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Unearthing Local Realities: A Micro-Level Investigation of Public Education and Healthcare Access in Pakistan

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Abstract

This study examines provincial variations in user satisfaction with healthcare and education services across Pakistan, drawing on data from the Pakistan Social and Living Standards Measurement Survey (PSLM) 2019–2020. The dataset, which includes more than 160,000 observations for certain variables, provides a robust foundation for quantitative analysis. Descriptive findings suggest that access to services is relatively widespread, with short travel distances and generally high levels of satisfaction reported. Yet, significant regional disparities emerge, reflecting uneven distribution and quality of services. To test these differences, Pearson's Chi-square test of independence was employed. Results reveal strong statistical associations ($p < 0.05$) between province and satisfaction, with Punjab consistently recording higher satisfaction levels, while Baluchistan shows markedly lower outcomes across several indicators. These findings underscore persistent geographic inequalities in service delivery. Addressing such gaps requires targeted, region-specific policies designed to enhance both accessibility and quality, thereby fostering more equitable development and balanced socio-economic progress across the country.

Keywords: Pakistan Education and Health care, Pakistan Social and Living Standards Measurement Survey, Chi-square, Micro-Level Quantitative Analysis

Introduction

The creation of human capital, which is necessary for a country to develop, is significantly supported by education (Sain & Bozkurt, 2023). In order to stay up with the increasingly globalized world, education has become increasingly important in the current technology era. As such, modern education gives a country the strong base it needs to meet the expectations of society. Pakistan's educational system still faces difficulties and hasn't met its goals despite the country's 73 years of independence and multiple plans and strategies for education (Ahmad, 2014). In the United Nations Development Program's (UNDP) 2020 Human Development Index (HDI) report, Pakistan is placed 154th out of 189 nations. Additionally, according to the Pakistan Economic Survey (2019), 57% of Pakistanis are literate, with 43% being illiterate.

In response, every kid in Pakistan will receive a basic education as part of a number of national projects that the government has started. By 2030, the country is expected to attain 100% primary and higher literacy rates, according to a 2017 ministry of education projections from Pakistan. As per the Ministry of Education of Pakistan (2018), there exist a few obstacles that prevent the country from achieving its educational objectives. A major issue impacting Pakistan's educational system is governance, among other things. Education governance, according to the Education for All (EFA) Global Monitoring Report, goes beyond simple management and administration. It involves both formal and informal processes, from policy formulation to plan monitoring and implementation, according to a report by the United Nations Educational, Scientific, and Cultural Organization (UNESCO, 2009). Contributions are made at every level of the system, from the central government to the classroom and community.

Due to its acknowledged importance, education has elevated to a top position on most political agendas across the globe. Pakistan is facing difficult circumstances 56 years after gaining independence, having paid a heavy price for its disregard for education. While Pakistan devotes just 2.7% of its GDP (gross national product) to education, UNESCO advises all developing countries to devote 4% of their GDP to this sector (UNDP, 2002).

Pakistan, with its sixth-world-ranking population of about 18.5 million courageous and energetic individuals, possesses an invaluable human capital. Primary education is the more important of the two required educational stages. It falls between early childhood education and secondary education. Some nations follow primary education with middle school, which is typically offered in primary or elementary schools. Primary education should be crucial in order for society to succeed, according to Sabil and Kai (2017). People become more productive and less reliant on social resources with each year they spend in primary education. Encouragement of learning, realizing one's potential, and active participation in society are the goals of education. Too many kids are, however, not learning nearly enough in school, even in spite of increased enrolment rates. Over half of the 19 million primary school-age children in Pakistan are not registered in school, making the primary education situation in that country critical, according to the National Commission for Human Development (NCHD). According to estimates, only 33% of students who enroll in institutions get their primary education completed, and more than 50% of students leave before their fifth year of study.

Another basic requirement for social and economic growth in the emerging and underdeveloped worlds is the availability of public health facilities. The establishment of health service centers can greatly enhance people's health. However, the estimated 1.5 million fatalities per year among children under five worldwide from illnesses like diarrhea are partly attributable to a lack of access to public health facilities. Pakistan's public health institutions have numerous obstacles, such as subpar medical procedures that impede the fight against polio. The virus spreads through an infected person's feces, particularly harming people with weakened immune systems (UNICEF, 2010).

