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Poverty, Vulnerability, and Welfare Insecurity in Khyber Pakhtunkhwa, Pakistan: Evidence from Nine Rounds of Household Survey Data, 2004–2025

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ABSTRACT

Analysing poverty as a static state of current deprivation is not sufficient. It is necessary to study it as a dynamic process shaped by deep-rooted problems in the economy and exposure to shocks. This study offers the first long-term (2004-05 to 2024-25) combined analysis of poverty and vulnerability to poverty in Khyber Pakhtunkhwa (KP), Pakistan. The headcount ratio and Chaudhuri's (2003) methodology employing Feasible Generalized Least Squares (FGLS) are employed. Official poverty lines calculated by the Planning Commission of Pakistan are used for 2004-05 to 2018-19, whereas for round 2024-25 poverty line (Rs.8,483.90) calculated by the author is employed. The study examines a wide set of household characteristics. Poverty estimates for 2004–05 to 2018–19 are reproduced from Jan, Ullah and Saeed (forthcoming) with permission. All vulnerability estimates and the 2024–25 poverty estimates are original to this study.

Results show a noticeable decline in poverty and vulnerability until 2015-16, followed by a reversal in 2018-19 which continued until 2024-25 mainly associated with the worsening economic situation, volatility, burden of newly merged districts. Rural landless households, agricultural labour, sharecroppers, large households, and those where the household head has low education consistently show the highest current and future deprivation risks.

The findings emphasize that poverty in KP is rooted in persistent asset deficits, demographic pressures, and insecure livelihoods. The study provides a strong empirical foundation for shock-responsive social protection, human capital investments, and asset-building strategies aimed at reducing long-term vulnerability and achieving durable poverty reduction in shock-prone regions.

Introduction

The concept of vulnerability has been widely used to analyse the status of populations at household, community, sub-national, national and global levels. As a matter of concern, vulnerability is not a physical construct, but it is a social construct (Forbes

& Nguyen 2019). Vulnerability is a deep and dynamic term that has essential characteristics which show the probability of damage, harm and loss to people, communities, or nations in the event of hazards (Thywissen 2006). Furthermore, the International Strategy for Disaster Reduction has defined vulnerability as, "This is a condition, when due to physical, economic, social and environmental factors susceptibility of a community to hazards increases" (UNDP 2004). In developing economies poverty is no longer understood exclusively as a static condition defined by current deprivation in resources of the population, but ever more as a dynamic interplay between low welfare levels, structural limitations, and exposure to shocks that is a threat for future wellbeing.

Khyber Pakhtunkhwa (KP) Province, Pakistan, offers one of the most compelling provincial frameworks for such an integrated analysis. The economy of the KP province is predominantly rural, characterized by outdated agriculture, fragmented landholdings, informal employment status, very limited non-farm diversification, and persistent educational disparities. Furthermore, these characteristics are compounded by frequent exposure to floods, and displacement of population, security issues and macroeconomic fluctuations. Resultantly, households in KP are not only suffering from comparatively high current poverty levels but also from extensive vulnerability to future poverty due to the volatility of consumption, occupational risks, and structural instability within the region's socioeconomic environment.

The existing poverty and vulnerability literature on Pakistan, while extensive, rarely integrates poverty and vulnerability dimensions in a unified systematic framework, nor does it inspect KP in such depth for a long period. Poverty has long been recognized as a multidimensional phenomenon involving deficits in income, consumption, assets, capabilities, and social inclusion. Some economists such as Sen (1982) and Townsend (1994) argue that poverty reflects not only insufficient resources but also limited access to essential services. Poverty estimation and analysis has been grounded in welfare economics and consumption expenditure is considered a more dependable indicator of long-term welfare than income (Deaton and Zaidi 2002). The Cost of Basic Needs (CBN) approach is commonly employed in developing countries, including Pakistan. However, most existing studies are static in nature, they describe poverty at a point in time rather than examining its volatility or the likelihood that how non-poor household may fall into poverty due to shocks. But on the other hand there are various socioeconomic determinants which contribute to poverty and vulnerability to poverty.

The framework introduced by Foster, Greer, and Thorbecke (1984) is a major advancement in poverty research. Their method enables disaggregation of poor and non poor groups by subgroups (rural–urban), allowing computing subgroup contributions to overall poverty. Baulch (2011) found that poverty is largely associated with basic disadvantages that trap households in deprivation. He concluded that investment is necessary in education, social protection programs and also equal employment opportunities must be provided. Gunther and Harttgen (2009) argued that current poverty does not fully show the future risks households face from idiosyncratic or covariate shocks. Amjad and Kemal (1997) studied the relationship between macroeconomic policies and poverty dynamics in Pakistan over three decades. Their results confirmed that periods of higher economic growth are related with increased employment and foreign remittances, as these factors contributed very effectively to poverty reduction. Similarly, many empirical studies confirm that education is a powerful buffer against poverty by improving human capital and income-earning capabilities which further pave the way for stable employment (Jamal 2005).

