

Measuring Income Inequality Across the Districts of Khyber Pakhtunkhwa

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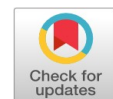
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Abstract: Income inequality is a paradox that exists at national and international levels, and inequality and poverty are closely related as more income inequality leads to a high poverty ratio and more educational deprivation. Despite efforts at international and national forums, inequality persists on a large scale, particularly in developing countries like Pakistan. No research study measured income inequality at the district level of Khyber Pakhtunkhwa, a province that has not been thoroughly studied in previous research despite its significant economic and geographical importance. This study used the Gini index to analyze income inequality across the districts of Khyber Pakhtunkhwa province, including the Federally Administrated Tribal Area, using data from the PSLM 2019-20 survey. The results revealed high-income inequality among the districts, with Shangala, Haripur, and Tor Ghar ranked as unequal districts, while Swabi was ranked as the least unequal. The study also highlights the lack of basic education, roads, hospitals, and employment opportunities in the worst-performing districts, underscoring the need for policymakers and development practitioners to address income inequality in the region. The study concludes with recommendations for promoting job growth, increasing wages, investing in technical education financial markets, and formalizing the economy to reduce income inequality in Khyber Pakhtunkhwa.

Keywords: Income inequality, Lorenz curve, Gini index, welfare, districts of Khyber Pakhtunkhwa

Received: 14 November 2022 / Accepted: 11 January 2023 / Published: 30 April 2023



INTRODUCTION

Sustainable economic growth is a critical goal for any state, and achieving it requires economic strategies that prioritize equity. The presence of socio-economic disparities in society has prompted the attention of researchers, as it is essential to ensure the welfare and life standard of the ordinary person without any social or economic discrimination. Socio-economic equity integrates access to standard education, health facilities, financial services, social reverence, and financial prosperity (Zulfiqar & Gillani, 2019). Infrastructure development has a critical role in the economic growth of a country by boosting economic activities, reducing transportation costs, and generating employment, thereby alleviating inequalities (Sahoo & Dash, 2012). However, massive income inequality between rich and poor in Pakistan is occurring immensely, according to the Human Development Report 2020. The report has presented two different Pakistan, one for the upper and rich class and the other for the poor and feeble class, indicating a significant difference in income, which is a clear indicator of socio-economic disparities and discrepancies.

Pasha (2022) has indicated that the affluent class has multiple opportunities to attain their educational targets, ensure their health and well-being, and enjoy a significant portion of riches, whereas the poor class is deprived of everything they need to ensure their self-esteem and household expenses. The inequality gap regarding the distribution of wealth, access to employment, and income is growing wider with time, imposing negative impacts on sustainable human development (Pasha, 2022). Moreover, regional disparities are the main problems of lesser-developed countries, where inequalities among regions may slow down the growth and development of the country. Lack of access to justice, quality education, healthcare, clean drinking water, adequate nutrition, and enough food for their families may affect the region's people due to inequality, especially where power and political affiliation are shared among the poor and rich based on gender, religion, and wealth. Pakistan is no exception to

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this phenomenon, where education is ranked 2nd highest in terms of out-of-school children, and gender inequality is among the last in South Asian countries (Sustainable Development Policy Institute, 2022).

Sustainable economic growth of any state depends on economic strategies based on equity; that's why the multiple Socio-economic disparities that exist across society have prompted the attention of researchers so that the living standard and welfare of the common man can be ensured all over the world without any social and economic discrimination. Socio-Economic equity integrates access to standard education, health facilities, financial services, social reverence, and financial prosperity (Zulfiqar & Gillani, 2019). Hence, the development of infrastructure has a crucial role in the economic growth of a country by boosting economic activities, generating employment, and reducing transportation costs; thus, the inequalities can be alleviated (Sahoo & Dash, 2012; Xi, 2020).

The National Human Development Report (2021) revealed substantial income inequality in Pakistan, with a stark divide between the rich and poor. This report presents two distinct groups in Pakistan: the wealthy and privileged upper class and the poor and vulnerable lower class. This income disparity highlights significant socio-economic disparities and discrepancies (UNDP, 2021). Pasha (2022) notes that the affluent class has greater opportunities for education, health, and wealth accumulation, while the poor struggle to meet basic needs. In 2017-18, the affluent class held Rs 2660 billion, equivalent to 7% of Pakistan's GDP.

