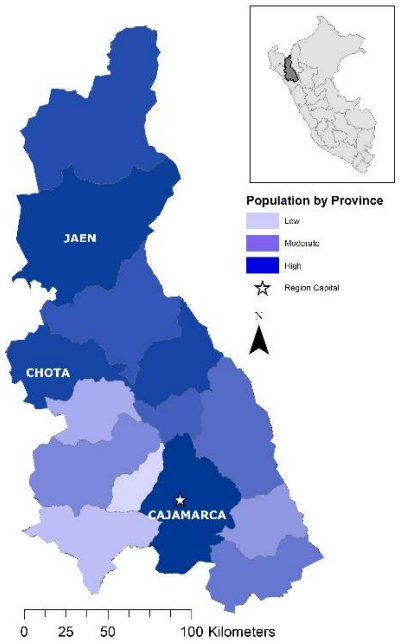
Region: Cajamarca



Region Capital: Cajamarca
Region Area: 33,494 km^2

Cajamarca is one of twenty-five regions in Peru, and its capital is an important town in the Peruvian highlands. A former territory of the Incan empire, Cajamarca is located in the northwest of the country, spans a mid-elevation geography, and shares a border with Ecuador. Its primary economic activities include mining, other services (e.g., tourism) and agriculture. As of 2015, Cajamarca's population was estimated at 1,529,755; with nearly half of its entire population residing in the provinces of Cajamarca, Jaen and Chota. Relative to the rest of Peru, the population of Cajamarca has lower than average life expectancy (72.9 years) and access to improved water sources (75.8%), while having higher than average poverty (52.9%) and illiteracy (13.1%).

1,529,755 Population (2015)

72.9 yrs Average life expectancy

52.9% Population in poverty

13.1% Illiterate population

75.8% Access to improved water

Multi-Hazard Risk (MHR) [1]

Score = 0.610, Rank = 1 of 25

Of the twenty-five regions of Peru, Cajamarca ranks first in multi-hazard risk (MHR = 0.610). Table 1 outlines the individual components that contribute to risk. As shown in the bar chart of Figure 1, Cajamarca's very high multi-hazard risk is a function of its very high multi-hazard exposure (MHE = 0.754), high vulnerability (V = 0.488), and low coping capacity (CC = 0.412). The ternary graph at right shows that individual risk components are all higher in Cajamarca compared to national averages. This is especially true of its multi-hazard exposure.

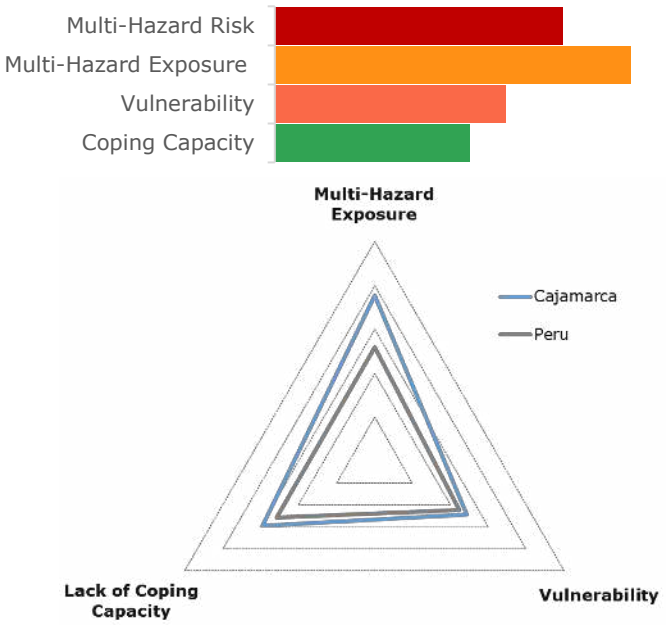


Figure 1. Components of the Multi-Hazard Risk Score compared to the national average.

[1] **Multi-Hazard Risk (MHR)**: An index that measures the likelihood of losses or disruptions to a region's normal function due to interaction between multi-hazard exposure, socioeconomic vulnerability and coping capacity. **MHR** = (MHE + V + (1-CC))/3. Values range from 0-1.

Components of Multi-Hazard Risk (MHR) [2]

Table 1. Scores and ranks for each component of the Multi-Hazard Risk Score.

