Determinants of wealth-related inequalities in mental health: a decomposition analysis of nationally representative household survey data

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Background

- Mental health problems, such as anxiety and depression, are an escalating global public health issue, with socioeconomic factors (Patel et al., 2018) and place of residence (Bonnell et al., 2022) playing a pivotal role in their prevalence and distribution
- In Nepal, a low-income country marked by significant economic disparities, these inequalities may intensify mental health issues (Luitel et al., 2019).
- The Nepal Demographic and Health Survey (NDHS) 2022, a nationally representative dataset, offers critical insights into these dynamics.
- Investigating wealth-related disparities in mental health is essential for informing policies to reduce inequities and enhance well-being in Nepal.

Objectives

- **Identify** the determinants of wealth-related inequalities in anxiety and depression, using NDHS 2022 data across residence type;
- **Quantify** the socioeconomic disparities in the prevalence of these mental health conditions across residence type; and
- **Decompose** these inequalities to evaluate the contributions of socio-demographic variables across residence type.

Methodology

- **Study design**: Cross-sectional
- **Sampling**: Subsample of households selected for the men's survey.
- **Study Population**: All men and women aged (15-19) in the subsample (12,355 unweighted)
- **Outcome Variable**: Symptoms of anxiety (a score greater than 5 in GAD-7 scale) or Symptoms of depression (a score greater than 9 in PHQ-9 scale)
- **Inequality Measurement**: Concentration Curve and Relative Concentration Index
- **Factors associated** : Multivariable logistic regression
- **Decomposition of concentration index**: Erreygers Decomposition

