

TRACING THE GROWTH OF THE GLOBAL COMMUNITY: A POPULATION FORECASTING ANALYSIS

INTRODUCTION:

Overview;

The world population is more than three times larger than it was in the mid-twentieth century. The global human population reached 8.0 billion in mid-November 2022 from an estimated 2.5 billion people in 1950, adding 1 billion people since 2010 and 2 billion since 1998. The world's population is expected to increase by nearly billion persons in the next 30 years, from the current 8 billion to 9.7 billion in 2050 and could reach at nearly 10.4 billion in the mid- 2080s

The dramatic growth has been driven largely by increasing numbers of people surviving to reproductive age, the gradual increase in human lifespan, increasing urbanization, and accelerating migration. Major changes in fertility rate have accompanied this growth. These trends will have far- reaching implications for generations to come.

Purpose;

This dramatic growth has been driven largely by increasing numbers of people surviving to reproductive age, the gradual increase in human lifespan, increasing urbanisation, and accelerating migration. Major changes in fertility rate have accompanied this growth. These trends will have far-reaching implications for generations to come.

PROBLEM DEFINITION & DESIGN THINKING:

EMPATHY MAP;

The image displays two screenshots of a PDF document titled "empathy map.pdf" in a Windows File Explorer window. The document is an empathy map template.

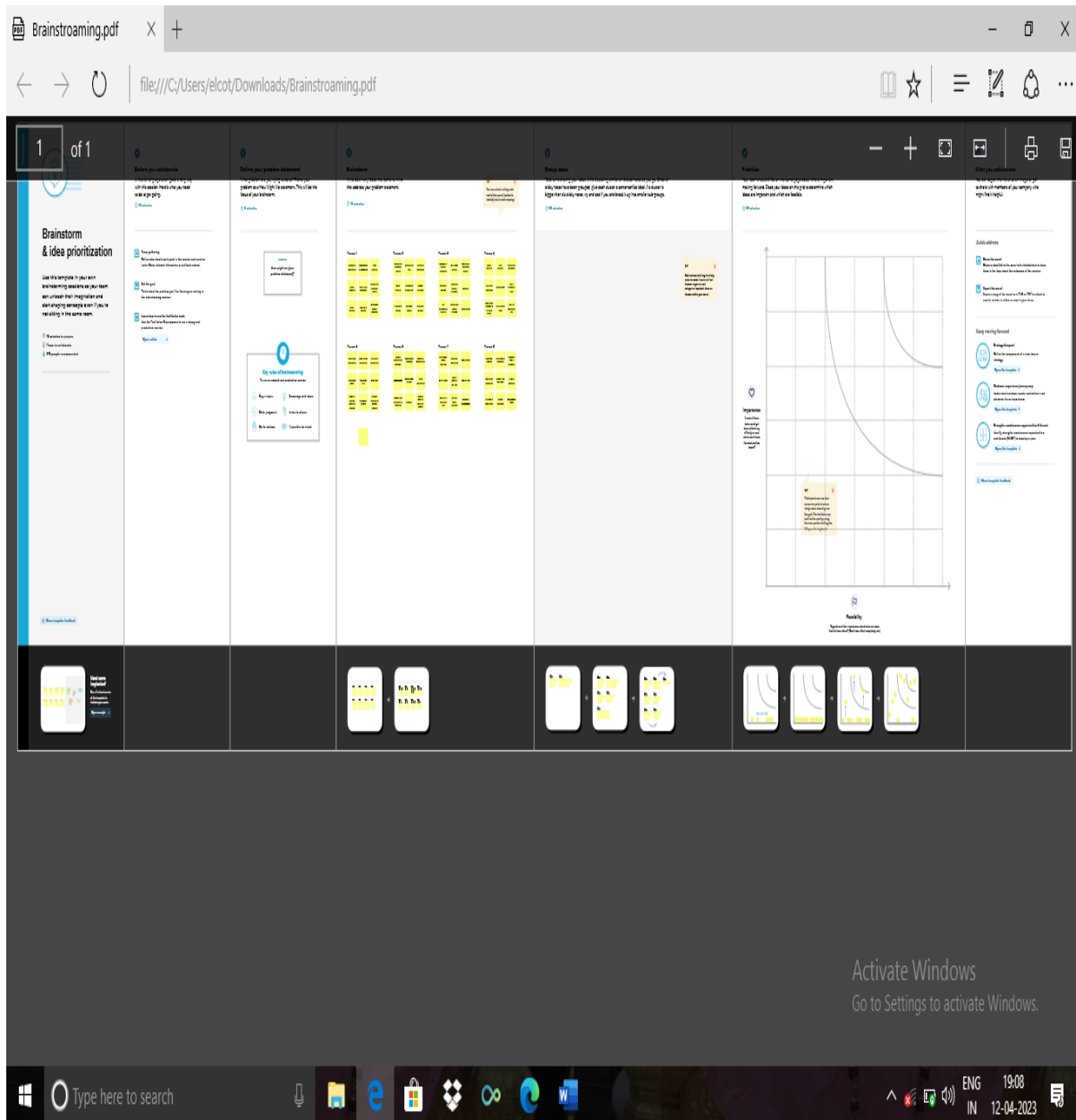
Top Screenshot:

- Template Section:** Features a purple icon of a person and the title "Empathy map". Below it, text reads: "Use this framework to develop a deep, shared understanding and empathy for other people. An empathy map helps describe the aspects of a user's experience, needs and pain points, to quickly understand your users' experience and mindset."
- Build empathy Section:** Contains the instruction: "The information you add here should be representative of the observations and research you've done about your users."
- Diagram:** A central diagram with four quadrants: "Says" (top-left), "Thinks" (top-right), "Does" (bottom-left), and "Feels" (bottom-right). The "Says" and "Thinks" quadrants are currently populated with sticky notes. The "Says" quadrant has two green notes: "The user is frustrated with the current system" and "The user is confused by the new interface". The "Thinks" quadrant has three pink notes: "The population should be balanced", "The growth of the population", and "The user is frustrated with the current system".

Bottom Screenshot:

- Diagram:** The same central diagram, but now the "Does" and "Feels" quadrants are populated with sticky notes. The "Does" quadrant has two yellow notes: "The user is frustrated with the current system" and "The user is confused by the new interface". The "Feels" quadrant has two blue notes: "The user is frustrated with the current system" and "The user is confused by the new interface".
- Additional Elements:** A "Share template feedback" button is visible in the bottom-left corner of the template area. A "Need some inspiration?" section is visible at the bottom of the page, showing a small thumbnail of the template.

IDEATION & BRAINSTORMING;



RESULT;

By using empathy map and ideation & brainstorming map we can found out the overview of this project.

ADVANTAGES;

- ❖ More people to greater human capacity.
- ❖ High economic growth.
- ❖ Economic of scal
- ❖ Enables specialisation.
- ❖ Critical mass.
- ❖ The efficiency of higher population density.
- ❖ The improved demographic structure of society.
- ❖ Increased consumption.
- ❖ Large population provides many opportunities for business to capitalize on given its vast consumer base.
- ❖ Makes the nation strong in all spheres.
- ❖ Enables creating a developed and prosperous nation.
- ❖ Enhances the economic growth of country.
- ❖ The capacity of a nation to complete globally with all other nations in any sphere requirement.
- ❖ There will be greater for some industries in a nation with a higher population. As long as it can produce enough of an item or service to satisfy its demand, a company that sells it will experience greater success.
- ❖ A population increase may stimulate technological advancement that would enable the production of more sophisticated military products.

