PARITY PATTERNS AND MATERNAL PROFILES: INSIGHTS FROM SRI LANKA'S VITAL STATISTICS SYSTEM

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Introduction

Parity (birth order) is a key demographic indicator that shows fertility practices,maternal life course patterns and population changes. Firstborn children, in particular, hold great demographic importance since that indicates the beginning of parenthood and how it affects the fertility decisions of the next in line. The analysis of the characteristics of first born and high order births gives an understanding of maternal behavior, reproductive timing, and socio-demographic transitions.Sri Lanka has a well established Civil Registration and Vital Statistics (CRVS) system, which records detailed information on births, including child characteristics, maternal attributes, parental background, and geographic location. However, the use of this administrative data for parity centered investigations and comparisons, has been very restricted in the Sri Lankan context.

Over the past several decades, Sri Lanka has experienced significant demographic transitions, including declining fertility rates, delayed marriage, increased female education, and improvements in maternal and child health services. These changes are likely to have influenced parity distributions, but the number of studies on the topic of parity using vital statistics is very low in Sri Lanka even though the country has access to high-quality civil registration and vital statistics data; the majority of the fertility research relies on census data or demographic and health surveys so this study aims to address this gap by analyzing birth registration data from selected years (2000, 2005, 2010, and 2015) to examine parity patterns and associated maternal and birth-related characteristics. By combining descriptive statistics, inferential modeling, and exploratory cluster analysis, the study seeks to provide a comprehensive understanding of parity dynamics in Sri Lanka.

Background and Significance

Parity, defined as the number of live births a woman has experienced, is a key demographic measure used to understand fertility behavior, reproductive patterns, and population change.Analysis of parity provides insight into the timing of childbearing, family size preferences, and maternal life course movement. Changes in parity distributions over time often reflect broader social, economic, and health-related transformations, including delayed marriage, increased female education, urbanization, and access to reproductive health services [1] . In all parts of the world, a decline in fertility has been accompanied by significant changes in parity patterns with the first births being less and the higher order births being less in number.

Most empirical evidence on fertility and parity in Sri Lanka has been derived from sample-based surveys, particularly the Demographic and Health Surveys (DHS), which provide valuable but periodic insights into reproductive behavior [2] .In contrast, Sri Lanka's Civil Registration and Vital Statistics (CRVS) system records nearly all live births and offers a continuous,

population-level source of information on birth order, maternal age, marital status, place of delivery, and geographic location.Considering about the high completeness of birth registration in Sri Lanka, vital statistics data have been underutilized for detailed parity based research and gives limited attention to examining changes in parity patterns and associated maternal factors . Analyzing selected years allows for the identification of changes in the distribution of first and higher-order births over time, as well as the associated maternal characteristics.

The significance of this study is its use of Sri Lanka's vital statistics system to generate empirical evidence on parity patterns at the national level.By examining maternal age, marital status, and other birth related characteristics in relation to parity, the study contributes to a get better understanding of parity patterns in Sri Lanka. The findings are expected to support maternal and child health planning by highlighting changing service needs associated with first and subsequent births. Furthermore, this study demonstrates the analytical value of vital statistical data for demographic research and understands the impact of the administrative data in population and health policy development.

Research Objective

Main Objective

Examine the demographic, maternal, and birth-related characteristics associated with parity also known as particularly first-born children in Sri Lanka using civil registration birth data, and to examine changes in distributions and associated factors across selected years (2000, 2005, 2010, and 2015).

Specific Objectives

1. To describe the distribution and characteristics of first-born and later-born children by birth order, gender, multiple birth status, place of birth, and birth weight.
2. To analyze maternal characteristics ,such as age at birth, marital status, and race associated with different parity levels.
3. To identify factors associated with parity (first-born versus higher-order births) using statistical modeling techniques.
4. To conduct exploratory cluster analysis to identify homogeneous groups of first-order births based on maternal and birth characteristics.

Methodology

This study carries out a quantitative, descriptive and analytical cross-sectional design using secondary data from Sri Lanka's Civil Registration and Vital Statistics birth records published by the Registrar General Department. Similar approaches have been widely used in parity and fertility research, as descriptive statistics, bivariate analysis, and regression models are standard methods for examining birth order patterns and associated factors [3] . This analysis considers registered live births for 2000, 2005, 2010, and 2015, enabling comparison of parity patterns over time.

