010 to 2060)?
The Hispanic (or Latino) population segment is expected to add another 665,000 people by 2060, the largest increase in a race or ethnic population. Whites will grow by another 285,000 followed by another 250,000 Asians

What's this talk about majority minority?
Whites will still represent a plurality in the MSA. However, projections now suggest the majority of people living in the MSA will be a member of one of the non-white categories.

When will we hit majority minority in the MSA region?
2070 is when we expect the shift in status – assuming extrapolations and various other growth assumptions are correct. The greatest degree of uncertainty is the forecast rate of in-migration of Hispanic and Asian Americans to this region from elsewhere in the U.S. To a lesser extent, immigration from abroad will also impact minority growth rates in this region, but immigration contributes much less to population growth in Oregon.

How many Millennials are there today? And how many more are expected?
In 2015, the MSA population includes 575,000 people of the millennial generation. The tail end of the Millennials will be coming of age by year 2020 at which time, there numbers in the MSA will swell to over 630,000 members. The number of Millennials will continue to edge up through additional net in-migration; their numbers will top out at over 750,000 people by 2045. Higher mortality rates eventually kick-in and their numbers will finally begin to decline as the leading edge closes in on retirement age.

Why does Metro produce population forecasts?
Metro's Charter makes the agency "accountable" for carrying out its "primary responsibility" of regional "planning and policy making to preserve and enhance the quality of life and the environment." Under municipal, state and federal regulations this means that Metro is directed to prepare long-range regional transportation and land use planning. This planning requires an update to population and economic (regional) forecasts with sufficient technical detail to inform policy.

What is the population forecast used for primarily?
Traditionally, Metro has applied the population forecast in its state and federally mandated regional transportation plan (RTP) updates. RTP updates happen every 4 years. Also, the population forecast is the basis for assessing whether the Metro UGB contains development capacity for a 20-year period. Since 1997, the forecast has been updated at least once every 5 years.

How frequently are the population forecasts to be updated?
ORS 197.299 (amended) requires Metro to periodically assess the sufficiency of the Metro UGB to maintain development capacity for a 20-year period and for Metro to complete this analysis at least every 6 years. Thus we anticipate being able to update our forecasts and projections at least every 6 years.

Why produce a range forecast?
Projecting population growth has a degree of risk and uncertainty, particularly when so much could happen between now and 50 years from now. Policy makers would like a sense to the degree plans may change under different growth scenarios. A so-called range forecast is provided for the 20 year and 50 year population forecast. The range forecast consists of a low, baseline (medium), and high growth alternative series. However, this range doesn't break down the population forecast by race. We take the adopted forecast (middle growth series) and complete our analysis by dividing this population total by race and gender.

Why doesn't Metro just use the Census or Portland State or Oregon State population forecasts?
These other organizations at present are not preparing population forecasts by race and ethnicity.

Why produce population forecast by race and ethnicity?
Many programs administered by Metro using federal grants require an environmental justice component to determine how public policy impacts people and communities of color. These assessments are based on existing conditions, however, we can be more alert to potential policy impacts going forward if policy makers were made more aware about change expectations in the future.

Are the Metro forecasts peer reviewed?
Yes. At different points of the forecast process, we convene forecast experts and stakeholders to review our inputs and assess the reasonableness of our forecast outlooks.

Metro 2060 Population – Baseline projection series

What's new?

Metro population projections have been around for a long time, but what's new is the differentiation of population growth by MSA (7-county region) and county-level (Clackamas, Multnomah, & Washington):

- ✓ Gender (male or female)
- ✓ Race and ethnicity (white, black, native Indian, Asian, pacific islander, Hispanic)
- ✓ Single year cohorts from age 0 to 101+

Chart 1

White	Black	Nat. Am.	Asian	Pacific Isl.	Hispanic
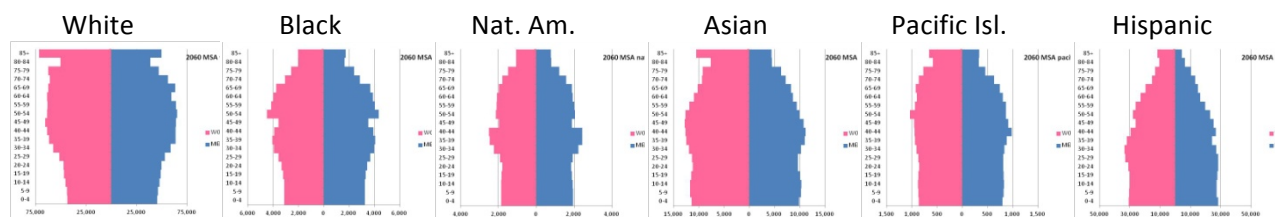
The scale of population pyramids are not the same.

Generation Theory

While all people in generations are unique, there is a tendency for many in the same generation to share similarities such as belief, values, attitudes and lifestyle. These attributes allow for the study of generations and leads to segmentation of people and households into market shares and general residential preferences.

Chart 2
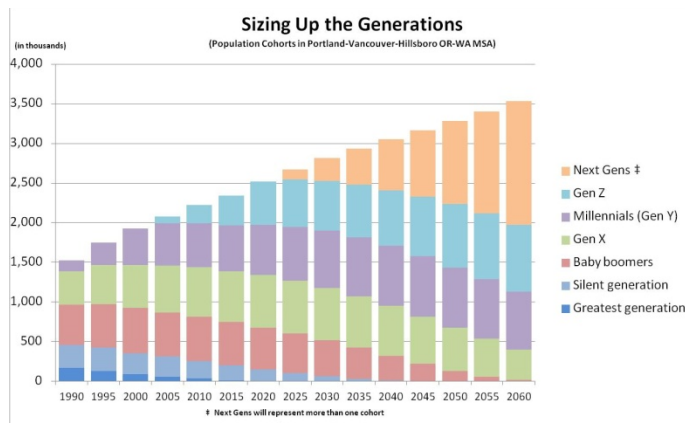
Race and ethnicity through year 2060
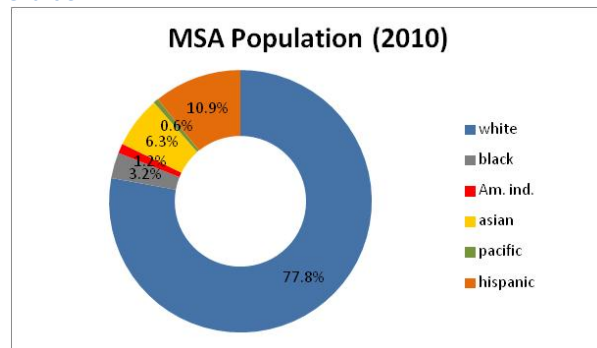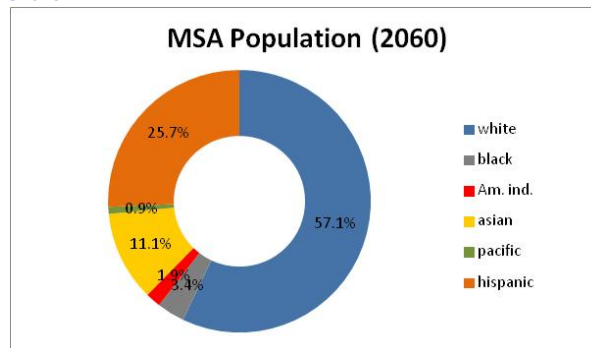
Chart 3

Chart 4

Forecast timeframe is from a 2010 Census (base year) to year 2060. Further extrapolations indicate a majority minority by year 2070, if earlier trend assumptions hold true.

Metro 2060 Population Forecast

Modeling Methodology for the MSA and County Population Projections
Portland-Vancouver-Hillsboro, OR-WA Metropolitan Statistical Area (MSA)

MSA Methodology

The Metro Research Center employs a cohort-component method to project regional population trends for age, gender, and race/ethnicity. The region is delineated by the latest designation of counties assigned to the metropolitan statistical area (MSA), 7 counties in all. In Oregon, these counties include Clackamas, Columbia, Multnomah, Washington and Yamhill; in Washington State, the counties are Clark and Skamania. From a 2010 base year, the population forecast is projected forward annually for the entire region by single-year cohorts, gender and 5 race and Hispanic origin groups: (1) non-Hispanic White, (2) non-Hispanic Black, (3) non-Hispanic American Indian or Alaska Native (AIAN), (4) non-Hispanic Asian, (5) non-Hispanic Hawaiian or Pacific Islander, and (6) Hispanic / Latino.