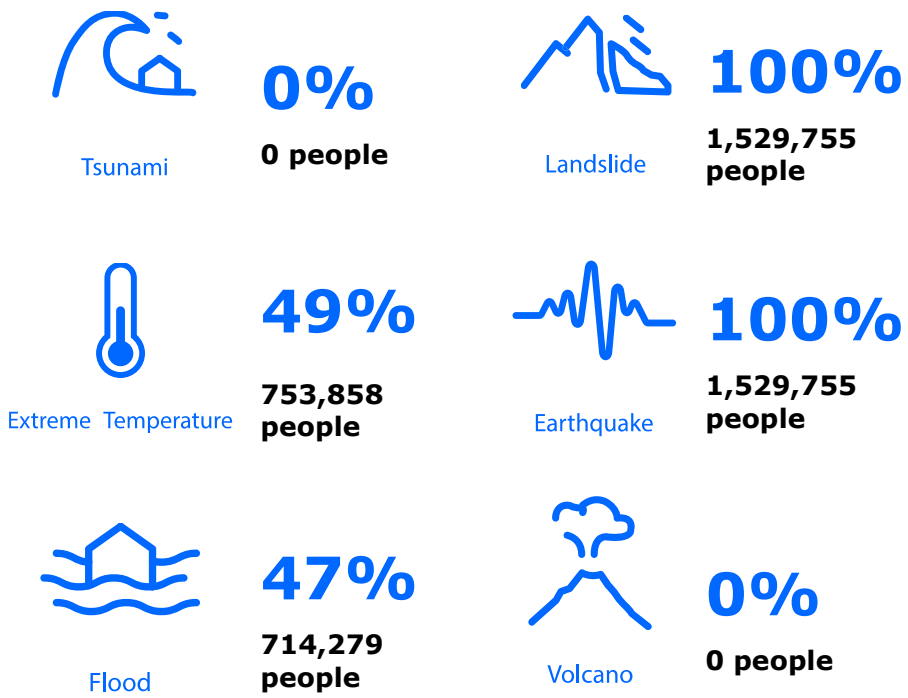
Multi-Hazard Exposure (MHE)		Vulnerability (V)		Coping Capacity (CC)	
Very High		High		Low	
Score	Rank (of 25)	Score	Rank (of 25)	Score	Rank (of 25)
0.754	3	0.488	9	0.412	19

Multi-Hazard Exposure (MHE) [3]

Score = 0.754, Rank = 3 of 25

Cajamarca has very high multi-hazard exposure relative to other regions of Peru (MHE = 0.754). This score is a function of both Raw and Relative MHE, as shown in Figure 2. The Raw MHE Score is an index reflecting the absolute value of population exposed to multiple hazards. This score can aid in understanding the overall scale of hazard exposure. The Relative MHE Score is an index reflecting the proportion of the region's base population exposed. This score can assist in the determination of how important hazards are, and can help prioritize disaster management activities across regions. Estimates of exposure by hazard type are summarized in Table 2.

Table 2. Estimated ambient population[4] exposed to each hazard type.



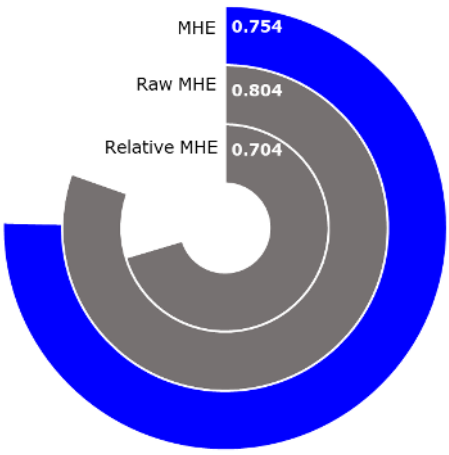


Figure 2. Average, raw and relative Multi-Hazard Exposure Scores.

[2] **MHR** = (MHE + V + (1-CC))/3.
[3] **Multi Hazard Exposure (MHE)***:* An index based on the estimated average exposure of the population to six hazard types: tsunamis, landslides, extreme temperature, earthquakes (MMI VII and above), floods and volcanos. Average exposure considers both raw average exposure and relative average exposure as a proportion of total population. Values range from 0-1.
[4] **Ambient Population**: 24-hour average estimate of the population; typically differs from census population.

Vulnerability (V) [5]

Score = 0.488, Rank = 9 of 25

Cajamarca has high vulnerability relative to other Peruvian regions (V = 0.488). The bar chart on the right displays the composition of its overall Vulnerability Score. As shown, vulnerability in Cajamarca is driven primarily by information access, gender inequality and clean water access. The table below summarizes the individual indicators within each socio-economic theme.

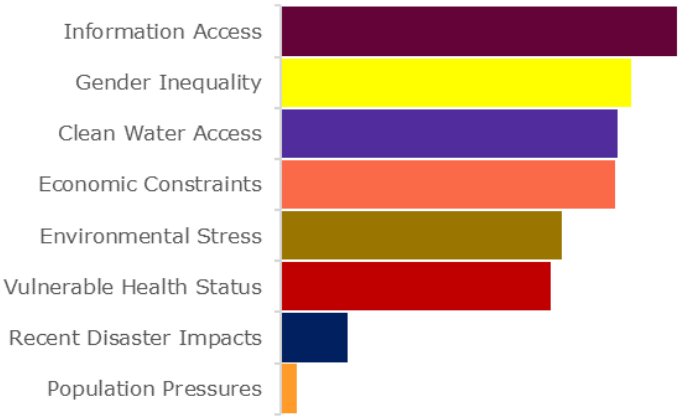


Figure 3. Components of the Vulnerability Score by relative contribution.