In contrast, the poor class represented 14.2% of the total quintile, while the affluent enjoyed 37% of the richest quintile (Pasha, 2020). This gap in wealth distribution, employment opportunities, and income is widening, threatening sustainable human development. The feeble class, comprising only 1% of the population, held a mere 0.15% of national income, while the affluent class, also 1% of the population, secured 9% of the national wealth in 2019-20. To address these disparities, the per capita income of 40% of the impoverished population must be increased to promote equitable socio-economic growth in Pakistan's GDP.

In less developed countries, regional disparities can impede growth and development, as unequal distribution of resources and opportunities can lead to limited access to necessities such as justice, education, healthcare, clean water, and food. These disparities may be exacerbated in societies where power and political affiliation are based on factors such as gender, religion, and wealth. For example, in Pakistan, individuals born into the bottom quintile of wealth are likely to remain in the bottom quintile, while those born into the top quintile are likely to remain wealthy, perpetuating inequality across generations (Burki et al., 2015). Similarly, Pakistan ranks second in the number of out-of-school children, with 25 million boys and girls between the ages of 5 and 16 out of school, according to the Sustainable Development Policy Institute Report. Additionally, Pakistan has a significant gender inequality, with women's participation in the labor force far lower than men's, accounting for only 18% of the total labor force compared to 71% for men, according to government figures. To develop appropriate economic policies to promote growth and prosperity, it is essential to identify and address disparities that hinder progress. Therefore, it is important to investigate potential inequalities among provinces in Pakistan and at the district level. However, there are empirical studies (Ahmed, 2020; Nasir & Mahmood, 1998; Shaheen, Awan & Cheema, 2016) that measured income inequality in Pakistan, and likewise, some of the research studies conducted to measure income inequality in Punjab province (Akram et al., 2021; Cahyana & Farida, 2019; Pervaiz & Akram, 2018; Gabinete et al., 2022). The researcher only traced a single study carried out by Gul et al. (2020), who investigated the correlation between poverty and income inequality in the case of distracting Bannu. However, no research study has been found to measure income inequality at the district level of Khyber Pakhtunkhwa. This study will use data from the Pakistan Social Living Standard (PSLM) 2019-20 to evaluate regional disparities within Khyber Pakhtunkhwa, a province that has not been fully studied in previous research despite its significant economic and geographical importance. Specifically, this study will measure income inequality across districts of Khyber Pakhtunkhwa.

LITERATURE REVIEW

According to Braun (1997), income inequality is a paradox at national and international levels, with the top 1% of the population earning around 15% of the overall income and the top 5% earning 40%. On the other hand, the bottom 20% of the population only receives 1% of the income. Despite efforts by the SDGS forum to reduce this disparity, it persists on a large scale, particularly in developing countries like Pakistan (Shahbaz & Islam, 2011). This financial disparity is due to the uneven access to resources, which provides more opportunities to the upper class than the poor class (King & Levine, 1993; Pagano & Volpin, 2001; Jalil & Ma, 2008; Shahbaz et al., 2008; Shahbaz et al., 2016). In Pakistan, income inequality remains a significant problem, with the income of the elite

growing at a rate of 31.7%, while the feeble class only experiences 4.1% economic growth from 1987-88 to 2013-14 (UNDP, 2016). The Asian Development Bank annual report (2002) reported that between 1993 to 1999, over 12 million people went below the poverty line in Pakistan due to poor governance and fragile economic growth. The government of Pakistan responded with policies to alleviate poverty extensively, as 24.3% of the population lives below the poverty line (Asian Development Bank, 2015). The purchasing power of people in Pakistan is below \$1.90 per day, according to the 2018 report, and 1.3% of people live below the poverty line (Asian Development Bank, 2021). Furthermore, malnutrition, undernourishment, and stunting are prevalent, with undernourishment at 12.3% (2017-18), stunting at 37.6% among children (Asian Development Bank, 2018), and malnutrition at 7.1% (Asian Development Bank report, 2021).

