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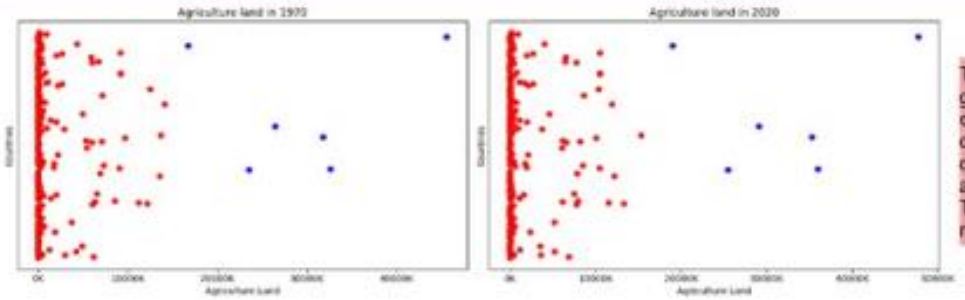
GLOBAL LAND ANALYSIS

INTRODUCTION

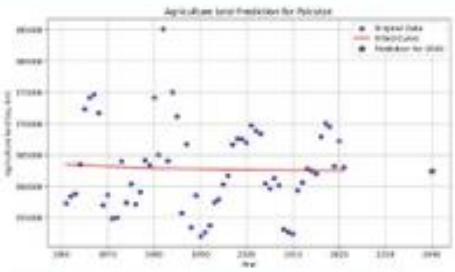
The landscape of global land use has witnessed significant transformations over the years, driven by a surge in industrial, commercial, and economic activities. These changes have not only shaped the physical environment but have also sparked discussions about their far-reaching implications, particularly in the context of climate change. Climate change manifests through alterations in rainfall patterns, temperature increases, rising sea levels, and a host of natural phenomena, all of which have raised concerns about their impact on human life .Recognizing the critical importance of addressing these challenges, world leaders have engaged in extensive conversations to devise strategies for sustainable development. Amidst these discussions, this study seeks to explore the dynamics of agricultural land, a vital component of global land use, over the period from 1961 to 2021.



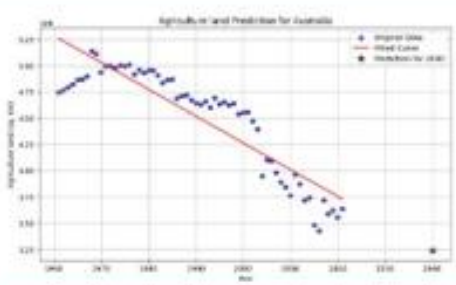
The cluster analysis depicted in Figure I examines global countries based on rural population, conducted between 1970 and 2019, aiming to discern trends in cluster patterns over time. The objective is to ascertain whether rural populations are on the rise or decline as the years progress. The analysis reveals that, notably in 2019, the rural population is observed to be increasing.

AGRICULTURAL LAND OF DIFFERENT COUNTRIES

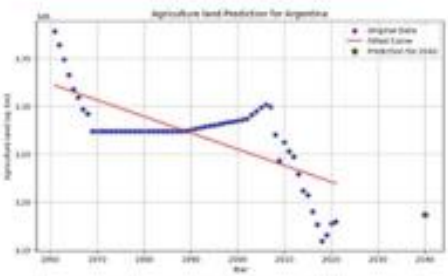
Three countries, each selected from a distinct cluster in Figure I, have been chosen to illustrate the trends in agricultural land for the next 20 years (from 2021). Notably, Pakistan demonstrates a consistent and steady increase in agricultural land, while Australia and Argentina portray a decline in agricultural land.



The projection for rural population in Belgium indicates a decline, with the forecast suggesting a decrease to approximately 150,000 over the next 20 years. This observation underscores an anticipated decrease in rural population post-2022.



The outlook for rural population in India points towards a notable increase, with the forecast indicating a rise to approximately 1.2 billion over the next 20 years. This forecast suggests a consistent upward trajectory in rural population post-2022, indicating growth with each passing year.



The anticipated forecast for rural population in Bahrain suggests a slight increase, with the projection indicating a rise to approximately 200,000 over the next 20 years. This observation implies a modest upward trend in rural population after 2022.

CONCLUSION

In conclusion, our examination of global rural demographics spanning from 1960 to 2022 illuminates the intricate interplay of industrialization, economic growth, and societal changes shaping the world's demographic landscape. The cluster analysis in Figure I from 1970 to 2019 indicates a discernible increase in rural populations. Further scrutiny of representative countries—India, Bahrain, and Belgium—reveals diverse trajectories, with India experiencing substantial rural population growth, Bahrain displaying a modest increase, and Belgium facing a noticeable decrease. Forecasts for the next two decades suggest a continuing decrease in Belgium, a significant increase in India, and a modest rise in Bahrain, underscoring the complexity and variation in rural population dynamics globally. These insights contribute to discussions on sustainable development and societal well-being in the face of evolving demographic trends.

https://github.com/kharal786786/assignment3-clustering-fitting.git