When Metro refers to a forecast or growth projection as "baseline", it means that it is the "likely" scenario alternative that assumes demographic factors and growth assumptions that represent the greatest likelihood of potentially materializing in the future. A baseline projection largely assumes that people have the right to migrate where they choose and that no major natural catastrophes will befall the region, state or the nation to alter its outlook. Metro also prepares "high and low growth scenarios" that under alternative growth conditions may prevail. They represent possible alternatives, but are judged less likely of actually occurring. These alternatives are not prepared by gender and race. At Metro, alternative growth scenarios are created as probabilistic expressions derived from "monte carlo" simulation in which components of the cohort method are perturbed based on historical statistical deviations and include projected forecast errors. These simulations are collected together that in terms of likelihood represent a probability distribution of possible population futures[1].

Metro's cohort-component approach to forecasting population growth takes the region's base year population (2010) and grows out the trends of that population according to how many people will likely survive into the next year and so on. Death rates are applied on an age-adjusted basis to calculate survival. Births and net migration (i.e., the difference between inflows and outflows of residents of the region) are added at each interval and in ensuing years are included to the population and its chance of survival is also calculated with the previous year's population. Fertility assumptions are applied to women of childbearing age to form new cohorts. A cohort component method traces people born in a given year throughout their lives; as each year passes, cohorts change due to mortality and migration assumptions.

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[1] Alternate growth scenarios or ranges are only available for MSA and not county-level.

Assumptions and General Growth Projection Details

The cohort-component forecast method is built around a mathematical identity equation for the growth of a population. A fundamental demographic concept is used in calculating population growth from a base year to future years. This fundamental demographic equation estimates tomorrow's population based on today's population and components of change in births, deaths and net migration in the MSA region. The generalized form of this equation is:
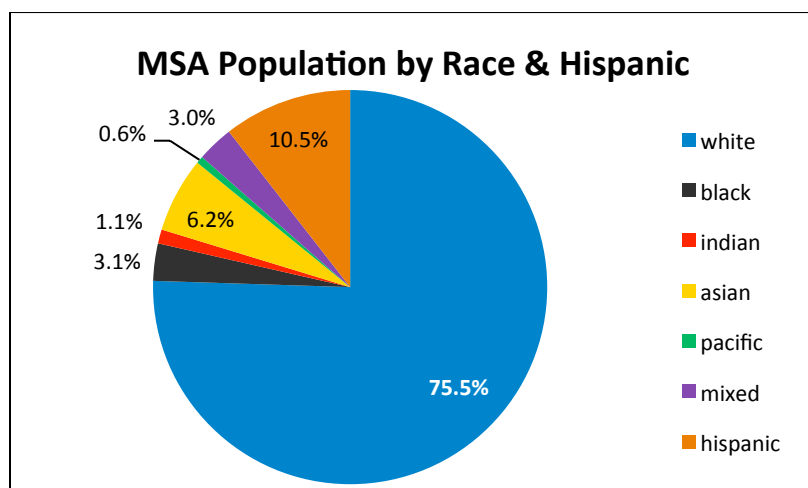
Equation 1

Population $_{t+1}$ = Population $_t$ + Birth $_{t+1}$ - Death $_{t+1}$ + Net Migration $_{t+1}$

where a future Population at t+1 must equal to Population at time t, plus births and in-migrants less deaths and out migrants that occur in the interval time=t and time=t+1. This is a very data intensive approach and if age, gender, and race is to be projected, then the data needs rise in step with the number of years into the future and the interval of growth plus detailed by the need to produce a specified forecast by age bracket, gender, and race categories. The data requirements become multiplicatively large depending upon the specified level of detail needed for a complete cohort-component population model.

Base Population – For its base-year benchmark, Metro used the 2010 Census counts and modified the race category to eliminate the "two or more" race (i.e., mixed race) category and to treat the "Hispanic or Latino" category as a separate race. The population of the two or more (TOM) race category was reassigned to white, black, Native American, Asian, or pacific island based on imputed apportionment calculations made by Metro. The delineation of population by race is consistent with Bureau of the Census definitions.

Chart 5

MSA Population by Race & Hispanic

- white 75.5%
- black 3.1%
- indian 1.1%
- asian 6.2%
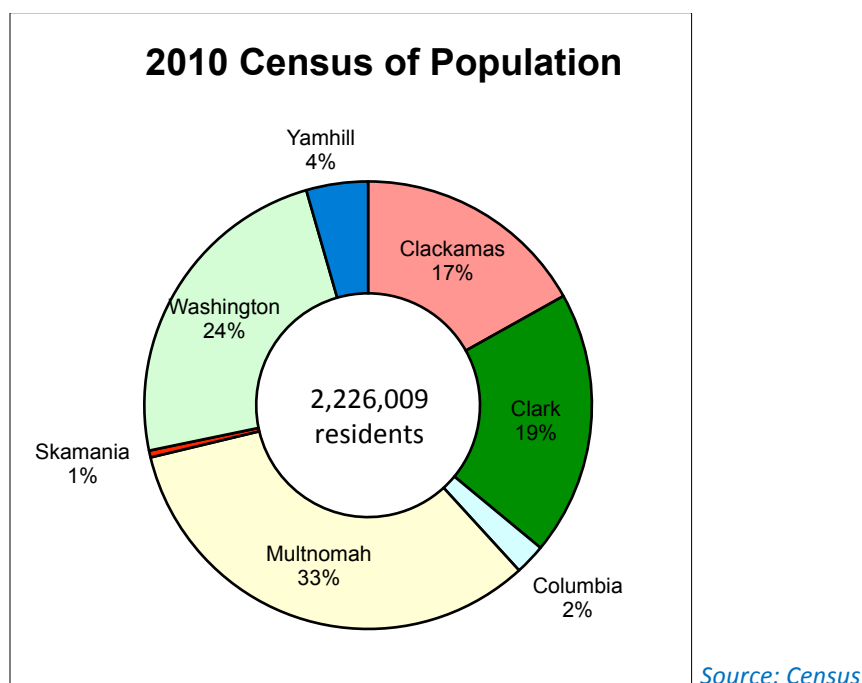- pacific 0.6%
- mixed 3.0%
- hispanic 10.5%

Source: Census

Race/ethnicity – The Metro population projection includes a breakdown of population growth by race and ethnicity. The race categories are white, black, Native American, Asian, and Hawaiian/pacific islander and ethnic Latinos/Hispanics. Individuals of mixed race or two or more races are proportionally

re-assigned using more detailed race data to 1 of the 5 race or ethnic categories. (About 3% of the current population in the region identify as two or more races.) For purposes of the forecast, Latino or Hispanic is treated as a race category. So if a person is Hispanic or Latino, he/she is only counted once in the Hispanic category and not in one of the other race categories. (Someone identifying as Hispanic or Latino may also be classified by race or of mixed racial descent, but for purposes of this study, each person is assigned to one race.)

The base year population is of the Portland-Vancouver-Hillsboro, OR-WA metropolitan statistical area (MSA). The current MSA rendition includes a total of 7 counties and a total population over 2.2 million.

