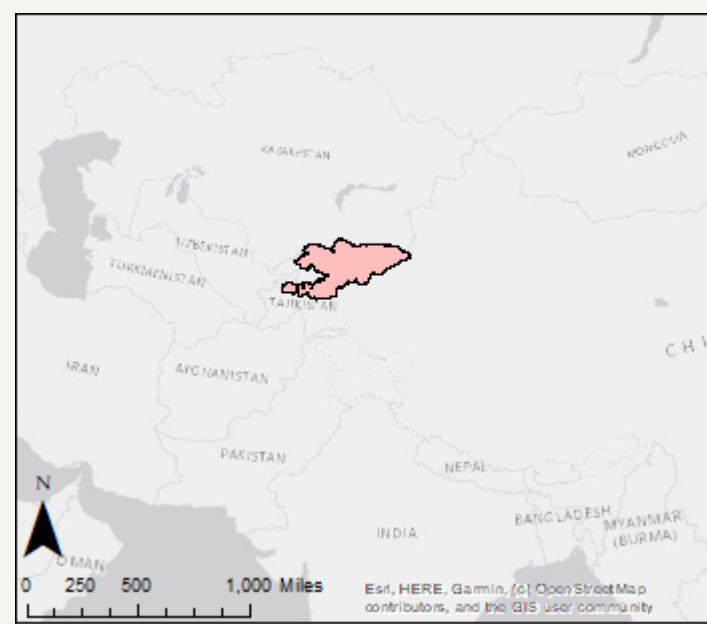


Engulfing Disaster:

A look at flooding and mudflow vulnerability in the Kyrgyz Republic.

Background



The ability to allocate resources properly during times of crises is essential for bringing the situation back to normalcy, especially events caused by natural disasters. In the Kyrgyz Republic, the World Bank estimates that around 47% of the country is within a hazard area for floods and landslides, encompassing 20% of their population. Further exacerbated by high levels of poverty with the Asian Development Bank estimating around 25% of population living below the national poverty line.

To be able to accurately identify populations at relative risk to natural disasters, it is important to understand the likelihood of a location experiencing a natural event. The Kyrgyz Republic is at risk to floods and mudslides according to the World Bank report *Disaster Risk Management and Climate Change Adaptation in Europe and Central Asia*, with some districts experiencing severe flooding.

Thus, it is important to conduct a disaster risk and vulnerability analysis for Kyrgyzstan. By combining existing disaster and risk analysis results for floods and landslides produced by the World Food Programme and the Government of the Kyrgyz Republic, and socio-economic vulnerability data, we will be able to pin-point areas of highest risk. Attempting to answer the question:

Which districts in the Kyrgyz Republic have the highest level of vulnerability to flooding and mudslides?