DISADVANTAGES;

- ❖ Increased pressure on natural environment.
- ❖ Water shortage.
Increase population.
- ❖ More waste creation.
- ❖ Over use of non-renewable resources.
- ❖ Trying to reduce carbon & methane emissions to reduce global warming is relatively more difficult as the population Higher population will lead to greater consumption of non renewable resources of leading to a faster depletion of natural resources.

Increasing resources will be depleted more quickly due to increased non renewable resources usage brought on by an increase in population.

We can now battling to process the non bio degradable waste that we are producing. It usually ends up in a landtill, contributing to harmful issues methane emisssion.

APPLICATIONS;

Applications of tableau;

Tableau desktop is a data visualisation application that lets we can analyse virtually any type of structured data and produce highly interactive, beautiful graphs, dashboards, and reports in just a minute. Without programs like tableau, business would struggle to extract the useful data from the rest. The software extracts meaningful data and makes it easy to understand through data analysis and data visualisation. [Tableau is the fastest growing data visualisation and reporting tool for business intelligence.](#)

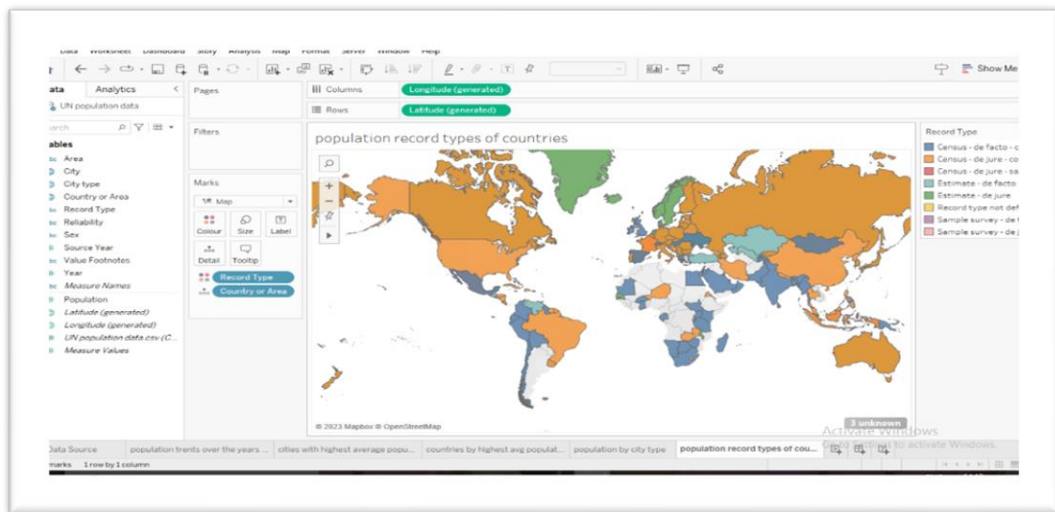
Tableau with the help of its feature of visual analysis, allows its users and professional in organisations to interact with the visualised data. In turn, this allows them to make informed and improved business decisions and better insights.

Tableau helps people and organisations be more data-driven. As the market-leading choice for modern business intelligence, our analytics platform makes it easier for people to explore and manage data, and faster to discover and share insights that can change businesses and the world. Millions of rows of data can be handled with efficiency via tableau. Large amounts of data can be used to generate a variety of visualizations.

Main uses applications of tableau;

- ❖ Data visualisation
- ❖ Data collaboration.
- ❖ Real-time data analysis.

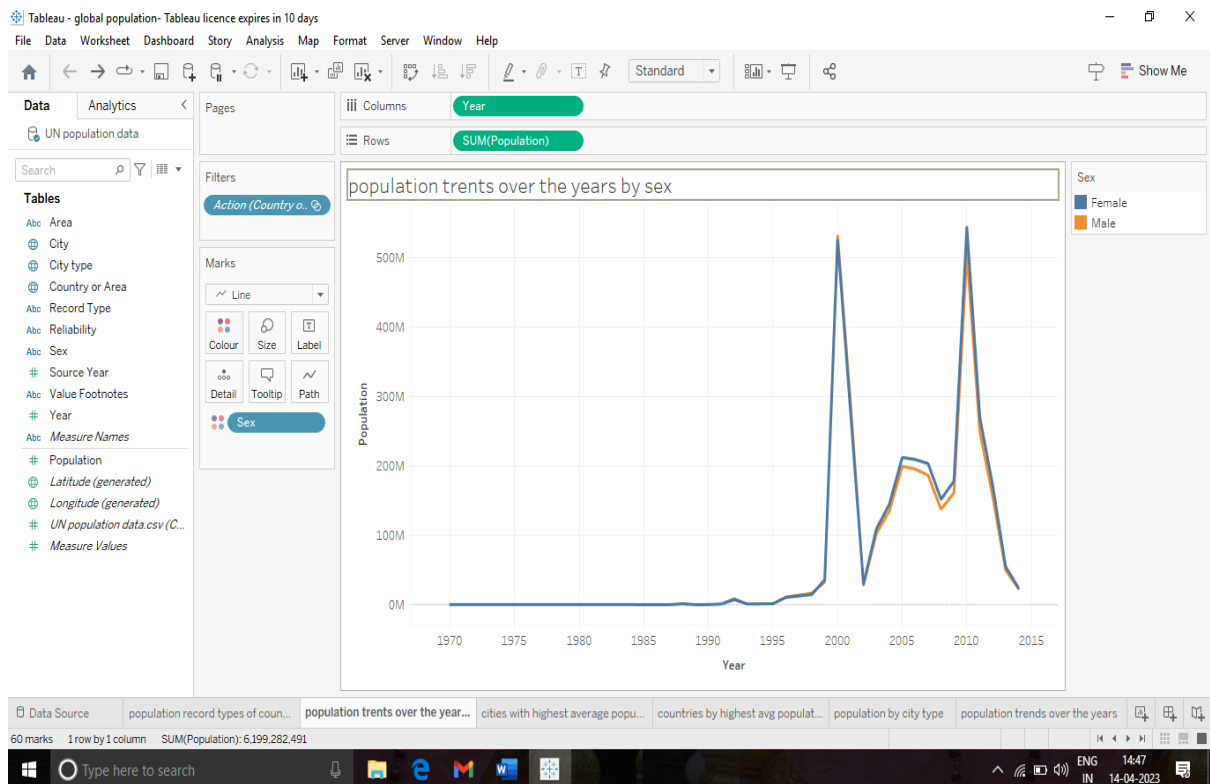
With the use of this tableau software we are drawn a graph for tracing the growth of the global community: A population forecasting analysis.