DEGURBA Classification

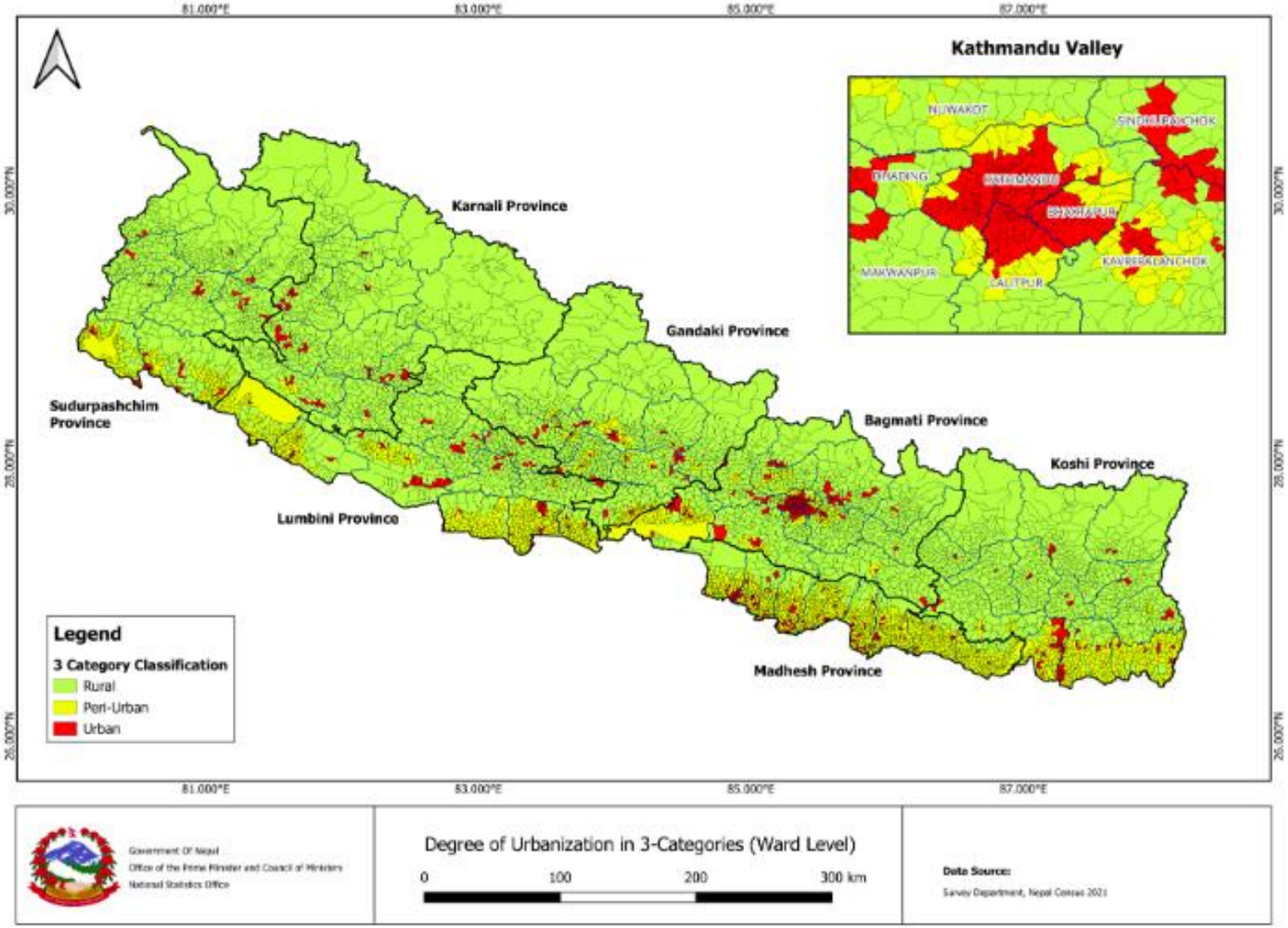


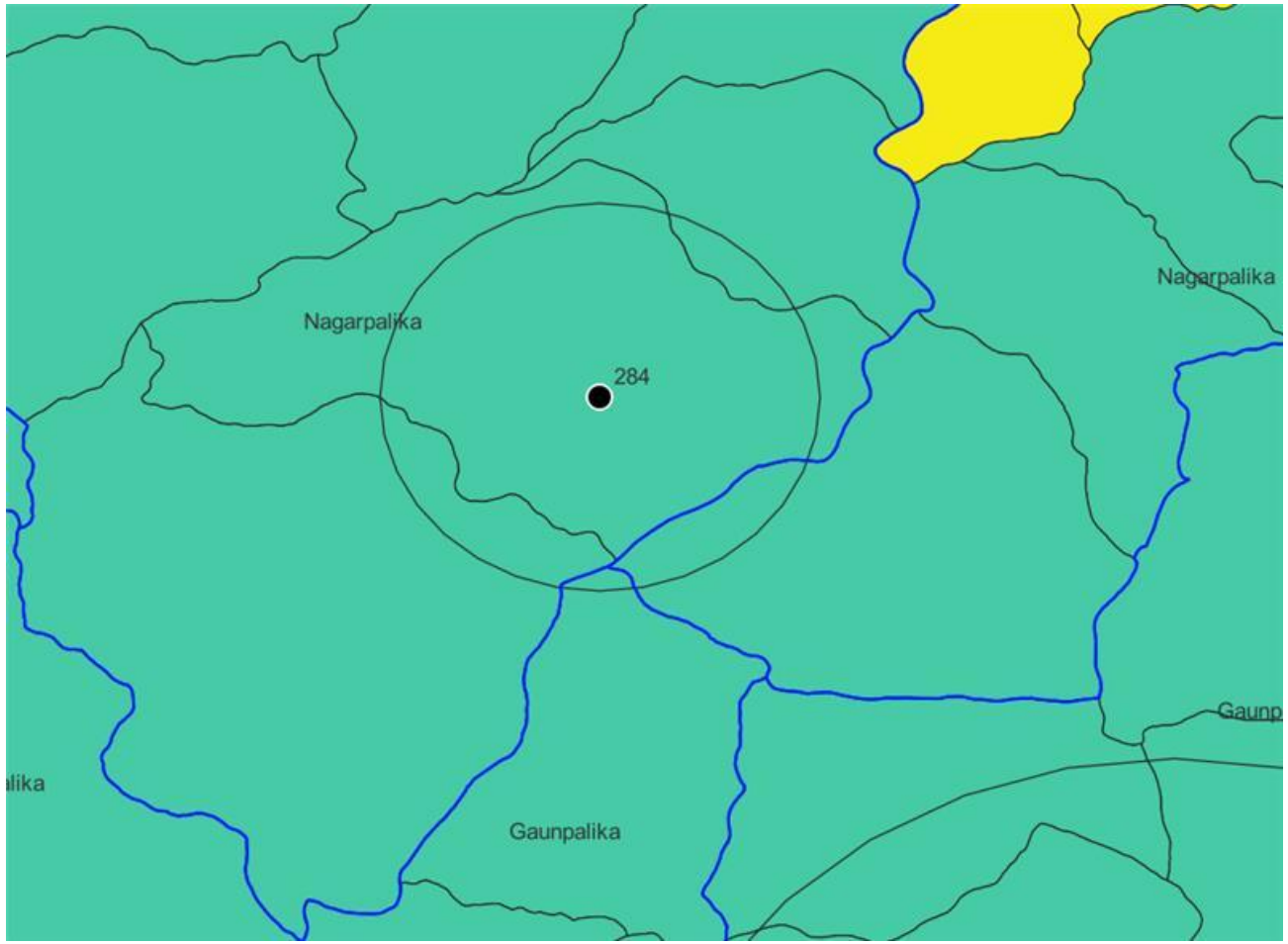
Figure 14 : Map-3- Category Classification at the Ward Level

DEGURBA Classification

- Sub-group analysis based on residence type (urban, rural and peri-urban) as defined by the Report on Degree of Urbanization (DEGURBA) in Nepal, National Statistics Office (NSO)
- NSO classifies all wards into rural, urban and peri-urban based on population, population density, built-up area coverage and contiguity.

Why this classification?

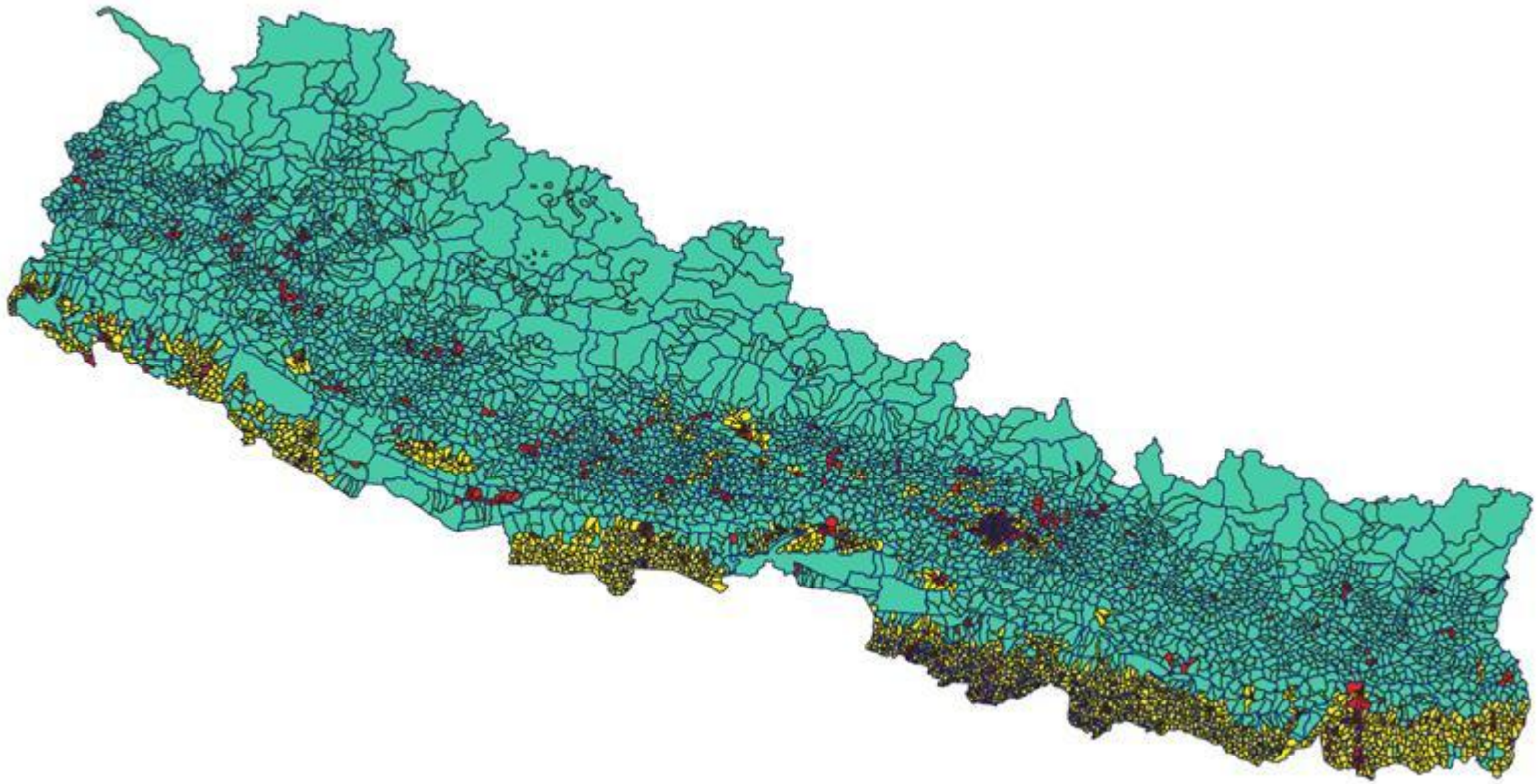
- Provides specific urbanicity for all DHS clusters rather than the generic local-level type-based classification