Haque et al. (2021) worked on poverty measurement in Pakistan within the Sustainable Development Goals (SDGs) framework. The study stresses that accurate estimation is essential, as poverty indicators directly influence inter-provincial fiscal transfers in the National Finance Commission (NFC) Award. Furthermore, global and regional studies have repetitively found that high dependency ratio and larger household sizes are positively correlated with poverty incidence. Ravallion (1988) argued that in developing countries where agriculture is dominant and incomes are highly volatile or uncertain, the probability of falling into poverty increases with greater income risk even if mean income is unchanged. The World Bank (2016) report on Poverty and Shared Prosperity highlighted that 80% of the total world poor population are living in rural regions, 64% are agriculture workers, and almost half are children under 14 years of age.

Although a wide range literature exists on poverty and vulnerability, the existing literature provides strong theoretical and empirical foundations for analysing poverty and vulnerability, which is shaped by integrating different factors. However, the incorporation of multiple socioeconomic correlates like household size, education, dependency burden, residential status and occupational status into a unified framework to study poverty and vulnerability over a long period, and to develop a trend-based poverty profile, remains underexplored. This study contributes to filling this gap by employing a systematic, multi-round/period analysis of poverty and vulnerability in KP, thereby offering more actionable insights for targeted policy intervention. This is the first study to analyse nine HIES rounds in KP (2004-05 to 2024-25). The study combines static poverty with dynamic vulnerability estimation by incorporating multi-correlate analysis including land ownership, occupation, residency status, education, household size, dependency burden, and rural–urban disparities. Most importantly this study point out the worse economic condition of merged district as a whole through data of 2018-19 (first time included

data of merged district in HIES) and 2024-25.These contributions strengthening the empirical evidence base for policymaking and advance methodological application of vulnerability analysis in Pakistan. Static poverty trends in Khyber Pakhtunkhwa for 2004–05 to 2018–19 have been documented elsewhere using the FGT headcount ratio (Jan, Ullah & Saeed, forthcoming). The present study does not replicate that analysis. Instead, we make three original contributions: (i) we compute poverty for 2024–25 using the Cost of Basic Needs (CBN) approach. (ii) We estimate ex-ante vulnerability to poverty for all nine HIES rounds (2004–05 to 2024–25) using the Chaudhuri (2003) FGLS method, and (iii) the impact of merged districts (former FATA) on both poverty and vulnerability. Vulnerability estimates for all rounds (2004–05 to 2024–25) and poverty estimates for 2024–25 are original to this study and have not been presented or published elsewhere

Methods and Procedures

In this study, spatial and temporal poverty and vulnerability in KP province are calculated. Official poverty lines calculated by the Planning Commission of Pakistan for 2004-05 to 2018-19 are used, whereas poverty line for 2024-25 (Rs.8,483.90) is computed by the author using the Cost of Basic Needs (CBN) approach and adult-equivalent consumption expenditure.

Estimation of Poverty

To estimate current poverty, the Headcount ratio (Po) method is used. The equation for the headcount index is given as follows.

$$P_0 = N_p / N \quad (1)$$

Np is the total number of poor people with total population or sample size (N)

Estimation of Vulnerability to Poverty

To assess the vulnerability to poverty a well-established econometric methodology developed by Chaudhuri (2003) using the Three Step Feasible Generalized Least Squares (FGLS) procedure proposed by Amemiya (1977) is used, which is given below.

$$\ln C_h = X_h\beta + e_h \quad (2)$$

Where lnCh is the log consumption, Xh are different household characteristics, β is a vector of parameters, and eh is a mean zero disturbance term. The variance of the error term is assumed to be heteroskedastic and is modeled as function of the same explanatory variables, which is shown as under

$$e^2_{e,h} = X_h\theta + \eta_h \quad (3)$$

Where θ is Vector of parameters associated with the variance function and ηh is residual term with zero mean. The estimated parameters are then used to derive the expected log consumption and its variance:

$$\hat{E}[\ln C_h | X_h] = X_h\hat{\beta} \quad (4)$$

$$\hat{V}[\ln C_h | X_h] = \hat{\sigma}^2_{e,h} = X_h\hat{\theta} \quad (5)$$

This approach estimates ex-ante vulnerability, defined as the probability that a household's consumption will fall below the poverty line.

Results

This section presents the findings of the study on poverty and vulnerability to poverty in the province of Khyber Pakhtunkhwa (KP) incorporating a comprehensive set of key variables. This section presents the findings of the study on poverty and vulnerability in Khyber Pakhtunkhwa (KP). Poverty estimates for 2004–05 to 2018–19 in Tables 1–8 are derived from Jan, Ullah and Saeed (forthcoming) and are presented here for comparative purposes. Vulnerability estimates and all 2024–25 estimates are original to this study.