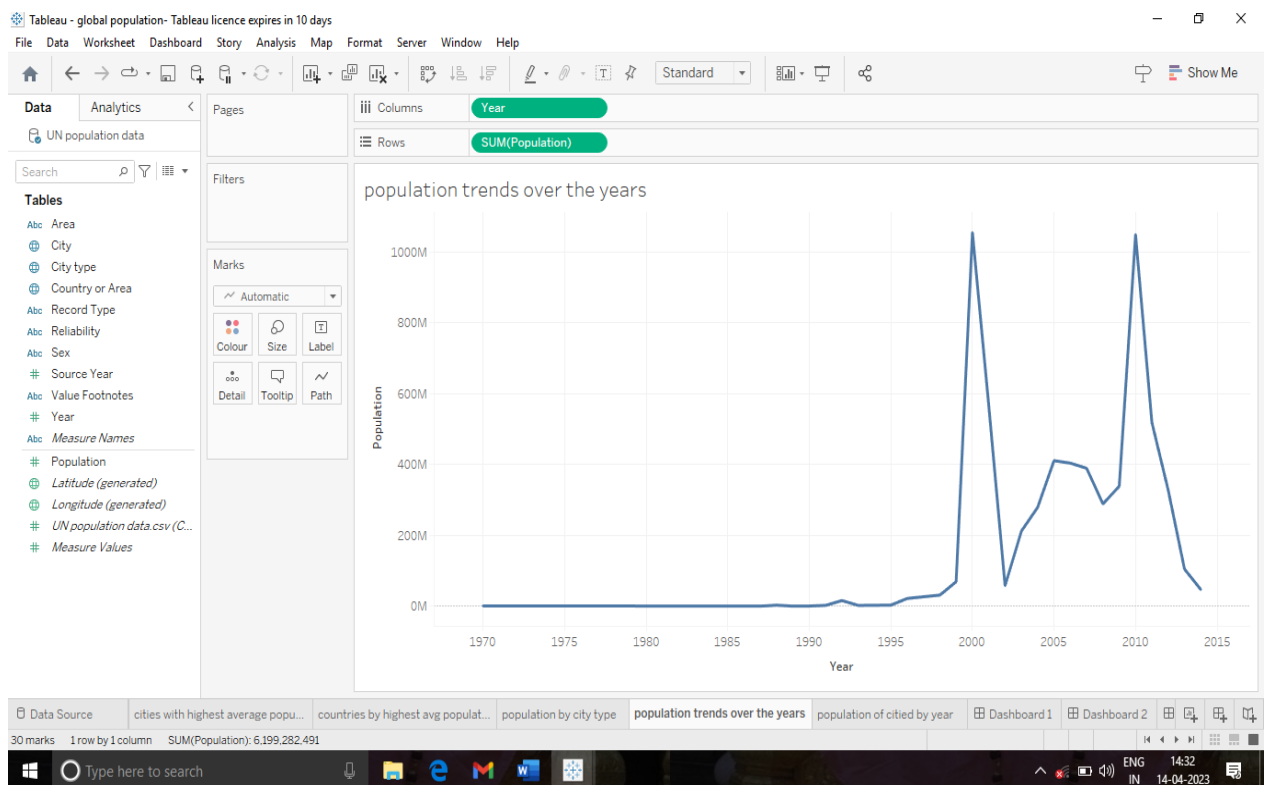
With the help of this graph we can found out the most populated countries in the world.they are

COUNTRY	POPULATION SIZE
China	1415.9
India	1342.3
United states	330.9
Indonesia	272.2
Pakistan	225.1
Brazzil	211.4

Population of trends over the years



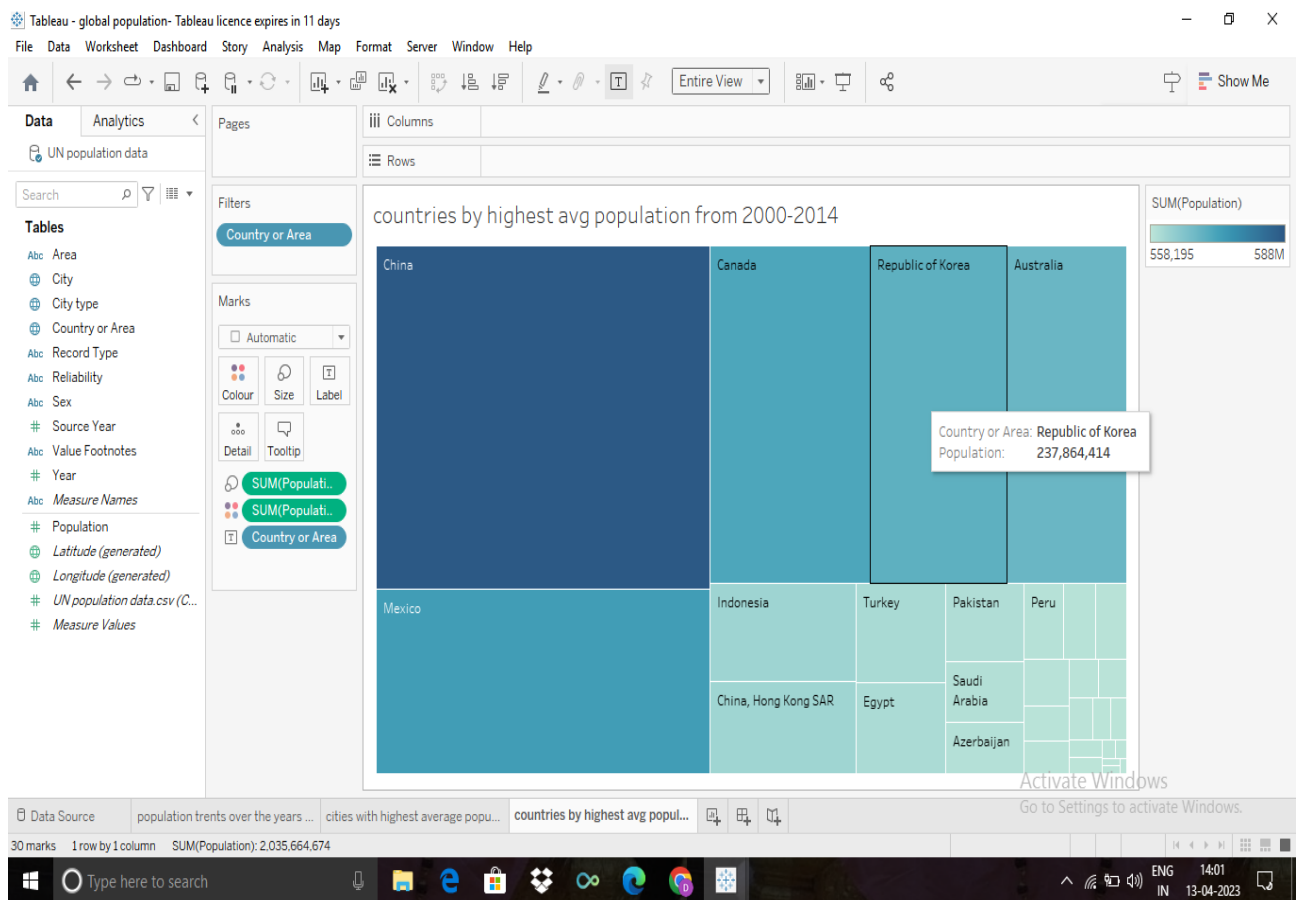
This graph tells that the worlds population contiues to grow, reaching 7.8 billion by mid-2020, raising from 7 billion in 2010, 6 billion in 1998 and 5 billion in 1986.Currently the world population is 7.9 billion, and it is expected to reach 9.9 billion by the year 2050.