Point-in-Polygon method (most probable value approach)

Perez-Heydrich, C., et al. (2013)

- Layer ward-level shapefiles with DEGURBA attribution



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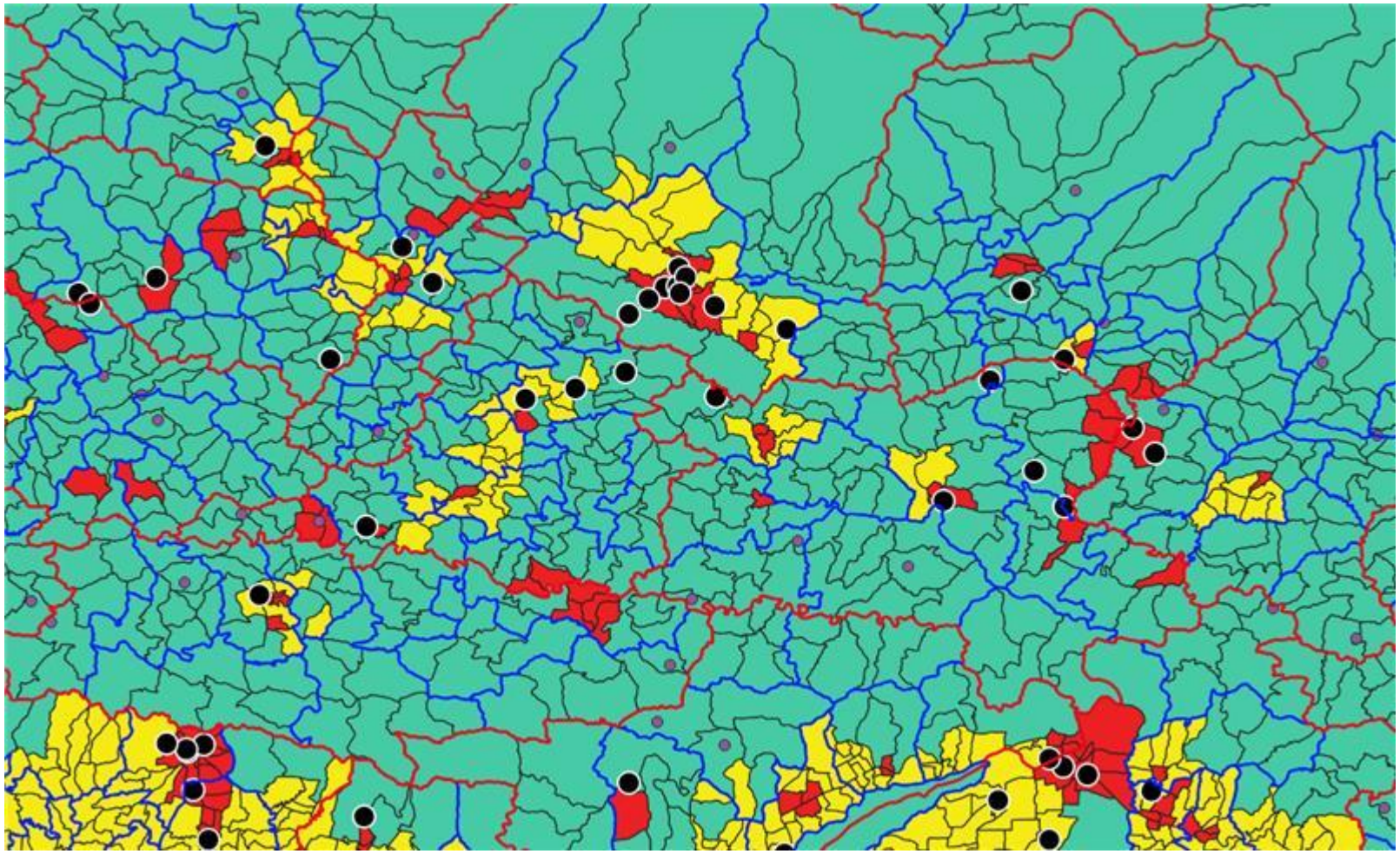
Point-in-Polygon method (most probable value approach)

- Plot urban and rural clusters on the ward layer (black – urban clusters, purple – rural clusters)



