ASSIGNMENT 3 – FINAL PROJECT

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INFO – P 502 Modeling Crisis
05- 05-2025

INTRODUCTION

County Description

As of the 2020 census, Bartholomew County, which is located in the US state of Indiana, had 82,208 residents. Columbus serves as its county seat. It was designated as the location of the mean center of the U.S. population by the U.S. Census Bureau in 1900. The Columbus, Indiana Metropolitan Statistical Area, which is a component of the broader Indianapolis-Carmel-Muncie Combined Statistical Area, includes Bartholomew County.

Bartholomew County, Indiana, has a total area of 409.52 square miles as of the 2010 census, of which 99.36% is land and 0.64% is water. Camp Atterbury is located in the county's northwest. Johnson, Shelby, Decatur, Jackson, Jennings, and Brown counties are its neighbors.

The city of Columbus serves as the county seat, and the county also includes the towns of Clifford, Elizabethtown, Hartsville, Hope, Jonesville, and part of Edinburgh.

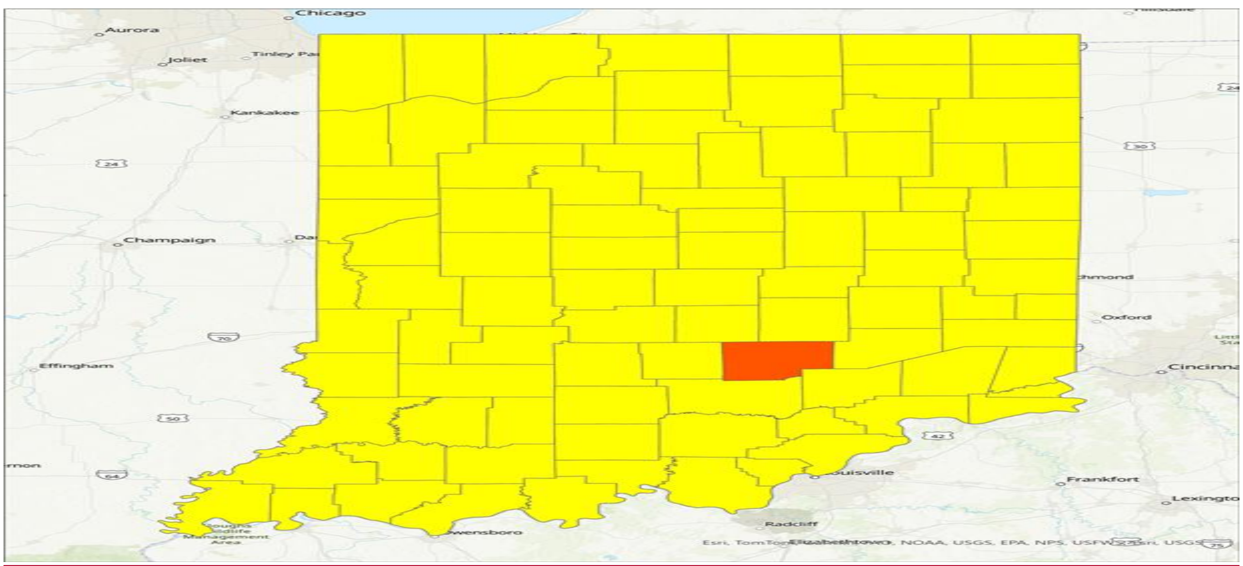


Figure 1.1: Location of Bartholomew County (highlighted in red) within the state of Indiana, providing geographic context for the flood impact analysis.

Natural Features and Terrain

Particularly close to its western boundary with Brown County, Bartholomew County, Indiana, boasts a varied terrain with gently rolling hills and flat agricultural plains. Numerous streams, such as the Flatrock and Driftwood Rivers, which meet at Columbus to form the East Fork of the White River, have formed the county's topography. The county's substantial agricultural activities are supported by the fertile soil that this river system contributes to. Furthermore, places like Columbus's Mill Race Park, which features recreational areas and floodplain woodlands, showcase the county's natural splendor. The county is a special area of Indiana because of its diverse geography and abundance of natural resources.

Population Demographics Bartholomew County

- ## Population over Time

The population data highlights a steady growth trend in Bartholomew County, Indiana. In 2020, the county had a population of 82,208, which increased to 84,741 by 2024 marking a 3.1% growth, higher than the state's overall growth of 2.0% during the same period.

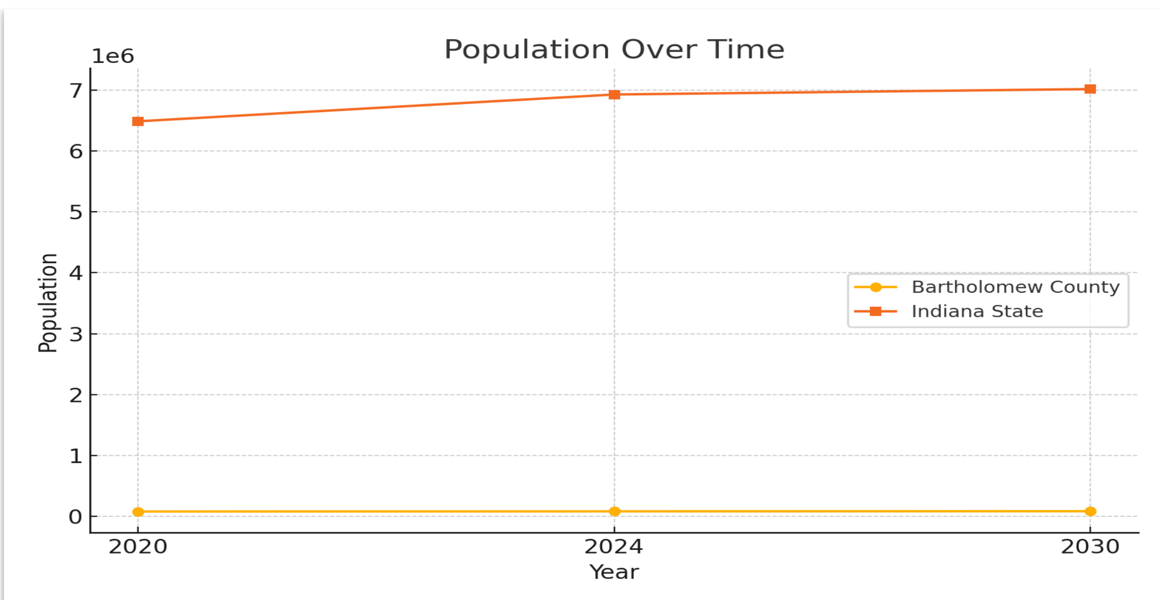


Figure 1.2: Population growth trend in Bartholomew County (2020–2030) compared to Indiana state averages, showing a steady increase and higher growth rate at the county level.