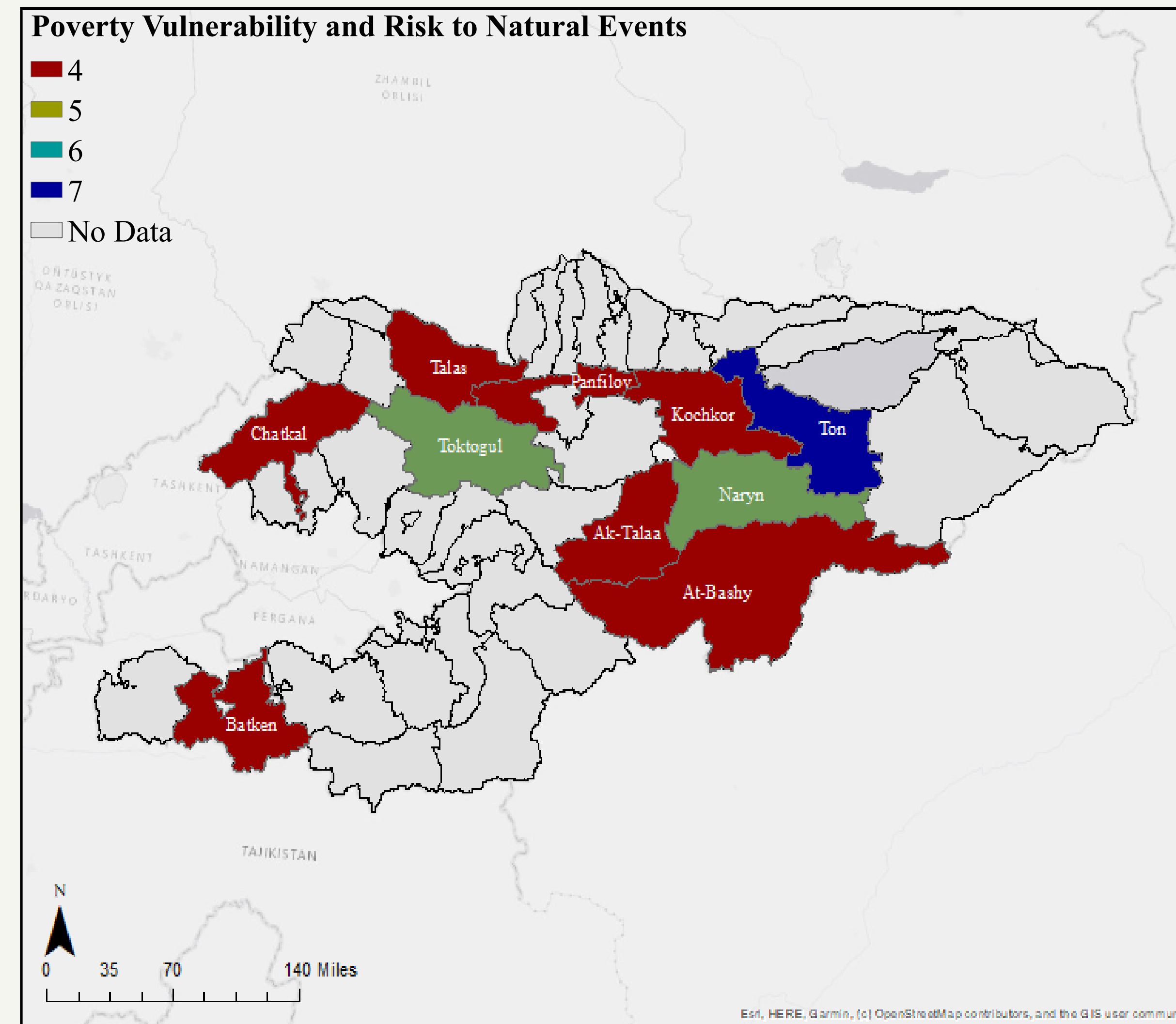
Methods

This project aims to identify which district holds the most vulnerable population to natural shocks, specifically floods and mudflows in the Kyrgyz Republic. Two matrixes were used in order to determine this. 1) Risk to natural shocks and Risk to floods and mudflows, produced by the World Food Programme in conjunction with the Kyrgyz Ministry of Emergency Situations and 2) Poverty vulnerability per district and population statistics produced by the National Statistics Committee. Natural Event Matrix:

	Risk to Natural Shocks	1 – Low Risk	2 – Medium Risk	3 – High Risk
Floods and Mudflow Risk				
1 – Lowest Risk		2	3	4
2		3	4	5
3		4	5	6
4		5	6	7
5 – Highest Risk		6	7	8

Cartographer: Meagan Reid | Date: 05/05/2020 | DHP207 Projection: Kyrg-06_TM_Zone_4 | Sources: ESRI, KG Ministry of Emergency Situations, KG National Statistics Committee, WFP