Recent research by Ahmed (2020) revealed that income inequality in Pakistan is significant, with the top 1% earning 30.2% of the income and the top 0.1% earning 13.4%. This top income share is significantly higher than neighboring India's and similar to that of the Middle East and Brazil. The middle 40% share is 30.0%, and the bottom 50% share is only 11.6%. The study highlights the need for further analysis and debate on Pakistani income inequality (Ahmed, 2020). Household surveys and recently released tax data to reconstruct the pre-tax income distribution of Pakistan from 2012 to 2015 were combined, and the research outcomes indicated that the top 1% income share is 30.2%, the top 0.1% share is 13.4%, and the top 0.01% share is 5.1%. These top-income shares are significantly higher than those in neighboring India. Instead, Pakistan's top income distribution is similar to that of the Middle East and Brazil. The middle 40% share is 30.0%, and the bottom 50% share is at a mere 11.6%. We hope this research informs the debate on Pakistani income inequality and provides a starting point for further analysis toward full distributional national accounts (Ahmed, 2020).

For decades, economic disparities have been an important issue of inquiry in social sciences. Economists have long debated investigating why income distribution is equal in some countries while others have greater inequality and higher income gaps between the poor and rich. The work of Kuznets (1955) pays more attention to the economist that income is more equal in industrialized countries compared to agrarian countries. Furthermore, the hypothesis stated that income disparities follow inverse U shaped with the development process; first follow rise with industrialization and then decline.

Nasir and Mahmood (1998) investigated earning inequalities in Pakistan, considering the HIES 1993-94 data. The study observed that discrimination in social factors, along with employment and non-market forces, play a vital role in earning distribution. Further, the study found that growth in social and economic inequalities may lead to increase income disparities throughout the population. In contrast, it's not a matter of great concern, and if the gap between the poor and rich grows at the cost of the poor, then it's become a serious problem. The study suggested that proper earning distribution is necessary and proper policy must be implemented to reduce household income inequalities.

Anwar and Bilquees (2003) examined the inequality trend in Pakistan for 1998-99 and 2001-02. The study argued that inequality and poverty are closely related and shows that more income disparities lead to a high poverty ratio and more educational deprivation. Another study by Ravallion (2001) concluded that with worse financial development, the poor could not get supporting opportunities for human and physical capital investment. Jamal and Khan (2003) examine the link between poverty, inequality, and economic growth from 1979 to 2002. The study observed that a decline in inequality is necessary for poverty reduction and high economic growth. Akhter (2008) examines income inequality and analyzes the Gini coefficient using the data of PIHS (2001-02) and PSLM (2004-05). The study found that inequality in earnings and wages is the key factor to lead to overall inequality in Pakistan. The rising trend is found in earning disparities in the short and long run for each occupational category.

Zakir and Idrees (2009) analyze the GINI coefficient to evaluate inequality. The welfare, real per capita income, and consumption are analyzed through the Sen Welfare index to estimate growth trends using consumption data for rural and urban areas of Pakistan from 1963 to 2004-05. The study found a fluctuating trend in income and consumption inequalities while increasing trends in welfare and growth. The index shows that urban areas have low inequality, high welfare, and high growth compared to rural areas, while income inequality is more severe than consumption inequality. Hamid and Aisha (2011) studied multi-dimensional gender inequalities in Pakistan. The study found that in Pakistan, gender inequality exists both social and economic factors such as education, health, employment, financial availability, and other socio-economic areas. Bourguignon et al. (2007) have studied the inequality of opportunity using the parametric approach for Brazil. The study observed that in Brazil, the

individual's income varies from 25% to 30% due to parental occupation. At the same time, this share changes when including another parental background, such as wealth and income status. Haq and Zia (2008) estimated human well-being (education, health, economic and social factor) in terms of multi-dimensional concepts using the data of PSLM (2006-07). Well-being is divided into two categories objective and subjective well-being indices. The study found that Punjab is the highest and Baluchistan ranked the lowest regarding objective well-being, while Sindh and KPK are in the lower medium well-being. The study further found that regions who's achieved hard-fact well-being have less subjective well-being in satisfaction. The study suggested that more focus and attention should be given to achieving the MDG goals.

Carneiro (2008) evaluated inequality factors. The study concluded that family status has a vital role in the education of their children which further affects wages and income level. The study shows that human capital compensatory policy which is an important factor in handling the problem of inequality in the present and as well as for future. Sapata (2009) analyzed the inequality of opportunities in Spain. The study observed that factors related to family status, such as gender, geographical region and parental wealth, and education, are the key determinants in Spain. A study further shows that fiscal policy is an effective tool for reducing income inequalities.