This upward trend is expected to continue, with projections estimating the county's population will reach 86,984 by 2030. Throughout this timeline, Bartholomew County has maintained its rank as the 19th most populous county in the state, consistently accounting for around 1.2% to 1.3% of Indiana's total population.

Population over Time	Number	Rank in State	Percent of State	Indiana
Yesterday (2020)	82,208	19	1.3%	6,484,050
Today (2024)	84,741	19	1.2%	6,924,275
Tomorrow (2030 projection)*	86,984	19	1.2%	7,013,509
Percent Change 2020 to Today	3.1%	12		2.0%

Population Estimates by Age, 2023

Age Group	Population	Percent of County	Indiana Avg
Preschool (0–4 years)	5,284	6.3%	5.9%
School Age (5–17 years)	14,931	17.8%	17.2%
College Age (18–24 years)	7,170	8.5%	9.6%
Young Adults (25–44 years)	22,250	26.5%	25.8%
Older Adults (45–64 years)	19,883	23.7%	24.2%
Seniors (65+ years)	14,485	17.2%	17.2%
Median Age	37.8	—	38.2

Table 1.1 Bartholomew County has a well-balanced age distribution. Young adults (25–44) make up the largest group (26.5%), followed by older adults (45–64) at 23.7%. Children (0–17) represent 24.1%, and seniors (65+) account for 17.2%, matching the state average. With a median age of 37.8, the county has a relatively young and stable population,

Population Estimates by Race and Hispanic Origin, 2023

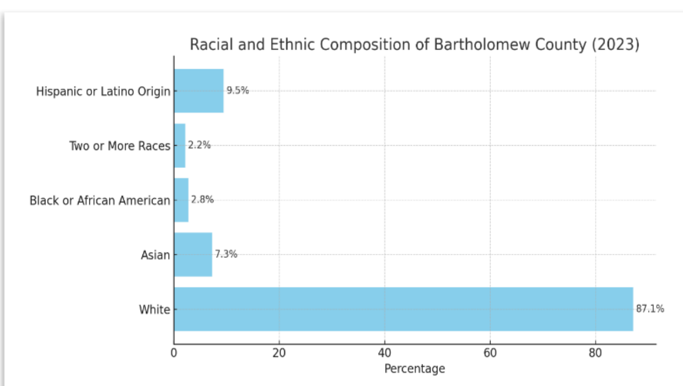


Figure1.3 Bartholomew County is predominantly White (87.1%), with a notable Asian population (7.3%), which is significantly higher than the state average of 2.9%. Other represented

groups include Hispanic or Latino (9.5%), Black or African American (2.8%), and Two or More Races (2.2%). This diversity highlights the county's growing multicultural presence.

Income and poverty

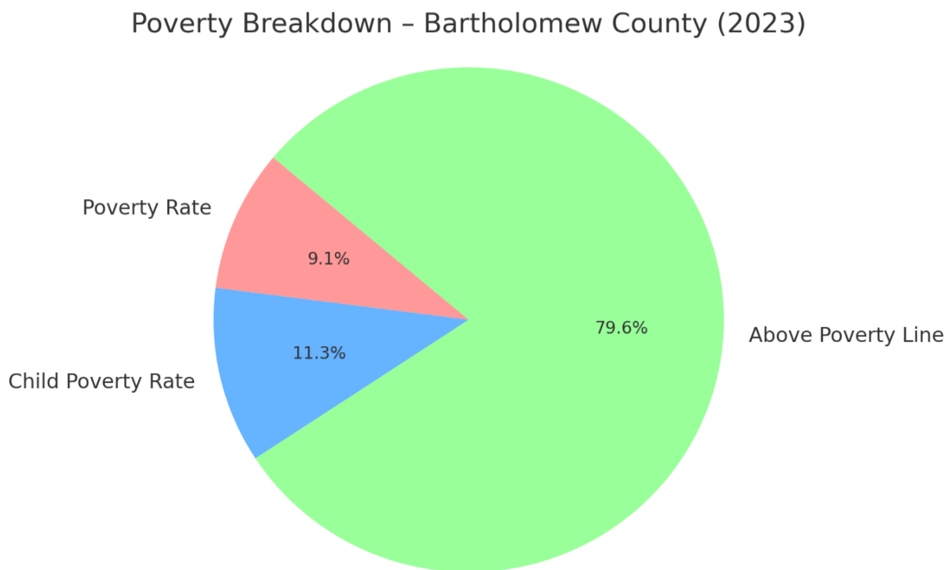


Figure 1.4 In 2023, about 10% of Bartholomew County's population lived below the poverty line, with a slightly higher 12.4% child poverty rate. The majority of residents (about 87.6%) were above the poverty threshold, reflecting the county's relatively strong economic standing compared to the state average

Land Use Overview in Bartholomew County

Bartholomew County exhibits a diverse land use pattern dominated by agriculture, urban development, and forested areas. The majority of land is used for cultivated crops (Class 82) and pasture/hay (Class 81), particularly across central and eastern regions, highlighting the county's agricultural strength.

Urban development is concentrated around Columbus, shown in red shades, with medium to high-intensity development (Classes 23 & 24) forming the urban core. Surrounding this are low-intensity and open space zones (Classes 21 & 22), indicating suburban and recreational land use.

Forested regions, mainly deciduous and mixed forests (Classes 41 & 43), dominate the west and south, acting as natural buffers and contributing to ecological stability. Smaller wetlands (Classes 90 & 95) and open water (Class 11) areas support hydrological functions but are limited in extent.