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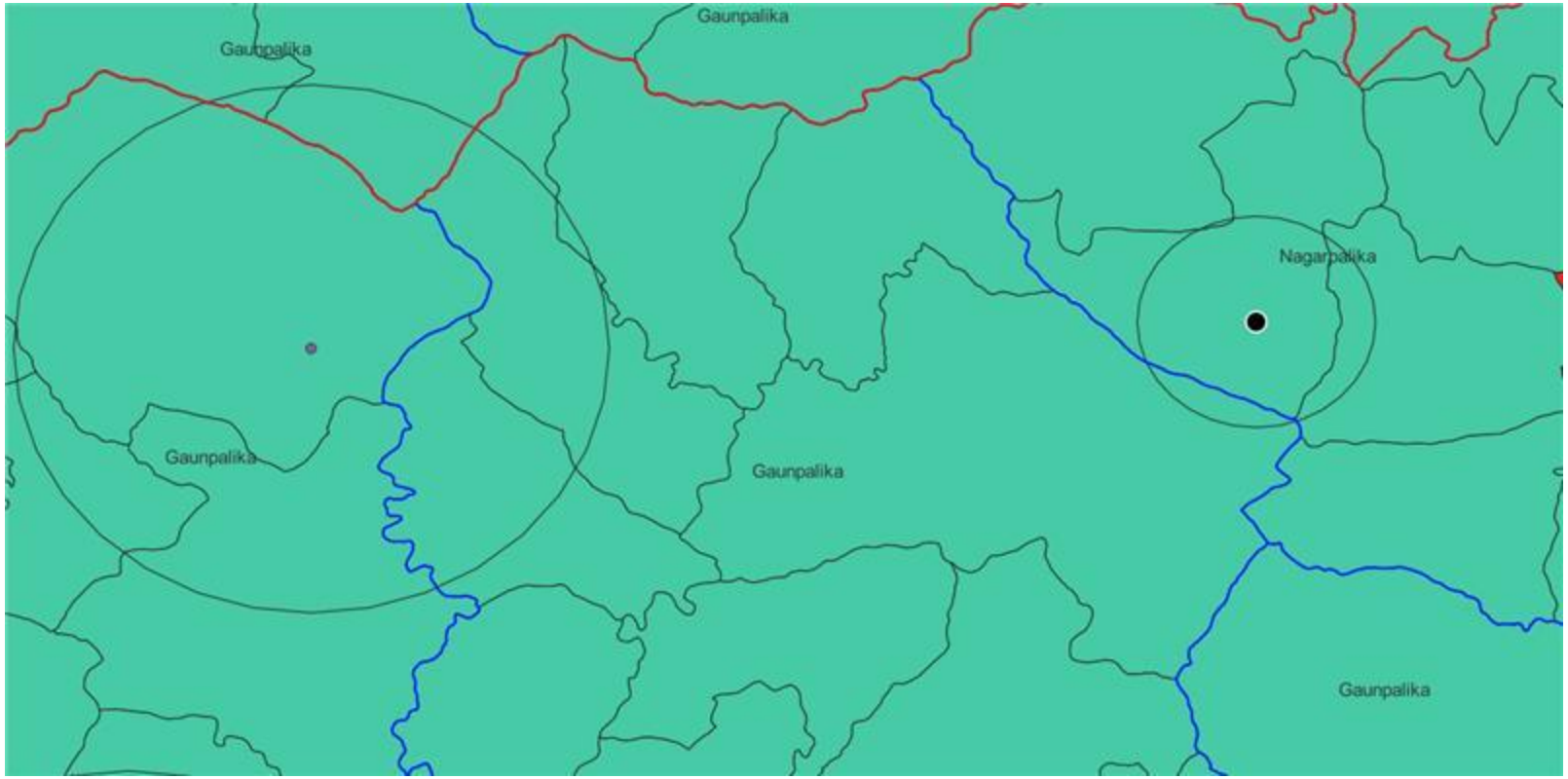
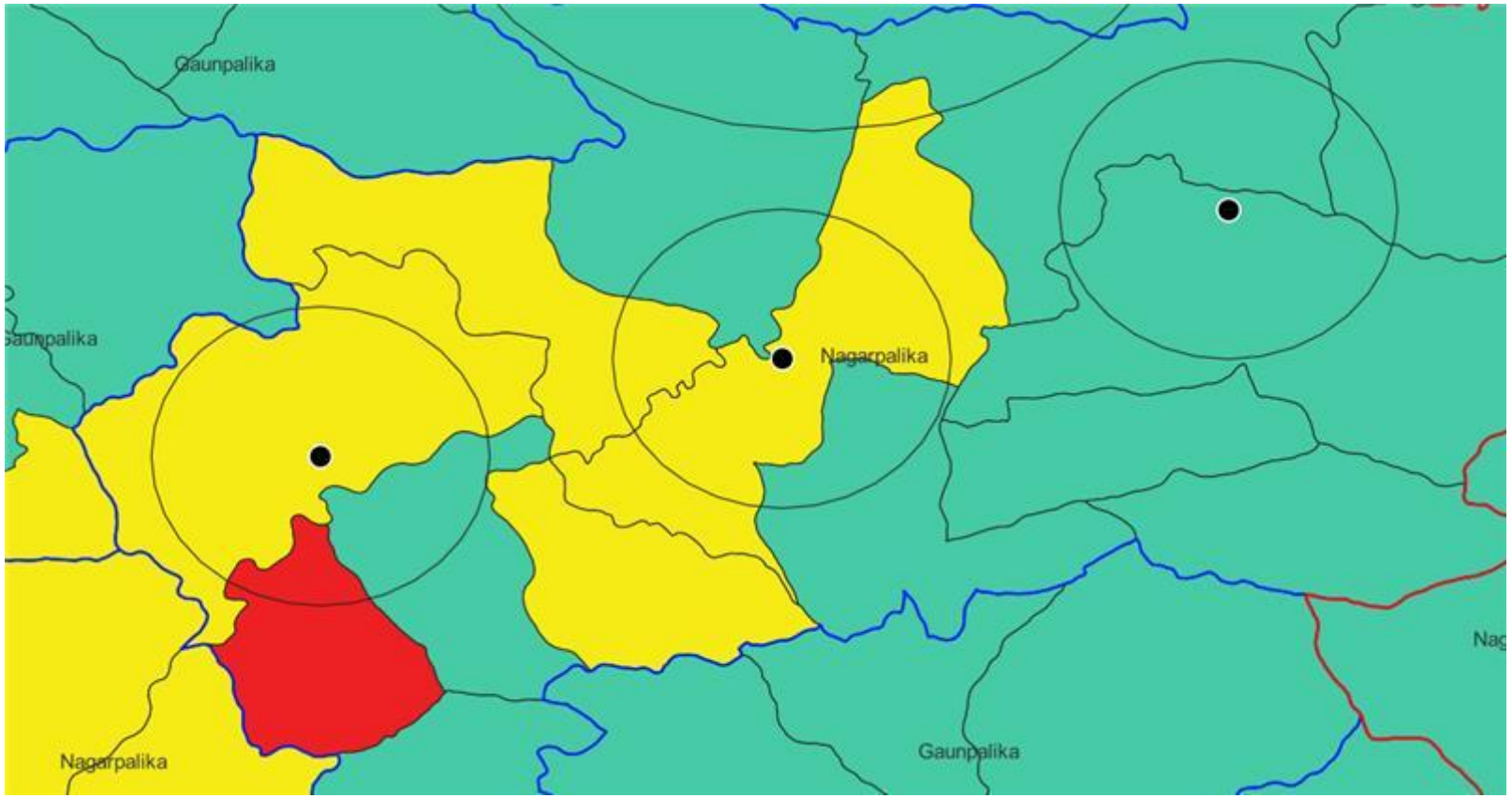
Point-in-Polygon method (most probable value approach)