Shehzadi et al. (2012) analyzed the data of PSLM (2005-06) to investigate inequality in urban Punjab. The study argued that merit is an important factor in determining income inequality. The study further shows that parental background also affects income inequality, while other factors include parent wealth, status, income, and education level. Shaheen et al. (2016) have examined inequality in Pakistan using the data of PSLM (2005-06 and 2010-11). Study shows that in Pakistan, the earning of the individual declined by 11% while inequality increased by 16% in term of the per capita income of the individual. The study further found that all circumstances factor is the key to affecting Pakistan's income and social inequity. In contrast, the role of efforts is expected to be more prominent and significant in egalitarian societies with fair chances of upward economic mobility for all segments of society.

On the other hand, the role circumstances may be crucial in less egalitarian societies. The study of Haider and Zaidi (2017) examines income distribution in Punjab. Study shows that income distribution is most unequal in urban Punjab, where the Gini coefficient was highest in 1987-88 and further increased by 5% in 2013-14. In contrast, income inequality in rural Punjab grew considerably by 29% from 1988 to 2014. In their 2018 study, Perviaz and Akram aimed to measure temporal and spatial variations in income and education inequality across districts in Punjab, Pakistan. To achieve this, they analyzed data from two Multiple Indicator Cluster Survey surveys. The study used Gini coefficients to measure income and education inequality, with household income and school attainments being the focus. The study results showed that income inequality increased in twenty-three districts while it decreased in twelve districts during the study period. Educational inequality decreased in all districts except for Dera Ghazi Khan, which increased slightly. Regression analysis indicated that education inequality had a negative association with school attainment, as measured by mean years of schooling, while income inequality was positively associated with education inequality. Zulfiqar and Gillani (2019) highlight socio-economic inconsistencies. The study found that regional disparities are the key obstacle for economic growth while recommending that effective policies be adapted to mitigate inequality and ensure broad-based, inclusive economic growth.

Akhtar et al. (2020) examined the correlation between poverty and income inequality in the Bannu district of Khyber Pakhtunkhwa, Pakistan. Previous research has demonstrated that poverty and income inequality are common in developing countries. This study collected primary data for the relevant variables and used the simple average, standard deviation, and coefficient techniques to analyze the data. The results revealed that poverty is extensive in the district of Bannu. The state of education is poor, healthcare is inadequate, and unemployment and other socio-economic circumstances are prevalent. The study highlights that poverty and income inequality is high in distracting Bannu.

Akram et al. (2021) conducted a study to estimate the level of inequality of opportunities in Punjab, Pakistan. The study used a non-parametric approach to analyze household-level data from the Multiple Indicator Cluster Survey. The household head's income was used as an outcome, and three parental characteristics, namely, region of residence (rural/urban), wealth status, and the education level of the household head's father were used as circumstances. The sample was divided into different groups based on these circumstances to equalize circumstances, and within-group and among-group income inequality was calculated. The results showed that up to 28% of income variation was due to differences in circumstances, with the education level of the household

head's father having the most significant contribution. The study highlights the need for compensatory government policies to address the inequality of opportunities in Punjab, Pakistan, and recommends providing equal educational opportunities as an important public policy measure to mitigate this issue.

RESEARCH METHODOLOGY

Data is collected from primary as well as secondary sources. Pakistan Social and living standard Measurement (PSLM 2019-2020) survey determines the district's social and economic disparities. The PSLM survey is designed to offer indicators related to social and economic background in specific years at the province and district levels. Where the data is used in policy implication and assessment of the government in formulating poverty reduction and development plans at the provincial level as well as at district levels according to the Millennium Development Goals (MDGs). The data is collected on the social indicators used for estimating the poverty level. The 2019-20 PSLM survey covered 6500 blocks and consisted of 195,000 households, including the key indicator of employment, health, education, demographic characteristic, assets of the household, welfare, water, and sanitation.

The Lorenz curve is a graphical representation of the income/wealth distribution among the population in a specific area. The vertical side shows the population percentile, while the horizontal side represents the population percentage. In contrast, the gap between the equality line and the Lorenz line is income/ wealth inequality. The more the gap between the two lines, the more the income inequality. The GINI coefficient is derived from the Lorenz curve, which shows the percentage of income earned by the cumulative percentage of the population. Where if the region has a perfectly equal income distribution, the poor 50% of population will earn 50% of the income while the poorest 75% will earn 75% of the income, and the curve will follow a 45-degree line.