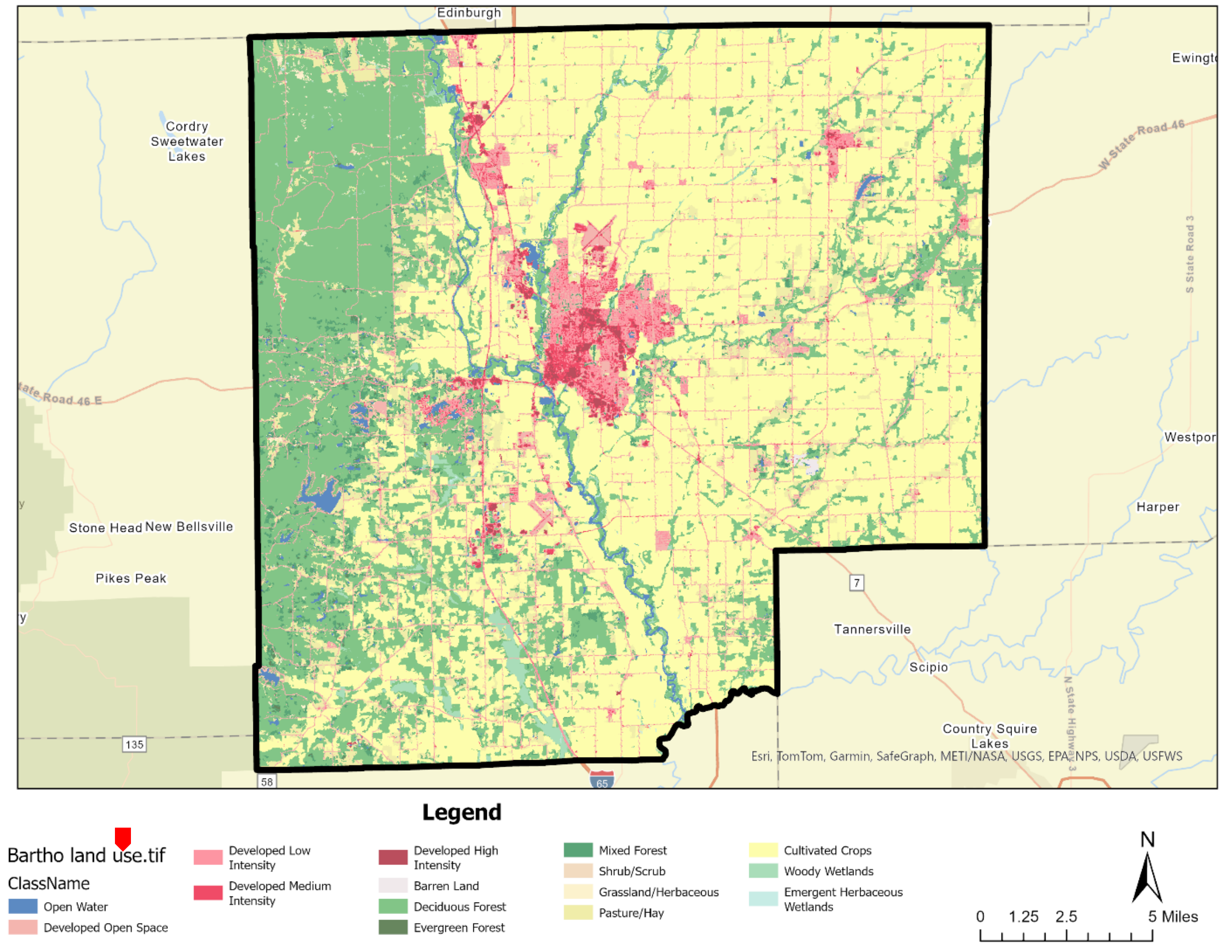


Figure 1.5. Land use in Bartholomew County based on NLCD 2019. Urban development (red) is concentrated around Columbus, while agriculture (brown/yellow) dominates rural areas. Forested land (green) is mainly in the west and south, reflecting a diverse urban–rural land use

Transportation and Utility Infrastructure Overview

Bartholomew County's major transportation routes—including Interstate 65 (I) and U.S. Route 31 (U)—run north-south through the county and intersect with key developed areas, particularly around Columbus Municipal Airport. These routes are vital for mobility, freight, and emergency response.

The Louisville & Indiana Railroad also traverses Columbus, supporting industrial and commercial activities. The Columbus Municipal Airport, identified on the map, plays a key role in emergency logistics and general aviation.

Much of this infrastructure overlaps with flood-prone areas, especially where roads and rivers intersect, as highlighted by the dense blue river network in the map. This spatial overlap damage utilities, particularly in urban cores like Columbus.

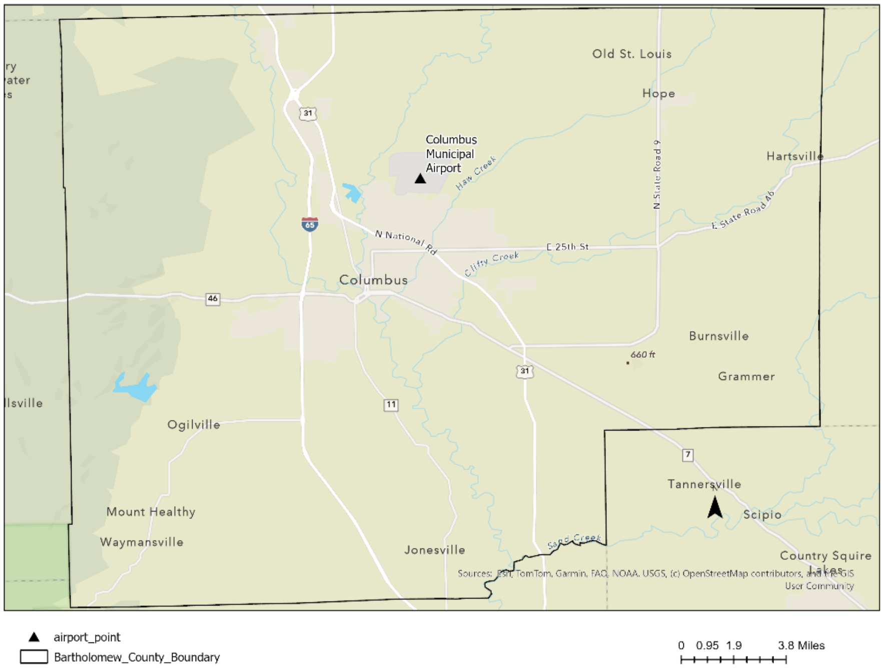


Figure 1.6 Major transportation routes, rivers, and NLCD land cover in Bartholomew County. Roads and rail lines intersect with flood-prone areas, especially near Columbus and along river corridors, posing potential risks to mobility and critical infrastructure during flood events.

Part 2: Hazard Analysis

Section 1:

Historical Flood Events in Bartholomew County

Bartholomew County has experienced several significant flood events over the past decades, primarily due to heavy rainfall and overflow from the East Fork of the White River and its tributaries such as Driftwood River and Clifty Creek.

- June 2008 Flood: One of the most severe in recent history, this flood was caused by more than 10 inches of rain over two days. The East Fork White River crested at a record 28.5 feet, inundating parts of Columbus and surrounding areas. Major damage occurred to homes, businesses, and infrastructure, including the Columbus Regional Hospital, which was forced to shut down temporarily due to floodwater intrusion. FEMA declared it a federal disaster (DR-1766-IN).

- March 1964 Flood: Heavy rain and snowmelt led to flooding along the East Fork White River. Agricultural land and roads were affected, but urban impacts were more limited due to lower development levels at the time.