- Make 5-km buffer for rural clusters and 2-km buffer for urban clusters



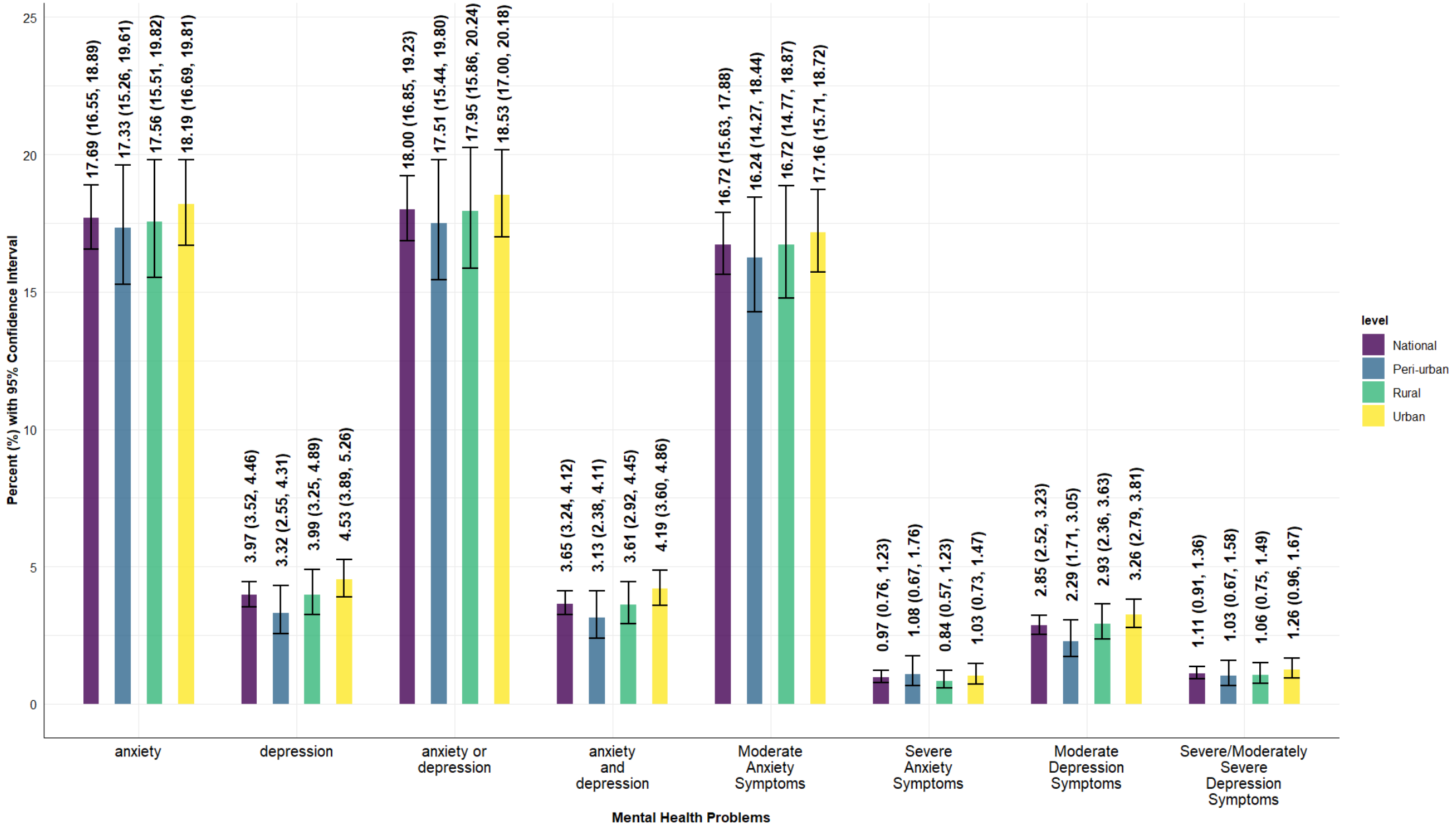
Point-in-Polygon method (most probable value approach)

- R program to calculate the most probable value based on intersected area and the rate of misclassification.

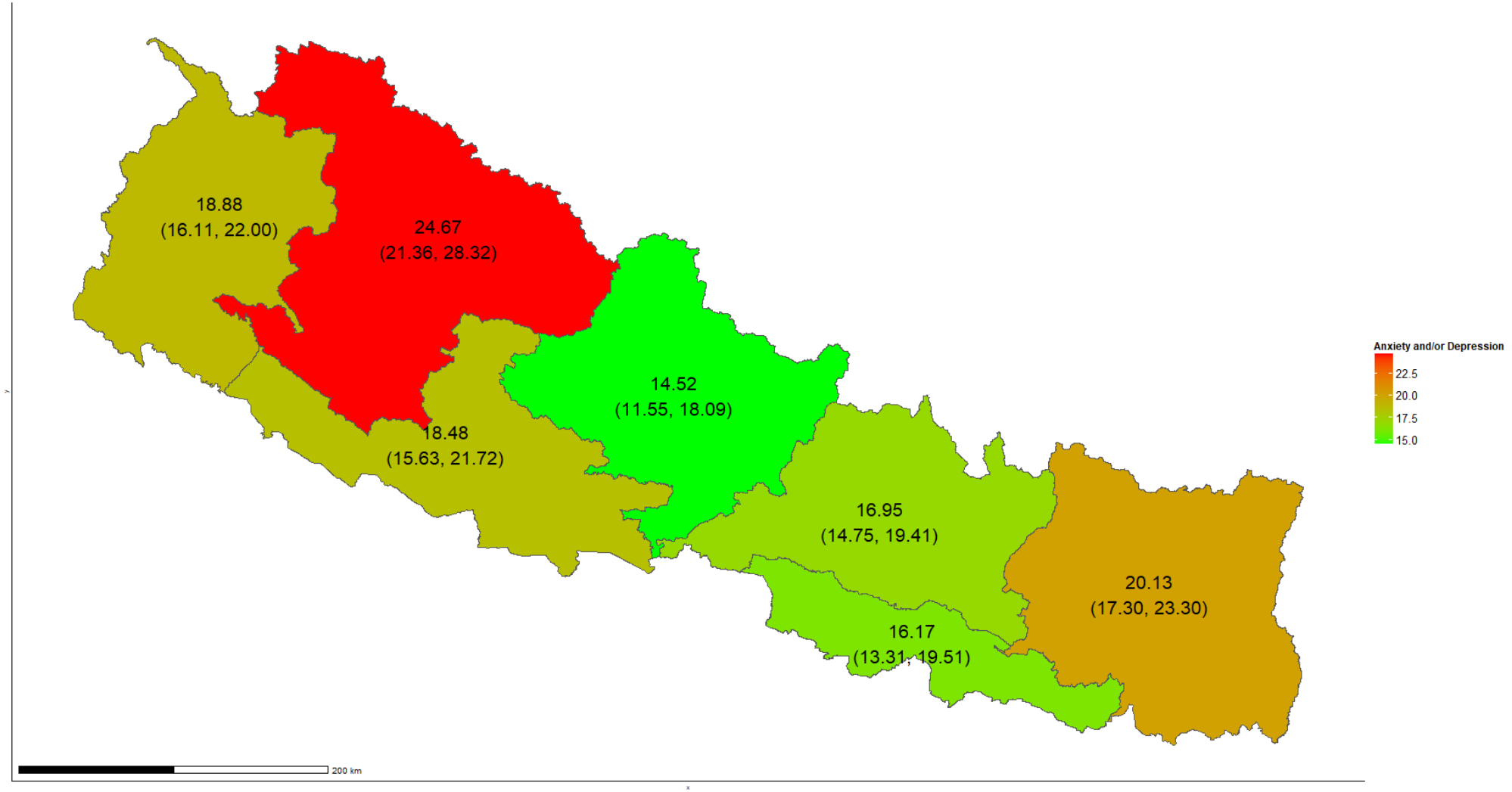


Total Clusters in DHS – 476
Accurate Categorization- 92%
Clusters readjusted based on visual inspection - 39