Poverty and Vulnerability Trends over Time

Across the nine rounds of HIES (2004–05 to 2024-25), poverty and vulnerability show considerable variation. Both poverty and vulnerability generally declined over time, with sharp improvements observed between 2004–05 and 2015–16 but the situation reversed in 2018-19 and continued until 2024-25.

Table 1: Poverty and Vulnerability through time across regions of KP

Year	status	Total	Urban	Rural
2004-05	Poverty	66.43	53.78	68.74
	Vulnerability	71.86	39.92	78.22
2005-06	Poverty	59.89	49.84	61.76
	Vulnerability	55.19	32.92	59.35
2007-08	Poverty	46.90	36.22	49.02
	Vulnerability	42.03	20.01	45.93
2010-11	Poverty	41.25	32.25	43.11
	Vulnerability	30.74	11.46	34.71
2011-12	Poverty	41.65	26.53	44.77
	Vulnerability	33.94	7.58	39.38
2013-14	Poverty	27.60	15.69	30.2
	Vulnerability	11.33	0.18	13.76
2015-16	Poverty	21.1	13.13	22.85
	Vulnerability	6.92	0.43	8.35
2018-19	Poverty	29.8	18.18	32.11
	Vulnerability	15.30	7.86	23.68
2024-25	Poverty	35.95	24.21	38.00
	Vulnerability	27.34	8.83	30.57

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

Rural and Urban Poverty Patterns

Poverty in rural KP consistently remained higher than urban averages across all years as evident from Table1. Similarly, vulnerability in KP remained very high in the initial years and then reduced sharply, but both vulnerability and poverty in rural KP fluctuated due to greater exposure of rural households to limited diversification or lack of multiple sources of income, and mainly dependence on agriculture, which is also prone to climatic variability.

Poverty and Vulnerability Analysis by Household Size

The decomposition of poverty and vulnerability through headcount ratio and Chaudhuri (2003) framework shows that household size is one of the most robust and stable factors of welfare in KP. Results are shown in Table 2.

Table 2: Poverty and Vulnerability Analysis by Household Size

Year	status	Household size 1–3			Household size 4–6			Household size 7–9			Household size 10+		
		Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
2004-05	Poverty	28.06	10.68	30.55	53.38	33.68	56.98	68.58	55.74	70.88	72.47	62.95	74.26
	Vulnerability	0.00	0.00	0.00	44.61	4.77	52.84	75.46	37.32	83.00	88.84	64.20	93.74
2005-06	Poverty	18.64	16.56	19.07	44.26	28.95	48.15	58.45	48.01	60.25	70.55	66.79	71.18
	Vulnerability	11.52	1.70	13.55	25.81	9.06	30.07	49.65	22.25	54.37	75.16	58.34	77.99
2007-08	Poverty	12.89	5.29	14.89	21.71	15.04	23.35	47.09	40.74	48.39	64.22	52.43	66.12
	Vulnerability	0.00	0.00	0.00	1.21	0.00	1.51	34.05	12.45	38.45	76.60	47.47	81.31
201	Poverty	9.29	5.09	9.96	24.31	13.77	26.8	42.6	33.06	44.4	55.87	49.0	57.

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	Vulnerability	0.00	0.00	0.00	2.49	0.00	3.08	28.06	5.80	32.37	58.16	28.30	64.28
2011-12	Poverty	9.68	3.53	10.98	20.82	13.89	22.54	41.27	29.72	43.77	61.71	38.95	65.45
	Vulnerability	0.00	0.00	0.00	1.88	0.00	2.34	25.01	0.64	30.28	72.30	26.50	79.84
2013-14	Poverty	1.67	0.00	2.00	13	4.70	14.95	25	16.32	27.03	44.5	27.11	47.79
	Vulnerability	0.00	0.00	0.00	0.00	0.00	0.00	3.15	0.00	3.90	29.49	0.57	34.92
2015-16	Poverty	0.43	0.52	0.41	9.91	4.77	11.19	21.64	13.55	23.39	31.24	21.86	33.13
	Vulnerability	0.00	0.00	0.00	0.00	0.00	0.00	2.73	0.00	3.32	17.59	1.38	20.86
2018-19	Poverty	4.33	0.71	5.20	11.56	5.88	12.80	26.87	14.84	29.09	46.42	31.41	49.38
	Vulnerability	0.00	0.00	0.00	0.00	0.00	0.00	6.62	0.00	7.84	34.57	1.80	41.03
2024-25	Poverty	7.05	3.38	7.70	20.70	13.43	22.14	39.87	28.12	41.81	52.05	36.63	54.54
	Vulnerability	0.24	0.00	0.28	6.08	0.63	7.15	32.46	10.57	36.07	48.29	18.61	53.09

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

The estimates display a constantly monotonic pattern throughout the survey years, For example, in 2004–05, the poverty headcount was 28.06% and ex-ante poverty rate was 0% for small households (i.e 1–3 members) then both reached a high level of 72.47% and 88.84% for larger households with 10 or more members. Urban–rural decompositions also validate the econometric findings. In urban regions, small households exhibit zero or near zero vulnerability in almost all years (e.g., 2004–05, 2007–08, 2010–11, 2011–12, 2013–14, 2015–16), whereas both rural and urban households with 10+ repeatedly exhibit the highest poverty and vulnerability in every survey round, particularly rural regions are most deprived.