Chart 6

2010 Census of Population

2,226,009 residents

- Yamhill 4%
- Clackamas 17%
- Clark 19%
- Columbia 2%
- Multnomah 33%
- Skamania 1%
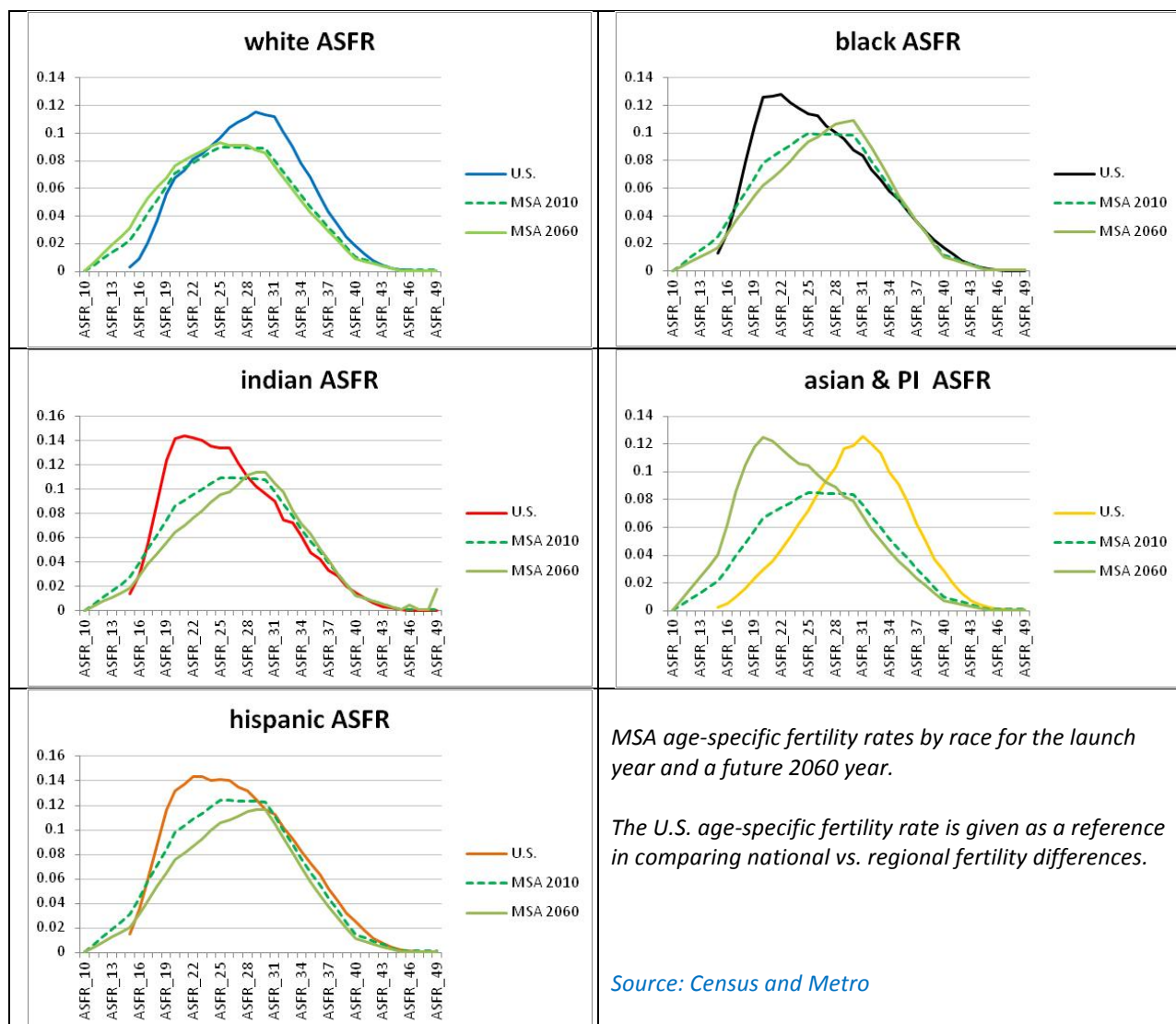- Washington 24%

Source: Census

Births (Fertility Rate Assumptions by Race) – Birth rates historically vary from year to year because of prevailing economic conditions and societal norms which shape the birth rates of Americans and foreign born residents who have migrated to live in the U.S. Recently, the Great Recession forced annual birth rates to decline as prospective parents delayed having children until the uncertainty and economic challenges during the recession disappeared. The birth rate for all races dipped during the Great Recession.

We expect birth rates in the near term to return to a pre-recession normal, but may take a while for conditions to settle. Still, it is reasonable to avoid starting from base year birth rates which seem too low. To smooth out the launch point values for the regional birth rates, base-year age-specific birth rates are calculated as a blend over a 5 year period (2008-2013). Annual fluctuations in birth rates are smoothed out using the 5 year data. Thus the 5-year blend serve as launch values for the extrapolation of future-year age-specific birth rates.

Future year MSA fertility rate projections are extrapolated on the basis of national fertility rate assumptions from the 2012 National Population Projections series. The national assumptions are considered representative of a medium growth rate scenario. The age-specific fertility rates (ASFR) are displayed in the series of charts nearby.

Chart 7

white ASFR

black ASFR

indian ASFR

asian & PI ASFR

hispanic ASFR

MSA age-specific fertility rates by race for the launch year and a future 2060 year.

The U.S. age-specific fertility rate is given as a reference in comparing national vs. regional fertility differences.

Source: Census and Metro

Total fertility rates (TFR) do and will vary by race and ethnicity as well as distinct distributions of age-specific fertility rates by race. The TFR represent on balance the number of children each woman is expected to have during her lifetime. Some women will have more than the average and others fewer, but in general, Asian and white women currently have the lowest TFR while Hispanic women presently average the most children. Over subsequent generations, the TFR for all race of women are expected to converge closer together due to cultural assimilation and harmonizing of economic and social

conditions. This is an assumption that exists in the national projections, and is carried along into the projections of regional fertility rate.

Table 1

Total Fertility Rate (TFR)		
Race/ethnicity	Base year TFR	Future year (2060) TFR
White	1.657	1.714
Black	1.831	1.755
Native American Indian	2.011	1.873
Asian & Pacific Islander	1.561	1.982
Hispanic or Latino	2.286	1.940

Source: Census, Oregon Dept. Health Statistics, and Metro

Death (Mortality Rate Assumptions by Race) – Life expectancy estimates at birth help summarize the mortality rate assumptions incorporated into baseline regional population projections. Life expectancies do and will vary by race and ethnicity. The base year and projected life expectancies derived from projected age-specific death rates are arrayed by race/ethnic group and gender.
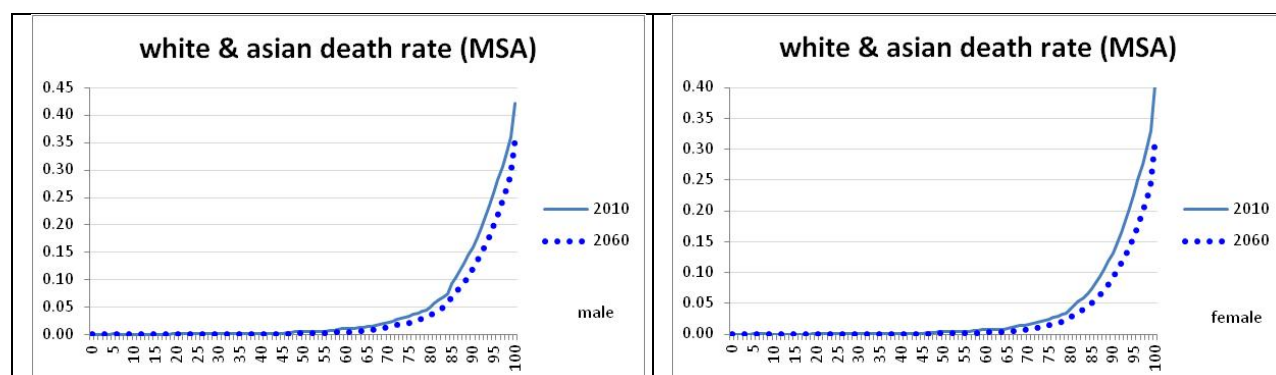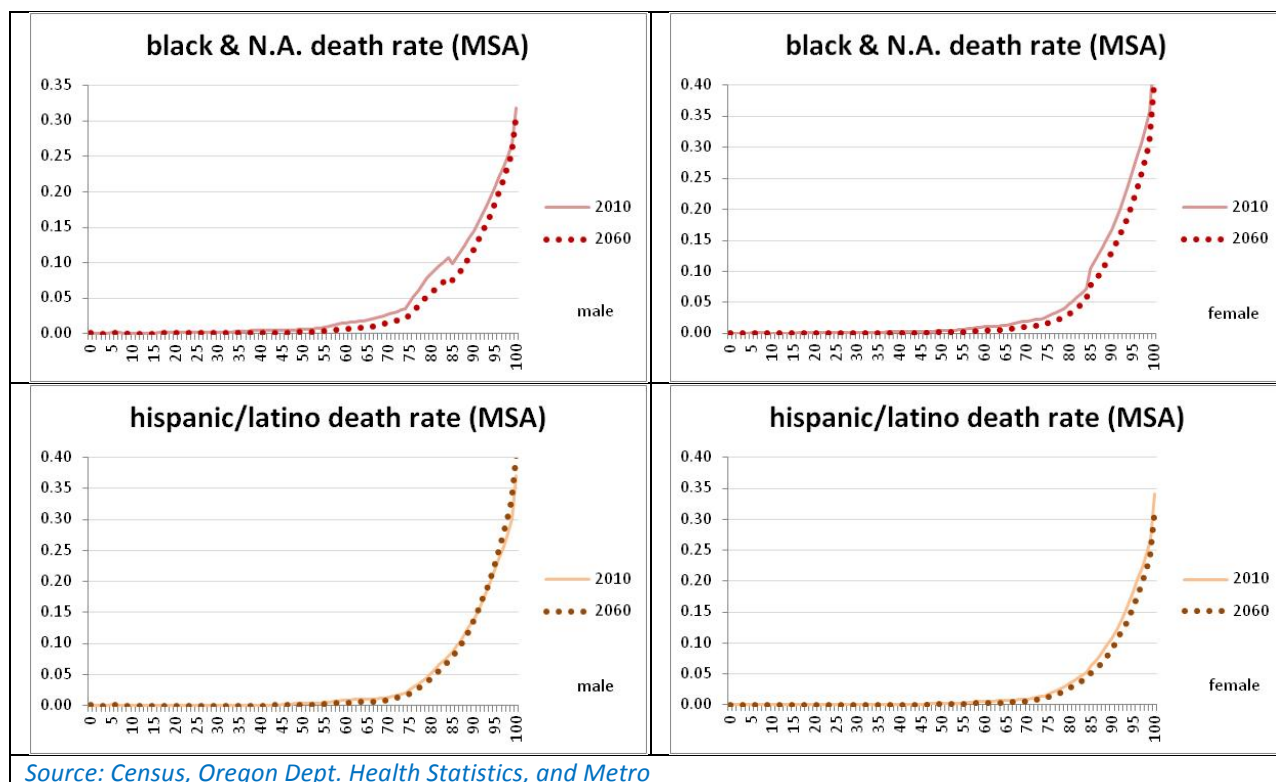
Table 2