This

graph tells the fact that gender in the world in 2021 is 101.68 males per 100 females. There were more females than males until 1957. In the world, the males to females ratio has increased from 99.692 in 1950 to at most 101.704 in 2011. It is now expected to decline at 100.296 in 2100.

Countries by highest average population from 2000-2014



With the help of this graph we can analysis that china is the world's largest populated (1.4260 billion) country , but India (1.417 billion) is expected to clain this title next year. The next most populated nations in year 2000-2014 is Maxico, canada, republic of Korea, Australia.We can found these informations are with the help of these graphs.

This appendix outlines the methods used to generate the population and labor force projections as well as summary measures and other indicators used in several chapters of this report. The projections were reviewed for accuracy and consistency by committee members and compared with results from other such projections. While the committee's projections were made to 2100, the report primarily discusses results through 2050. Given the high degree of uncertainty regarding variables such as future rates of return, productivity growth, international capital flows, and so on, the committee chose to limit its analysis and discussion to the next four decades.

POPULATION PROJECTIONS BY AGE AND SEX

The population projections used by the committee are based on intermediate-cost population projections prepared by the Social Security Administration (SSA) for its 2011 Trustees Report, with some important

modifications. The committee thanks Felicitie Bell, Office of the Chief Actuary of the SSA, for her generosity in sharing projection details with it. The Social Security methods are summarized here briefly, but complete information on SSA projection methods and assumptions can be found at <http://www.ssa.gov/oact/tr/2011/index.html> (accessed June 24, 2011). The starting population is the 2008 estimated Social Security Area population¹

¹The Social Security Area population covers the U.S. Census population (residents of all 50 states and Washington, D.C., plus Armed Forces overseas) but adds a small group of potential Social Security beneficiaries who are not covered by the U.S. Census population. These persons

Suggested Citation:"Appendix A: Population and Related Projections Made by the Committee." National Research Council. 2012. Aging and the Macroeconomy: Long-Term Implications of an Older Population. Washington, DC: The National Academies Press. doi: 10.17226/13465.x

Save

Cancel

by sex and single year of age. This population is projected forward each year based on projected rates of fertility, mortality, and net migration. Net migration is immigrants coming into the population minus emigrants leaving the population.

The age-specific fertility rates used are the same as in the intermediate-cost SSA projections, with a minor adjustment for the years 2008 and 2009.² The age distribution of fertility is based on recent historical trends, while the overall level of fertility is assumed to decline gradually in the near term and remain constant

at just below replacement level. Specifically, the observed total fertility rate is 2.09 children per woman in 2008 and is assumed to fall gradually to a constant level of 2.00 children per woman by 2035.

The main adjustment to the SSA projections is that the mortality rates used here are lower than those used in the intermediate-cost SSA projection. As described in Chapter 3, the committee agrees with the Social Security Advisory Board's Technical Panel on Assumptions and Methods (TPAM) that there will likely be faster future declines in mortality than reflected in the intermediate-cost SSA projections. This conclusion is based on an analysis of potential future trends in smoking and obesity (Technical Panel on Assumptions and Methods, 2011). The SSA projection assumes that average life expectancy by 2050 will be 82.2 years, whereas the committee projection assumes instead an additional 2.3 years of life on average, for a life expectancy of 84.5 years by 2050. This mirrors the TPAM conclusion. The corresponding lower age-specific mortality rates are

found by searching for a mortality schedule that is between the SSA intermediate- and high-cost options and implies a life expectancy in 2050 of 84.5 years. The high-cost option assumes lower mortality than the intermediate and thus an average life expectancy of 84.8 years by 2050. The projection used here employs a mortality schedule that is a weighted average of the two SSA options such that the desired life expectancy in 2050 of 84.5 years is achieved.

This average is found by first defining a difference term $b_{x,s}$ for age x and sex s , which is the difference between the death rates $m_{x,s}$ for the high cost and intermediate cost:

are U.S. citizens living abroad, residents of U.S. territories, and noncitizens living abroad who are insured for future Social Security benefits. They usually comprise around 2 percent of the U.S. Census population. In the aggregate, the Census and Social Security Area population age and sex distributions are almost identical.

²Published rates for 2008 were multiplied by 0.99 and for 2009 by 1.01 to match more closely the predicted birth cohorts of the SSA projections and correct for inconsistencies introduced by interpolation to estimate January 1 populations from July 1 population estimates.

Page 221

Suggested Citation:"Appendix A: Population and Related Projections Made by the Committee." National Research Council. 2012. Aging and the Macroeconomy: Long-Term Implications of an Older Population. Washington, DC: The National Academies Press. doi: 10.17226/13465.x

Save

Cancel

The new death rates that were used for these projections are

where k , which is the same for both sexes and constant over age, is found by a search program to achieve the desired average life expectancy of 84.5 years in 2050.

The SSA projection adds net migrants at each projection step based on a guess about the future trend of migration, legal and illegal combined, and the age and sex distribution of net migrants from recent history. The total number of net migrants in the SSA projections begins at only 35,000 in 2008 based on evidence that the recent economic downturn in the United States has

discouraged a great deal of potential immigration and encouraged some emigration. The projected number of net migrants quickly rebounds to 1,250,000 by 2015 but then falls slowly but steadily to 1,025,000 by 2085.

While the committee's projection uses the same age and sex distribution of net migration as in the SSA 2011 Trustees Report from 2008 to 2025, its trajectory for future migration is significantly higher than that of the SSA. As with future mortality, the committee believes that the future trajectory for net migration developed by the TPAM is more reasonable than the one currently used in intermediate SSA projections. Thus the committee adopted the TPAM migration schedule for 2026–2050, which assumes a constant rate of 3.2 net migrants for every 1,000 residents each year after 2025.

Given the rates of fertility, mortality, and net migration described above, the starting Social Security Area population of 2008 is projected forward in single-year steps of age and time for men and women separately using the cohort component method. The projection

ends in the year 2100.³ This projection was the baseline scenario of future change. Summary measures for fertility, life expectancy, and net migration appear in Table A-1. For several analyses reported in previous chapters, the rates of fertility, mortality, and net migration were modified to calculate population projections based on alternative scenarios of change. In these cases, the projections were exactly as described above, except for the alternative rates described in the scenario.

³The SSA 2011 Trustees Report only published projection results to year 2085 because it is charged with reporting a 75-year time horizon for Social Security finances. The demographic projections, however, are estimated internally to 2100.

