Analyzing Census Growth Rates

(COMP3125 Individual Project)

*Note: Do not used sub-title

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Abstract*—This electronic document is a "live" template and already defines the components of your paper [title, text, heads, etc.] in its style sheet. **CRITICAL: Do Not Use Symbols, Special Characters, Footnotes, or Math in Paper Title or Abstract. (*provide a short abstract*)

Keywords—example1, example2, example3, example 4, example 5 (provide 3-5 keywords)

I. Introduction (*Heading 1*)

Population growth is an extremely important part of determining what makes one county stand out against another. Understanding how demand for living in a particular county occurs, is essential for long term planning, so those who are doing well can do better, and those counties who are losing residents can work on improving. This project investigates growth by measuring many factors to determine what's common among the counties with the greatest growth rates (1), what factors show the strongest correlation with growth rate (2), and how we can use these factors, to ultimately determine future trends in population (3).

II. Datasets

A. American Community Survey 2009->2022

This data comes directly from the government. The government is required to perform a census every ten years, accounting for every resident in the United States. This data is specific but lacking in some areas. The ACS tries to rectify this. Every year they generate data from about 3.5 million Americans (1% of the total population), and collect tones more specific data to be used for things like schooling, housing and economics. I found the data given by the Decimal (10 year) census reports to be lacking so I decided to use the ACS. There are approximately 3000~ counties, so I made a custom class to handle the inner workings of the data so you can make a request to only select things you care about for a particular problem (when you're just identifying the highest growing populations, you don't need any other data apart from the counties themselves and their populations each year).

B. Character of the datasets

Each ACS has tones of variables, many of which we are not interested in. I broke its data down into some major groups. Category population demographics containing a split between genders for different age groups, along with totals, and a median. A category breaking down race & ethnicity, education, income. Employment, commute, housing, poverty, and type of occupation. I built a class to handle certain requests, so you don't have to work with a major table every time. You can just select columns you want, and what state(s) you want to look at, along with what years and it will provide it for you. It also does calculations if needed such as combining/not combining gendered ages, and calculations such as employment rate percentage (if employed and total labor force are present). Additionally, since growth rate is something, we care about, having a way to view population growth rate is built in.

III. Methodology

I have little draft for the exact methodology as most of my work has been spent on making future work easy for me, a data cleaning phase. I made a custom module named CensusDataFetcher, which calls the census API given human-enterable parameters. I did this because navigating the official census website itself was overbearing, and this was much easier to build, and doing it like this way will make calls to the census for specific data much easier. Additionally, it will make future cleaning easy as I don't need to store some 80~ variables each time, especially for the scale of 3000~ counties. The class makes a call given a year, so when your comparing changes over multiple years it simply calls the API over the entire range and combines it back into one DataFrame with an option of either having raw values or percent differences. I apologize for the brevity in my rough draft for this section and others. I have done little work in starting the project directly, instead focusing on making it easier to work on in the future, which I think I've accomplished with my CensusDataFetcher.

IV. Results

In this section, present your findings using an appropriate method, such as equations, numerical summaries, or visualizations like charts and graphs. Clearly explain all results and provide guidance on how to interpret them. If any unexpected results arise, discuss possible reasons or contributing factors. To improve clarity and organization, consider using subsections (e.g., A, B) to separate different aspects of your results.

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A. Result A

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B. Results B

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C. Results C

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TABLE I. TABLE TYPE STYLES

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	Table column subhead	***Subhead***	***Subhead***
copy	More table copy[a]		

[a] Sample of a Table footnote. (*Table footnote*)

Fig. 1. Example of a figure caption. (*figure caption*)

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V. DISCUSSION

Every method/project has its shortage or weakness. Please discuss the unsatisfied results in your project. And discuss the feasible suggestions of future work to revise/improve your result.

Example: xxx

VI. CONCLUSION

In this part, you should summarize your project. What important results did you find for your topic and what's the effect of this result on the real-world?

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Example: xxx

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REFERENCES

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[1] G. Eason, B. Noble, and I. N. Sneddon, "On certain integrals of Lipschitz-Hankel type involving products of Bessel functions," Phil. Trans. Roy. Soc. London, vol. A247, pp. 529–551, April 1955. *(references)*

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[5] R. Nicole, "Title of paper with only first word capitalized," J. Name Stand. Abbrev., in press.

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