Poverty and Vulnerability Analysis by Dependency Ratio

The dependency ratio appears as one of the most influential factors of poverty and vulnerability. Detailed results are shown in the following Table 3

Table 3: Poverty and Vulnerability Analysis by Dependency Ratio

Year		Low DR (<0.5)			Medium: 0.5≤DR<1			High: 1≤DR<2			Very High: DR≥2		
		Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
2004-05	Poverty	46.07	31.66	51.68	59.19	42.22	63.0	63.59	49.32	66.53	70.45	61.31	71.84
	Vulnerability	32.14	5.23	42.62	63.31	32.32	70.26	73.58	41.34	80.23	81.61	57.04	85.35
2005-06	Poverty	42.81	28.66	47.07	52.81	44.23	54.91	61.54	48.54	63.78	65.02	63.15	65.31
	Vulnerability	20.33	3.99	25.25	41.17	21.96	45.88	60.92	39.17	64.68	63.32	44.04	66.32
2007-08	Poverty	22.46	18.57	23.8	44.96	25.66	49.15	48.43	40.38	50.04	52.09	45.48	53.13
	Vulnerability	5.08	2.39	6.01	33.83	11.36	38.70	45.67	20.08	50.76	51.24	33.26	54.06
2010-11	Poverty	21.0	14.88	22.87	36.64	32.32	37.6	43.3	36.12	44.87	49.78	38.62	51.5

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	Vulnerability	3.67	0.44	4.61	17.39	6.78	19.75	37.02	11.12	42.68	42.67	23.10	45.66
2011-12	Poverty	21.81	13.53	24.91	40.13	25.69	43.75	44.87	26.94	48.07	45.63	34.72	47.44
	Vulnerability	7.41	0.45	10.02	31.12	3.39	38.07	39.66	5.86	45.68	38.55	16.95	42.13
2013-14	Poverty	14.55	6.48	17.41	25.09	10.34	28.74	29.67	18.68	32.11	31.57	22.51	32.99
	Vulnerability	1.42	0.00	1.93	9.20	0.00	11.48	11.31	0.00	13.83	16.20	0.70	18.62
2015-16	Poverty	10.5	3.84	12.87	14.35	10.5	15.48	20.22	15.08	21.37	28.06	17.72	29.67
	Vulnerability	0.00	0.00	0.00	1.76	0.00	2.28	8.99	0.00	10.99	9.35	1.58	10.57
2018-19	Poverty	12.57	5.85	14.88	24.93	16.67	27.0	33.13	21.0	35.63	33.07	21.92	34.59
	Vulnerability	1.18	0.00	1.59	7.61	0.00	9.53	12.27	0.00	14.81	25.77	2.57	28.93
2024-25	Poverty	20.00	11.75	22.26	29.82	19.59	32.08	37.52	26.22	39.50	41.95	31.79	43.26
	Vulnerability	6.49	1.36	7.90	20.79	7.43	23.74	26.22	9.83	29.08	37.53	12.45	40.77

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

The results show that as dependency ratio increases, poverty and vulnerability also rise sharply. Households with a low dependency ratio (DR < 0.5) exhibit the strongest economic position, with low poverty rates ranging between 10% and 46% throughout the survey years, and vulnerability to poverty remains remarkably low (0–32%). In urban regions low-DR households are more resilient, as they recorded a negligible vulnerability after 2007-08, reflecting higher consumption or resources per capita, and stronger adaptive capacity. On the other hand, households with a medium-dependency ratio (0.5 ≤ DR < 1) face remarkably higher poverty and moderate vulnerability, mainly in rural regions where dependency burdens strain, schooling, food, and healthcare expenditures. Households with a high-dependency ratio (1 ≤ DR < 2) represent a deprived group. Households with very high dependency rates (DR ≥ 2) consistently show the worst results across all years.

Poverty and Vulnerability by Education Level of Household Head

The education level of the head of household appears as one of the most powerful and important determinants of poverty and vulnerability in Khyber Pakhtunkhwa. As the education level of the head of household rises from illiteracy and low education level (0–5 years) to higher secondary and beyond (11+ years), both poverty and vulnerability decline sharply. Detailed results are given in Table 4.