Suggested Citation:"Appendix A: Population and Related Projections Made by the Committee." National Research Council. 2012. Aging and the Macroeconomy: Long-Term Implications of an Older Population. Washington, DC: The National Academies Press. doi: 10.17226/13465.x

Save

Cancel

TABLE A-1 Summary Measures of Demographic Assumptions for Baseline Projection, Selected Years 2008–2100

Years of Life Expectancy

Year	Men	Women	Combined	Total Fertility Rate (births per woman)	Net Migrants (millions)
2008	75.4	80.3	77.8	2.05	0.04
2009	75.6	80.4	77.9	2.04	0.84
2010	75.7	80.5	78.1	2.07	0.82

2015	76.9	81.3	79.0	2.05	1.25
2020	77.9	82.1	79.9	2.04	1.20
2025	78.8	82.9	80.8	2.02	1.14
2030	79.7	83.6	81.6	2.01	1.19
2035	80.5	84.3	82.4	2.00	1.23
2040	81.3	85.0	83.1	2.00	1.27
2045	82.1	85.7	83.8	2.00	1.31
2050	82.8	86.3	84.5	2.00	1.34
2055	83.5	86.9	85.1	2.00	1.38
2060	84.2	87.4	85.8	2.00	1.43
2065	84.8	88.0	86.3	2.00	1.47
2070	85.4	88.5	86.9	2.00	1.52
2075	86.0	89.0	87.4	2.00	1.57
2080	86.5	89.4	88.0	2.00	1.62
2085	87.1	89.9	88.5	2.00	1.67
2090	87.6	90.3	88.9	2.00	1.72
2095	88.1	90.7	89.4	2.00	1.78

2100 88.6 91.1 89.8 2.00 1.84

SOURCE: Committee calculations.

POPULATION PROJECTIONS BY RACE/ETHNIC GROUP

For some of the analyses, population projections by separate groups defined by race and ethnicity were of interest. The SSA does not take race or ethnicity into account when it makes projections, so data from the U.S. Census Bureau were used to break the SSA-based population projections into race/ethnic groups that are consistent with the main population projections used in this report. The committee thanks David Waddington, Ben Bolender, Christine Guarneri, and Donnette Willis of the Population Projections Branch of the U.S. Census Bureau for sharing data with it for the project.

Census Bureau projections are done based on the resident population by age, sex, race, and Hispanic

origin. The set of projections published in 2008 was used here and can be found at <http://www.census.gov/population/www/projections/2008projections.html> (data first accessed May 31, 2011). These projections cover the years 2008 to 2050, so the committee extends the Census 2050 rates to the year 2100 to cover the full period of interest.

Page 223

Suggested Citation:"Appendix A: Population and Related Projections Made by the Committee." National Research Council. 2012. Aging and the Macroeconomy: Long-Term Implications of an Older Population. Washington, DC: The National Academies Press. doi: 10.17226/13465.x

Save

Cancel

While the Census projections define many additional groups, only five groups were used in this work to avoid

small numbers in groups defined by sex, single years of age, and race/ethnicity. The five race/ethnicity groups used were (1) Hispanic, (2) non-Hispanic white alone, (3) non-Hispanic black alone, (4) non-Hispanic Asian alone, and (5) non-Hispanic other. This last group includes non-Hispanic native Hawaiian and Pacific Islanders, American Indians and Alaska natives, and multiracial persons.

Census Bureau projected rates based on these five groups do not aggregate to the same rates as in the baseline single-group projection described in the preceding section. This is due both to the modifications in SSA rates made by the committee and to the different projection methods used by the Census Bureau and the SSA. To keep the projection by race/ethnic group consistent with the single-group projection, it was necessary to use the race/ethnic projections from Census to disaggregate the baseline projection rather than using Census rates by race/ethnic groups and projecting them directly.

This means that the starting population for the race/ethnic projections is not the starting population of the Census Bureau race/ethnic population projections. Instead, each age and sex group in the starting population for the single-group projection is broken down into the five race/ethnic groups based on the distribution in the Census Bureau population for that age and sex group.

Then, at each projection step, the total number of vital events (births, deaths, net migrants) for each age and sex group is estimated for the single-race projection and broken down into the five race/ethnic groups based on the distribution that would have occurred given the relative rates (of fertility, mortality, or net migration) from the Census Bureau race/ethnic population projections. In this way, the single-sex and race/ethnic projections are consistent with each other but the

relative changes in the race/ethnic groups are consistent with the Census Bureau rates by race/ethnic group.

For example, say mortality rates for the single-group projection predicted 900 deaths to men aged 52 during the year, while the Census mortality rates by race/ethnic group projected 800 deaths across the five race/ ethnic groups. The 900 single-group deaths would be multiplied by the race/ ethnic distribution of the 800 deaths to get the race/ethnic distribution of the 900 deaths to men aged 52 during the year.

Finally, while the Census Bureau publishes mortality rates by each age/ sex/race/ethnic group, this is not the case for fertility or net migration. Birth rates are published by race/ethnic group only, not age, so the projection assumes that the age distribution of fertility for all five race/ethnic groups is the same as the overall SSA age distribution of fertility. Net migration is published as counts by sex and race/ethnic group, so the

projection assumes that the age distribution of male net migration is the same as the SSA age

Page 224

Suggested Citation:"Appendix A: Population and Related Projections Made by the Committee." National Research Council. 2012. Aging and the Macroeconomy: Long-Term Implications of an Older Population. Washington, DC: The National Academies Press. doi: 10.17226/13465.x