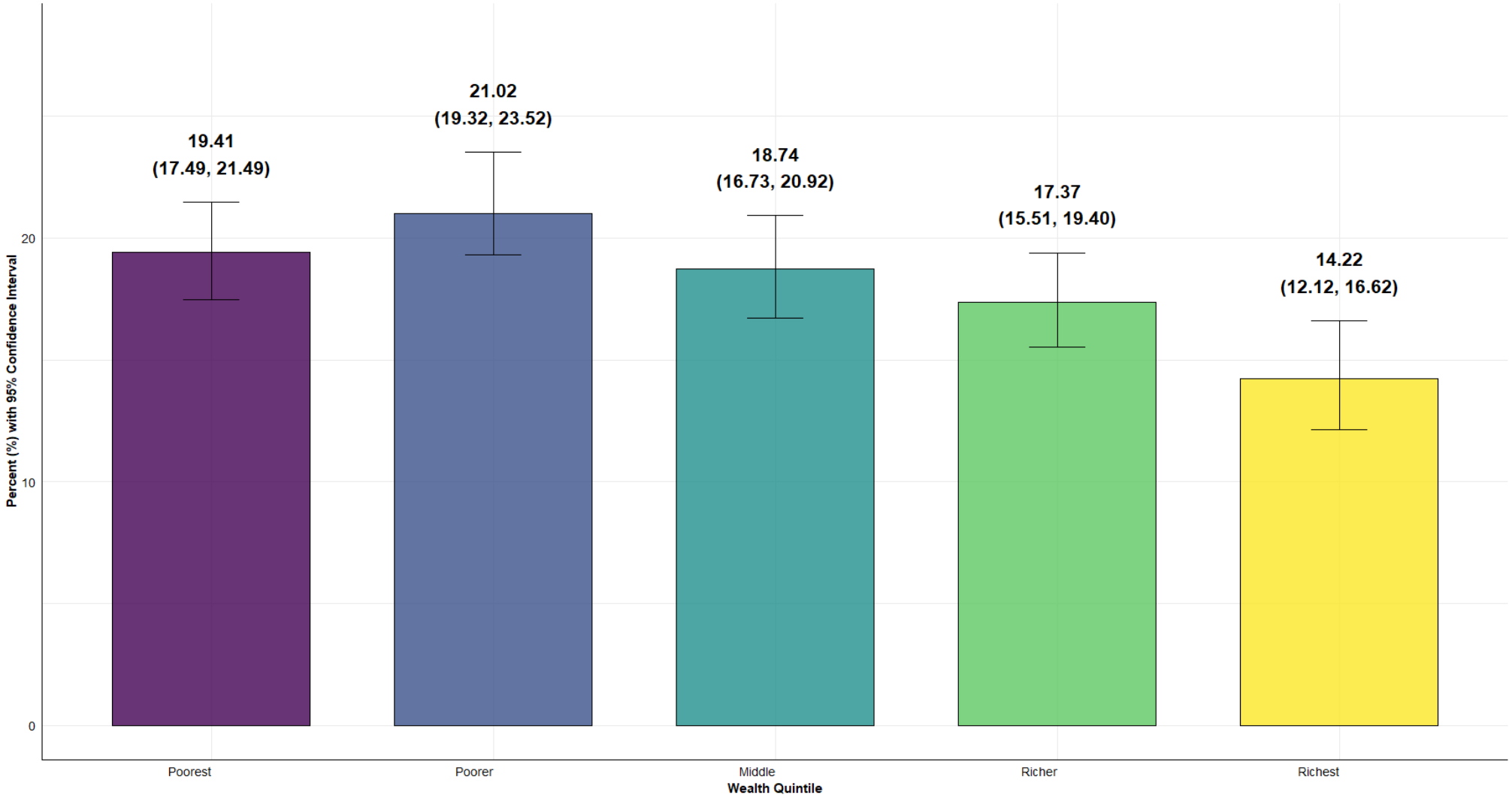
Results


Percent (%) with 95% Confidence Interval
25
20
15
10
5
0
17.69 (16.55, 18.89)
17.33 (15.26, 19.61)
17.56 (15.51, 19.82)
18.19 (16.69, 19.81)
3.97 (3.52, 4.46)
3.32 (2.55, 4.31)
3.99 (3.25, 4.89)
4.53 (3.89, 5.26)
18.00 (16.85, 19.23)
17.51 (15.44, 19.80)
17.95 (15.86, 20.24)
18.53 (17.00, 20.18)
3.65 (3.24, 4.12)
3.13 (2.38, 4.11)
3.61 (2.92, 4.45)
4.19 (3.60, 4.86)
16.72 (15.63, 17.88)
16.24 (14.27, 18.44)
16.72 (14.77, 18.87)
17.16 (15.71, 18.72)
0.97 (0.76, 1.23)
1.08 (0.67, 1.76)
0.84 (0.57, 1.23)
1.03 (0.73, 1.47)
2.85 (2.52, 3.23)
2.29 (1.71, 3.05)
2.93 (2.36, 3.63)
3.26 (2.79, 3.81)
1.11 (0.91, 1.36)
1.03 (0.67, 1.58)
1.06 (0.75, 1.49)
1.26 (0.96, 1.67)
anxiety
depression
anxiety or depression
anxiety and depression
Moderate Anxiety Symptoms
Severe Anxiety Symptoms
Moderate Depression Symptoms
Severe/Moderately Severe Depression Symptoms
Mental Health Problems
level
National
Peri-urban
Rural
Urban