Life Expectancy at Birth						
	White, Asian & Pacific Isl.		Black & Native American		Hispanic or Latino	
	Male	Female	Male	Female	Male	Female
Base year	77.8	81.5	73.4	78.3	80.7	84.5
Future (2060)	83.9	87.1	81.5	84.5	84.2	87.8

Source: Census, Oregon Dept. Health Statistics, and Metro

The following charts illustrate the death rates estimated from 2010 vital statistics and population data and the projection of these death rates to year 2060 based on the life expectancy assumptions shown in a nearby table. According to Census assumptions, death rates for Asians and whites are expected to be almost the same, blacks and native Americans are grouped together, while Hispanics/Latino members of the population are expected to have the highest life expectancy as reflected in the death rates.

Chart 8

black & N.A. death rate (MSA) — male

black & N.A. death rate (MSA) — female

hispanic/latino death rate (MSA) — male

hispanic/latino death rate (MSA) — female

*Source: Census, Oregon Dept. Health Statistics, and Metro*

Deaths are calculated by applying regional age-specific survival rates, constructed separately for men and women in each of the race/ethnic categories for the MSA population. Launch values for the death rates are based on a blend of a five year period, 2008 to 2013, of death statistics for the Oregon portion of the MSA.

Future year MSA-level age-specific death rate projections are extrapolated on the basis of national mortality rate assumptions from the 2012 National Population Projections series. The national assumptions are considered representative of a medium growth scenario. The set of age-specific death rates (ASDR) by race are displayed in a series of nearby charts.

Migration – Migration totals are developed using an in-house econometric model that produces a trend migration-level forecast. This migration trend is then proportioned out by race/ethnicity and gender for the population forecast. The migration proportions are summarized in charts nearby. These assumptions are produced using a "survived population method" between the last two decennial censuses (i.e., 2000 and 2010). Decomposing the components of population change between the last two Census years, we are able to compute the change in growth due to births, deaths and net migration by gender and race. From this decomposition the region's population growth from the last decade, these ratios and shares are extrapolated to produce the migration details for each cohort going forward.

Chart 9
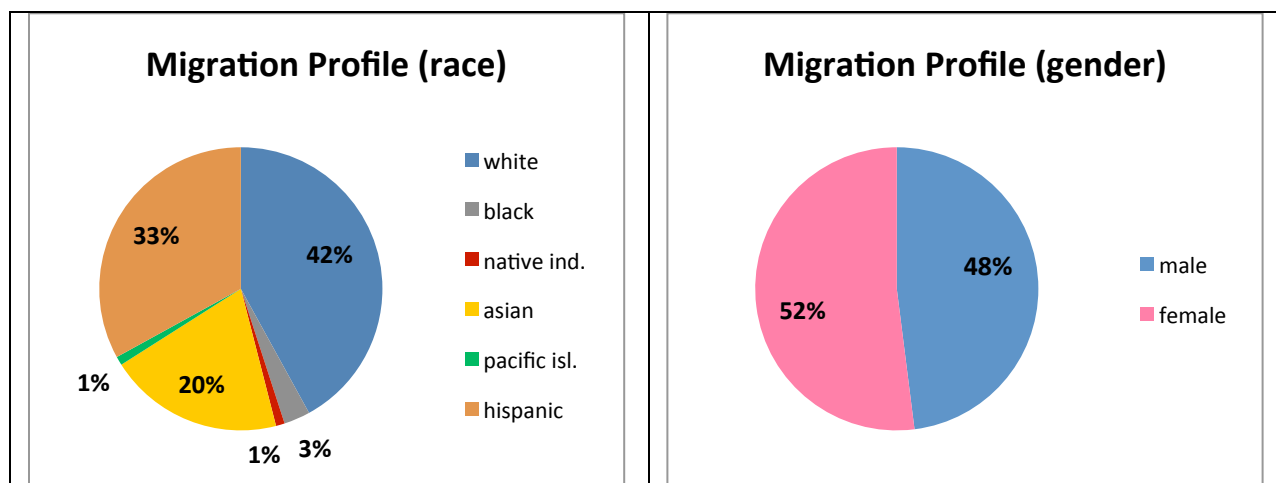
Source: Census and Metro

The net migration of white residents is represented by a 42% plurality. This is a fairly significant regional change from when whites were a majority. People of Hispanic or Latino ethnicity are expected to be one-third of future migrants, almost double the region's current share of population. Asian migrants are expected to account for one-fifth of future net migrants, representing 3 times over the share of Asians in the region today. The share of future migrants of Black, Native Indian and Pacific Island descent are expected to be about the same as today's regional shares, respectively, 3%, 1%, and 1%. The future migration profile reinforces the racial profile of future births in the region such that we anticipate a majority of minorities by about the year 2070. The ascension of majority minorities is about 25 years delayed as compared to the U.S. as a whole (according to Census Bureau middle series projections) because of the much higher concentration of white residents from the onset of the forecast.

In terms of gender difference between migrants and births in the region, the baseline population forecast predicts a slightly higher percentage of female migrants (52%) as compared to the current ratio of women in the region (50.6%) and births of baby girls (49%). The assumed higher projected rate of female migrants stems from an historical trend that has revealed even higher proportion of female net migration (57%) than male net migration, but for projection purposes we have dampened the gender migration disparity going forward.