Similarly, if the income inequality is high in the region, the curve will deviate from the equality line where the poorest 25% of the population will earn 10%, and 50% of the population will earn 20% of the total income. The GINI coefficient is the area between the Lorenz curve and line of equality 45-degree line divided by the total area under 45 lines of equality. The Gini coefficient condenses the entire income distribution for an area into a single number between 0 and 1: the higher the number, the greater the degree of income inequality.

RESULTS AND DISCUSSION

The Gini index of Khyber Pakhtunkhwa (KP) province is used to analyze the income inequality condition of Khyber Pakhtunkhwa districts, including the newly merged area, such as the Federally Administrated Tribal Area (FATA). Each district's Gini index is calculated based on the PSLM 2019-20 survey data. The districts are ranked based on the Gini Coefficient, as shown in the graph and table. Figures 4.4a and 4.4b show the indices of Khyber Pakhtunkhwa, where Shangala is the highest in terms of a high Gini coefficient of 0.52, showing the highest income inequality among the 32 districts of Pakhtunkhwa. The second highest income inequality district is Haripur in terms of a high Gini index of 0.51, followed by Tor Ghar at 0.51. North Waziristan is ranked 4th in high-income inequality while Lower Dir, Orakzai, and Tank have an index value of 0.49 and place 5th, 6th, and 7th ranked in terms of highest income inequality district, respectively. While D.I. Khan, Kurram 0.48 and Batagram, Charsada, Kohistan, Mansehra, Peshawar, and Swat have a Gini Index of 0.47, and Mardan has a Gini Index of 0.46 ranked 8th to 16th place respectively. Followed by Bajur, Hangu, Karak, Kohat, Chitral, Malakand, Upper Dir, Bunair, Lakki Marwat, South Waziristan, Bannu, Abbottabad, Khyber, Mohmmmand, Nowshera, and Swabi.

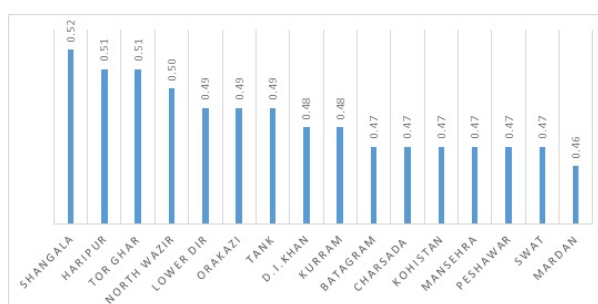


Figure 1: Gini Index of KP Districts

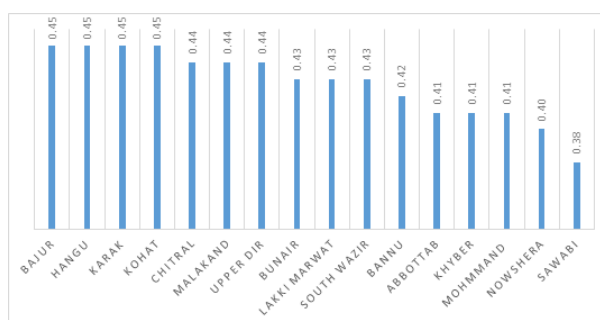


Figure 2: Gini Index of KP Districts

The Lowest income inequality district in Khyber Pakhtunkhwa is considered Sawabi, followed by Nowshera, Mohmmand, Khyber, Abbottabad, and Bannu in terms of low Gini Index where the Gini index score of 0.38 for district Sawabi is similar Nowshera’s 0.41 while Mohmmand, Khyber, and Abbottabad score 0.42. To summarize the results top low-income inequality districts are Sawabi, Nowshera, Mohmmand, Khyber, and Abbottabad, while the high-income inequality districts are Shangala, Tor Ghar, Haripur, North Waziristan, and Lower Dir. The top performer districts are considered urban areas, while the worst performer is in rural areas that face a lack of opportunities like basic education, roads, hospitals and lack of employment, and other infrastructure. While the remaining districts, on average, found an average performance. In contrast, the study observed that there is high inequality among the districts of Khyber Pakhtunkhwa. The findings of this study are consistent with the results of Perviaz and Akram (2018) who measured income inequality for Punjab province that income inequality prevails in most of the districts of Punjab. The study’s findings resemble Akhtar et al. (2020), and this study also reached the same conclusion as Akhtar et al. (2020) that poor education, inadequate healthcare, unemployment, and other socio-economic circumstances are factors that are responsible for high-income inequality. Likewise, the mountainous districts of Khyber Pakhtunkhwa, which are not well-known tourist destinations, show high-income inequality.