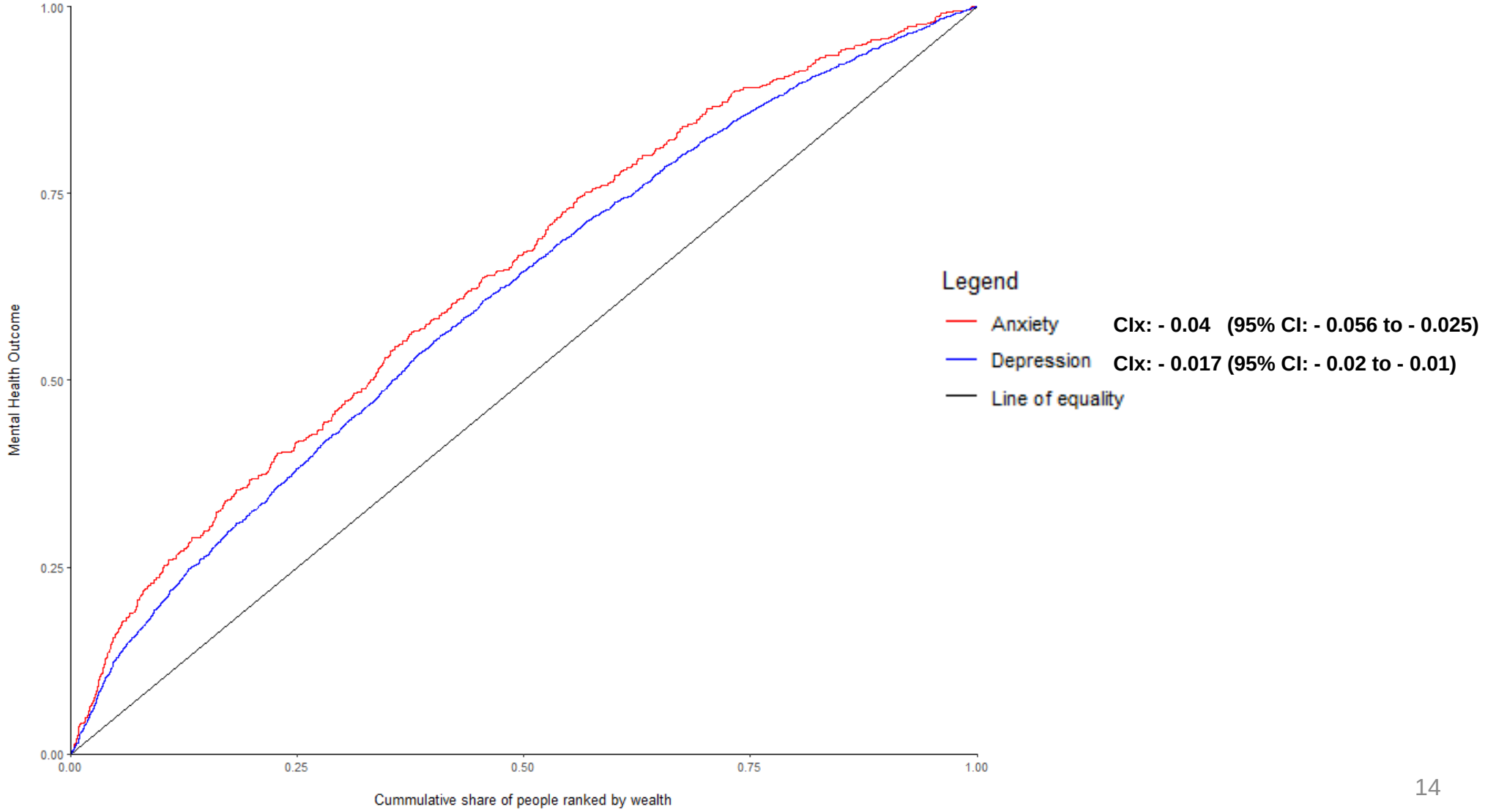
Province-wise prevalence (95%CI) of anxiety or depression



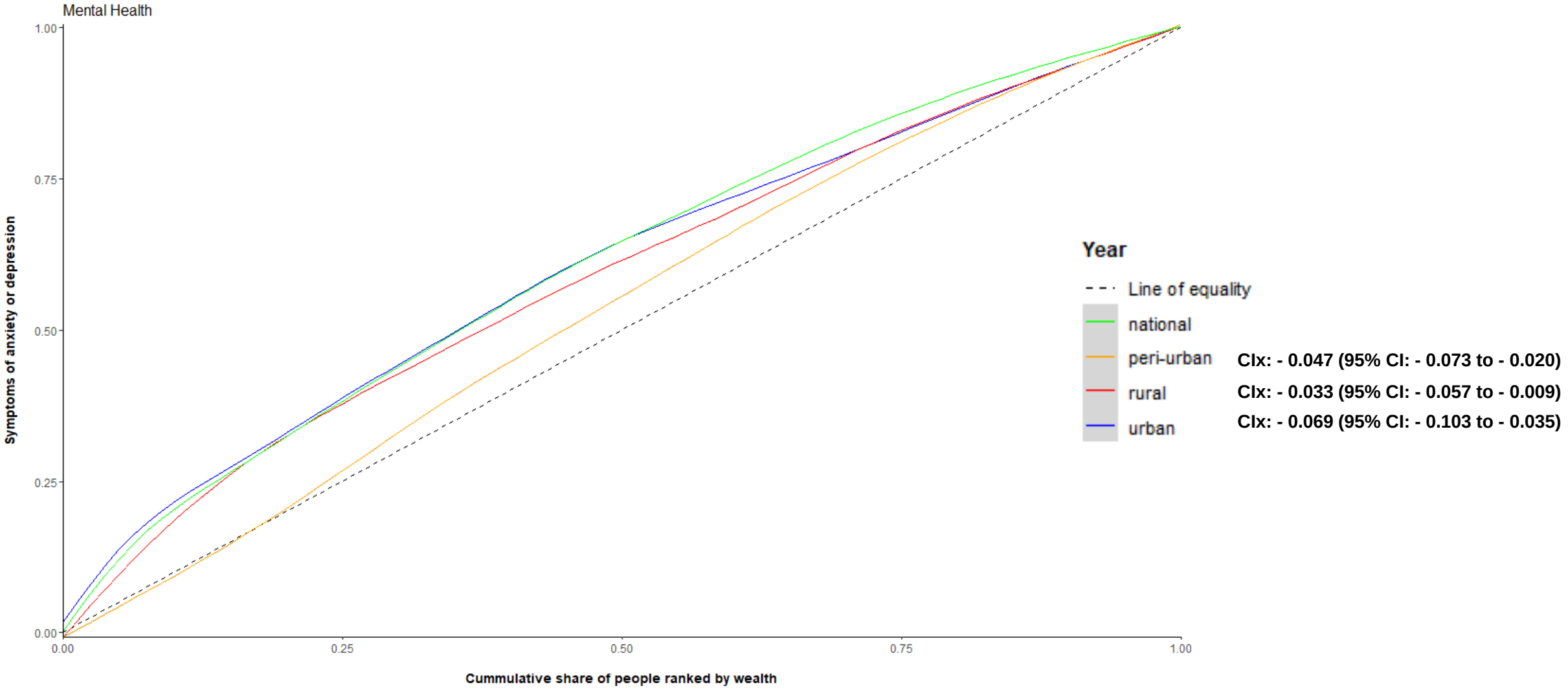
Symptoms of anxiety or depression by wealth quintile



Concentration curve for symptoms of anxiety or depression against wealth rank



Concentration curve for symptoms of anxiety or depression against wealth rank



Results from multivariable logistic regression (subgroup analysis)

Age:
Youths aged 15-24 years had significantly higher odds of experiencing anxiety or depression symptoms compared to those aged 35-49 years:
Urban: **Adjusted Odds Ratio (AOR) 1.93** (CI: 1.31-2.86) , Rural: **AOR 1.49** (CI: 1.13-1.96) ,Peri-urban: **AOR 1.75** (CI: 1.29-2.36)

Gender:
Men had consistently lower odds of experiencing these symptoms compared to women:
Urban: **AOR 0.44** (CI: 0.32-0.61), Rural: **AOR 0.54** (CI: 0.40-0.71), Peri-urban: **AOR 0.37** (CI: 0.28-0.50)