- May 2017 Flash Flooding: Intense rainfall caused localized flash flooding in Columbus and other low-lying areas. While less damaging than 2008, the event highlighted ongoing vulnerability in stormwater management systems.

These events demonstrate Bartholomew County's repeated exposure to riverine and flash flooding, particularly around Columbus, where major transportation corridors and utilities are z

Future Flood Risk: Climate Change Implications
According to the Indiana Climate Change Impacts Assessment (IN CCIA) led by Purdue University, central Indiana—including Bartholomew County—is expected to see a 20–25% increase in heavy precipitation events by mid-century. This intensification of rainfall is attributed to higher atmospheric moisture associated with rising temperatures (IN CCIA, 2018).

- Potential future impacts include:
  More frequent flash floods due to rapid stormwater runoff.
- Increased riverine flooding caused by saturated soils and overwhelmed waterways.
- Compound flood risks, as development expands into flood-prone areas and infrastructure ages.

Section 2

For this project, a 1% annual chance flood scenario—commonly referred to as a 100-year flood—was modeled using Hazus-MH for Bartholomew County, Indiana. This analysis included hydrology, floodplain delineation, and hazard modeling steps, resulting in a flood depth grid that shows predicted water depths across the county during such an event.

- The flood map made by Hazus shows how deep floodwaters could be in areas that might experience a 100-year flood. Unlike maps created after a real flood event, the Hazus map does not reflect one specific storm. Instead, it uses average terrain data and general water flow patterns to identify zones at higher flood risk.
- While helpful for planning, the Hazus map has some limitations:
- It estimates flood potential, not what will definitely happen.
- It may overlook small urban trouble spots like low-lying underpasses or poor drainage zones.

In flat areas, water depths may appear more uniform due to lower-resolution elevation data.

Hazus 1% Annual Chance Flood Depth Grid

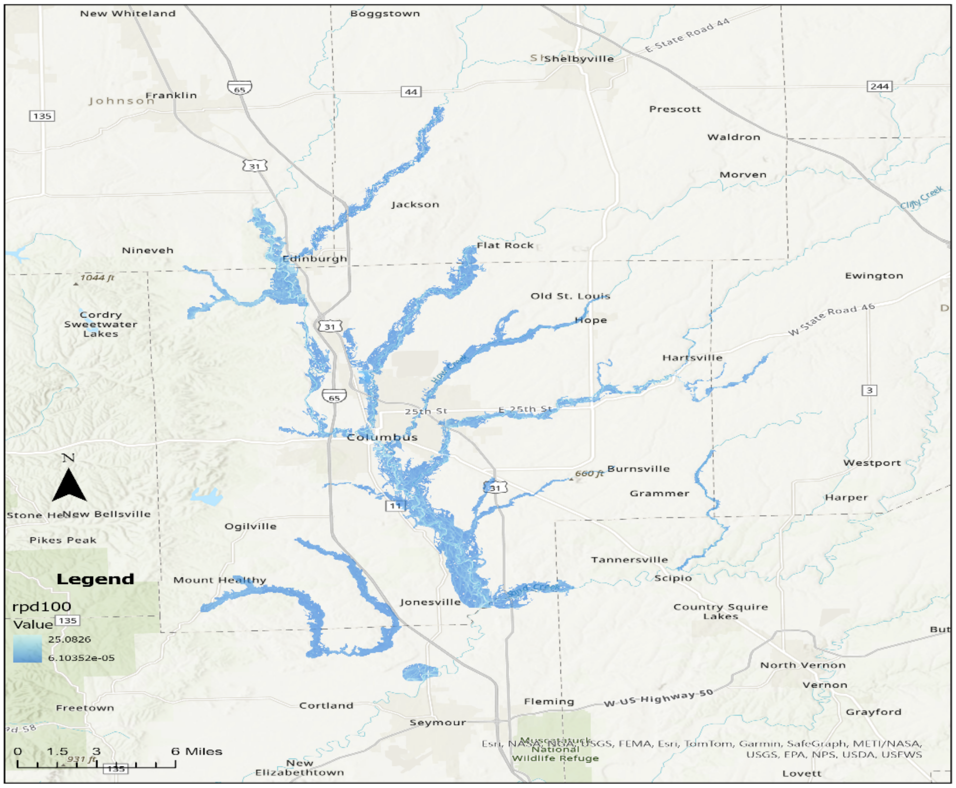


Figure 2.1 Hazus-generated 1% annual chance flood depth grid for Bartholomew County. The map displays predicted inundation depths based on probabilistic modeling, highlighting areas with elevated flood risk across major waterways and low-lying terrain.

Comparing Hazus Depth Grid to FEMA Flood Zones (A and AE)

FEMA's flood zones ('A' and 'AE') were extracted from the **S_FLD_HAZ_AR** layer and saved as **Rtn100_FEMAMSC**. When overlaid on the Hazus 1% flood depth grid:

The comparison shows that:

- Hazus and FEMA AE zones generally align in major floodplain areas, especially along the East Fork White River.
- Zone A areas, which lack detailed elevation modeling, show greater variance compared to Hazus predictions.
- In rural or less-studied regions, Hazus identifies flood-prone areas not represented in FEMA data, due to updated terrain modeling and automated hydrology.