Save

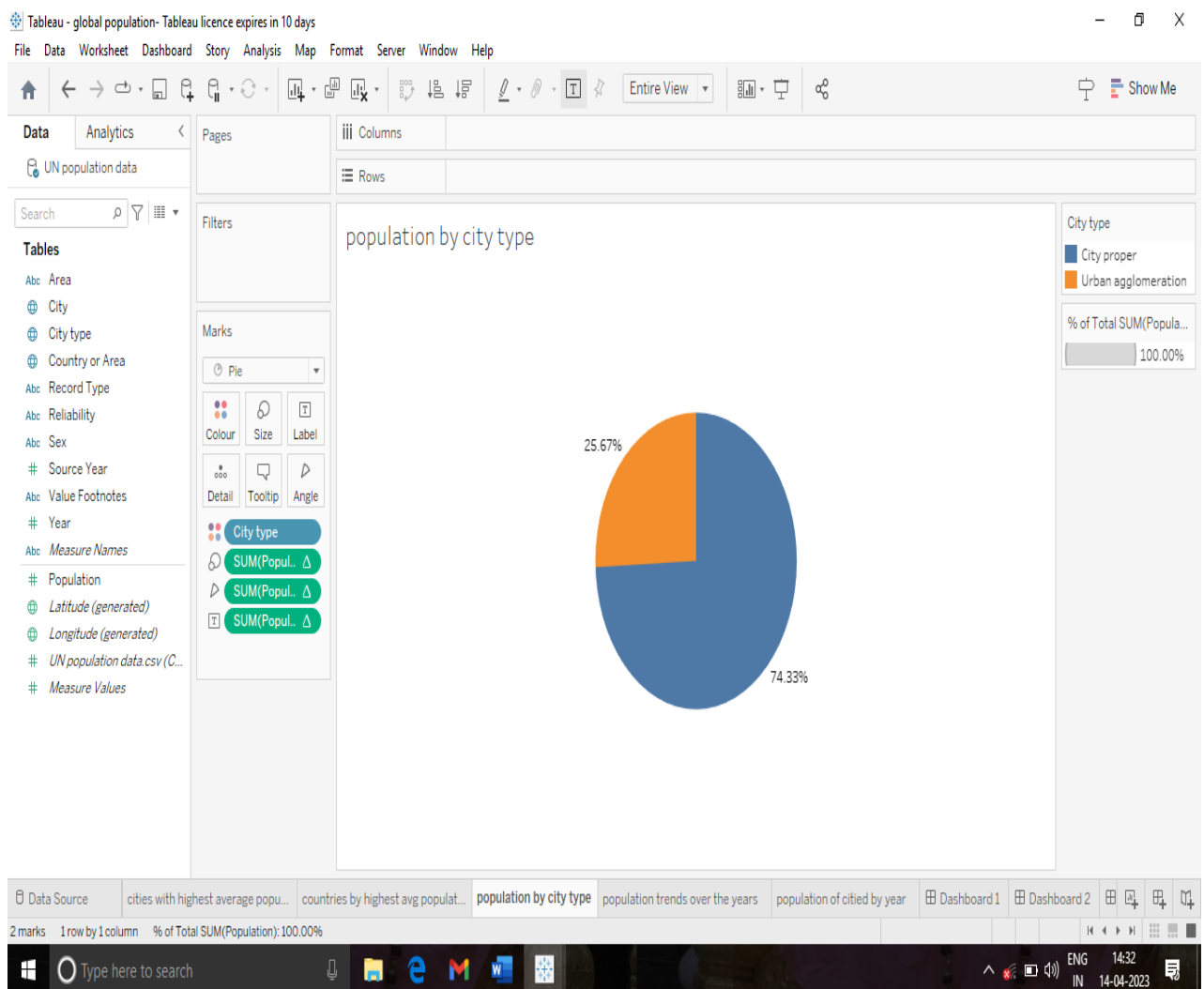
Cancel

distribution of male net migrants for all five race/ethnic groups. Similarly for females, the SSA age distribution of female net migrants is used for all females across race/ethnic groups.

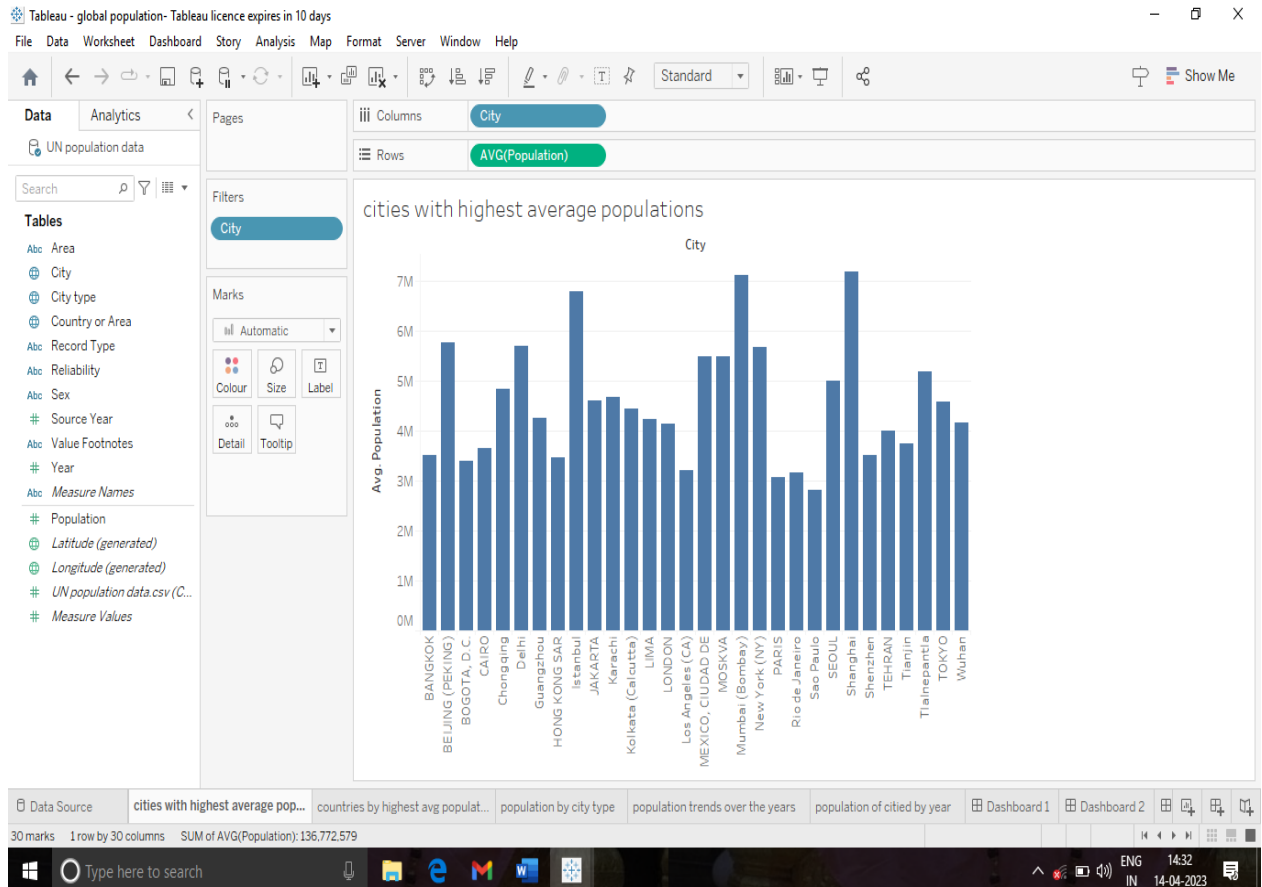
LABOR FORCE PROJECTIONS

National Academies of Sciences, Engineering, and
Medicine. 2012. Aging and the Macroeconomy: Long-
Term Implications of an Older Population. Washington,
DC: The National Academies Press.
<https://doi.org/10.17226/13465>.