Marital Status:
Individuals who were widowed, divorced, or separated had significantly higher odds compared to those never in union:
Rural: **AOR 2.81** (CI: 1.71-4.62), Peri-urban: **AOR 4.41** (CI: 2.54-7.66)

Daily Functioning:
Those reporting some difficulty with daily activities were more likely to experience symptoms then those who had no difficulty:
Urban: **AOR 1.70** (CI: 1.27-2.27), Rural: **AOR 1.56** (CI: 1.28-1.91), Peri-urban: **AOR 1.55** (CI: 1.17-2.06)

Health Status:
Individuals reporting bad or very bad health were significantly more likely to experience symptoms compared to those with good or very good health:
Urban: **AOR 4.12** (CI: 2.65-6.40), Rural: **AOR 3.92** (CI: 2.95-5.21), Peri-urban: **AOR 4.92** (CI: 3.62-6.67)

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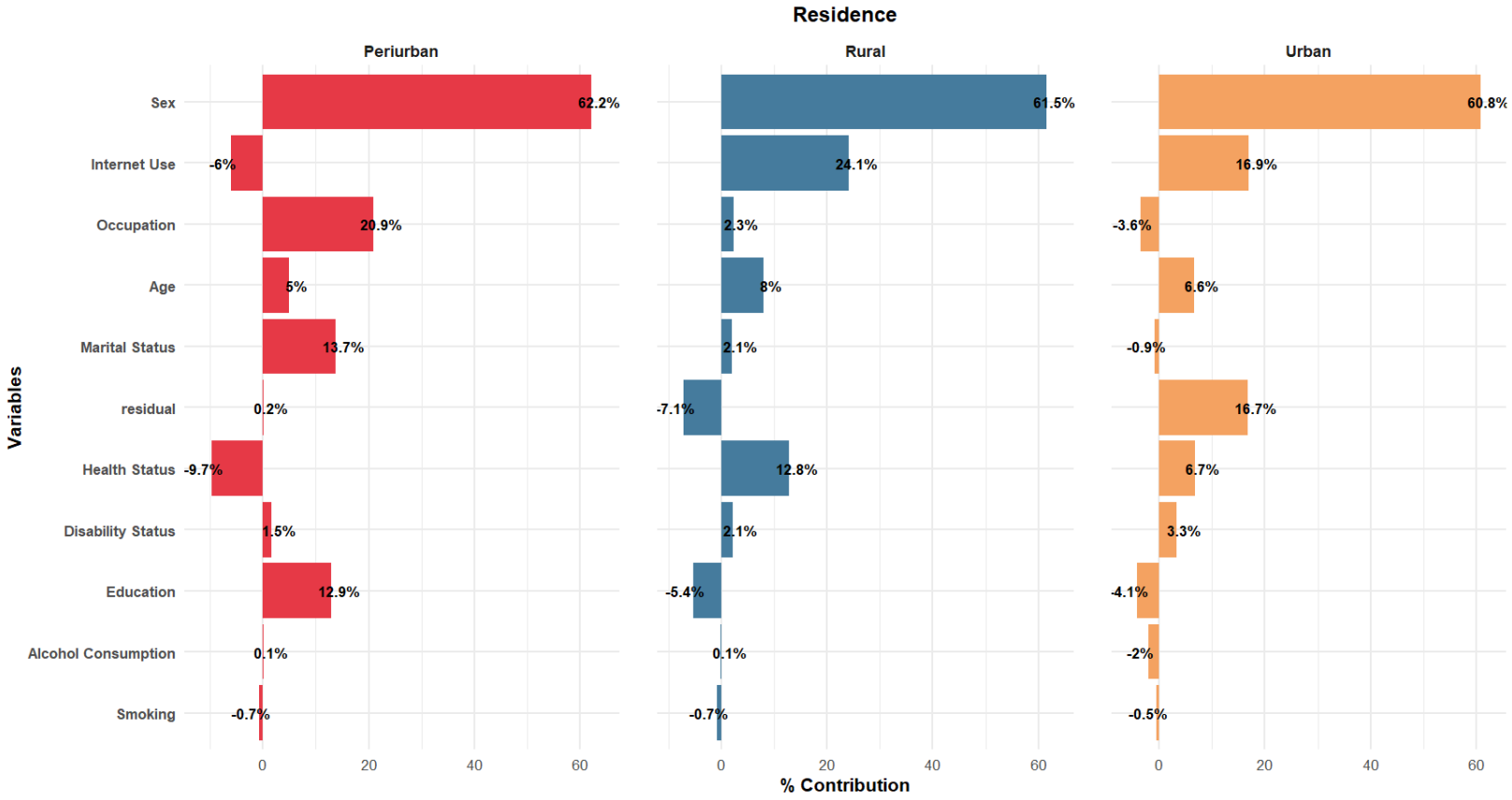
Results from Decomposition Analysis



- Sex was the leading contributor to disparities in anxiety and depression symptoms, accounting for over 60% of the variation across all residential settings (62.2% in peri-urban, 61.5% in rural, and 60.8% in urban areas).
- Internet use significantly influenced disparities in rural (24.1%) and urban (16.9%) areas, whereas marital status and occupation were notable factors in peri-urban areas (13.7% and 20.9%, respectively).
- Education's impact varied by setting, contributing positively in peri-urban areas (12.9%) but negatively in rural (-5.4%) and urban (-4.1%) areas, reflecting its differing role in mental health disparities.

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Conclusion and Takeaway message

This study highlights significant wealth-related inequalities in anxiety and depression symptoms among Nepalese adults, based on data from the Nepal Demographic and Health Survey 2022. Key findings are:

- **Disproportionate Burden on the Poor**: Concentration curves for anxiety and depression symptoms lie above the line of equality, indicating a higher prevalence among poorer households. The concentration index (CIx) for anxiety (-0.04; 95% CI: -0.056 to -0.025) reflects a greater disparity compared to depression (-0.017; 95% CI: -0.02 to -0.01).
- **Variation Across Residence Types**: When segregated by place of residence, all concentration curves remain above the line of equality, with urban areas showing the highest inequality followed by peri-urban and rural areas. This suggests that urban poverty exacerbates mental health disparities.

Conclusion and Takeaway message

- **Key Contributing Factors**: Sex is the dominant driver of these inequalities across all settings (contributing over 60%), with additional factors like internet use and education varying by residential context.
- **Targeted, context-specific policies are critical**: Addressing these disparities, especially in urban areas, requires tailored strategies that prioritize gender-sensitive approaches and equitable access to mental health resources.

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Bio

I am a public health graduate from Tribhuvan University with experience in research and data analysis, currently working at HERD International. I specialize in data management and health informatics. I am committed to advancing public health through rigorous, data-driven methodologies.

THANK YOU!

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