Chart 10

Source: Census and Metro
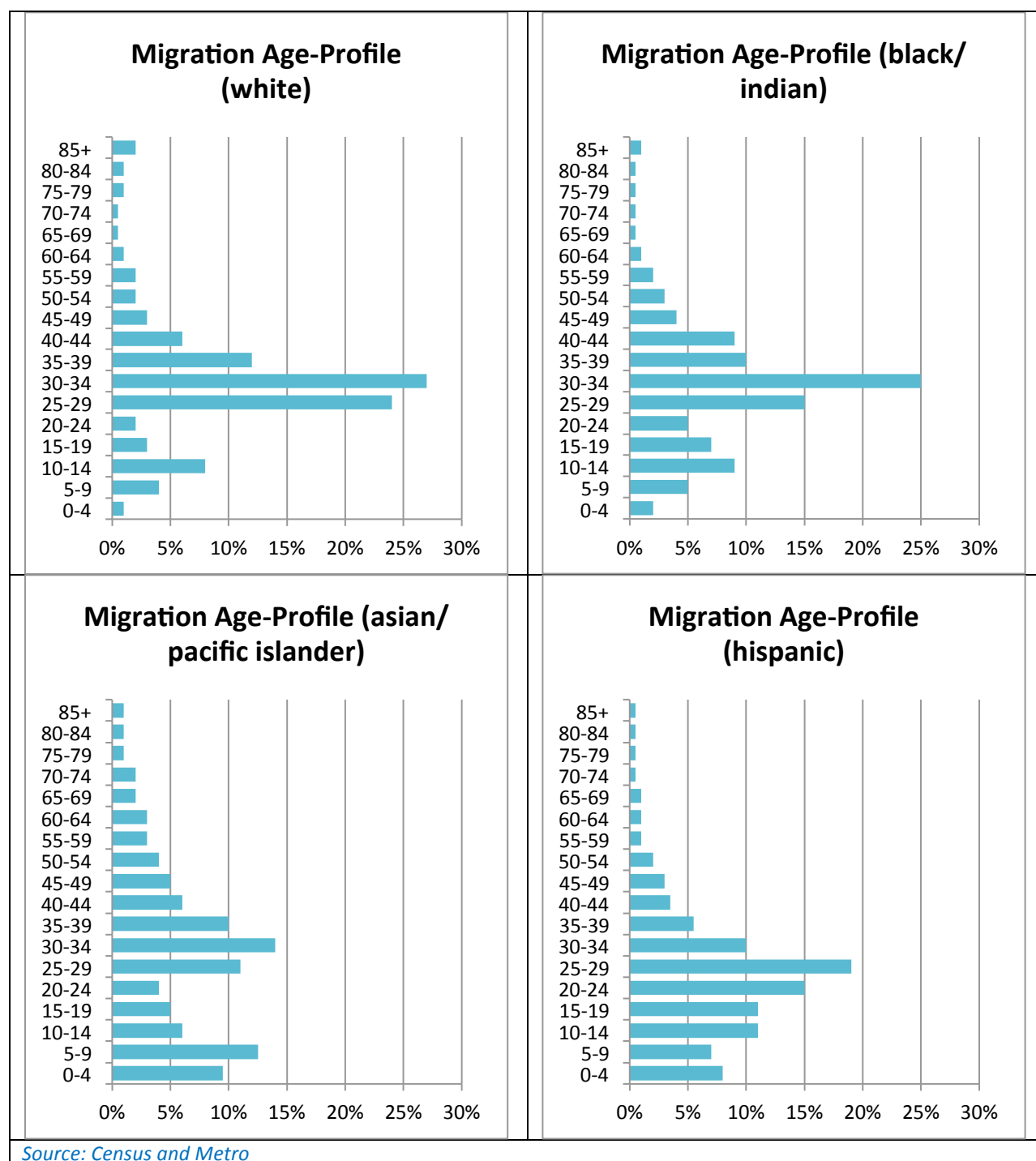
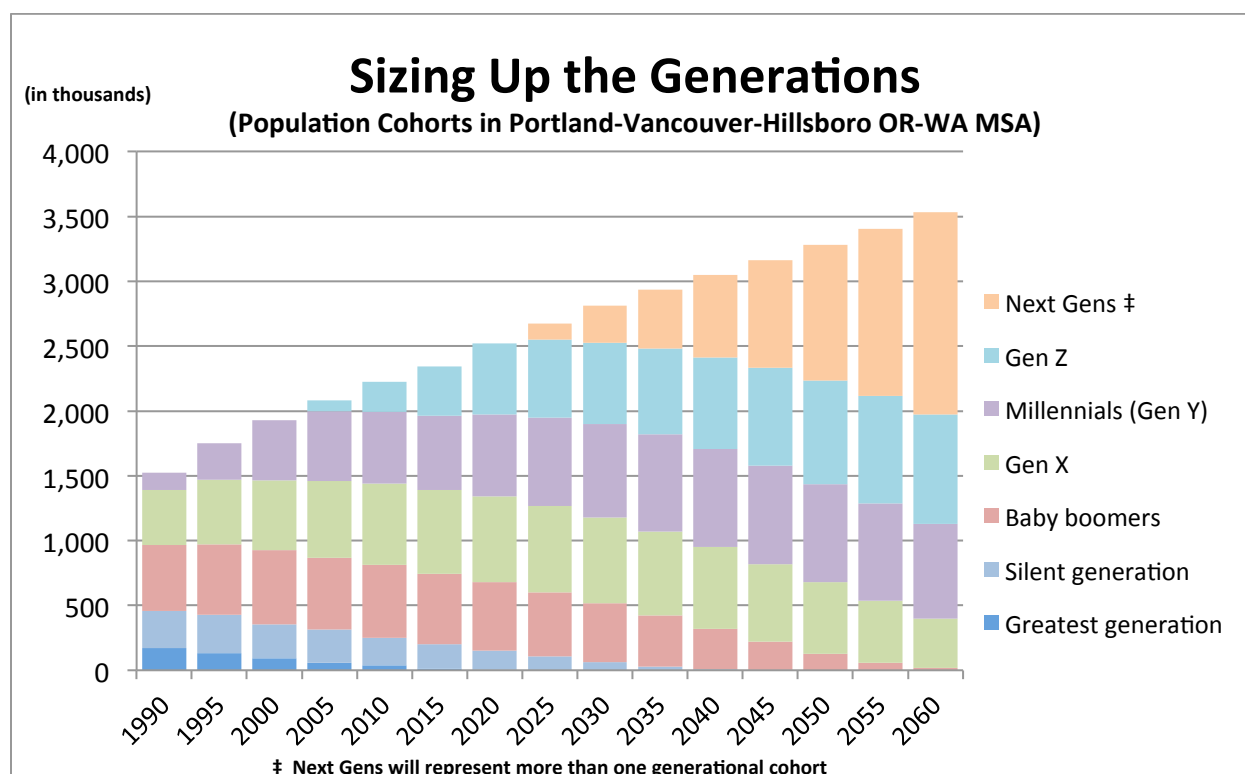Age-specific migration rates or profiles are derived from the same 10 year look back at Census data for the region. Profiles for the Native American population are combined with blacks, and the Pacific Islander population combined with Asians due to small numbers of Native Indian and Pacific Islander migrants. We find that the age profile for white net-migrants have very pronounced mode between ages

25 to 34, while the mode for blacks and Indians is between 30 to 34 years of age. Asians and Pacific Islanders appear to have two distinct modes between ages 25 to 39 and 0 to 9; this suggests very strongly that the migration of this group may be traditional family groups. The Hispanic population shows a distinct and greater propensity of its net migrant population to be under age 30; this likely reflects the historic trends of Latinos of Mexican descent settling in places where farm work and low-skilled occupations are available. Proportionally fewer retirement age or older Hispanics and blacks seemed to have moved and settled here in the region during the last decade, whereas whites and Asian retirees were almost twice as many proportionally.

Overview of the Region's Baseline Population Trend Projection

Perhaps an interesting and a more functional means of examining population is through a "generational lens" that groups cohorts with like similarities based on specific historical, cultural, socio-economic attitudes, norms and circumstances. This generational analysis divides the population based on age groups that by observation or perception display distinctive characteristics. Although it may be useful to lump people together into generations, it is also equally important to remember that there are as many differences in attitudes, values, behaviors and lifestyles within a generation as there are differences between generations. However, we believe that a generation view of population trends reveals simplifications and generalizations that help us understand the complexity of regional populations.

Chart 11

Sizing Up the Generations
(Population Cohorts in Portland-Vancouver-Hillsboro OR-WA MSA)

(in thousands)

Legend: Next Gens ‡, Gen Z, Millennials (Gen Y), Gen X, Baby boomers, Silent generation, Greatest generation

‡ Next Gens will represent more than one generational cohort

source: Metro

Legend information:

Generation	Age Bracket	Coming of Age	Age in 2015	Description
Greatest Generation	1905-1924	1923-1942	91 to 110	Came of age during Great Depression and fought WWII[2]
Silent Generation	1925-1945	1943-1963	70 to 90	Hard working, kept quiet on own beliefs & opinions[3]
Baby Boomers	1946-1964	1964-1982	51 to 69	Consumer oriented yet nonconformist, led various movements of liberal agendas[4]
Generation X (Gen X)	1965-1983	1983-2001	32 to 50	Marked by disappointment, economic headwinds & underachievement[5]
Millennials (Gen Y)	1984-2002	2002-2020	13 to 31	Raised on fast evolving technology & during drastic liberalization of social norms[6]
Gen Z	2003-2021	2021-2039	12 or younger	More realistic – jaded by recession, terrorism – and more technology reliant[7]
Next Gens ‡	2022 and beyond	2040 and beyond	Not alive	Future generations?

The Greatest and Silent Generations are sometimes combined and called the Traditionalists. As year 2015 fades, there will be fewer than 4,000 residents from the Greatest Generation by 2020. The number of Silent Generation residents will fall below 150,000 by 2020 or under 6% of the region's total population. By 2040, the number of traditionalists will be virtually gone, leaving fewer than half a percent of the total population.

Going forward from 2015, the number of Baby Boomers alive has already peaked in the region. As each year passes the number of Baby Boomers alive in the region will begin to fall away faster and faster. From an economic standpoint, Boomers will decline as an economic force. But the generation will achieve one last economic stimulus as an engine of economic growth. They're last major economic thrust will be felt in post-retirement and from its impact on health care and through social security for seniors. The baby boomers was a larger cohort than the traditionalist cohort, their economic impact on housing and the economy as a proportion has yielded roughly twice the economic and social influence due to this generations much larger numbers.