Table 4: Poverty and Vulnerability Analysis by Education Level of Household Head

Year	status	0–5 years	6–10 years	11+ years
2004-05	Poverty	73.86	52.70	35.79
	Vulnerability	87.99	46.37	4.78
2005-06	Poverty	68.06	50.85	26.13
	Vulnerability	75.25	18.00	6.25
2007-08	Poverty	52.71	42.63	19.70
	Vulnerability	53.23	28.82	0.00
2010-11	Poverty	46.12	37.97	20.31
	Vulnerability	39.20	21.17	0.00
2011-12	Poverty	49.30	35.37	13.58
	Vulnerability	46.09	18.79	0.40
2013-14	Poverty	31.80	21.57	12.54
	Vulnerability	15.66	3.56	0.00
2015-16	Poverty	27.12	14.97	8.67

	Vulnerability	11.67	0.00	0.00
2018-19	Poverty	36.29	24.53	10.01
	Vulnerability	23.07	5.30	0.00
2024-25	Poverty	46.52	30.11	21.44
	Vulnerability	46.27	16.51	1.99

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

Households headed by individuals with only 0–5 years of education level exhibit severe deprivation, with poverty rates ranging from 74% in 2004–05 to 46% in 2024-25, and similarly vulnerability reaching as high as 88% in the initial years. Due to lack or limited educational attainment these households are usually concentrated in low-skilled jobs, resulting in low wages. On the other hand, households headed by education level 6–10 years show significant improvement in well-being, with low poverty rates and vulnerability falling to single digits in most years. This reveals a transition from subsistence agriculture to semi-skilled employment. The outstanding development appears among the households whose heads acquired 11+ years of education, where poverty consistently drops into the single-digit, and vulnerability approaches zero after 2010–11. These households are more likely to get access to salaried employments.

Poverty and Vulnerability by Land Ownership in Khyber Pakhtunkhwa

Agricultural and non-agricultural land ownership is strongly related to both poverty and vulnerability. In this study, landless households recorded the highest poverty and vulnerability rates across the study years. Nonagricultural land ownership shows even greater security and protection against poverty. Detailed results are given in Table5.

Table 5: Poverty and Vulnerability by Non-Agricultural Land Ownership

Year	status	Yes Total (%)	Yes Urban (%)	Yes Rural (%)	No Total (%)	No Urban (%)	No Rural (%)
2004–05	Poverty	58.12	30.24	64.39	64.84	51.68	67.43
	Vulnerability	60.71	22.63	69.28	72.97	41.84	79.10
2005–06	Poverty	57.37	46.79	59.15	77.98	62.45	83.18
	Vulnerability	52.17	29.09	56.06	76.91	48.74	86.34
2007–08	Poverty	42.65	39.99	42.73	48.64	38.63	51.28
	Vulnerability	36.74	0.00	37.83	44.16	21.07	50.69
2010–11	Poverty	44.85	24.96	48.43	41.13	30.89	44.09
	Vulnerability	30.31	9.99	33.47	30.76	11.50	34.76
2011–12	Poverty	36.95	16.10	40.41	41.85	27.83	46.27
	Vulnerability	26.17	20.37	27.10	34.27	7.16	39.91
2013–14	Poverty	32.81	18.44	5.60	27.37	29.81	16.15
	Vulnerability	8.30	10.18	0.00	11.46	13.92	0.18
2015–16	Poverty	11.50	6.75	12.48	21.46	13.36	23.25
	Vulnerability	0.00	0.00	0.00	7.18	0.45	8.67
2018–19	Poverty	32.77	22.73	34.66	29.49	17.73	31.84
	Vulnerability	20.15	1.32	23.69	14.79	0.61	17.62
2024–25	Poverty	31.73	16.66	33.88	52.14	39.20	56.24
	Vulnerability	20.06	0.12	22.90	55.27	26.13	64.52

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Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

The above table 5 indicates that households who do not own non-agricultural land consistently suffer from higher poverty and vulnerability to poverty in both regions, they are more exposed to economic shocks, and have lower capacity to diversify their income. On the other hand households that own non-agricultural land exhibit lower poverty and vulnerability; they are more stable, and have greater economic resilience because of asset-based stability. This shows that ownership of non-agricultural land acts as a risk-absorbing agent, enabling households to generate further income from multiple sources.

Poverty and Vulnerability by Agricultural Land Ownership

Traditionally, ownership of agricultural land has been considered a key economic asset and a symbol of social status in rural regions of Pakistan, often associated with wealth, food security and stability. However, data from 2004–05 to 2024-25 of rural areas in Khyber Pakhtunkhwa (KP) reveal a more complex reality and the results show that ownership of agricultural land in rural areas does not always guarantee lower poverty or vulnerability.

