

CATEGORY:

Data Analytics with Tableau

PROJECT TITLE :

Tracing the Growth of the Global Community: A Population Forecasting Analysis

INTRODUCTION:

1.1 Overview: A brief description about your project

1.2 Purpose: The use of this project. What can be achieved using this.

Problem Definition & Design Thinking

A population projection gives a picture of what the future size and structure of the population

By sex and age might look like. It is based on knowledge of the past trends, and, for the future, on assumptions made for three components: Fertility, mortality and migration

Population Forecasting

The Need For Forecasting Population

In the solution of any planning problem, the planner either makes an explicit forecast, or makes some implicit assumption about the population for which he is planning. "Population" includes more than mere numbers of people. The planner must know what kind of people live in his planning area, what types of lives they lead, and would like to lead, how long they will live, and how long they will reside in the particular area; and who will replace them when they move out or die; how many children they will have (and would like to have under different conditions), whether these children will live in the area, and many other factors.

Many communities have installed facilities which have become useless because predicated on faulty estimates of future population, or they have failed to install facilities where justified by future population. A common example of such errors is the newly constructed school in an area where the population is aging rather than being replaced by young, child-bearing families. Sewer systems have been expensively developed only to be later replaced

because the population soon was double or triple what was anticipated for the area. Narrow streets have been later widened at great expense. On the other hand, land often has been overly zoned for commercial purpose in the expectation of a vast increase in population which did not materialize. Or land was zoned for potential capacities in some cities in some cities of whole states many of our communities today.

MAJOR DIFFICULTIES IN FORECASTING

Anticipating the numbers and characteristics of future population is very difficult. Since the planner is unable to fully foresee and therefore to predict future world social and economic conditions, he can only project what he thinks will happen to present trends in the future. He must make assumptions about the future, assumptions which may be outmoded or invalidated in a rapidly changing industrial society.

For the practising planner today there is another obstacle. The population analyst has generally been concerned with forecasting the future populations of whole countries, and diverse national trends tend to cancel out each other in the largeness of the figures. However, projection of population in small areas, such as county or city is a more difficult task, because an error in projection may not be balanced by another unforeseen event or influential factor, and because an error in projection may result in a variation important when compared to the small local total (although not important when compared to a national total). In addition, in- and out-migration for the local area must be projected; this is no easy task. This is especially true for populations of large cities where the major

element of population change has been migration. This is also especially true of certain sections of the country — some West Coast communities have doubled or trebled their populations in less than a decade.

In spite of all the obstacles, none of which can be under-estimated, and all of which seem to announce the foolhardiness of any attempt, population projections must be made expertly enough so that the planner can perform his function planning for the future population of his area.

PROBLEM DEFINITION & DESIGN THINKING

2.1 EMPATHY MAP:



Empathy map

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.

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2

Build empathy

The information you add here should be representative of the observations and research you've done about your users.

Says

What have we heard them say?
What can we imagine them saying?

People
Growth
Rate

Birth &
Death Rate

People
Language
Increase

or
Produce Data
for Analysis
Research

Sex Ratio

Fertility
Rate

Limited
Capacity for
Following

or
No Help
Search Areas
of Land

Tracing the Growth of the
Global Community
A Population Forecasting
Analysis

The Time It
Takes to
do the
Census

Expenses of
Doing the
Census

Produce a
comprehensive
Forecast for
Population

Privacy
Concerns

Lack of
Feasibility

Privacy
Concerns

Understand
Certain
Populations

Produce
Cost Rights
Information

Does

What behavior have we observed?
What can we imagine them doing?

Thinks

What are their wants, needs, hopes,
and dreams? What other thoughts
might influence their behavior?

Feels

What are their fears, frustrations, and
anxieties? What other feelings might
influence their behavior?



Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

🕒 **10 minutes** to prepare

🕒 **1 hour** to collaborate

👤 **2-8 people** recommended

💬 [Share template feedback](#)



Before you collaborate

A little bit of preparation goes a long way with this session. Here's what you need to do to get going.

10 minutes

A

Team gathering

Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B

Set the goal

Think about the problem you'll be focusing on solving in the brainstorming session.

C

Learn how to use the facilitation tools

Use the Facilitation Superpowers to run a happy and productive session.