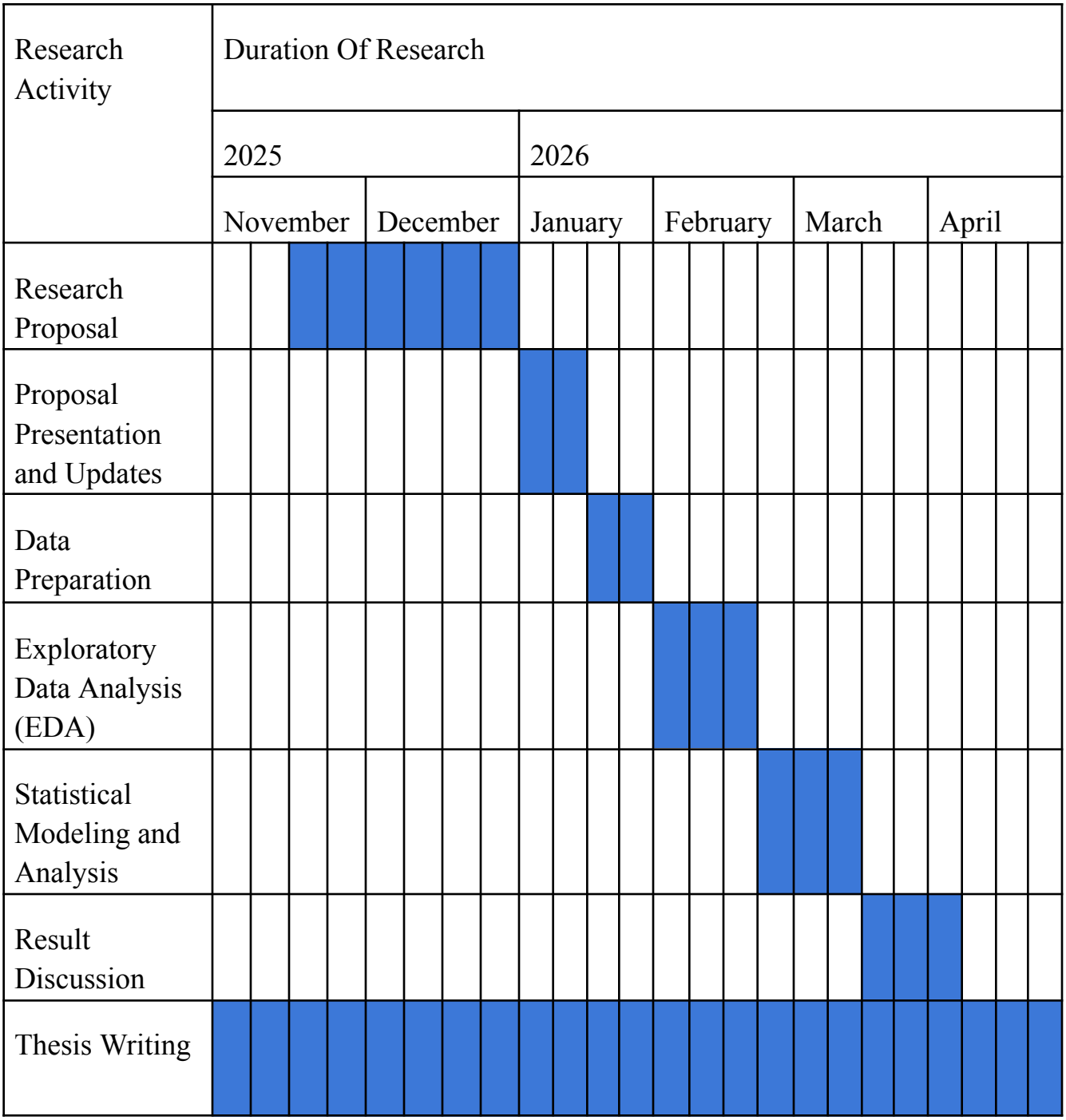
The study population includes all registered live births in the selected years. The main outcome variable is parity (birth order), categorized as first born children (parity 1) and later born children (parity ≥2). Explanatory variables include child characteristics (sex, multiple birth status, place of birth, and birth weight) and maternal characteristics (age at birth, marital status, and race), which have commonly been examined in previous parity-related studies[4] .

Data will be cleaned, coded, and prepared for analysis. Maternal age at birth will be calculated using the mother's date of birth and the child's date of birth, and variables will be grouped into meaningful categories. Statistical analysis will be conducted using Python or standard statistical software.Descriptive statistics such as frequencies, percentages, and cross-tabulations will be used to describe the distribution of first-born and later-born children and to examine changes in parity patterns across the selected years. Chi-square tests will be applied to assess associations between parity and selected maternal and birth-related characteristics, as commonly done in demographic and maternal health studies [5] .

To identify factors independently associated with parity, binary logistic regression analysis will be conducted, with parity (first-born versus higher-order birth) as the dependent variable. Logistic regression is a widely used method in fertility and parity research for controlling confounding factors and estimating adjusted effects[6] . In addition, exploratory cluster analysis will be performed among first-born births to identify homogeneous groups based on maternal and birth characteristics, an approach increasingly used to uncover hidden patterns in demographic data[7,8] .

These analytical approaches and methods will be systematically applied in this research to address the study objectives and research questions and to generate empirical evidence on parity patterns and maternal profiles in Sri Lanka.

Time Scale Bar Chart



Source of Funding

The Required Vital Statistic Data will be Provided by the Statistic branch of the Registrar General Department.

Expected Outcome

After completing this study, clear evidence will be obtained on parity patterns in Sri Lanka, especially differences between first-born and later-born children. The results will show how the proportion of first births and their characteristics have changed from 2000 to 2015. The study will identify common maternal characteristics associated with first-order births, such as age, marital status, and race. Key factors that influence whether a birth is first-order or higher-order are expected to be identified through statistical analysis. In addition, the cluster analysis will group first-born children into distinct categories based on maternal and birth characteristics, showing that first births are not a uniform group. Overall, the findings will provide useful information for understanding fertility behavior and supporting maternal and child health planning in Sri Lanka.

Summary

This study examines birth order patterns in Sri Lanka, with special focus on first-born children, using civil registration birth data for selected years between 2000 and 2015. It describes the characteristics of births and mothers and identifies factors associated with parity. The study also compares changes over time. Findings from this research will help to better understand birth patterns in Sri Lanka and support future planning and research in maternal and child health.

Reference

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