

**Centennial Honors College Thomas E. Helm Undergraduate
Research Day 2025**

ABSTRACT

Major: Mathematics

Podium

Faculty Mentor(s): Dinesh Ekanayake and Amy Ekanayake

**Shaping the Future: How Education, Economy, and Policy Influence Life
Expectancy and Fertility**

Olivia Rueschhoff

Life expectancy and fertility rates play an important role in shaping the population age distribution. Over the past fifty years, declining fertility rates and increasing life expectancy have led to many concerns, highlighting the need for accurate projections. In this project, we explore how factors such as college education among young adults, women's labor force participation, economic growth, government spending on health and education, marriage age, contraceptive prevalence, and abortion rates influence life expectancy and fertility. Leveraging underlying relationships, we develop long-term forecasting models that effectively predict these key demographic trends. Our findings demonstrate that we can create models that yield exceedingly good forecasts with the proper selection of variables.