Human progress depends on good health, which is correlated with fundamental human rights. Although the definition of health can be difficult to pin down, it usually refers to the absence of disease and weakness and includes both physical and mental well-being. One important global societal goal is to attain optimal health. The World Health Organization (WHO) defines health as a dynamic state resulting from the body's continual adjustment to external changes and stress in order to preserve homeostasis, or internal balance. Enhancing one's health is crucial for overall enjoyment and well-being, and it also has a major positive impact on the economy by prolonging life, boosting productivity, and reducing costs. Health, according to the World Health Organization (1948), is a condition of whole physical, mental, and social well-being rather than only the lack of illness or disability. The WHO (1957) further modified this definition, which is supported by member nations, to describe it as a quality or condition of the human organism expressing optimal functioning under specific genetic and environmental conditions.

In general, basic healthcare services including immunizations, maternity care, and treatment for common ailments are provided all around the nation (Smith, 2024). But access to specialty medical treatment is still restricted and centered in large cities, especially in areas like neurology, cardiology, and oncology. This discrepancy makes it necessary for many patients to travel great distances or pay large fees in order to receive necessary medical treatments, which exacerbates access disparities to healthcare.

Inadequate funding, ineffective resource allocation, and institutionalized corruption in healthcare institutions are some of the issues that make it difficult for people to get healthcare (National Academies of Sciences, Engineering, and Medicine (2018)). Insufficient public funding for healthcare facilities and staff development puts additional

pressure on the system's ability to provide for the expanding healthcare requirements of an expanding populace. Comprehensive changes that boost public investment, improve accountability within the healthcare industry, and improve healthcare delivery are necessary to address these issues. Considering the literature, the study describe the accessibility of education and healthcare services in Pakistan. Furthermore, analyzed the satisfaction disparities in education and health services for difference provinces of Pakistan.

Methodology

Data Description

This study employs a quantitative research approach to examine the accessibility of education and healthcare services in Pakistan and to analyze disparities across regions and provinces. The data for this analysis were obtained from the Pakistan Social and Living Standards Measurement Survey (PSLM) 2019-2020 conducted by the Pakistan Bureau of Statistics (PBS), including Basic Health Units (BHUs), Family Planning Units, Health Clinics or Hospitals, and different levels of schools (Primary, Middle, and Secondary). The data cover variables such as the frequency of service usage, reasons for not using the service, satisfaction with service quality, and observed changes since the previous year, distance to the facility, mode of transport, and the time taken to reach the facility. The sample sizes for these variables vary across facilities, with some samples being as large as over 160,000 observations.

The empirical analysis of this study is based on descriptive and inferential statistical methods to examine the accessibility of health and education services across regions and provinces in Pakistan. Initially, descriptive statistics are used to summarize the data and present an overview of access patterns across different regions and provinces. Frequencies and percentages are calculated to illustrate the distribution of access to facilities among various geographical segments. These descriptive measures enable us to identify disparities and highlight potential gaps in service provision, setting the groundwork for further inferential testing. To test the stated hypotheses, the study employs the Pearson Chi-Sqaure test (χ^2), an econometric method widely used to examine whether two categorical variables are statistically independent. In this test cross tabulation, is used in which data is classified according to two categorical variables. The categories for one variable shows in the rows and the categories for the other variables are show in columns. Each categorical variable must have two or more categories. Each cell reflects the total count of cases for a specific pair of categories ng the formula:

$$\chi^2 = \sum_{i=1}^{a}\sum_{j=1}^{b} (O_{ij} - E_{ij})^2 / E_{ij}$$

Where, OijO_iOi represents the observed frequency in each category and EiE_iEi signifies the expected frequency under the null hypothesis of no association. This approach allows for assessing whether access to each type of service varies significantly by region or province. For each hypothesis, contingency tables were constructed to compare observed and expected counts of accessibility outcomes. The chi-square test results indicate whether the null hypothesis of independence can be rejected at a specified significance level, typically 0.05.