[Open article](#)



1

Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

🕒 5 minutes

PROBLEM

How might we [your problem statement]?



Key rules of brainstorming

To run an smooth and productive session



Stay in topic.



Encourage wild ideas.



Defer judgment.



Listen to others.



Go for volume.



If possible, be visual.

2

Brainstorm

Write down any ideas that come to mind that address your problem statement.

🕒 10 minutes

MADHAVAN .R

Business requirements	Collect the Dataset	strong Data in DB
No of Unique visualizations	Utilization of data Filters	Social impact
Amount of data rendered to DB	Literature Survey	Understand the data

MANIVASAGAM

connectDB with tablu	preparing the data visualization	reating graphical representations
population records	population trends over the years	Cities with highest average populations
population by city type	population of cited by year	record types of countries

MURUGAN

population trends over the years	population trends over the year by sex	population by city type
No of scence of story	Utilization of data filters	cities with highest average populations
No of calculation fields	population trends over the years	population trends over the year by sex

MOHANAPRIYA

cities with highst average population	countries with highest avg population from 2000-2014	population by city type
population of cities by year	web integration	Publishing helps
project documentation	record explanation	create doc as per the template provided

3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

🕒 20 minutes

limited
capacity for
Follow-up

Provides a
Comprehensive
picture of the
population

Undercounts
certain
populations

Facilities civil
Rights
Enforcement

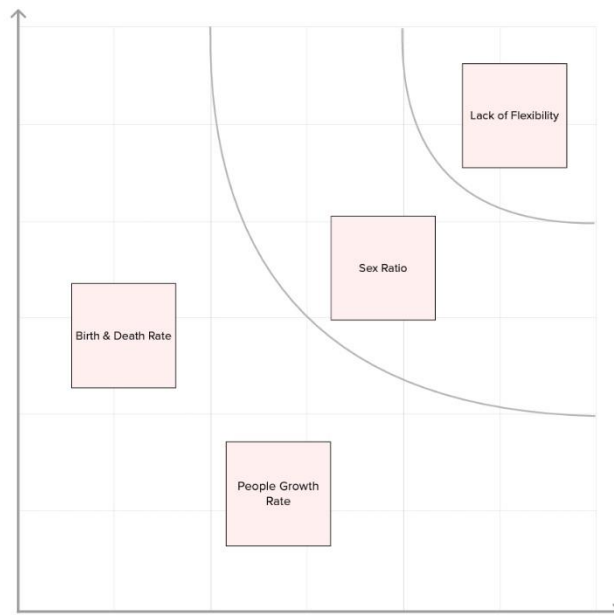
population
forecasting
provides data
for Academic
Research

4

Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

⌚ 20 minutes



Feasibility

Regardless of their importance, which tasks are more feasible than others? (Cost, time, effort, complexity, etc.)



After you collaborate

You can export the mural as an image or pdf to share with members of your company who might find it helpful.

Quick add-ons



Share the mural

Share a **view link** to the mural with stakeholders to keep them in the loop about the outcomes of the session.



Export the mural

Export a copy of the mural as a PNG or PDF to attach to emails, include in slides, or save in your drive.

Keep moving forward



Strategy blueprint

Define the components of a new idea or strategy.

[Open the template →](#)



Customer experience journey map

Understand customer needs, motivations, and obstacles for an experience.

[Open the template →](#)



Strengths, weaknesses, opportunities & threats

Identify strengths, weaknesses, opportunities, and threats (SWOT) to develop a plan.

[Open the template →](#)



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EXPLAIN POPULATION FORECASTING

Different evolution assumptions are made for each component, constituting different scenarios.

The projections serve as a basis for long-term thinking, particularly in terms of collective development.

