

**Ghulam Ishaq Khan Institute of Engineering Sciences and Technology**

**DS311 – Data Warehousing & BI**

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**Proposal Report** for DS 311 Semester Project

### ****Proposal Report: Extensive Analysis of the 7th Population Census of Pakistan 2023****

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**Date:** 2/12/2024

## **Executive Summary**

This proposal details our approach to developing a Power BI dashboard for the 7th Population Census of Pakistan 2023. The project aims to present an in-depth analysis of demographic and housing data to provide actionable insights into key factors such as population distribution, age demographics, urbanization trends, literacy rates, household structures, and living conditions. The deliverables include a fully interactive dashboard and a formal data analysis report to support data-driven decision-making for policymakers and researchers.

## **Intent**

The intent of this project is to transform raw census data into a meaningful and actionable format, enabling stakeholders to:

* Identify demographic patterns and trends.
* Understand disparities in literacy, living conditions, and household structures.
* Facilitate targeted policy formulation and resource allocation.

This project aligns with efforts to enhance the usability of public data for socio-economic development and informed governance.

## **Methodology**

### ****1. Data Identification and Preparation****

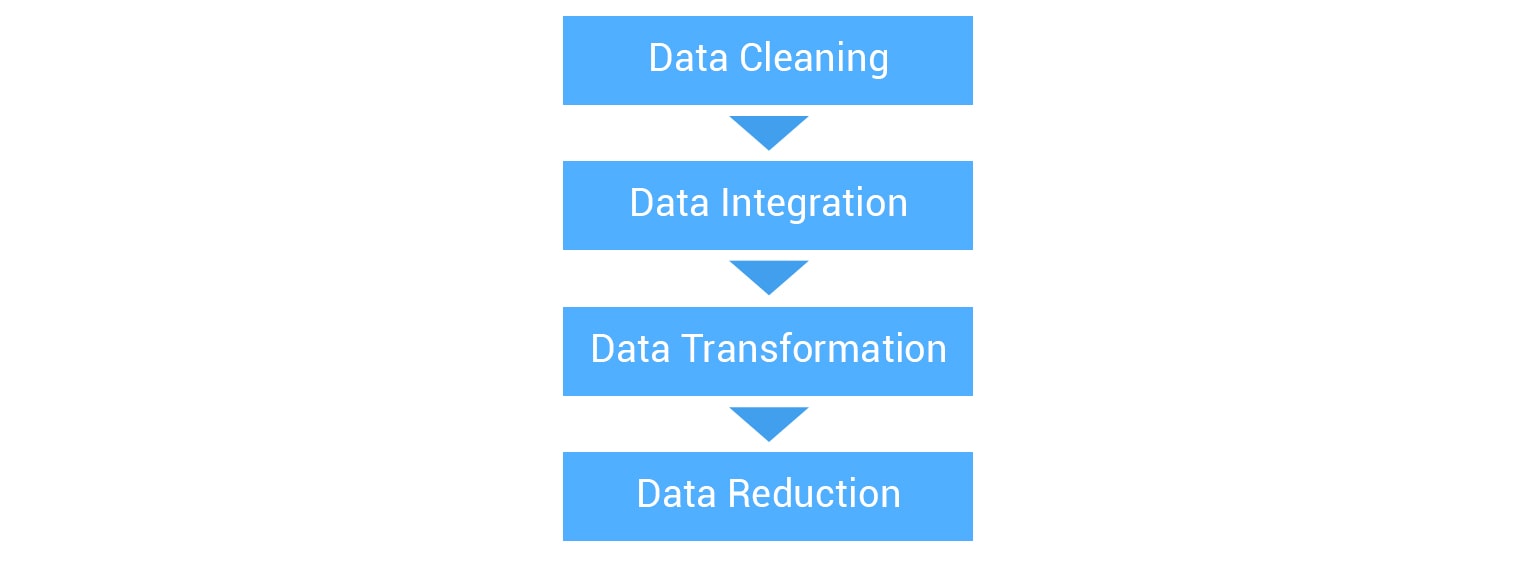
* **Dataset Source:** The official 7th Population Census of Pakistan 2023.
* **Data Attributes:**
  + Population metrics by region, gender, and age.
  + Urban and rural distribution trends.
  + Housing and living conditions.
  + Literacy rates across regions.
* **Data Documentation:** Structure, metadata, and summary statistics will be documented for transparency.

### ****2. Data Cleaning and Preprocessing****

* Address missing or inconsistent values using standard imputation techniques.
* Normalize datasets for consistency (e.g., common age ranges, uniform geographic identifiers).
* Remove outliers to ensure the reliability of insights.

### ****3. Data Modeling****

* Design a robust data model with defined relationships between dimensions (e.g., geography, age, literacy).
* Optimize for efficient querying and retrieval in Power BI.



## **Power BI Dashboard Development**

### ****Features and Visuals****

* **Bar and Line Charts:** Trends in population growth, urbanization, and literacy.
* **Heatmaps:** Regional analysis of literacy rates and housing conditions.
* **Pie Charts:** Age and gender composition.
* **Interactive Filters:** User-friendly filters for detailed exploration by region and demographic category.

### ****Dashboard Objectives****

* Present trends and insights in an accessible and intuitive format.
* Highlight disparities and regional variances.
* Support decision-makers with actionable data.

## **Deliverables**

1. **Interactive Power BI Dashboard:**
   * Accessible online or offline as required.
   * Contains key metrics, trends, and interactive visuals.
2. **Formal Data Analysis Report:**
   * Descriptive and visual analysis of census data.
   * Discussion of observed patterns, trends, and outliers.
   * Justification for selected metrics and visualizations.
3. **Documentation Package:**
   * Data properties, cleaning steps, and modeling processes.
   * User guide for interpreting the dashboard.

**Timeline**

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| --- | --- | --- |
| **Phase** | **Deliverable** | **Timeline** |
| **Data Acquisition** | Dataset approval and collection | **Day 1** |
| **Data Cleaning & Preprocessing** | Cleaned and validated dataset | **Day 2-3** |
| **Data Modeling** | Finalized data model | **Day 3** |
| **Dashboard Development** | Prototype dashboard | **Day 4-6** |
| **Formal Report Writing** | Comprehensive data analysis report | **Day 7** |
| **Final Review & Delivery** | Final dashboard and report | **Day 8** |

## **Conclusion**

This project will provide a transformative analysis of the 7th Population Census of Pakistan through a professional Power BI dashboard and formal report. The deliverables will equip policymakers, analysts, and stakeholders with actionable insights to guide socio-economic planning.