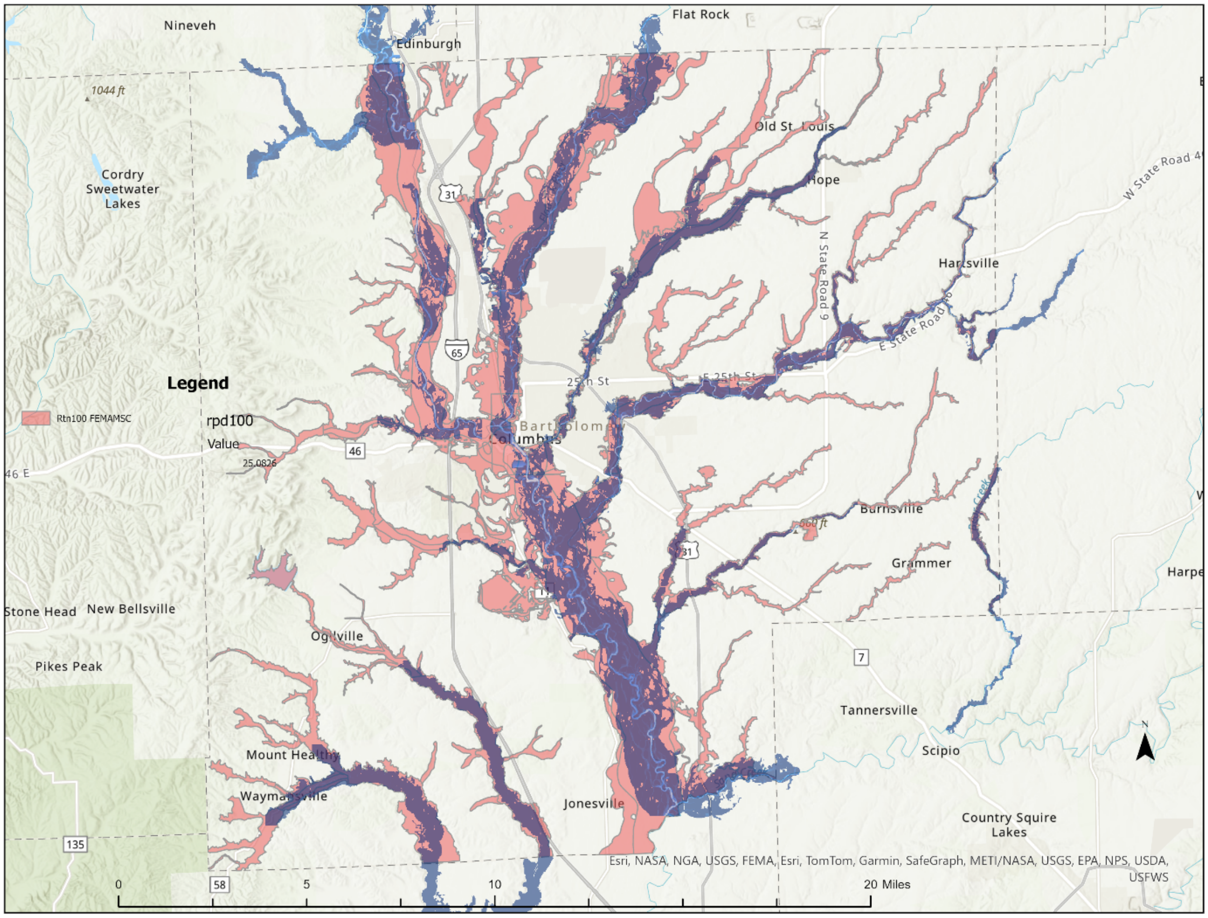


Figure 2.2. Overlay of Hazus 1% annual chance flood depth grid and FEMA Zones A/AE in Bartholomew County. The comparison highlights areas of agreement and discrepancy between modeled flood risk (Hazus) and regulatory boundaries

Part 3: Physical and Economic Impact Analysis

Debris Damages

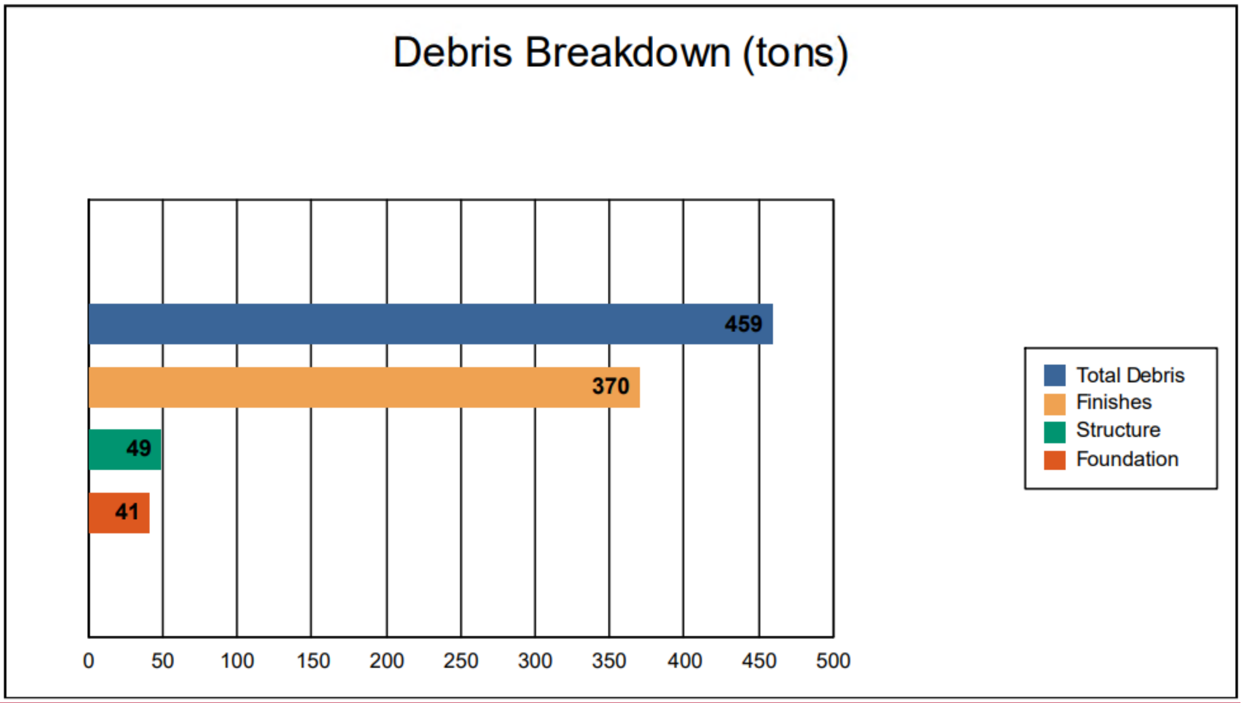
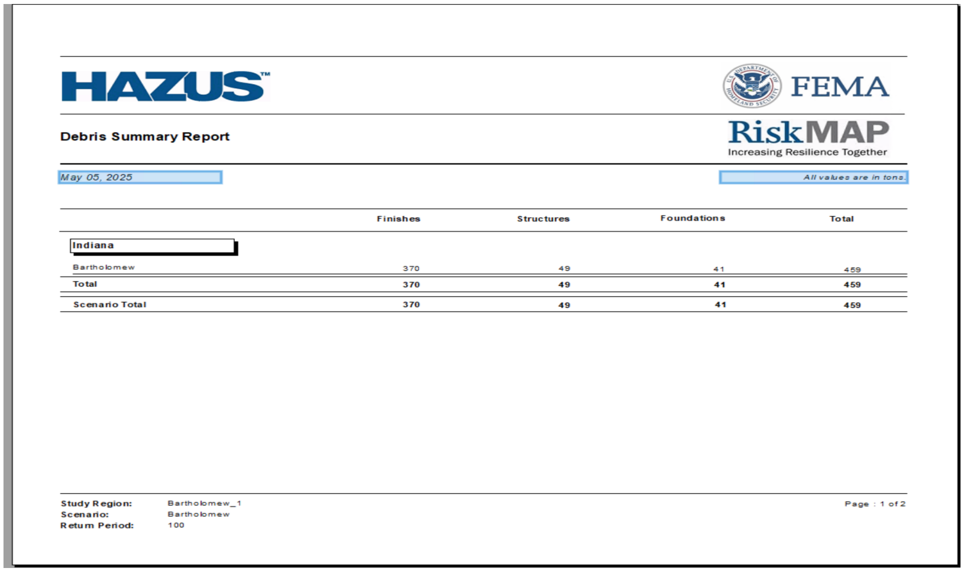