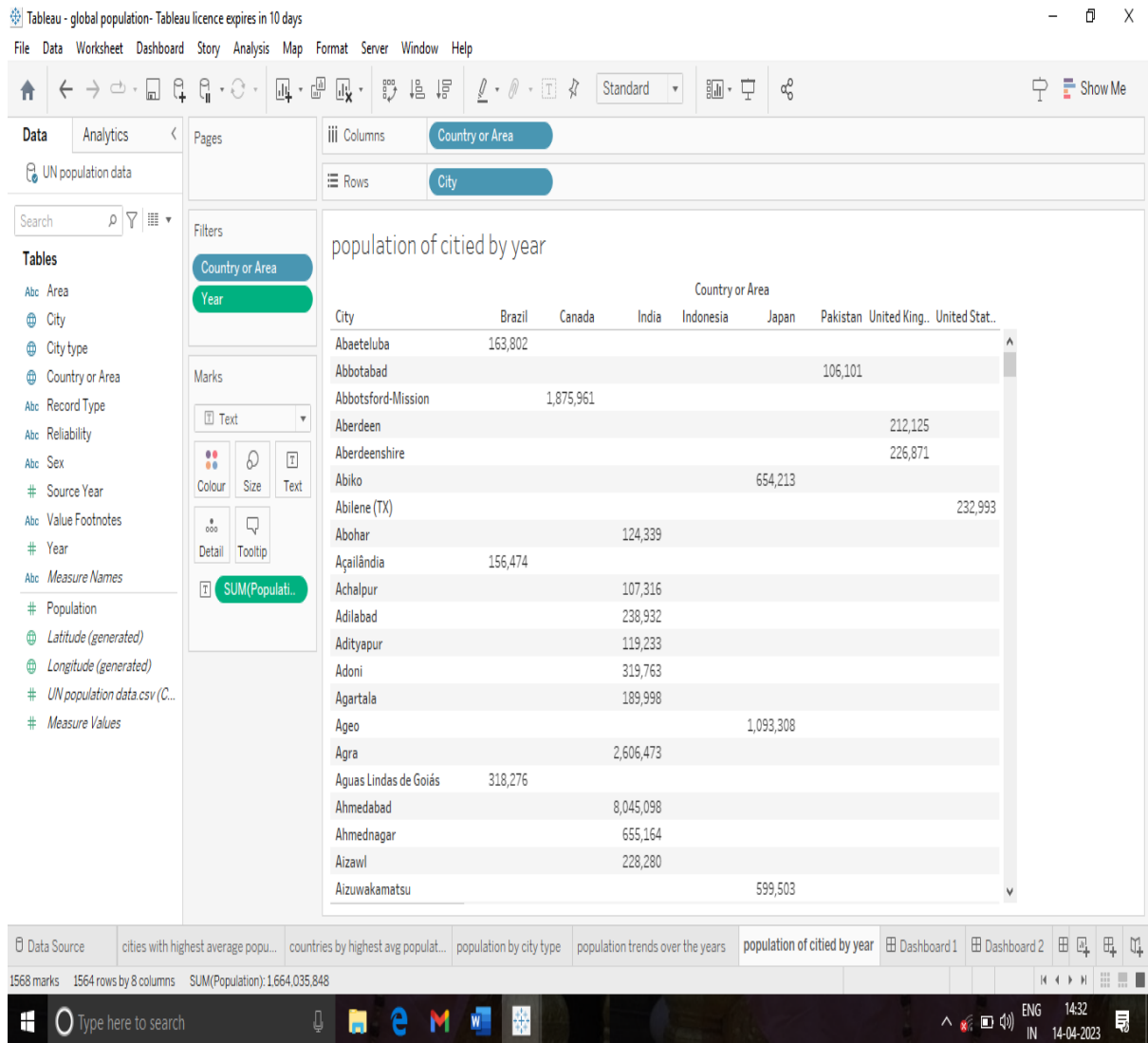
Population by city type



Cities with highest average populations



Population of city by year



Applications of microsoft word;

We can create the all tyoes official document in microsoft word. We can use the templete function in mirosoft to download letter head samples, bills, cash memos, joining letters, receipts all various types of account management related work. It is easy to write and formet exist in microsoft word by using such as paragraph, font, style etc,

We can insert a cover page ,water marks and tables in our assignment according to our choice. This is used by millions of people around writing its launch. And writing a book in microsoft word is really easy.

Using this microsoft word only we are create a document for the overview of the Tracing the growth of the global community: A population forecasting analysis.

This MS word is a powerful, proven, and professional application is the easiest word processing program developed by microsoft Inc. We can create a birthday card or invitation card in microsoft word by using pre defined templetes or using insert menu and formet menus.

Now a days the microsoft word plays a important role for all of us to create document, pdf, resumesetc, with the the use of this microsoft word only we can create a brief overview of this project.

Conclusion;

The current population of India around 140 crores. According to certain reports, in the next few years, there will be a solid growth of population in India, and globally too. According to Malthus's population theory means that food production increases in mathematical rates, which means that the population increases gradually, on the other hand the population grows at a geometric rate or faster. The earth's current population is almost 6 billion people and expected to surpass 8 billion people by 2040 and 11 billion by 2100. Population growth is the increase in the number of humans on the earth. For most of human history our population size was relatively stable. But with innovation and industrialization, energy, food, water, and medical care became more available and reliable.

Using the Tableau software to understand the growth of population, a good data visualisation should communicate a data set clearly and effectively by using graphs. The best visualization makes it easy to comprehend data at a glance. Tableau is a very effective tool for graphical representation, different graphical views to display data.

FUTURE SCOPE:

According to population growth more people means increased demand for food, water, housing, energy, health care, transportation, and more. And all that consumption contributes to ecological degradation, increased conflicts, and a higher risk of large scale disasters like pandemics.

According to tableau there is an ample growth and scope if you learn tableau. However this depends on various demographics geography experience, and skills. Tableau developers have a range of job titles to choose from computer architecture, business intelligence developer. Business objects developer data analyst etc, The data visualization tool has been gaining popularity in companies big and small and hence, Tableau careers are uber-in. Looking at google trends it seems there can be no better time than 'now' to get certified in tableau and build a career in business intelligence and data analytics. Tableau is not a language or a platform. It is just a tool used in business and intelligence. Tableau is a good to have knowledge, but building a career out of tableau is never advisable. Tools keep on changing a technology updates. So learning tableau is good. It is a stepping stone of your career. Don't try to build an entire career based on that. Python is a technology hire and pig are big data technology. Tableau is a tool.

APPENDIX:

This appendix outlines the methods used to generate the population and labour force projections as well as summary measures and other indicators used in several chapters of this report. The projections were reviewed for accuracy and consistency by committee members and compared with results from other such projections. While the committee's projections were made to 2100, the report primarily discusses results through 2050. Given the high degree of uncertainty regarding variables such as future rates of return, productivity growth, international capital flows, and so on, the committee chose to limit its analysis and discussion to the next four decades.

POPULATION PROJECTIONS BY AGE AND SEX

The population projections used by the committee are based on intermediate-cost population projections prepared by the Social Security Administration (SSA) for its 2011 Trustees Report, with some important modifications. The committee thanks Felicitie Bell, Office of the Chief Actuary of the SSA, for her generosity in sharing projection details with it. The Social Security methods are

summarized here briefly, but complete information on SSA projection methods. The starting population is the 2008 estimated Social Security Area population¹

¹The Social Security Area population covers the U.S. Census population (residents of all 50 states and Washington, D.C., plus Armed Forces overseas) but adds a small group of potential Social Security beneficiaries who are not covered by the U.S. Census population. These persons

Suggested Citation: "Appendix A: Population and Related Projections Made by the Committee." National Research Council. 2012. Aging and the Macroeconomy: Long-Term Implications of an Older Population.

by sex and single year of age. This population is projected forward each year based on projected rates of fertility, mortality, and net migration. Net migration is immigrants coming into the population minus emigrants leaving the population.

The age-specific fertility rates used are the same as in the intermediate-cost SSA projections, with a minor adjustment for the years 2008 and 2009.² The age distribution of fertility is based on recent historical trends, while the overall level of fertility is assumed to decline gradually in the near term and remain constant at just below replacement level. Specifically, the observed total fertility rate is 2.09 children per woman in 2008 and is assumed to fall gradually to a constant level of 2.00 children per woman by 2035.