Risk and Vulnerability Analysis

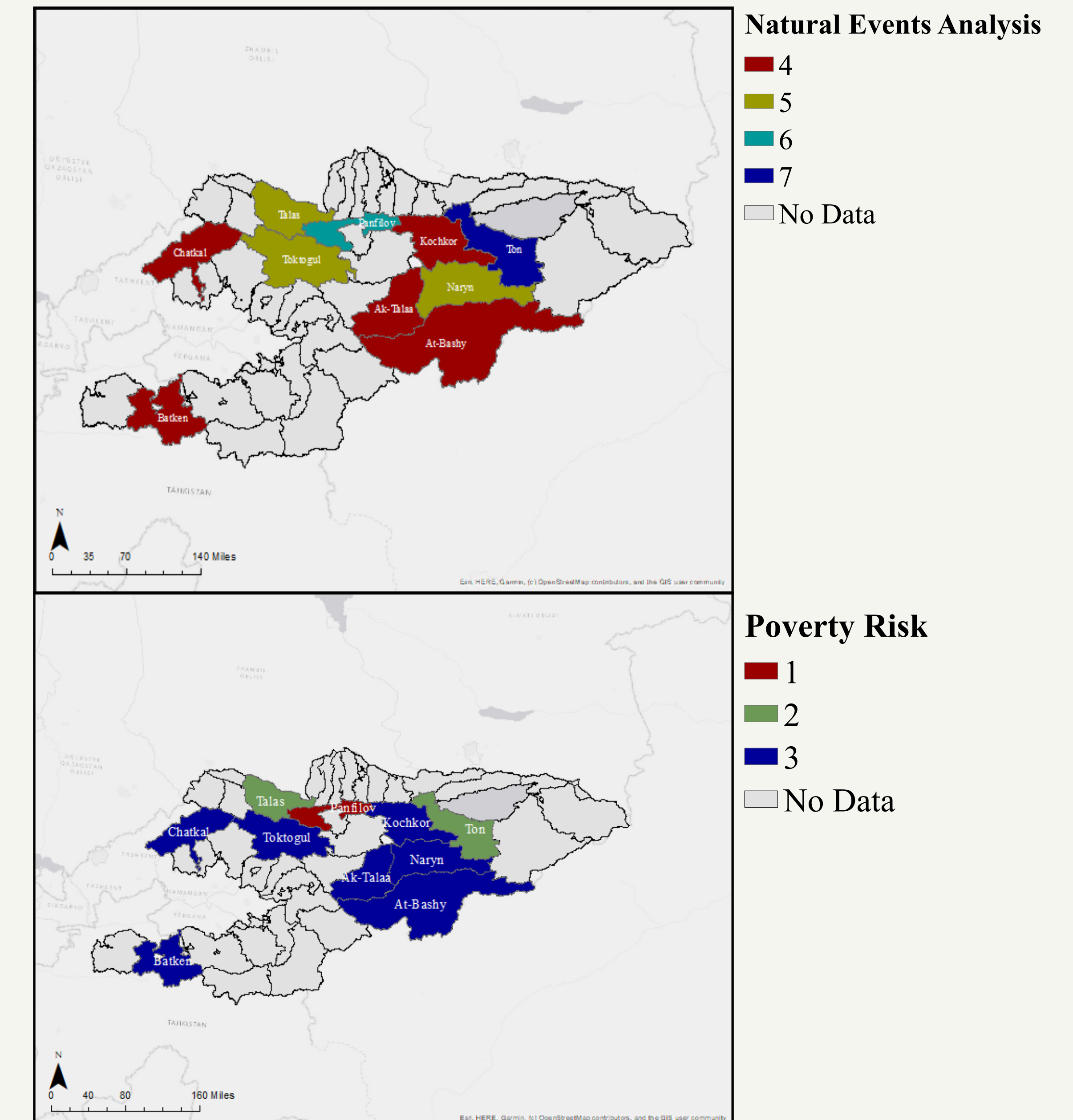


With data provided by the World Food Programme in conjunction with the Kyrgyz Republic Ministry of Emergency Situations on Natural Shocks and Flood and Mudflow risk at the provincial level allowed for the use of the field calculator tool to determine which districts have the highest risk to these events. By codifying risk on a scale of 1(lowest risk) to 5(highest risk) for floods and mudflows and 1 (lowest risk) to 3 (highest risk) for natural shocks, the above matrix was produced to show aggregate risk for each district that data is available for.