Table 3. Indicators of vulnerability grouped by theme.

Environmental Stress	**3.7** % of total regional area with irrigation-fed agriculture	**15.9** % of total regional area with severe erosion					
Vulnerable Health Status	**18.0** Infant mortality rate per 1k births	**93.4** Maternal deaths per 100k births	**72.9** Average life expectancy (years) at birth	**35.6** % of children under 5 years of age that are malnourished	**4.0** % of population with 1 or more disability		
Clean Water Vulnerability	**75.8** % households with access to improved water	**41.7** % households with access to flush toilets					
Information Access Vulnerability	**13.1** % of population 15yrs and older that are illiterate	**7.7** Average years of schooling	**73.0** % primary school enrollment	**4.8** % households with internet	**54.4** % households with television	**79.5** % households with radio	
Economic Constraints	**0.59** Ratio of dependents to working age population (15-64 years)	**53.25** Ratio of average monthly household expenses to income	**52.9** % of population monetarily impoverished				
Gender Inequality	**0.50** Proportion of female representatives in local government	**0.68** Ratio of female to male secondary enrollment	**0.79** Ratio of female to male labor participation				

[5] **Vulnerability (V)**: An index that measures the socioeconomic conditions associated with susceptibility to disruptions in a region's normal functions. Values range from 0-1.

Population Pressures	**0.4** % Average annual population change (2010-2015)		
Recent Disaster Impacts	**13.3** Average annual hazard-related deaths per 10k persons (2010-2014)	**0.7** Average annual number of homes destroyed by recent hazards per 10k persons (2010-2014)	

Coping Capacity (CC) [6]

Score = 0.412, Rank = 19 of 25

Cajamarca has a low coping capacity relative to other regions (CC = 0.412). The bar chart on the right displays the composition of its overall Coping Capacity Score. As shown, coping capacity in Cajamarca is hindered primarily by its environmental and economic capacity. The table below summarizes the individual indicators within each socio-economic theme.

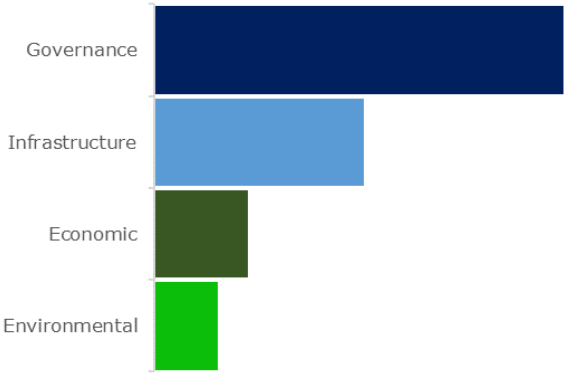


Figure 4. Components of the Coping Capacity Score by relative contribution.

Table 4. Indicators of coping capacity grouped by theme.

Economic Capacity	**$761** Average monthly income ($)	**$9,843** Gross domestic product per capita			
Governance	**0.87** Registered cases of sexual violence per 10k persons	**0.70** Registered cases of missing persons per 10k persons	**0.006** Average annual number of social conflicts per 10k persons (active and resolved)	**6,508** # of voters per 10k persons (2014 election)	
Environmental Capacity	**3.5** % protected or reforested land				

[6] **Coping Capacity (CC)**: An index that measures the systems, means and abilities of a region to absorb and respond to events that could potentially disrupt normal function. Values range from 0-1.

Infrastructure Capacity

Healthcare Capacity	**10.1** # of hospital beds per 10k persons	**12.2** # of nurses per 10k persons	**4.8** # of physicians per 10k persons
Communications Capacity	**3.6** % households with fixed phone line	**78.5** % households with mobile phone	
Transportation Capacity	**2.1** Port/airport density per 10,000 sq km	**2,815.1** Road/rail density per 10,000 sq km	

Resilience (R) [7]

Score = 0.462, Rank = 19 of 25

Resilience is a function of both vulnerability and coping capacity. Cajamarca is less resilient than the national average, and its low Resilience Score (R = 0.462) is due to its high vulnerability and low coping capacity. The region's baseline indicators suggest a focus for resilience-building efforts. In Cajamarca, the thematic areas with the weakest relative scores are summarized in the table below. Readers can additionally consult Appendix 1 for a comprehensive assessment of its need for specific program types relative to other regions.

Table 5. The top 3 thematic areas with the weakest relative scores.

Gender Inequality

Information Access Vulnerability

Healthcare Capacity

[7] **Resilience (R):** An index that offers a hazard-independent measure of current socio-economic conditions affecting the short-term ability to absorb, respond to, and recover from disruptions to a region's normal function. Values range from 0-1.