Figure 3.1
The total estimated debris generated from the 100-year flood event in Bartholomew County is 459 tons. This debris is primarily composed of:

- 370 tons from finishes (e.g., drywall, insulation),
- 49 tons from structural components (e.g., wood, brick), and

41 tons from foundations (e.g., concrete, rebar).
As shown in Figure 3.2 finishes account for the majority of debris. Based on FEMA guidelines (25 tons per truck), approximately 19 truckloads would be needed to remove all debris after the flood.

Debris is concentrated near major water bodies such as the Flatrock and Driftwood Rivers, especially around urban areas like Columbus and low-lying southern tracts (see Figure 3.3). These areas are more affected due to a combination of flood depth and higher building density.



HAZUS

FEMA

Debris Summary Report

RiskMAP
Increasing Resilience Together

May 05, 2025

All values are in tons.

	Finishes	Structures	Foundations	Total
Indiana				
Bartholomew	370	49	41	459
Total	370	49	41	459
Scenario Total	370	49	41	459

Study Region: Bartholomew_1
Scenario: Bartholomew
Return Period: 100

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Figure 3.2

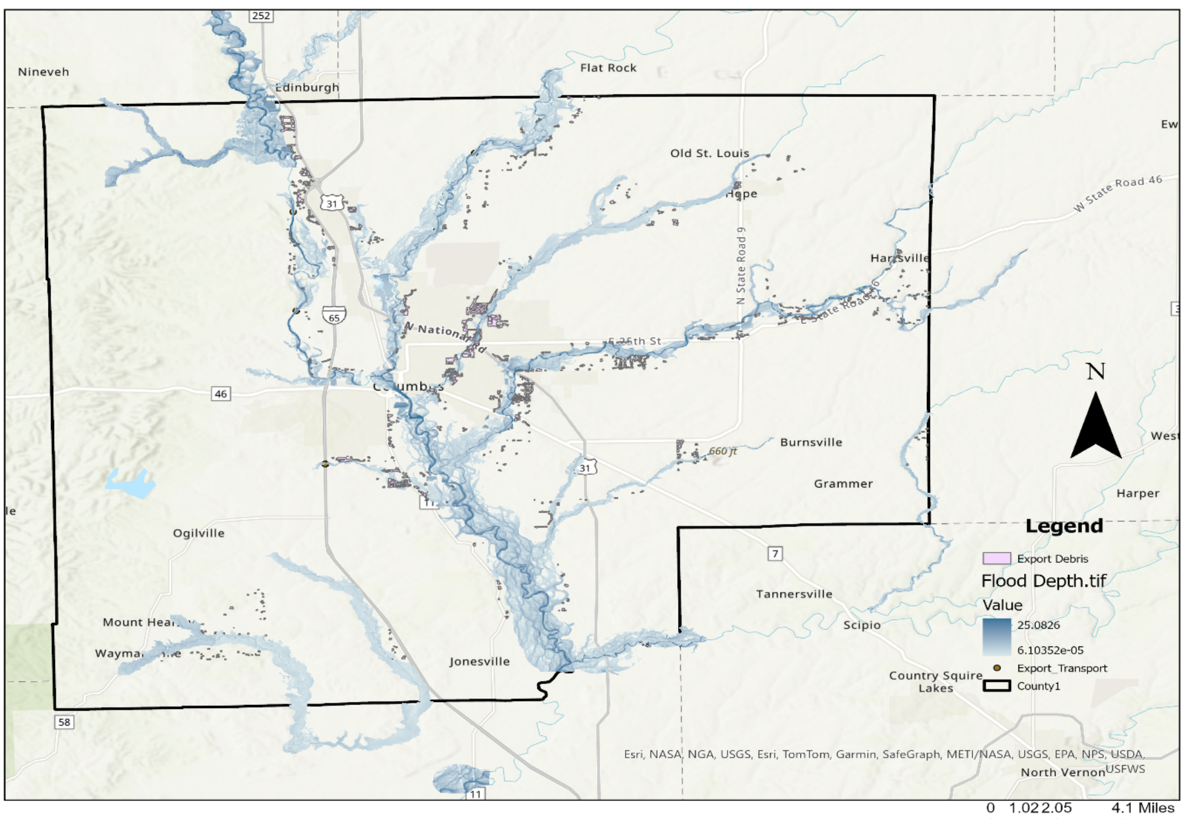

Figure 3.3 Exported transport points and debris locations highlight areas of likely road disruption due to severe inundation along major river corridors and low-lying regions

Utility Damages

The flood scenario for Bartholomew County resulted in notable impacts to critical utility infrastructure. According to FEMA's Hazus assessment, three wastewater facilities in the county were affected by floodwaters, with an average damage of 18.9%. Out of the three, two facilities became non-functional, and the total estimated economic loss was $76,024 (in thousands).

As shown in Figure 3.4, the affected wastewater treatment plants are located near major flood zones, including areas around Hope and Columbus. These areas experienced high water depths, as shown by the blue shading on the map. Disruption to wastewater services in these locations may impact public health and delay post-flood recovery operations.

HAZUS™ FEMA

Waste Water Facility Damage

RiskMAP
Increasing Resilience Together

May 05, 2025

Dollar values are in thousands.