To further understand where the most vulnerable populations are to natural risk in the Kyrgyz republic, an index on poverty was created indicating the percentage of the population per district living under the national poverty line. Vulnerability to poverty was then coded between 1 (the lowest risk of poverty) and 3 (the highest risk of poverty) in order for it to be overlaid with the risk to natural events creating the below:

	Risk	3 Lowest Risk	4	5	6	7	8 Highest Risk
Poverty							
1		4	5	6	7	8	9
2		5	6	7	8	9	10
3		6	7	8	9	10	11

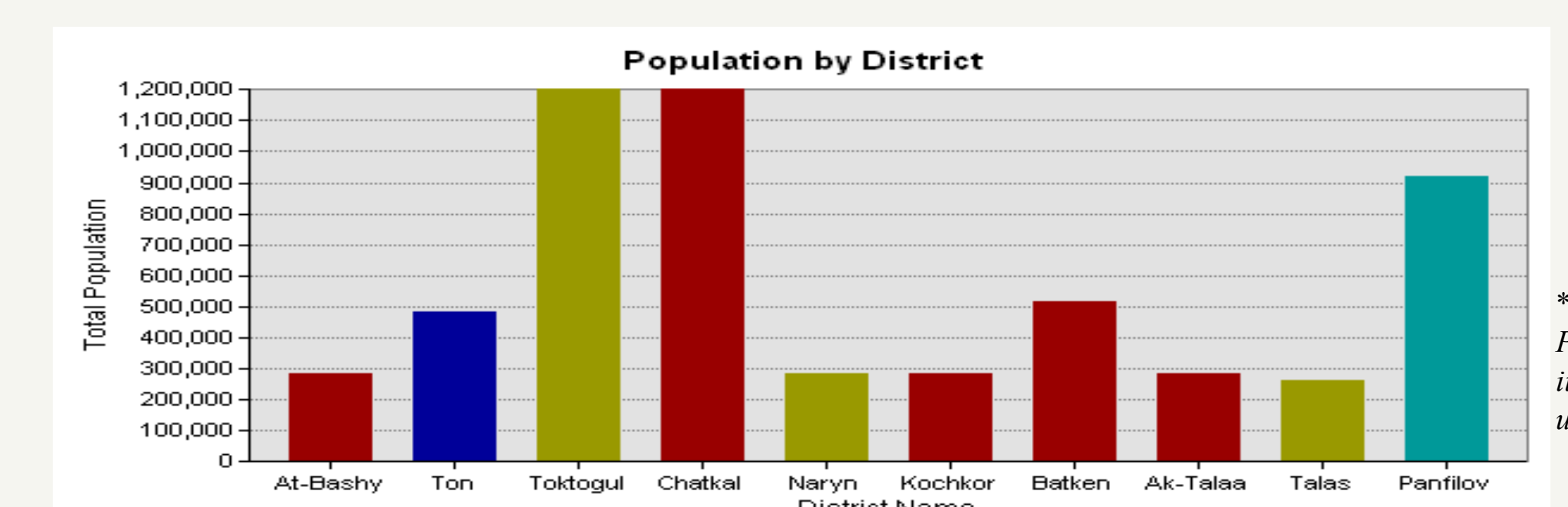
Natural Event Analysis and Poverty Analysis



Results

Though the population of certain districts in the Kyrgyz Republic see higher levels of poverty, specifically At-Bashy, Ak-Talaa, and Kochkor, those areas are not as at risk for experiencing a natural event. Unfortunately, data was not available for every district in the Kyrgyz Republic. Yet based off of the data available, the districts that are at the highest risk of experiencing negative effects due to a natural event is Ton, a district on the edge of Lake Issy-Kul, and high up in the Tien Shan mountains.

Further, below are the population statistics per district studied:



*Colors match to Poverty Vulnerability and Risk to Natural Events Legend