Data Analysis and Interpretation

Table 1: Descriptive Statistics

Facility	Description	Sample	Mean	SD	Min	Max
Basic Health Unit (BHU)	How Many Times Used theService	160652	1	.937	1	4
	Reason for Not Using the Service	123869	7	2.147	0	7
	Satisfaction From Quality of Service	52685	1	.481	1	2
	Change Found Since Last Year	52685	2	.509	1	4
	Distance in KM	52685	4	1.402	0	5
	Mode of Transport	52685	2	.496	1	3
	Time to Reach	52685	1	1.068	1	5
Family Planning Unit	How Many Times Used the Service	160653	1	0.467	1	4
	Reason for Not Using the Service	153607	7	1.799	0	7
	Satisfaction From Quality of Service	12430	1	0.41	0	2
	Change Found Since Last Year	12430	2	0.497	0	4

	Distance in KM	12430	1	1.445	0	5
	Mode of Transport	12430	2	0.507	0	3
	Time to Reach	12430	1	1.178	0	5
	How Many Times Used the Service	160653	3	.839	1	4
	Reason for Not Using the Service	41027	4.069	2.352	0	7
	Satisfaction From Quality of Service	144269	1.138	.345	1	2
Health Clinic or Hospital	Change Found Since Last Year	144269	2.156	.496	1	4
	Distance in KM	144269	3.376	1.495	1	5
	Mode of Transport	144267	1.784	.455	1	3
	Time to Reach	144267	2.17	1.203	1	5
	How Many Times Used the Service	160653	2.156	1.352	1	4
	Reason for Not Using the Service	92232	6.066	1.616	0	7
	Satisfaction From Quality of Service	70788	1.044	.204	1	2
Primary School	Change Found Since Last Year	70788	2.281	.498	1	4
	Distance in KM	70788	1.882	1.085	1	5
	Mode of Transport	230	1.057	.648	0	3
	Time to Reach	174	1.017	.779	0	5
	How Many Times Used the Service	160653	1.51	1.062	1	4
	Reason for Not Using the Service	130470	6.115	1.612	0	7
	Satisfaction From Quality of Service	31470	1.044	.205	1	2
Middle School	Change Found Since Last Year	31470	2.297	.497	1	4
	Distance in KM	31470	2.417	1.292	1	5
	Mode of Transport	45	.889	.745	0	3
	Time to Reach	33	.667	.692	0	3
	How Many Times Used the Service	160653	1.571	1.127	1	4
	Reason for Not Using the Service	127423	6.172	1.589	0	7
	Satisfaction From Quality of Service	33983	1.046	.209	1	2
Secondary School	Change Found Since Last Year	33983	2.329	.498	1	4
	Distance in KM	33983	3.005	1.312	1	5
	Mode of Transport	36	1	.956	0	3
	Time to Reach	26	.577	.758	0	2

Table 1 presents a descriptive analysis of public health and education services, including Basic Health Units (BHU), Family Planning Units, public clinics/hospitals, and primary, middle, and high schools. Respondents generally accessed BHUs at least once, reporting moderate satisfaction (mean = 5.10/7) and minimal changes over the past year. Travel distances and times were short, with common transport modes used. Family Planning Units were less frequently used, though satisfaction remained high (mean = 5.47/7), with little perceived change in services and average travel distances under 2.5 km. Public health clinics and hospitals showed frequent usage and satisfaction, with diverse transport modes and short travel times. Primary schools were consistently accessed, with high satisfaction and slight changes over the previous year. Middle and high schools displayed regular use, positive satisfaction scores, and minimal changes, though transport modes and travel times varied among respondents. Overall, the data highlights consistent service utilization, generally high satisfaction, limited changes in service quality, and short distances or times required to access facilities, reflecting broad accessibility and varied logistical experiences among users.

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1.1.1 Satisfaction from Basic Health Unit (BHU) Across Province

Four provinces in Pakistan, Khyber Pakhtunkhwa, Punjab, Sindh, and Baluchistan have different levels of satisfaction with the quality of the services provided. Indicating a statistically significant difference in satisfaction levels between these provinces is the chi-square test result, which has a probability (p-value) of 0.0000 and a Pearson Chi2 value of 2791.63. The null hypothesis that satisfaction is evenly distributed among the provinces is rejected since the p-value is 0.0000, or less than 0.05. This implies that there are significant variations between provinces in terms of satisfaction with service quality. Particularly, Baluchistan has the fewest happy responders (2,426), while Punjab has the most (17,674). According to this finding, geographical variations may have a significant role in how well services are viewed, and addressing these discrepancies may need focused improvements.