	# of Facilities	Average Damage (%)	Total Loss ($)	Non-Functional Facilities
Indiana				
Bartholomew	3	18.9	76,024	2
Total	**3**	**18.9**	**76,024**	**2**
Scenario Total	**3**	**18.9**	**76,024**	**2**

If this report displays all zeros, two possibilities can explain this.
(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Study Region: Bartholomew_1
Scenario: Bartholomew
Return Period: 100

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Figure 3.4

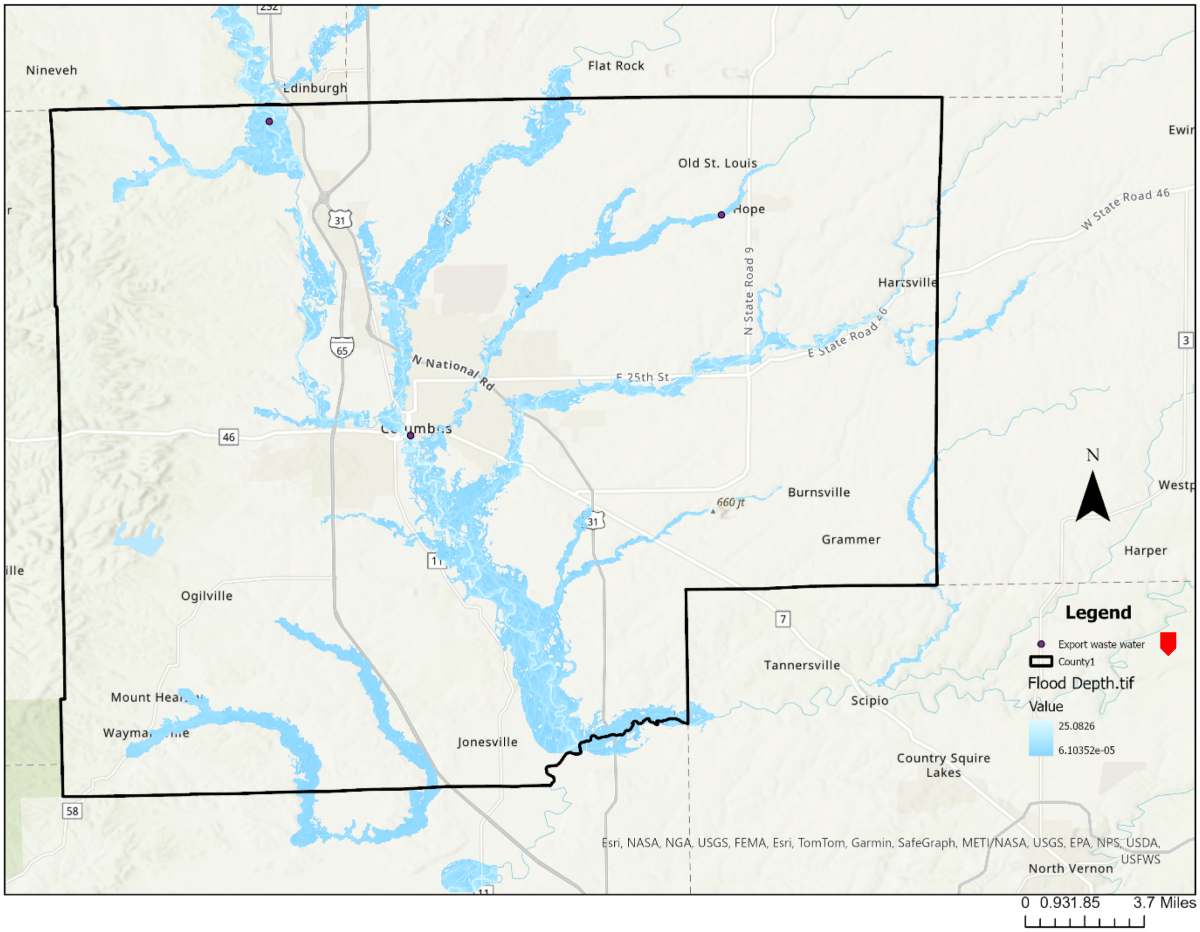
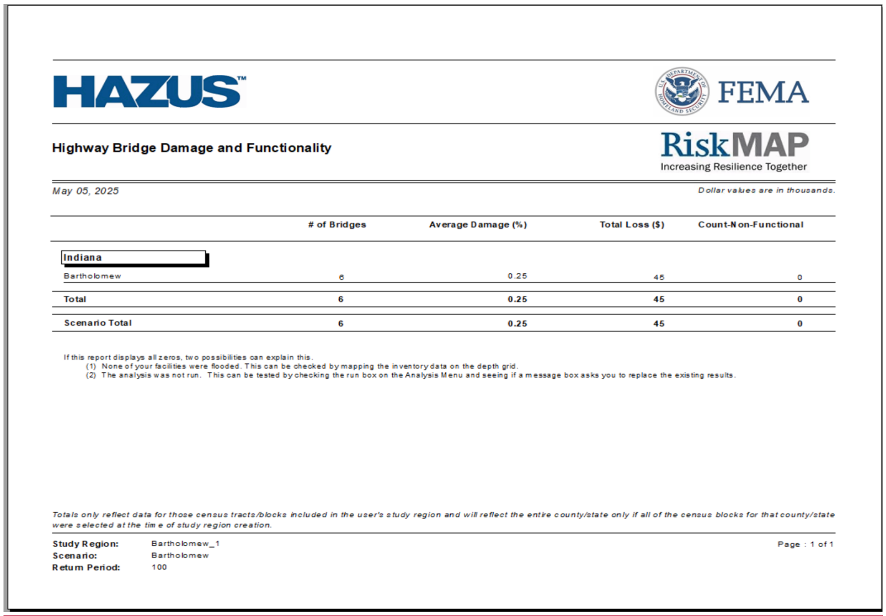


Figure 3.5: Map showing locations of wastewater facilities affected by flooding in Bartholomew County. Facilities overlap with areas of significant flood depth, indicating exposure to potential service disruption.

Transportation Damages

The flood analysis for Bartholomew County identified six highway bridges exposed to floodwaters, with minor structural damage. According to Hazus data, these bridges experienced an average damage of just 0.25%, resulting in a total estimated loss of $45,000. Fortunately, none of the bridges were rendered non-functional, suggesting the county's major roadways remain largely operational.

The accompanying map (Figure 3.6) displays the locations of transportation infrastructure at risk. Most export transport points are located along major roadways and in proximity to flood-prone zones such as areas near Columbus, Jonesville, and Edinburgh, where flood depth is significant. While functional impact is minimal in this event, repeated or more intense flooding could pose future risks to critical road links.



HAZUS

FEMA

RiskMAP
Increasing Resilience Together

Highway Bridge Damage and Functionality

May 05, 2025

Dollar values are in thousands.

	# of Bridges	Average Damage (%)	Total Loss ($)	Count-Non-Functional
Indiana				
Bartholomew	6	0.25	45	0
Total	**6**	**0.25**	**45**	**0**
Scenario Total	**6**	**0.25**	**45**	**0**

If this report displays all zeros, two possibilities can explain this.
(1) None of your facilities were flooded. This can be checked by mapping the inventory data on the depth grid.
(2) The analysis was not run. This can be tested by checking the run box on the Analysis Menu and seeing if a message box asks you to replace the existing results.

Totals only reflect data for those census tracts/blocks included in the user's study region and will reflect the entire county/state only if all of the census blocks for that county/state were selected at the time of study region creation.