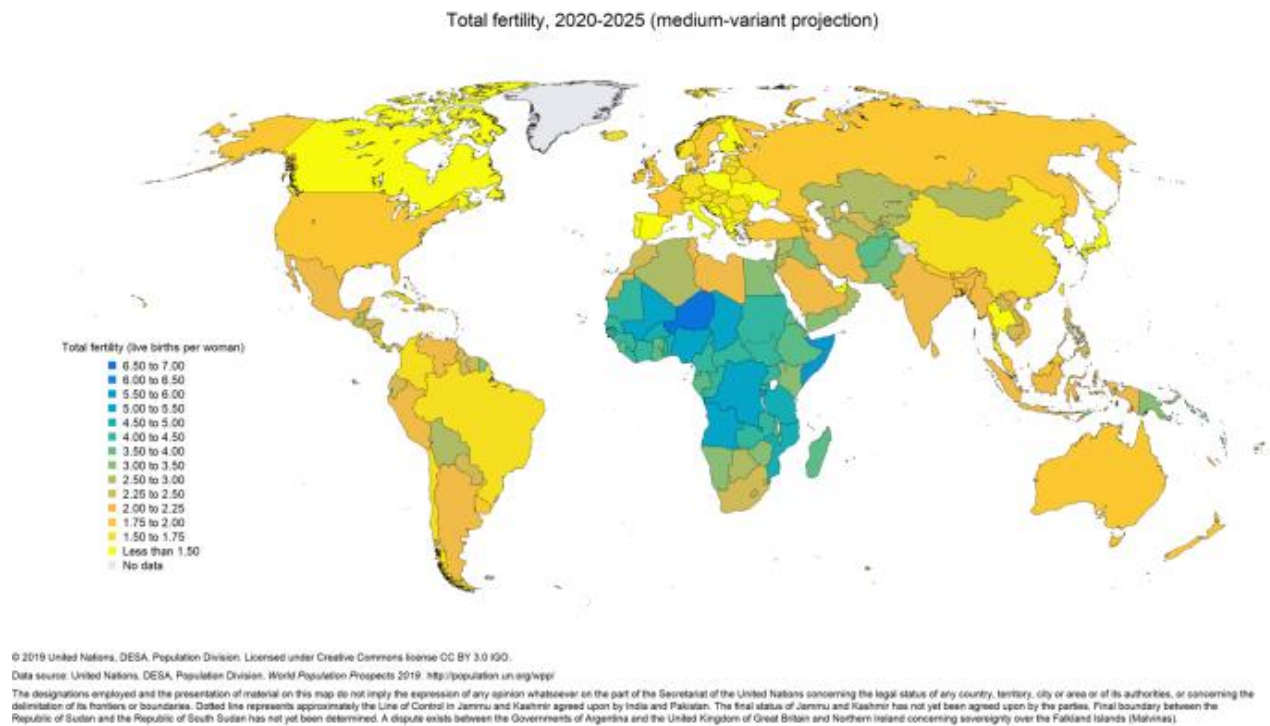
They make it possible to analyse population trends if the assumptions are true, but are not forecasts. Individual behaviour, certain public policy actions, scientific progress or unforeseen events (weather events, epidemics) in the coming years may have a lasting effect and significantly influence trends, which the projections do not take into account

STRUCTURE OF A POPULATION FORECASTING

Population forecasting is defined as the method of determining the expected population for a particular design period of a water supply system with the help of the study and analysis of future events and available records.

The population is an important parameter that is determined for the design of the water system of a particular area. Water supply systems are designed for a

population expected for a certain design period instead of taking into consideration the present population of the area.



There are several mathematical methods that can be used to determine the population for a design period.

RESULT:

It cannot be over-emphasized that there are many varied factors influencing birth rates, migrations, and to a lesser degree, death rates. Unfortunately, much of the research necessary to isolate these various factors and to appraise their effects remains to be done. The planner in forecasting future population for his area may seek the aid of a demographer especially trained in the technical study of population. However, the planner must work closely with the demographer to constantly relate planning considerations to statistical manipulations. The planner, with his knowledge of the area and study of its economic potentialities and his proposals for future densities (and distribution of these), has insights into the developmental pattern of a community, which the demographer lacks.

Population projections, like master plans, must be revised quite frequently. It has been suggested in this report that several alternative projections be made on the basis of different sets of assumptions. It has also been recognized that in the last analysis, the planner must use as a working guide that population projection he considers most feasible. In making population projections, the planner need not be so much worried about errors in forecasting the numbers of persons (a five percent under or over-estimation of population should not disrupt a community!)

but he should be concerned about an error in the kinds of anticipated persons. For example, in a community of anticipated 100,000 population, 5,000 additional persons could be absorbed; if all 5,000 additional persons were children of school age, however, the effects on community facilities might be disastrous.