Table 2: Association between BHU Satisfactions among Provinces

Satisfaction	**Province**				
	Khyber Pakhtunkhwa	**Punjab**	**Sindh**	**Baluchistan**	**Total**
Satisfied	7197	17674	6237	2426	33534
Not Satisfied	4338	7100	3423	4244	19105
Total	**11535**	**24774**	**9660**	**6670**	**52639**

Pearson Chi2 = 2791.63 Prob = 0.0000

1.1.2 *Satisfaction from Family Planning Unit across Province*

The information shows the degree of customer satisfaction in four Pakistani provinces: Baluchistan, Punjab, Sindh, and Khyber Pakhtunkhwa. 12,363 people in all were questioned; 2,504 people expressed discontent and 9,859 people expressed satisfaction. With a p-value of 0.0000 and a Chi-squared test result of 3248.70, it is evident that there is a statistically significant correlation between satisfaction level and province. This implies that there are notable differences in satisfaction between provinces regarding the caliber of service. It is implied that these discrepancies are not the result of chance by the high Chi-squared value and the incredibly low p-value. Particularly, compared to the other provinces, Punjab has the most percentage of satisfied respondents, whilst Baluchistan has a comparatively larger percentage of unhappiness.

Table 3: Association between Family Planning Unit Satisfactions among Provinces

Satisfaction Level	**Province**				
	Khyber Pakhtunkhwa	**Punjab**	**Sindh**	**Baluchistan**	**Total**
Satisfied	2056	5794	1361	648	9859
Not Satisfied	296	726	146	1336	2504
Total	**2352**	**6520**	**1507**	**1984**	**12363**

Pearson Chi2 = 3248.70 Prob = 0.0000

1.1.3 Satisfaction from Public Clinic/Hospital across Province

The table displays information on client satisfaction with service quality in Pakistan's various provinces. Along with the total responders for each province, it displays the number of satisfied and dissatisfied clients. Province and satisfaction with service quality are statistically significantly correlated, according to the Pearson Chi-squared test, which has a value of 10493.66 and a probability (p-value) of 0.0000. Particularly, with 66,390 satisfied consumers, Punjab leads the state, followed by Sindh with 27,504 satisfied customers. On the other hand, with 7,929 pleased clients, Baluchistan has the fewest. In comparison to Punjab, where 5,867 respondents are unsatisfied, Baluchistan has the greatest number of respondents—5,535—expressing displeasure. Overall, the considerable Chi-squared value indicates that satisfaction levels fluctuate significantly between provinces, pointing to possible variations in how different regions of Pakistan perceive or experience service quality.

Table 4: Association between Hospitals Satisfactions among provinces

Satisfaction from Service	**Province**				
	Khyber Pakhtunkhwa	**Punjab**	**Sindh**	**Baluchistan**	**Total**
Satisfied	22565	66390	27504	7929	124388
Not Satisfied	4188	5867	4291	5535	19881

Total	**26753**	**72257**	**31795**	**13464**	**144269**

Pearson Chi2 = 10493.66 Prob = 0.0000

1.1.4 Satisfaction from Public Primary School across Province and Region

The information provided demonstrates how satisfied people are with the standard of services in various Pakistani provinces. According to the table, Khyber Pakhtunkhwa has 15,350 happy respondents, whereas Punjab has 34,839. Baluchistan, with 4,678 respondents, has the fewest happy respondents, in comparison. Sindh has the most percentage of respondents that are dissatisfied (724), followed by Baluchistan (1,188). There is a significant association between province and satisfaction level, as indicated by the Chi-square test statistic of 4255.87 with a p-value of 0.0000, suggesting that satisfaction levels in Pakistan varies significantly throughout provinces. In order to customize service quality improvements depending on local needs and tastes, more research could look at certain elements that affect satisfaction.