Table 6: Poverty and Vulnerability Rates by Agricultural Land Ownership

Year		Yes(Total)	Yes(Urban)	Yes(Rural)	No (Total)	No(Urban)	No (Rural)
2004–05	Poverty	61.55	33.68	63.13	67.44	52.9	73.7
	Vulnerability	69.79	22.80	72.44	74.33	43.55	87.59
2005–06	Poverty	58.13	49.36	58.34	60.89	49.87	64.25
	Vulnerability	54.28	23.36	55.03	55.71	33.46	62.50
2007–08	Poverty	36.27	12.09	38.71	49.01	38.64	51.28
	Vulnerability	21.56	7.07	23.03	46.05	21.31	51.46
2010–11	Poverty	40.17	27.17	40.45	41.58	32.4	49.06
	Vulnerability	25.59	0.00	26.14	32.25	11.79	37.85
2011–12	Poverty	31.07	10.79	33.74	42.99	27.83	46.27
	Vulnerability	8.04	0.00	9.10	37.22	8.21	43.49
2013–14	Poverty	32.86	33.07	18.04	25.75	28.89	15.64
	Vulnerability	13.52	13.72	0.00	10.56	13.78	0.18
2015–16	Poverty	12.49	7.74	12.93	22.29	13.45	24.43
	Vulnerability	0.00	0.00	0.00	7.88	0.46	9.67
2018–19	Poverty	22.94	11.66	23.85	30.99	18.64	33.72
	Vulnerability	2.77	0.00	2.99	17.46	0.72	21.17
2024-25	Poverty	31.09	8.19	32.42	36.84	25.18	39.16
	Vulnerability	17.77	1.07	18.73	29.08	9.30	33.01

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

Agricultural land ownership in rural regions also shows relatively high poverty and vulnerability, primarily because agricultural land in KP is highly fragmented and characterized by low productivity. However, in combination with other factors it becomes more beneficial over time, as shown in table.6 that by 2015–16, poverty and vulnerability drop sharply. In urban regions the poverty and vulnerability among the agricultural land owners is significantly low, mainly because most of the urban owners having agricultural land belong to rural, but are settled in urban areas where they have multiple sources of income. On the other hand rural owners have smaller poverty and vulnerability compared to rural non-owners due to the reason that agricultural land serves as an asset and additional source of income and food security.

Poverty and Vulnerability Analysis by Residency Status

This part of the study shows poverty and vulnerability status based on residency ownership and non-ownership. Detailed results are presented in Table.7

Table 7: Poverty and Vulnerability Rates by Residency Status

Year	Owner				Renter			Rent free		
		Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
2004–05	Poverty	63.58	47.23	66.21	62.92	56.78	74.15	73.93	46.55	76.28

	Vulnerability	71.65	39.14	76.87	59.18	43.75	87.37	86.47	28.42	91.46
2005–06	Poverty	57.58	47.95	59.09	63.5	53.48	74.56	80.18	65.07	81.21
	Vulnerability	52.59	30.37	56.07	53.74	38.05	71.05	82.87	51.67	85.00
2007–08	Poverty	44.99	30.69	47.27	52.0	51.28	53.18	65.03	42.82	67.01
	Vulnerability	39.89	13.69	44.07	46.03	35.32	63.39	63.56	40.69	65.60
2010–11	Poverty	39.38	28.97	41.02	47.63	38.62	61.76	64.4	50.7	65.82
	Vulnerability	28.40	7.42	31.69	33.12	20.44	52.98	68.61	22.08	73.41
2011–12	Poverty	40.48	24.22	43.13	43.54	31.01	58.18	63.88	48.59	65.7
	Vulnerability	32.58	5.55	36.99	30.21	10.25	53.53	71.73	39.97	75.52
2013–14	Poverty	27.19	29.41	14.48	28.38	39.35	17.8	33.57	34.4	26.81
	Vulnerability	9.55	0.25	11.16	19.62	0.00	39.97	28.12	0.00	31.58
2015–16	Poverty	19.14	10.48	20.72	27.09	18.46	35.41	43.08	37.04	43.7
	Vulnerability	4.47	0.00	5.28	13.24	1.17	24.87	36.66	5.60	39.84
2018–19	Poverty	30.32	18.18	32.72	27.11	17.11	29.17	28.1	21.18	29.39
	Vulnerability	16.10	0.58	19.17	10.79	0.60	12.88	13.48	2.56	15.53
2024-25	Poverty	33.70	19.79	35.61	44.92	33.07	52.55	50.01	34.50	52.43
	Vulnerability	23.24	2.96	26.02	40.81	22.04	52.89	57.19	16.46	63.55

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

In this study, three major residency statuses (owner, renter and rent-free) are studied, these represent an important household characteristic to understand their welfare state in Khyber Pakhtunkhwa (KP). The results reveal a persistent gap, as owner households show lower poverty and vulnerability, whereas rent-free (non-owners) households exhibit the most susceptible segment throughout the study years. Poverty and vulnerability declined over time, but hierarchy of wellbeing across residency status remained unchanged. The analysis shows that the households that own their residence are less poor and less vulnerable compared to renters and rent-free households. Rent-free households often reflect informal housing arrangements; they are mostly dependent on their relatives or landlords. This group of household consistently shows the highest vulnerability throughout the survey years.