There is no easy method to population forecasting. Some demographers feel that fertility and mortality rates are nearing some sort of stability. Should this actually happen, a series of formulae might be developed by which fertility and mortality might be projected, leaving migration as the field for most intensive scrutiny. The "stability" does not yet exist. Given though the planner of today must resort to "enlightened guesses", he must be aware of the many complex interacting forces that influence future population numbers, composition and place of residence.

ADVANTAGES AND DISADVANTAGES

The advantages pertaining to forecasting include the following:

- **Insight Creation** - Gaining insight is a must for operations that are seeking to generate adequate forecasts. Forecasting gets you into the habit of looking at the past and real-time data to predict future demand. While doing this, you will be able to anticipate demand fluctuations more effectively. It also will provide insight

into your company's supply chain health and provide you with an opportunity to make any corrections or adjustments based off of new information that is received through real-time data.

- **Learning From Past Mistakes** - Forecasting also enables you to make decisions based off of past errors and could provide insight on how to correct these in the future. You don't start from scratch after each forecast. Even if your prediction was nowhere close to what ended up coming to pass, it provides a starting point. It is common to review where and why things didn't happen the way you had predicted and you should be able to see an improvement in your forecasts. You will also get into the habit of reflecting upon past performance as a whole.
- **Cost Decrease** - Cost decrease is another substantial factor within manufacturing operations considering that forecasting can reduce the amount of errors due to following a schedule based off of the past. Anticipating demand will aid you with tweaking your processes to increase efficiency all along the supply chain. Because you are able to predict what customers will want and when they'll want it, you will ultimately be able to decrease excess inventory levels and increase overall profitability.

The disadvantages pertaining to forecasting include the following:

- **Forecasts are Never Completely Accurate** - Forecasts are never 100% and it is almost impossible to predict the future with certainty. Even if you have a great process in place and forecasting experts on your payroll, your forecasts will never be spot on. Some products and markets will have a high level of volatility, especially during times of crisis. The coronavirus has definitely enhanced and increased this volatility within the market - which is why understanding what factors influence your demand can potentially aid with developing forecasts during this time. Having said that, the main drawback of forecasts are that they are almost always wrong - which leads to excess or shortage of inventory.
- **It can be Time-Consuming and Resource-Intensive** - Forecasting pertains to data gathering, data organizing, and coordination. Companies will employ a team of demand planners who are responsible for coming up with the forecast. In order to adequately conduct this function, demand planners will need a substantial amount of input from sales and marketing teams. It is also not uncommon for process to be manual and labor-intensive, which will ultimately take up a lot of time. If you have the correct technology in the right place, it is much less of an issue.

- **Could be Costly** - Forecasting can be extremely costly - especially if it is done right. If you want adequate and close-to-accurate forecast, you have to spend the money, time, and resources to do so. Hiring a team of demand planners is a significant investment and adds to the cost of utilizing quality tools. While it is costly, you should easily see a return on this investment over time and your forecast should be much more accurate, thus saving you money and paying for itself in the long run.

A software that can aid with adequate and appropriate forecasting pertains to PlanetTogether's Advanced Planning and Scheduling (APS) Software. Advanced Planning and Scheduling (APS) Software can aid with forecasting through utilizing real-time and historical data and ultimately coming up with a production plan that enables manufacturers to reduce waste and increase profitability. Advanced Planning and Scheduling (APS) Software increases operational efficiency through utilizing these forecasts and ultimately coming up with a production plan that is the most efficient for their manufacturing operation. PlanetTogether's APS Software is a must for manufacturing facilities that are seeking to maintain a competitive edge and take their operation to the next level.

