Analysis of Education in Iran
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Background or Abstract

This project intends to dive into the many facets of Iran's education system, aiming to offer an analysis of educational attainment, gender disparities, enrollment trends, and access. The motivation behind this exploration is to understand the existing levels of educational attainment, pinpoint gender-related gaps in education, enrollment trends, gauge education accessibility, and educational outcomes. Through addressing these research questions, the aim is to provide valuable insights into the dynamics of Iranian education.

Figure 1: Flag of the Islamic Republic of Iran

Research Questions

1. How do demographic factors and regional variations contribute to shaping Iranian education?
2. How do gender dynamics intersect with educational attainment and patterns?

Data

1. Population by Age and Sex (Provincial Level):
Source: The Statistical Center of Iran
Description: This dataset, obtained from The Statistical Center of Iran, provides a detailed demographic breakdown of the population at the provincial level. The data includes factors such as age groups and sex, based on the 2016 Population and Housing survey.

Figure 2: Logo for The Statistical Center of Iran

2. Students at Azad University:
Source: Islamic Azad University
Description: This dataset, sourced from the Islamic Azad University, covers students' demographic information, including their enrollment in broad fields of study, gender distribution, and academic levels. The data spans from 1375 to 1386 (1996-2007).

Figure 3: Logo for the Islamic Azad University

3. Literacy in Urban and Rural Areas by Gender:
Source: Iran Data Portal
Description: This dataset, derived from the 1390 census (2011), presents the literate population aged six and over in both urban and rural areas, categorized by gender and province.

Figure 4: Logo for Iran Data Portal

Preprocessing

1. Used Excel for initial data cleaning.
2. Extracted relevant rows and columns from data sources.
3. Refined all 3 datasets using Python libraries, prioritizing relevance to the research questions.

Analysis & Results

I utilized Python libraries to visualize dataset patterns and employed regression modeling to predict literacy in both rural and urban areas of Iran, offering insights into key factors shaping literacy rates and demographic dynamics.
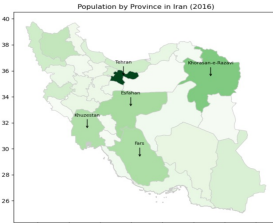
Figure 5: Population heatmap of 2016 Iranian provinces with a legend, highlighting Tehran, Khorasan-e-Razavi, Esfahan, Fars, and Khuzestan as most populous.
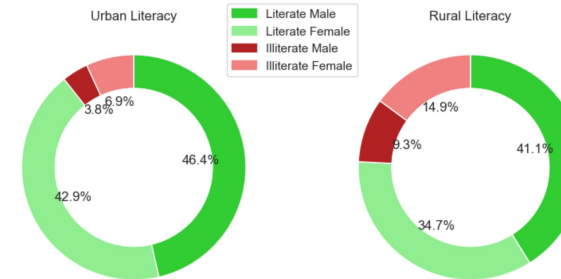
Figure 6: Two donut charts display literacy rates in urban and rural areas in Iran by gender in 2011. In rural regions, both genders have higher illiteracy, with females nearly doubling males. Urban areas show better overall literacy but maintain gender-based illiteracy disparities like rural patterns.
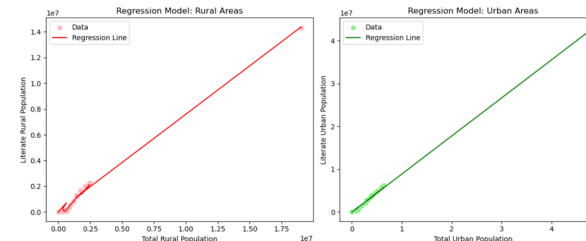
Figure 7: "Regression models for 2011 literacy rates in rural and urban areas of Iran. The left subplot displays the rural model with a scatter plot and a regression line, while the right subplot shows the urban model. Both models have strong predictive power, the rural model highlights the impact of total rural population and gender composition on literacy, and the urban model emphasizes the influence of total urban population with minimal gender impact.

Figure 8: Bar chart of Azad University's total degrees by education level and gender. Degrees are ranked from highest to lowest: bachelor's, associate's, master's, and doctorates. The gender distribution is equal.
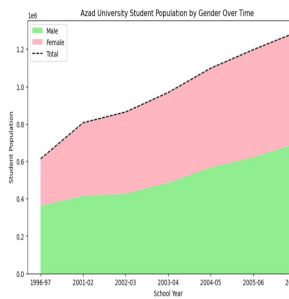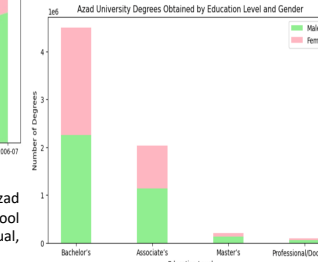
Figure 9: Area chart depicting Azad University's student population by school year. The gender ratio is nearly equal, slightly favoring male students.

Discussion

The analysis of Iranian education reveals both regional and demographic patterns. **Figure 5** emphasizes the significance of Tehran, Khorasan-e-Razavi, Esfahan, Fars, and Khuzestan, suggesting increased education resources in these areas. **Figure 6** illustrates higher rural illiteracy, particularly among females, highlighting the need for targeted interventions to address gender-related disparities. The **Figure 7** models show that total rural population and gender composition are key factors for rural literacy, while total urban population is the primary predictor in urban areas with less impact of gender. For higher education, **Figure 8** and **Figure 9** reveal equal gender distribution across degrees and a balanced gender ratio among university students, showing equality. These findings stress the need for solutions to achieve gender equity and improve education access in Iranian rural areas.

Future Work

I. Conduct a study on Iranian rural communities, alone, focusing on educational disparities and resource limitations.
II. Exploring strategies to improve the quality of education in these areas through policies and interventions.

References

1. Iran Data Portal. (2016). Literacy in Urban and Rural Areas by Gender. https://irandataportal.syr.edu/wp-content/uploads/literacy-rate-by-age-group-whole-country-census-2011.xlsx

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3. The Statistical Center of Iran. (2011). Population by Age and Sex (provincial level). https://irandataportal.syr.edu/wp-content/uploads/Population-by-Age-and-Sex-provincial-level.xlsx