



Figure 1. A map depicting the estimated flash flood risk for Oktibbeha County, MS, US.

On my honor, as a Mississippi State Student, I have neither given nor received unauthorized assistance on this academic work.

The factors determining the risk for flash flooding included land cover, the slope of the elevation, the distance to a stream, and the distance to a major road. Of these, the land cover includes features such as urban area that include impermeable surfaces such as concrete, crops, barren lands, and grasslands. The affect that the land cover has on flash flooding risk ranks from 3 to 1, with the land cover types mentioned above ranked respectively (barren lands and grasslands are both ranked as a 1). Additionally, the greater the slope of elevation, the greater the risk for flash floods. The greater the proximity to a stream, the greater the risk. The same was determined for proximity to a major road. All four of these features can be found within the city limits of Starkville, MS. The city is large, and the urban landscape is quite extensive. Additionally, there are many streams running through most of the city, with many crossing converging on major roads. Additionally, the high slopes found near many of the major roads makes up for the fourth factor—especially near highways and interstates. Outside of the city, regions marked as Dangerous exist mostly near roads, as many grasslands and barren lands exist in combination with more shallow sloping terrain. Most of the map is marked as Low Risk or Unlikely given that only 1-2 of the given factors exist. Most of the Low Risk exists along major roads or along streams as these areas are more common to have two categories converge.

The data could have included more categories for consideration, given that only 4 categories were measured. None of the factors needed to be removed, as they all impact residences or travel. However, the most significant data that was missing is soil type. Soil type could be one of the single most impacting categories not included, as infiltration and runoff rates greatly impact the risk of flash flooding. Additionally, the combination of barren lands and steep sloping terrain could have been weighted slightly more than any other two categories, as this combination results in a much greater risk of flash flooding when there is little to no vegetation to slow down the movement of the water. Lastly, the emergent wetlands and wetlands categories could have remained, as those regions tend to mitigate flash flooding risk.