Poverty and Vulnerability Analysis by Employment Status of Household Head

The employment status of the head of household appears as one of the most conclusive fundamental determinants of poverty and vulnerability. Table8 presents and explains the poverty and vulnerability based on employment status of the head of the household.

Table 8: Poverty and Vulnerability Rates by Employment Status of the Head of Households

Year		Paid employee			Self-employed non agri			Own cultivator			Contract cultivator			Share cropper			Livestock		
		Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural	Total	Urban	Rural
2004–05	Poverty	67.11	49.71	71.13	58.49	52.2	61.06	70.09	57.7	70.28	67.52	69.43	67.42	86.92	88.76	86.83	66.57	48.27	66.97
	Vulnerability	69.64	40.58	76.37	64.75	37.34	75.93	83.35	67.30	83.59	93.16	46.30	95.67	91.97	100	91.56	76.31	24.82	77.42
2005–06	Poverty	61.18	51.55	63.68	59.87	45.3	63.74	59.07	39.33	59.41	94.31	53.38	95.6	76.31	78.72	76.25	50.42	81.58	47.89
	Vulnerab	54.94	33.87	60.41	53.88	35.77	58.69	52.41	16.25	53.03	89.06	53.38	90.19	85.56	28.24	86.99	74.01	26.94	77.83

	ility																	
2007	Pove	48.	39.7	50.7	47.5	33.	53.	44.	53.	44.	62.	0.0	63.	50.	33.	51.	38	0.0	39.
–08	rty	75	6	9	6	42	52	27	93	03	18		93	9	21	53	.0		24
	Vuln	44.	27.6	47.7	41.71	21.	50.	39.	0.0	40.	52.	0.0	53.	56.	0.	58.	20	0.0	21.
	erab	03	6	4		58	20	94	0	91	33	0	80	83	00	85	.54	0	21
	ility																		
2010	Pove	44.	37.9	46.2	41.4	27.	44.	41.	73.	41.	54.	85.	51.	66.	44.	66.	25.	28.	24
–11	rty	66	5	1	2	36	93	76	29	43	07	87	17	24	24	91	14	15	.95
	Vuln	42.	20.6	47.5	27.0	7.8	34.	29.	0.0	29.	79.	72.	79.	69.	78.	69.	0.	0.0	0.
	erab	53	2	5	6	8	57	09	0	40	28	82	87	64	21	38	00	0	00
	ility																		
2011	Pove	45.	26.8	49.6	38.5	29.	41.	44.	30.	44.	25.	14.8	30.	58.	26.	61.	58	6.7	63.
–12	rty	52	9	4	1	21	88	75	14	98	53	7	19	89	93	12	.3	4	84
																	9		
	Vuln	42.	10.6	49.9	30.8	10.	38.	35.	0.0	36.	0.0	0.0	0.	58.	0.	63.	72.	0.0	80
	erab	84	9	5	3	21	31	47	0	03	0	0	00	98	00	09	53	0	.18
	ility																		
2013	Pove	26.	29.2	19.13	20.0	22.	15.	36.	36.	23.	53.	54.	0.	51.6	52.	41.	16.	18.	0.
–14	rty	89	2		5	2	05	7	87	03	1	63	0	5	02	52	96	89	0
	Vuln	14.	19.0	0.00	6.70	9.5	0.0	10.	10.	0.0	43.	44.	0.	68.	70.	21.	0.	0.0	0.
	erab	67	8			7	0	19	32	0	36	61	00	92	67	80	00	0	00
	ility																		
2015	Pove	26.	14.9	30.2	17.8	11.	20.	16.	16.	16.	13.	18.4	13.	33.	22.	34.	20	0.0	22.
–16	rty	95	2		3	61	77	82	14	83	92		78	41	25	08	.13		65
	Vuln	14.	0.98	17.52	7.04	0.0	10.	0.0	0.0	0.0	1.8	0.0	1.9	27.1	0.	28.	0.	0.0	0.
	erab	00				0	36	0	0	0	5	0	1	5	00	78	00	0	00
	ility																		
2018	Pove	31.	18.8	33.9	30.2	16.	34.	26.	15.	26.	35.	13.8	37.	38.	20.	39.	23.	16.	24
-19	rty	27	6	5	2	26	84	11	56	57	16	7	53	34	67	1	58	5	.45
	Vuln	22.	1.71	27.0	11.18	0.0	14.	9.9	0.0	10.	27.	0.0	31.	38.	0.	40.	9.7	0.0	10.
	erab	56		6		0	88	2	0	35	97	0	09	77	00	44	5	0	96
	ility																		
2024	Pove	41.	29.8	44.1	33.1	26.	35.	37.	21.	37.	38.	0.0	39.	49.	35.	50.	49	34.	49
-25	rty	88	0	2	8	74	15	23	25	51	82	0	36	60	21	28	.15	48	.81
	Vuln	39.	12.27	44.2	24.5	10.	28.	30.	8.7	31.	30.	0.0	31.	54.1	24.	55.	49	48.	49
	erab	22		1	5	69	80	78	8	17	61	0	03	0	10	52	.7	12	.8
	ility																8		5