Table 5: Association between Primary School Satisfactions among Provinces

Satisfaction from Service	**Province**				
	Khyber Pakhtunkhwa	**Punjab**	**Sindh**	**Baluchistan**	**Total**
Satisfied	15350	34839	12834	4678	67701
Not Satisfied	622	553	724	1188	3087
Total	**15972**	**35392**	**13558**	**5866**	**70788**

Pearson Chi2 = 4255.87 Prob = 0.0000

1.1.5 Satisfaction from Public Middle School across Province

30,089 respondents said they were satisfied, while 1,381 respondents said they were not, according to a breakdown of the 31,470 responses. Punjab had the highest number of satisfied people (15,816) when looking at provincial distribution, followed by Khyber Pakhtunkhwa (6,638), Sindh (5,441), and Baluchistan (2,194). On the other hand, Khyber Pakhtunkhwa (164), Sindh (285), Punjab (290), and Baluchistan (642), were the provinces with the highest levels of dissatisfaction. There is a statistically significant correlation (Chi2 = 2576.22, $p < 0.05$) between province and satisfaction according to the Pearson Chi2 test, indicating significant variation in satisfaction levels between provinces. In order to eliminate regional inequalities and raise general satisfaction levels across the country, this data emphasizes the necessity of targeted improvements in service quality.

Table 6: Association between Middle School Satisfactions among Provinces

	Province				
Are you satisfied with quality of service?	**Khyber Pakhtunkhwa**	**Punjab**	**Sindh**	**Baluchistan**	**Total**
Satisfied	6638	15816	5441	2194	30089
Not Satisfied	164	290	285	642	1381
Total	6802	16106	5726	2836	31470

Pearson Chi2 = 2576.22 Prob = 0.0000

1.1.6 Satisfaction from Public High School across Province

After Sindh (6,989), Khyber Pakhtunkhwa (6,424), and Baluchistan (2,766), Punjab reported the largest overall number of happy customers (16,250). On the other hand, Baluchistan had the fewest unhappy consumers (519), while Sindh (417), Punjab (444), and Khyber Pakhtunkhwa (174) had the highest numbers. Its bigger population than the other provinces is reflected in the overall totals, which indicate that Punjab had the highest number of respondents in both the satisfied and unsatisfied categories. A strong correlation between province and satisfaction levels is indicated by the Pearson Chi2 test value of 1164.40, which has a probability near zero (0.0000). This suggests that there are notable regional differences in satisfaction in Pakistan.

Table 7: Association between High School Satisfactions among Province

	Province				
Are you satisfied with quality of service?	**Khyber Pakhtunkhwa**	**Punjab**	**Sindh**	**Baluchistan**	**Total**
Satisfied	6424	16250	6989	2766	32429
Not Satisfied	174	444	417	519	1554
Total	6598	16694	7406	3285	33983
Pearson Chi2 = 1164.40 Prob = 0.0000					

5.2 Conclusion

The study examines service usage and satisfaction across various provinces and regions in Pakistan, with a focus on Khyber Pakhtunkhwa, Punjab, Sindh, and Baluchistan. Data analysis through chi-square tests reveals notable variations in individual levels of satisfaction. To evaluate whether satisfaction with public services varies significantly across provinces, the study employed Pearson's Chi-square test of independence. The analysis revealed robust and statistically significant associations ($p < 0.05$) between provincial location and satisfaction with both healthcare and educational facilities. These results highlight that the experience of service provision is not uniform across Pakistan. Punjab consistently recorded the highest levels of satisfaction, suggesting comparatively stronger service delivery mechanisms or better resource allocation in this province. By contrast, Baluchistan ranked lowest on several indicators, pointing to persistent challenges in meeting the expectations and needs of its population.

The implications of these findings are twofold. First, they confirm the presence of structural and geographic inequalities in access to and perceptions of essential services, reinforcing the argument that location plays a critical role in shaping citizens' lived experiences. Second, they signal the urgent need for policy makers to recognize and address these disparities through targeted interventions. Improving the quality of services in underperforming provinces, particularly Baluchistan, requires not only an increase in resources but also context-sensitive strategies that consider local constraints such as geography, infrastructure, and governance capacity. The findings of the study significantly contribute to the literature as well as policy-makers for addressing these issues create disparities among difference provinces on the basis of level of satisfaction. Similarly, the study findings recommend a need of improvement in infrastructure and service delivery in rural areas. Moreover, regulators should mitigate regional disparities by initiating development programs that focus on improving service delivery tailored to the specific requirements of each region.

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