Introduction :

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 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.

Overview :

Population projections serve various actors at subnational, national, and international levels as a quantitative basis for political and economic decision-making. Usually, the users are no experts in statistics or forecasting and therefore lack the methodological and demographic background to completely understand methods and limitations behind the projections they use to inform further analysis.

Our contribution primarily targets that readership. Therefore, we give a brief overview of different approaches to population projection and discuss their respective advantages and disadvantages, alongside practical problems in population data and forecasting.

Fundamental differences between deterministic and stochastic approaches are discussed, with special emphasis on the advantages of stochastic approaches. Next to selected projection data available to the public, we show central areas of application of population projections, with an emphasis on Germany.

Purpose :

Population forecasts are used to summarize existing knowledge of population change to help decision makers. Since the 1920s, the previously favored curve fitting methods were replaced by the cohort component method that adds age and sex details.

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Definition :

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Advantages :

- **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.

Disadvantages :

- 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.

Conclusion

Proper demand forecasting enables better planning and utilization of resources for business to be competitive. Forecasting is an integral part of demand management since it provides an estimate of the future demand and the basis for planning and making sound business decisions.