DHS Data Analysis Project: Modern Contraceptive Use

This document describes a complete data analysis project conducted using Demographic and Health Survey (DHS) data, focusing on modern contraceptive use among women of reproductive age. The analysis is designed to be job-ready for NGO and INGO roles such as Data Analyst, Monitoring & Evaluation (M&E) Officer, and Research Assistant.

1. Data Source

The data used in this project were obtained from the Demographic and Health Surveys (DHS) Program website after submitting a formal data request. The Individual Recode (IR) dataset was downloaded in Stata (.DTA) format.

2. Variable Understanding

All variables were identified and interpreted using the DHS Recode Manual and dataset documentation provided by the DHS Program. Variable definitions and labels were cross-checked to ensure accuracy.

3. Data Loading

The dataset was imported into Python using pandas. Initial validation steps were performed to confirm data structure, variable presence, and record counts.

4. Data Transformation

Relevant variables were selected for analysis, including age, residence, education, wealth index, marital status, working status, contraceptive method, and sampling weights. Variables were renamed to human-readable names and DHS weights were rescaled.

5. Indicator Construction

Modern contraceptive use was constructed as a binary indicator following DHS and WHO definitions. Women using modern methods were coded as 1, while those using traditional or no method were coded as 0.

6. Data Cleaning

The analysis population was restricted to women aged 15–49 years and further limited to married or in-union women to align with standard modern contraceptive prevalence definitions.

7. Analysis Approach

Weighted analysis was conducted using DHS sampling weights to ensure nationally representative estimates. Modern contraceptive prevalence was analyzed by residence, education, age group, wealth, and working status.

8. Visualization

Consistent bar charts were produced using matplotlib with clear titles, subtitles, and labels, making them suitable for reports and presentations.

9. Key Findings

- **Modern contraceptive use increases with age**
  Modern contraceptive use is lowest among younger women and increases steadily with age, peaking among women aged 35–44. This pattern reflects life-course dynamics, where younger women are more likely to be spacing births or early in childbearing, while older women increasingly use contraception to limit further pregnancies after achieving their desired family size.

- **Higher use among women with no education reflects fertility stage, not better access**
  Married women with no formal education show higher levels of modern contraceptive use compared to women with secondary or higher education. This does not indicate better access or awareness among less educated women. Instead, it reflects earlier marriage and higher completed fertility among women with no education, leading to greater contraceptive use for stopping births. More educated women tend to marry later and are often still in the child-spacing phase.

- **Urban–rural differences are influenced by demographic composition**
  Differences in modern contraceptive use between rural and urban areas are driven largely by differences in age structure and fertility stage. Rural women are more likely to have completed childbearing and therefore use contraception for limiting births, while urban women are more likely to be younger and delaying or spacing pregnancies.

- **Family planning needs vary across population groups**
  The findings demonstrate that family planning needs are not uniform. Younger women require access to spacing methods and counseling, while older women need reliable limiting methods. Similarly, program strategies should consider education level, residence, and life stage rather than assuming differences are solely due to access barriers.

- **Policy implication: differentiated family planning strategies are essential**
  Effective family planning programs should adopt age- and context-specific approaches. Strategies focusing on adolescents and young couples should emphasize spacing and informed choice, while programs targeting older women should prioritize access to long-acting and permanent methods. Tailoring interventions to demographic realities can improve program impact and efficiency.

One-Line Explanations for Charts

Modern Contraceptive Use by Residence

This chart shows differences in modern contraceptive use between urban and rural married women, reflecting variations in fertility stage and life circumstances.

Modern Contraceptive Use by Education

This chart shows how modern contraceptive use varies by education level among married women, influenced by age at marriage and stage of childbearing**.**

Modern Contraceptive Use by Age Group

This chart shows that modern contraceptive use increases with age as women move from spacing to limiting births**.**

Modern Contraceptive Method Mix *(if included)*

This chart shows the distribution of modern contraceptive methods used, highlighting preferences and availability of family planning options.

NOTE*: All charts represent married or in-union women aged 15–49 and use DHS sampling weights for national representation.

10. Ethical Considerations

All analyses followed DHS data usage guidelines. The data were used solely for analytical purposes and no individual-level identification was attempted.