Table 1: District of KPK Income Inequality Index

Districts	Gini Index	Districts	Gini Index
Abbottab	0.41	Lower Dir	0.49
Bajur	0.45	Malakand	0.44
Bannu	0.42	Mansehra	0.47
Batagram	0.47	Mardan	0.46
Bunair	0.43	Mohmmand	0.41
Charsada	0.47	North Waziristan	0.50
Chitral	0.44	Nowshera	0.40
D.I.Khan	0.48	Orakazi	0.49
Hangu	0.45	Peshawar	0.47
Haripur	0.51	Shangala	0.52
Karak	0.45	South Wazir	0.43
Khyber	0.41	Sawabi	0.38
Kohat	0.45	Swat	0.47
Kohistan	0.47	Tank	0.49
Kurram	0.48	Tor Ghar	0.51
Lakki Marwat	0.43	Upper Dir	0.44

CONCLUSION

The Gini index was used to analyze income inequality in Khyber Pakhtunkhwa province and its districts, including the Federally Administrated Tribal Area. The PSLM 2019-20 survey data was used to calculate the Gini index for each district, and the results were presented in a graph and table. The highest income inequality district was Shangala, with a Gini coefficient of 0.52, followed by Haripur and Tor Ghar, with a Gini index of 0.51. North Waziristan ranked fourth. Lower Dir, Orakzai, and Tank were ranked 5th, 6th, and 7th, respectively, with a Gini index of 0.49. D.I. Khan, Kurram, Batagram, Charsada, Kohistan, Mansehra, Peshawar, Swat, and Mardan were ranked 8th to 16th, respectively, with Gini indices ranging from 0.46 to 0.48. The remaining districts were ranked from 17th to 32nd, with Swabi being the least unequal, with a Gini index of 0.36. Sawabi has the lowest income inequality in Khyber Pakhtunkhwa, followed by Nowshera, Mohmmmand, Khyber, Abbottabad, and Bannu, based on their low Gini Index scores. Sawabi's Gini index score is 0.38, followed by Nowshera with 0.41, while Mohmmmand, Khyber, and Abbottabad have a score of 0.42.

In summary, the top-performing districts with low-income inequality are Sawabi, Nowshera, Mohmmmand, Khyber, and Abbottabad. At the same time, the worst performers are Shangala, Tor Ghar, Haripur, North Waziristan, and Lower Dir, mostly rural areas lacking basic education, roads, hospitals, employment opportunities, and other infrastructure. This study indicates high inequality among the districts of Khyber Pakhtunkhwa. These findings provide important insights for policymakers and development practitioners to address regional income inequality.

RECOMMENDATIONS

The recommendations are as follows. To tackle the issue of unemployment, the government should push the private sector to create more job opportunities. However, if the private market fails to provide full employment to society, the government must intervene and become the employer. To further promote job growth, the government should increase wages and boost revenue-generating sectors while ensuring tax fairness. Technical education should be supported to give citizens opportunities to showcase their skills, and the financial market should provide a better environment to thrive.

Additionally, the economy should shift from an informal to a formal structure, and the budget for education should be increased to ensure every child has access to school. The quality of education should also be improved with free schooling for all and more vocational schools and colleges. More teachers should be trained for quality education. The government should increase the budget for health and provide basic health units in every village. A bill like the 18th Amendment should be passed to provide funds on a population basis for district-level projects rather than based on specific individuals such as MPs or MNAs.

LIMITATIONS OF THE STUDY AND FUTURE RESEARCH STUDIES

This study limits itself to measuring income inequality across Khyber Pakhtunkhwa districts. Future studies should also consider factors of income inequality at the district level. Likewise, this study limits itself to income inequality, whereas other socio-inequality may also be determined, such as health and educational inequality across districts of Khyber Pakhtunkhwa.

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