Succeeding the Baby Boom Generation is the Gen Xers. In this region, due largely to migration, the region has seen the Generation X population grow to significantly larger than its peers from the Baby

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[2] http://www.goodreads.com/author/quotes/18495.Tom_Brokaw
[3] http://study.com/academy/lesson/the-silent-generation-definition-characteristics-facts.html
[4] http://study.com/academy/lesson/what-are-baby-boomers-definition-age-characteristics.html
[5] http://www.valueoptions.com/spotlight_YIW/gen_x.htm
[6] http://elitedaily.com/life/the-20-differences-between-the-baby-boomers-and-generation-y/
[7] http://growingleaders.com/blog/six-defining-characteristics-of-generation-z/

Boom Generation. Gen X was at one time popularized with the phrase "Baby Busters", perhaps because of the lower fertility rate that spawned this generation or because of its counter-culture attitudes of its preceding Boomer generation. Regardless of its name and lower birth rates, the Gen X crowd in the region may be expected to top nearly 700,000 residents at its projected zenith in 2025. Net migration continues to add to the total number of Generation X residents in the region; after 2030, the number of Gen X residents taper as mortality rates accelerate and as migration numbers fall off due to age.

Millennials (previously called Gen-Y by some researchers) represent an even larger regional population segment than any previous generation. The number of Millennials will continue to grow as Millennial-aged migrants move-in from elsewhere and settle in this region. The future cohort is expected to top 760,000 residents in the region by 2045. Afterwards, mortality rates will start accelerating and the number of these residents will start declining. At its zenith, the number of Millennials in the region will approach 1 in 4.

Gen Z is expected to be the largest identified population segment in the region during the forecast period. Their numbers for this region will top out after 2060 at nearly 850,000 residents and will exceed 1 in 4 residents.

The next generations could be even larger than the projections for Gen Z. Time will tell of course.

MSA Growth Projections by Race and Gender

White Population

- The age pyramid for the white population in the MSA is identified by a constrictive population pyramid. The region's white population is expected to become older with median age rising, and characterized by a longer life expectancy, a low death rate, but also a low birth rate. The pyramid would be even narrower near the bottom (younger ages) if not for domestic net in-migration in which migrants are generally younger than the resident population.
- Median age in 2010 = 38.7 years (est.)
- Median age in 2060 = 46.8 years (est.)

Chart 12
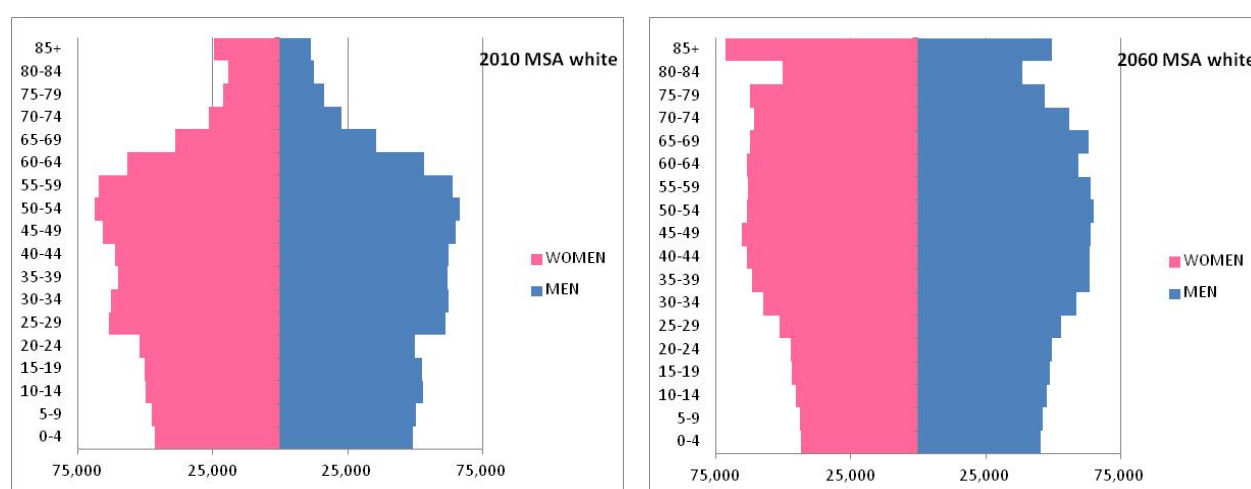
Source: Census (2010) and Metro

Table 3

	2010	2020	2030	2040	2050	2060
Total Pop.	1,732,585	1,848,925	1,938,925	1,978,489	1,996,265	2,017,368
APR%		0.72%	0.40%	0.14%	0.10%	0.13%
Male	850,749	911,576	955.594	973,909	982,845	993,842
Female	881,836	937,349	983,331	1,004,580	1,013,419	1,023,526
Dependency Ratio	43.5	53.2	61.7	65.5	70.0	71.6
Children (0 to 14)	24.5	24.1	23.4	23.0	23.2	23.1
Seniors (65 and over)	18.9	29.1	38.3	42.5	46.8	48.5

Source: Census (2010) and Metro

Black Population

- The age pyramid for the black population in the MSA can be described as either stationary or a constrictive population pyramid. The region's black population is expected to age relatively fast, with median age rising quickly in 50 years, and characterized by a longer life expectancy, a lower death rate, but also a low birth rate. The age pyramid at the bottom remains roughly the same

in numbers, but the middle aged and senior cohorts expand significantly in the next 50 years. The wave of net in-migration of blacks to this region is expected to be limited in numbers.

- Median age in 2010 = 28.3 years (est.)
- Median age in 2060 = 42.1 years (est.)

Chart 13
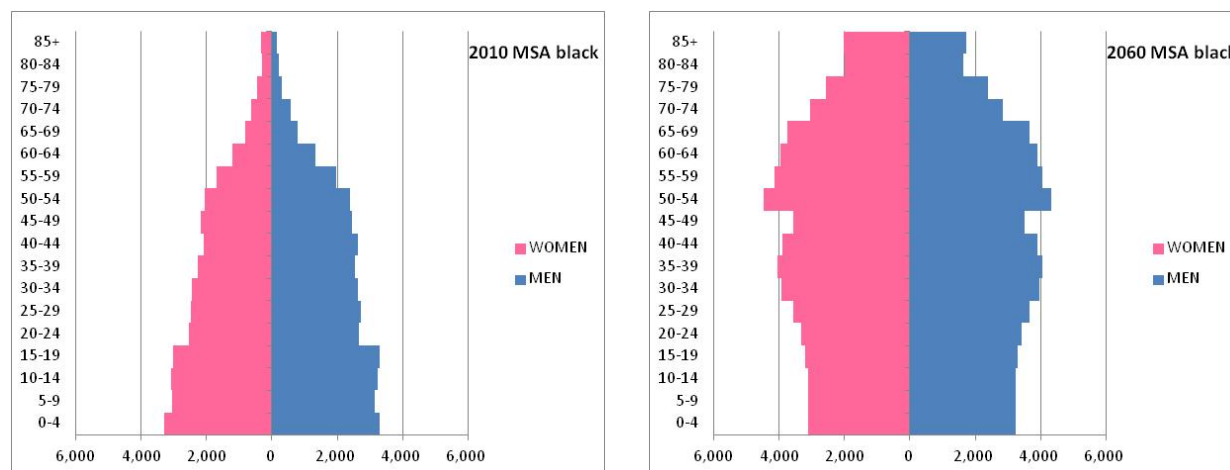
Source: Census (2010) and Metro
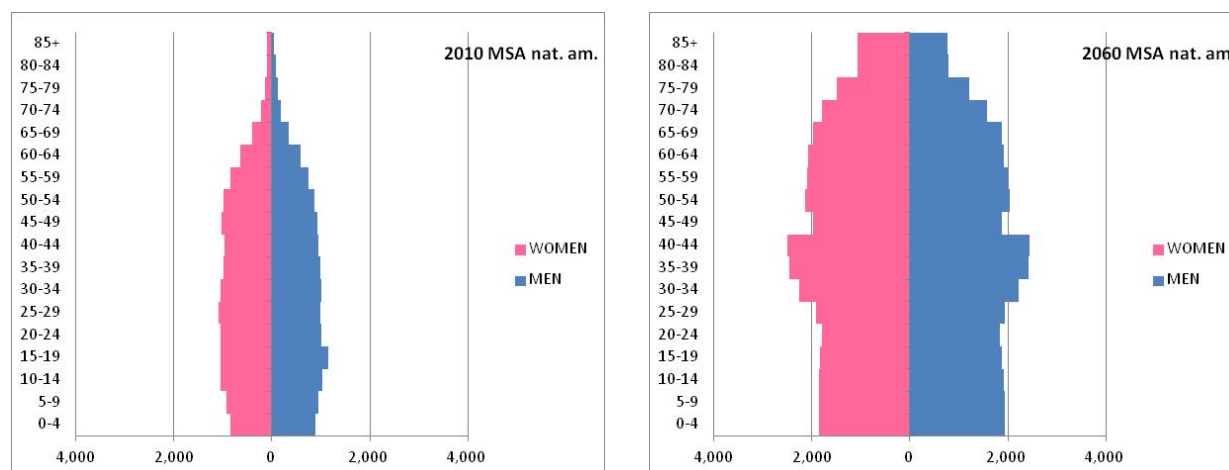
Table 4