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

The above table shows that paid employees exhibit the most favorable path, with poverty declining progressively from 67% in 2004–05 to nearly 31% by 2018–19, and vulnerability declined sharply and became negligible in urban areas. This shows the protective special effects of salaried or regular earner. Self-employed non-agricultural workers group also exhibit greater resilience against poverty and vulnerability, mainly in urban regions. In contrast, different agricultural employment categories exhibit higher and persistent deprivation. Households headed by own-cultivators show high poverty around 70 percent initially but later on show remarkable progress, largely due to collateral opportunity. Livestock-owning households occupy the middle position in the welfare distribution. The results indicate that Livestock functions an assets which has a storage value and acts as a short-term resilient during shocks, but income and consumption volatility in the group remains high and unpredictable. A consistent and remarkable pattern across all employment groups is the strong urban–rural gap. Urban workers, especially paid employees and urban self-employed show much lower poverty and vulnerability as compared to their rural counterparts.

Poverty Analysis by Share of Household Members with Grade 6 and Above Education

The occurrence of poverty by the proportion of household members who have completed Grade 6 and above reveals a strongly monotonic and important pattern, highlighting the transformative role of broad based educational attainment in shaping household wellbeing.

Table 9: Poverty Rates by Educational Attainment of Household Members (Grade 6 and Above)

Year	0–25%	26–50%	51–75%	76–100%
2004-05	58.17	41.21	30.83	0.0
2005-06	55.75	38.67	22.80	12.49
2007-08	42.63	24.03	11.26	0.0
2010-11	42.83	22.84	20.83	0.35
2011-12	42.56	21.22	8.58	0.0
2013-14	28.28	10.42	1.91	0.0
2015-16	22.08	9.13	2.83	0.0
2018-19	30.36	15.74	7.46	6.24
2024-25	50.32	34.14	20.00	9.54

Note: Poverty estimates for 2004–05 to 2018–19 are from Jan, Ullah and Saeed (forthcoming). Vulnerability estimates and 2024–25 poverty estimates are original to this study.

Households where only 0–25% of members have attained Grade 6 or above level education consistently show the highest poverty rates across all survey years, highlighting their restricted access to productive employment. As the share of household members attaining six or more years of schooling rises to 26–50%, a considerable reduction in poverty is evident, representing the early development of intra-household spillover effects. It is further a significant sign that with attainment of (educational level Grade 6 or above) of more than half of household members (51–75%) , poverty falls sharply, mainly after 2013–14. The robust welfare outcomes are observed in households where 76–100% of family members have attained grade 6 and above level education, these households show near zero poverty rate in most of the study years.

Conclusion

The patterns observed across household demographics, assets, education, employment structure, and rural–urban location collectively reveal a deeply interconnected welfare landscape in Khyber Pakhtunkhwa (KP). The results consistently show that disadvantages such as landlessness, high dependency ratios, low education, and insecure employment intensify both current poverty and future vulnerability to poverty.

The results reveal that poverty and vulnerability in KP have declined over time up to 2015-16 but reversed in 2018-19 and continued to rise until 2024-25.This reversal highlights the province's sensitive and vulnerable position, which is due to the inclusion of merged districts in the province and inflationary shocks, this shows the weak position of merged district and also of the whole province, which could not accommodate or support the merged districts in the existing resources. Vulnerability does not simply reflect poverty, instead, it exposes hidden layers of risk within the households that may not be poor today but are susceptible or exposed to falling into poverty due to certain disadvantages and recurring shocks.

The study provides strong, consistent, and robust patterns across all major factors including, household size, dependency ratios, employment status, residency status, education of the head and members, rural–urban location, agricultural and non-agricultural land ownership. Landlessness, agricultural labour dependency, tenancy insecurity, large household size, and high dependency ratios are determinants of both current poverty and vulnerability to poverty. But among these factors, education level, household size and dependency ratio are the key factors contributing to poverty and vulnerability. Spatial disparities remain noticeable, with rural regions of KP experiencing significantly higher poverty and vulnerability compared to urban regions of KP. Rural households face limited access to markets, education, infrastructure, healthcare, and multiple employment opportunities. Furthermore environmental and climatic hazards intensify these disadvantages which create most often chronic vulnerability which cannot be addressed by income expansion alone. Rural regions are in the worst condition because all the factors discussed above interact together to shape poverty and vulnerability.

By combining static and dynamic welfare perspectives, this study sets a new yardstick for poverty and vulnerability research. This study not only offers a richer empirical basis for targeted policy design, but also shows the significance of risk-sensitive, forward-looking strategies for sustainable poverty reduction.

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