DATA ANALYTICS

S.NO	COUNTRY	2023 POPULATION	GROWTH RATE	WORLD%
1	INDIA	1,42,00,12,522	0.81%	17.85%
2	CHINA	1,42,57,41,969	-0.02%	17.81%
3	UNITED STATES	33,96,33,480	0.50%	4.25%
4	INDONESIA	22,70,79,802	0.74%	3.47%
5	PAKISTAN	23,95,51,418	2%	3.00%
6	NIGERIA	22,27,54,786	2.41%	2.80%
7	BRAZIL	21,61,76,857	0.52%	2.70%
8	BANGLADESH	17,26,06,246	1.03%	2.16%
9	RUSSIA	14,45,43,094	-0.19%	1.80%
10	MEXICO	12,82,68,721	0.75%	1.60%
11	ETHIOPIA	12,58,97,158	2.55%	1.58%
12	JAPAN	12,34,25,118	-0.53%	1.54%
13	PHILIPPINES	11,69,86,798	1.54%	1.47%
14	EGYPT	11,23,72,279	1.56%	1.41%
15	DR CONGO	10,16,06,666	3.29%	1.28%
16	VIETNAM	9,87,28,972	0.68%	1.23%
17	IRAN	8,80,42,789	0.70%	1.11%
18	TURKEY	8,57,26,839	0.56%	1.07%
19	GERMANY	8,33,02,132	-0.09%	1.04%
20	THAILAND	7,17,82,532	0.15%	0.90%
21	UNITED KINGDOM	6,76,91,810	0.34%	0.85%
22	TANZANIA	6,70,49,424	2.96%	0.84%
23	FRANCE	6,47,31,588	0.20%	0.81%
24	SOUTH AFRICA	6,03,06,389	0.87%	0.75%
25	ITALY	5,89,04,506	-0.28%	0.74%
26	KENYA	5,48,84,375	1.99	0.69%
27	MYANMAR	5,44,99,886	0.74%	0.68%
28	COLOMBIA	5,20,35,117	0.41%	0.65%
29	SOUTH AFRICA	5,17,91,558	-0.06%	0.65%
30	UGANDA	4,83,18,008	2.82%	0.61%
31	SUDAN	4,78,62,802	2.63%	0.60%
32	SPAIN	4,75,28,376	-0.08%	0.59%
33	ARGENTINA	4,57,17,020	0.56%	0.57%
34	ALGERIA	4,54,70,257	1.57%	0.57%
35	IRAQ	4,53,03,350	2.27%	0.53%
36	AFGHANISTAN	4,20,16,773	2.07%	0.51%
37	POLAND	30,12,04,718	2.93%	0.48%
38	CANADA	3,87,16,304	0.85%	0.47%
39	MOROCCO	3,77,65,059	1.02%	0.46%
40	SAUDI ARABIA	3,68,41,422	1.48%	0.46%
41	UKRAINE	3,64,17,190	-7.45%	0.46%
42	ANGOLA	3,64,64,248	3.08%	0.46%
43	UZBEKISTAN	3,50,60,216	1.55%	0.44%
44	YEMEN	3,42,99,857	2.24%	0.43%
45	PERU	3,42,57,108	0.89%	0.43%

WORLD - HISTORICAL POPULATION GROWTH RATE DATA

<i>S.NO</i>	<i>YEAR</i>	<i>POPULATION</i>	<i>GROWTH RATE</i>
1	2023	8,04,53,11,447	0.88%
2	2022	7,97,51,05,156	0.83%
3	2021	7,90,92,95,151	0.87%
4	2020	7,84,09,52,880	0.98%
5	2019	7,76,49,55,032	1.06%
6	2018	7,65,37,89,828	1.10%
7	2017	7,59,98,22,404	1.15%
8	2016	7,51,34,74,238	1.17%
9	2015	7,42,05,97,537	1.19%
10	2014	7,33,90,13,429	0.22%
11	2013	7,25,05,93,370	1.24%
12	2012	7,36,16,97,921	1.25%
13	2011	7,07,31,25,425	1.25%
14	2010	6,98,56,03,105	1.27%
15	2009	6,89,83,05,908	1.27%
16	2008	6,81,15,97,227	1.27%
17	2007	6,72,59,48,554	1.27%
18	2006	6,47,57,51,478	1.27%
19	2005	6,55,81,76,119	1.27%
20	2004	6,47,57,51,478	1.28%
21	2003	6,39,38,97,365	1.29%
22	2002	6,31,24,07,360	1.31%
23	2001	6,23,07,46,982	1.33%
24	2000	6,14,88,98,975	1.34%
25	1999	6,06,77,58,458	1.34%

CONCLUSION

It cannot be over-emphasized that there are many varied factors influencing birth rates, migrations, and to a lesser degree, death rates. Unfortunately, much of the research necessary to isolate these various factors and to appraise their effects remains to be done. The planner in forecasting future population for his area may seek the aid of a demographer especially trained in the technical study of population.