	2010	2020	2030	2040	2050	2060
Total Pop.	70,278	81,348	93,518	103,442	112,231	120,937
APR%		1.75%	1.30%	0.92%	0.80%	0.72%
Male	36,379	41,699	47,477	52,066	56,104	60,125
Female	33,899	39,650	46,041	51,376	56,127	60,812
Dependency Ratio	50.9	45.2	46.3	51.5	52.8	58.7
Children (0 to 14)	41.1	30.8	28.9	27.5	25.0	25.0
Seniors (65 and over)	9.8	14.4	20.4	24.1	27.8	33.6

Source: Census (2010) and Metro

Native American Indian Population

- The age pyramid for the native Indian population in the MSA can be described as either stationary or a constrictive population pyramid. The median age of the region's native Indian population is expected to rise, and characterized by a longer life expectancy, a lower death rate, but also a low birth rate. A slight bulge appears in the middle-age cohorts in 2060 due to a boomlet of births that was projected 30 years prior in 2020/30 and expanded out with net in-migration as a subsequent wave.
- Median age in 2010 = 31.8 years (est.)
- Median age in 2060 = 40.4 years (est.)

Chart 14

Source: Census (2010) and Metro
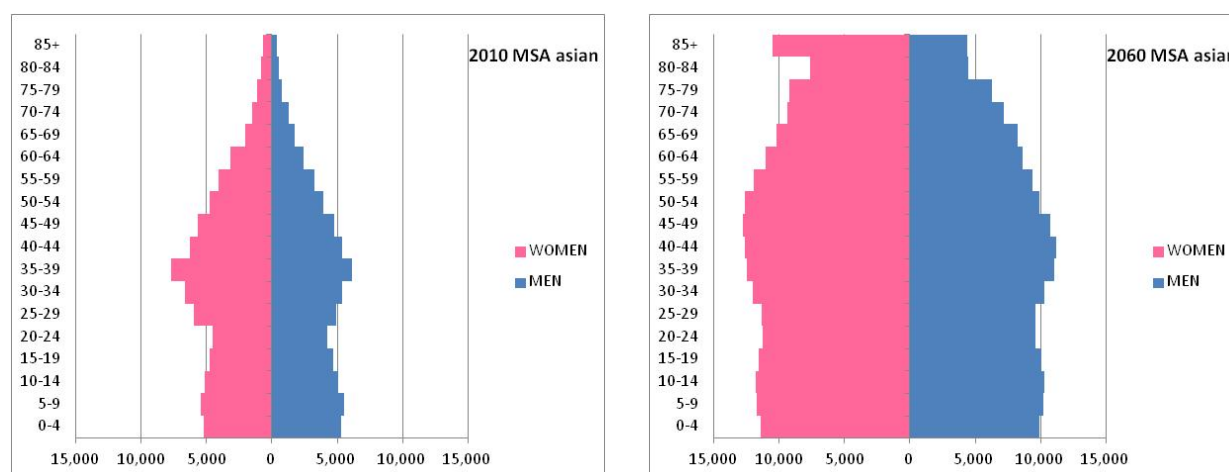
Table 5

	2010	2020	2030	2040	2050	2060
Total Pop.	26,361	33,754	42,306	49,592	57,736	66,605
APR%		3.24%	2.05%	1.58%	1.56%	1.37%
Male	12,909	16,472	20,615	24,183	28,223	32,608
Female	13,452	17,283	21,691	25,409	29,514	33,997
Dependency Ratio	39.1	40.3	50.7	49.4	53.3	60.0
Children (0 to 14)	29.9	25.3	30.0	26.4	26.1	27.3
Seniors (65 and over)	9.2	15.0	20.7	23.0	27.2	32.7

Source: Census (2010) and Metro

Asian Population

- The age pyramid for the Asian population in the MSA can be described as a fairly stationary population pyramid. The region's Asian population is expected to age, and characterized by a longer life expectancy, a lower death rate, and a slightly higher projected birth rate than historically in the region. A higher share of net in-migration also adds to the population growth.
- Median age in 2010 = 33.1 years (est.)
- Median age in 2060 = 40.6 years (est.)

Chart 15

Source: Census (2010) and Metro
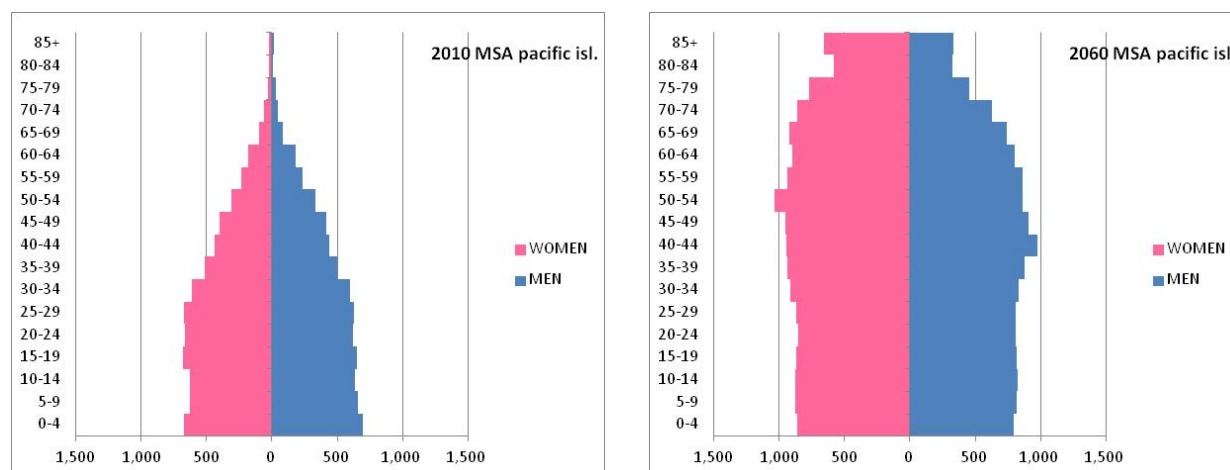
Table 6

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Total Pop.	141,317	188,033	237,448	283,838	335,069	390,882
APR%		3.32%	2.24%	1.79%	1.66%	1.52%
Male	65,866	88,743	112,976	135,924	161,441	189,466
Female	75,431	99,289	124,472	147,914	173,629	201,416
Dependency Ratio	43.2	45.9	49.7	58.4	64.0	65.7
Children (0 to 14)	32.1	29.4	27.4	25.5	29.3	30.0
Seniors (65 and over)	11.1	16.4	22.3	29.9	34.6	35.7

Source: Census (2010) and Metro

Pacific Islander and Hawaiian Population

- The age pyramid for the pacific islander population in the MSA can be described as a fairly stationary population pyramid. The region's pacific islander population is expected to age fairly quickly, and characterized by a longer life expectancy, a lower death rate, and a slightly higher projected birth rate than historically in the region. The total and share of population of pacific islanders in the region is small today and is expected to remain small in the future.
- Median age in 2010 = 25.1 years (est.)
- Median age in 2060 = 41.9 years (est.)

Chart 16

Source: Census (2010) and Metro
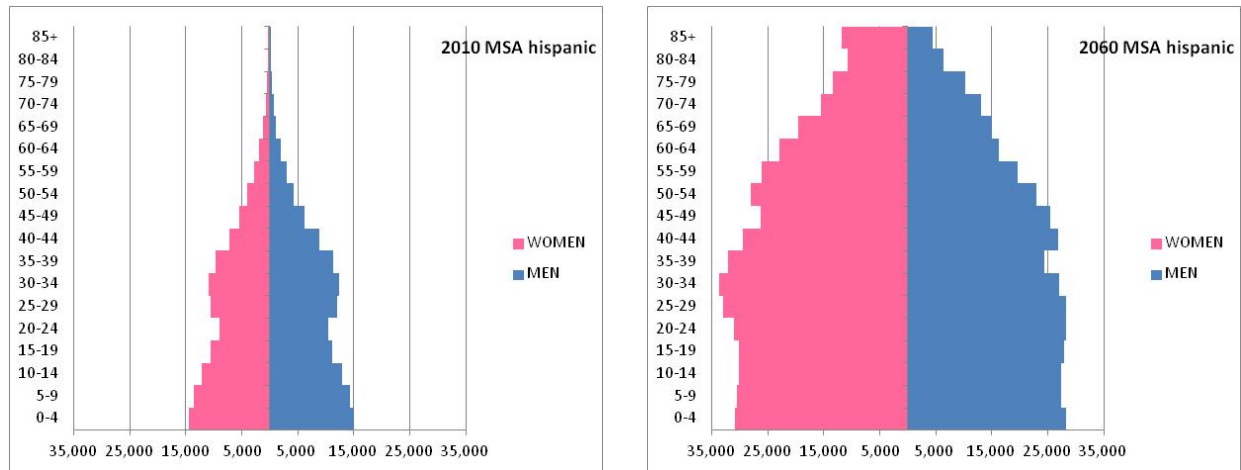
Table 7

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Total Pop.	13,623	17,217	20,865	24,147	27,412	30,671
APR%		2.53%	1.81%	1.40%	1.23%	1.08%
Male	6,772	8,534	10,316	11,911	13,489	15,072
Female	6,851	8,683	10,549	12,236	13,923	15,599
Dependency Ratio	46.5	43.0	44.3	49.9	58.7	66.8
Children (0 to 14)	42.0	33.4	28.3	27.5	27.7	28.9
Seniors (65 and over)	4.4	9.6	16.0	22.5	31.0	38.0