The main adjustment to the SSA projections is that the mortality rates used here are lower than those used in the intermediate-cost SSA projection. As described in Chapter 3, the committee agrees with the Social Security Advisory Board's Technical Panel on Assumptions and Methods (TPAM) that there will likely be faster future declines in mortality than reflected in the intermediate-cost SSA projections. This conclusion is based on an analysis of potential future trends in smoking and obesity (Technical Panel on Assumptions and Methods, 2011). The SSA projection assumes that average life expectancy by 2050 will be 82.2 years, whereas the committee projection assumes instead an additional 2.3 years of life on average, for a life expectancy of 84.5 years by 2050. This mirrors the TPAM conclusion. The corresponding lower age-specific mortality rates are found by searching for a mortality schedule that is between the SSA

intermediate- and high-cost options and implies a life expectancy in 2050 of 84.5 years. The high-cost option assumes lower mortality than the intermediate and thus an average life expectancy of 84.8 years by 2050. The projection used here employs a mortality schedule that is a weighted average of the two SSA options such that the desired life expectancy in 2050 of 84.5 years is achieved.

This average is found by first defining a difference term boxes for age x and sex s , which is the difference between the death rates mixes for the high cost and intermediate cost: are U.S. citizens living abroad, residents of U.S. territories, and noncitizens living abroad who are insured for future Social Security benefits. They usually comprise around 2 percent of the U.S. Census population. In the aggregate, the Census and Social Security Area population age and sex distributions are almost identical.²Published rates for 2008 were multiplied by 0.99 and for 2009 by 1.01 to match more closely the predicted birth cohorts of the SSA projections and correct for inconsistencies introduced by interpolation to estimate January 1 populations from July 1 population estimate.

The new death rates that were used for these projections are where k , which is the same for both sexes and constant over age,

is found by a search program to achieve the desired average life expectancy of 84.5 years in 2050.

The SSA projection adds net migrants at each projection step based on a guess about the future trend of migration, legal and illegal combined, and the age and sex distribution of net migrants from recent history. The total number of net migrants in the SSA projections begins at only 35,000 in 2008 based on evidence that the recent economic downturn in the United States has discouraged a great deal of potential immigration and encouraged some emigration. The projected number of net migrants quickly rebounds to 1,250,000 by 2015 but then falls slowly but steadily to 1,025,000 by 2085. While the committee's projection uses the same age and sex distribution of net migration as in the SSA 2011 Trustees Report from 2008 to 2025, its trajectory for future migration is significantly higher than that of the SSA. As with future mortality, the committee believes that the future trajectory for net migration developed by the TPAM is more reasonable than the one currently used in intermediate SSA projections. Thus the committee adopted the TPAM migration schedule for 2026–2050, which assumes a constant rate of 3.2 net migrants for every 1,000 residents each year after 2025.

Given the rates of fertility, mortality, and net migration described above, the starting Social Security Area population of 2008 is projected forward in single-year steps of age and time for men and women separately using the cohort component method. The projection ends in the year 2100.³ This projection was the baseline scenario of future change. Summary measures for fertility, life expectancy, and net migration appear in Table A-1. For several analyses reported in previous chapters, the rates of fertility, mortality, and net migration were modified to calculate population projections based on alternative scenarios of change. In these cases, the projections were exactly as described above, except for the alternative rates described in the scenario

TABLE A-1 Summary Measures of Demographic Assumptions for Baseline Projection, Selected Years 2008–2100

Years of Life Expectancy					
Year	Men	Women	Combined	Total Fertility Rate (births per woman)	Net Migrants (millions)
2008	75.4	80.3	77.8	2.05	0.04
2009	75.6	80.4	77.9	2.04	0.84

2010	75.7	80.5	78.1	2.07	0.82
2015	76.9	81.3	79.0	2.05	1.25
2020	77.9	82.1	79.9	2.04	1.20
2025	78.8	82.9	80.8	2.02	1.14
2030	79.7	83.6	81.6	2.01	1.19
2035	80.5	84.3	82.4	2.00	1.23
2040	81.3	85.0	83.1	2.00	1.27
2045	82.1	85.7	83.8	2.00	1.31
2050	82.8	86.3	84.5	2.00	1.34
2055	83.5	86.9	85.1	2.00	1.38
2060	84.2	87.4	85.8	2.00	1.43
2065	84.8	88.0	86.3	2.00	1.47
2070	85.4	88.5	86.9	2.00	1.52
2075	86.0	89.0	87.4	2.00	1.57
2080	86.5	89.4	88.0	2.00	1.62
2085	87.1	89.9	88.5	2.00	1.67
2090	87.6	90.3	88.9	2.00	1.72
2095	88.1	90.7	89.4	2.00	1.78
2100	88.6	91.1	89.8	2.00	1.84

SOURCE: Committee calculations.

POPULATION PROJECTIONS BY RACE/ETHNIC GROUP

For some of the analyses, population projections by separate groups defined by race and ethnicity were of interest. The SSA does not take race or ethnicity into account when it makes projections, so data from the U.S. Census Bureau were used to break the SSA-based population projections into race/ethnic groups that are consistent with the main population projections used in this report. The committee thanks David Waddington, Ben Bolender, Christine Guarneri, and Donnette Willis of the Population Projections Branch of the U.S. Census Bureau for sharing data with it for the project.

Census Bureau projections are done based on the resident population by age, sex, race, and Hispanic origin. These projections cover the years 2008 to 2050, so the committee extends the Census 2050 rates to the year 2100 to cover the full period of interest.

While the Census projections define many additional groups, only five groups were used in this work to avoid small numbers in groups defined by sex, single years of age, and race/ethnicity. The five race/ethnicity groups used were (1) Hispanic, (2) non-Hispanic

white alone, (3) non-Hispanic black alone, (4) non-Hispanic Asian alone, and (5) non-Hispanic other. This last group includes non-Hispanic native Hawaiian and Pacific Islanders, American Indians and Alaska natives, and multiracial persons.

This means that the starting population for the race/ethnic projections is not the starting population of the Census Bureau race/ethnic population projections. Instead, each age and sex group in the starting population for the single-group projection is broken down into the five race/ethnic groups based on the distribution in the Census Bureau population for that age and sex group.

For example, say mortality rates for the single-group projection predicted 900 deaths to men aged 52 during the year, while the Census mortality rates by race/ethnic group projected 800 deaths across the five race/ ethnic groups. The 900 single-group deaths would be multiplied by the race/ ethnic distribution of the 800 deaths to get the race/ethnic distribution of the 900 deaths to men aged 52 during the year.

Finally, while the Census Bureau publishes mortality rates by each age/ sex/race/ethnic group, this is not the case for fertility or net

migration. Birth rates are published by race/ethnic group only, not age, so the projection assumes that the age distribution of fertility for all five race/ethnic groups is the same as the overall SSA age distribution of fertility. Net migration is published as counts by sex and race/ethnic group, so the projection assumes that the age distribution of male net migration is the same as the SSA age

THANK YOU