Source: Census (2010) and Metro

Hispanic (or Latino) Population

- The age pyramid for the Hispanic population in the MSA is becoming a much more stationary population subgroup but retains a somewhat wider range at the base indicating higher births. The median age of the region's Hispanic population is expected to increase but not as quickly as other races. Hispanic vital statistics include rising life expectancy, lower death rates, and the highest fertility rate of all races in the region. The Hispanic population group in the region is expected to grow rapidly during the next 50 years due to natural increases and strength in net in-migration.
- Median age in 2010 = 23.4 years (est.)
- Median age in 2060 = 34.8 years (est.)

Chart 17

Source: Census (2010) and Metro

Table 8

	2010	**2020**	**2030**	**2040**	**2050**	**2060**
Total Pop.	241,844	349,822	480,898	612,390	755,232	907,261
APR%		4.21%	2.99%	2.31%	2.04%	1.73%
Male	126,427	179,570	244,249	308,976	378,717	452,399
Female	115,417	170,252	236,649	303,414	376,515	454,862
Dependency Ratio	57.3	45.6	46.8	50.8	52.9	55.4
Children (0 to 14)	53.6	39.4	37.2	35.6	32.9	31.9
Seniors (65 and over)	3.7	6.2	9.7	15.1	20.0	23.5

Source: Census (2010) and Metro

County Methodology

A matrix scaling approach is used to estimate county level population projections. In statistics, this method is sometimes called bi-proportional fitting or iterative proportional fitting (IPF) procedure. This approach relies on Census data and maximizes the resulting information from the baseline MSA level population projections. Census population counts by race, age and county from the 2010 Decennial Census is a given for initial launch values of the IPF contingency table, while marginal values (i.e., row and column sums of future years) are given by the baseline MSA population projection. Using the MSA projections assures consistency across the sum of all counties for the race and age projections. Census data grounds the county projections to known and reliable distributions of existing population by race and county. This approach has the advantage reducing the number of strong assumptions we might have had to impose on a county-level forecast if a cohort-component method were used to project and apportion population to counties by race, gender and age.

In order to limit the number of strong assumptions further, we drop gender from the county population projections. However, because we have to split racial growth trends by county, we must make strong assumptions regarding future racial geo-distributions. We very much want to avoid making too many strong assumptions about geographic distributions of race, but any method cannot entirely avoid imposing some degree of racial distribution. Consequently, we develop three (3) scenarios but these scenarios should not be interpreted as high and low growth scenarios. Instead, the assumptions for the scenario series hypothesize alternative racial concentrations and growth flows among the main counties of the region.

These scenario series suppose the following 3 alternatives:

Series 1: A status quo of constant minority share of residences by county

Series 2: A shift of minority concentration to suburban and exurban counties

Series 3: A shift of minority concentration to suburban and exurban counties plus a "white flight" returning to the region's central city

Where possible (and without severely limiting the acuity of the county projections), we eliminate the gender projections at the county level and combine the Asian and Pacific Islander races into a single merged category. Individuals identified as Hispanic / Latino are still treated as a separate race for computation purposes. Persons identifying themselves and two or more races have been reapportioned into 1 of the 4 remaining race categories (white, black, native Indian or Asian/Pacific Islander).

Although the regional MSA level population projections have been adjusted to match the middle series population forecast from the 2015 Urban Growth Report management decision, additional land use information which could be derived from Metro's land use allocation model (MetroScope "WILLIAM" scenario) has not been incorporated into the county projections in this report. The county growth distributions from the MetroScope WILLIAM scenario have not been released and are unavailable for this study.

County Growth Projections by Race

The distribution of MSA population growth to counties is strictly based on strong assumptions generated for each of the aforementioned scenario series.

> Series 1: "Status quo county trend"- assumes constant minority share between counties while simultaneously adjusting for higher percentage of minorities in the MSA
> Series 2: A shift of minority concentration to suburban and exurban counties
> Series 3: A shift of minority concentration to suburban and exurban counties plus a "white flight" returning to the region's central city
> Series 4: The Metro UGB is explicitly presumed to capture a proportionally higher share of the MSA's overall population growth.

We postulate in the 4 series alternatives different county-level settlement pattern for the region's minority classes and white population. Theses postulates guide the shift in concentration of minority growth for each county.

- In the case of series 1, the implicit proportion of population by race by county is held constant through the forecast, but the effective proportion of population by race and by county is adjusted higher to reflect the growing racial proportions of minorities at the MSA level (recall that we predict the gradual shift to majority minority by approximately year 2070 in the region).
- In the case of series 2, from the initial launch proportions of population by race and county, we presume the minority shares decrease in Multnomah County and explicitly re-apportioned to the suburban and exurban counties. Furthermore, since the MSA population is projected to increase minority populations proportionally, especially Asian and Hispanic minorities, the cumulative effect of these assumptions reinforce stronger population and minority growth in suburban and rural counties.
- In the case of series 3, the race proportions, we presume going forward a modest shift in white population growth favoring Multnomah County at the expense of white population growth in the other counties. This assumption is combined with the previous assumption of minority diffusion in series 2.
- In the case of series 4, the Metro UGB is assumed to have a much stronger pull on overall population growth as compared to the other counties. Thus Clackamas, Multnomah and Washington County are expected to grow faster at the expense of somewhat slower Clark growth and the other rural counties. Series 4 most closely aligns with the Metro TAZ growth distribution forecast (i.e., developed for the 2016 RTP update) in terms of each county's population growth distribution.

TOTAL POPULATION COUNTS

Projection series 1

	Clack	Mult	Wash	Tri-county	%Tri-county
2010	375,993	735,334	529,710	1,641,037	73.7%
2020	417,834	836,181	612,607	1,866,622	74.1%
2030	458,089	938,549	699,005	2,095,643	74.5%
2040	488,358	1,022,091	772,792	2,283,241	74.8%
2050	516,562	1,104,037	847,429	2,468,028	75.1%
2060	547,084	1,191,990	927,650	2,666,723	75.5%

Projection Series 2

	Clack	Mult	Wash	Tri-county	%Tri-county
2010	375,993	735,334	529,710	1,641,037	73.7%
2020	422,689	818,921	619,707	1,861,317	73.9%
2030	470,619	893,454	717,609	2,081,681	74.0%
2040	511,196	939,095	807,114	2,257,405	74.0%
2050	552,826	971,259	902,447	2,426,532	73.9%
2060	600,173	996,512	1,008,775	2,605,460	73.7%

Projection Series 3

	Clack	Mult	Wash	Tri-county	%Tri-county
2010	375,993	735,334	529,710	1,641,037	73.7%
2020	409,367	850,943	613,059	1,873,369	74.4%
2030	442,675	960,620	703,665	2,106,960	74.9%
2040	468,415	1,041,924	785,767	2,296,106	75.2%
2050	495,257	1,109,632	873,721	2,478,610	75.5%
2060	527,438	1,171,339	972,481	2,671,258	75.6%

Projection Series 4

	Clack	Mult	Wash	Tri-county	%Tri-county
2010	375,993	735,334	529,710	1,641,037	73.7%
2020	421,756	855,562	608,435	1,885,753	74.9%
2030	467,476	981,231	690,955	2,139,662	76.0%
2040	504,555	1,090,635	761,566	2,356,755	77.2%
2050	541,117	1,201,117	833,987	2,576,222	78.4%
2060	581,733	1,321,021	912,854	2,815,609	79.7%

source: Metro

%Tri-county is the annual share of population in the Tri-county and the MSA level population