Study Region: Bartholomew_1
Scenario: Bartholomew
Return Period: 100

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Figure 3.6

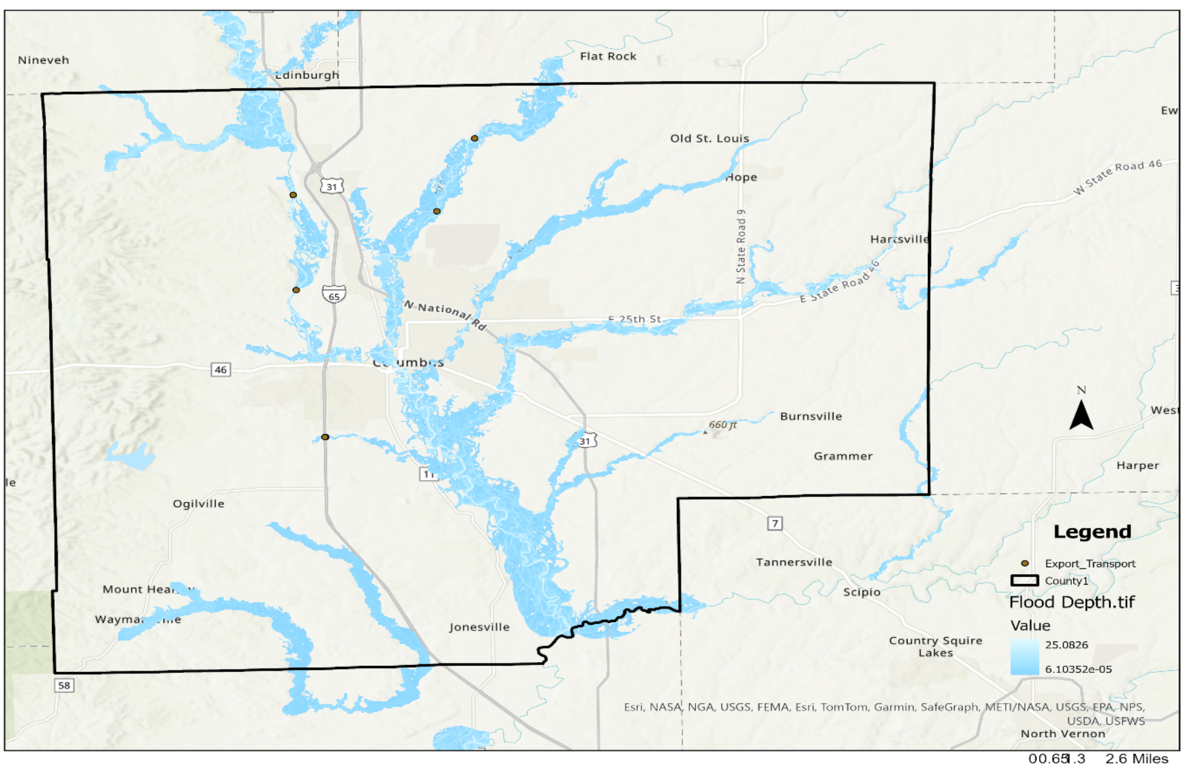

Figure 3.8: Transportation infrastructure exposure map in Bartholomew County, showing highway bridge locations near flood-affected zones. Although minor damage was recorded, all bridges remain functional following the modeled flood scenario.

Building Damages

Genreral occupancy	Estimated County of Damaged Buildings(GBS)	Estimated County of Damaged Buildings(UDF)	Estimated Economic Loss(GBS)	Estimated Economic Loss(UDF)
Residential	184	337	27265000	12386565.301056
Commercial	7	36	108498	5037348.316985
Agricultural	0	2	448000	0
Industrial	0	8	19469000	787677.319388
Government	0	1	974000	0
Education	0	0	352000	0
Religion	0	1	7361000	295785.781459

The flood event in Bartholomew County resulted in widespread damage to various types of buildings, both in terms of occupancy and structural composition. The majority of the damage occurred in the residential sector, with an estimated 521 buildings impacted and a combined economic loss exceeding 39.5 million dollars. This includes damages to both General Building Stock (GBS) and User-Defined Facilities (UDF). Residential structures were followed by commercial and industrial buildings in terms of damage and financial loss.

Although the number of affected commercial buildings was relatively low, they still accounted for over 5 million dollars in losses, indicating the vulnerability of these assets. Industrial buildings, despite having only eight damaged structures, generated nearly 20 million dollars in damages due to the high value and complexity of the facilities. Public-use buildings, including government, education, and religious institutions, also sustained damages, with religious facilities accounting for more than 7.6 million dollars in combined losses. These figures highlight the economic vulnerability of community-serving structures.

This analysis underscores the need for targeted mitigation and preparedness strategies, particularly in high-density residential zones and critical infrastructure facilities. The table below summarizes the building damages by general occupancy type, estimated count, and economic loss.

Limitations of the Physical and Economic Impact Analysis

The analysis has several important limitations:

- Hazus GBS data may overestimate losses in sparsely developed areas because it uses average values for building characteristics and costs, which may not reflect local construction patterns.
- UDFLoss estimates, although more refined, are restricted to the 100-year floodplain and do not account for structures in the 500- or 1000-year zones.
- Damage assessments for utilities and transportation infrastructure are based on general assumptions and may not reflect recent system upgrades or built-in redundancies.
- Indirect economic losses such as business disruption, temporary relocation, and long-term community displacement are not fully captured in the Hazus model.

These limitations underscore the importance of integrating model results with on-the-ground observations and local expertise to guide effective emergency response planning and recovery strategies.

Part 4: Social Analysis

Section 1

In this section, we assess the social risks across Bartholomew County using two trusted federal datasets:

- The **Community Resilience Estimates (CRE)** from the U.S. Census Bureau
- The **National Risk Index (NRI)** from the Federal Emergency Management Agency (FEMA)

These tools help us understand how well different communities might prepare for and recover from a disaster, such as a flood or severe storm.

Community Resilience Estimates (CRE)

The CRE map shows the number of social risk factors affecting residents in each census tract. These factors can include things like limited income, lack of education, older age, or chronic illness.

- Areas with 0 risk factors are considered very resilient.
- Areas with 1–2 risk factors have moderate resilience.
- Areas with 3 or more risk factors are considered to have low resilience.

Observations:

As shown in the CRE map of Bartholomew County:

- Most census tracts are shaded light pink, indicating the presence of 3+ risk factors.
- This means the majority of the county has low community resilience.
- The few darker pink zones near Columbus suggest pockets of better conditions, where people may have more resources to handle a disaster and recover quickly.

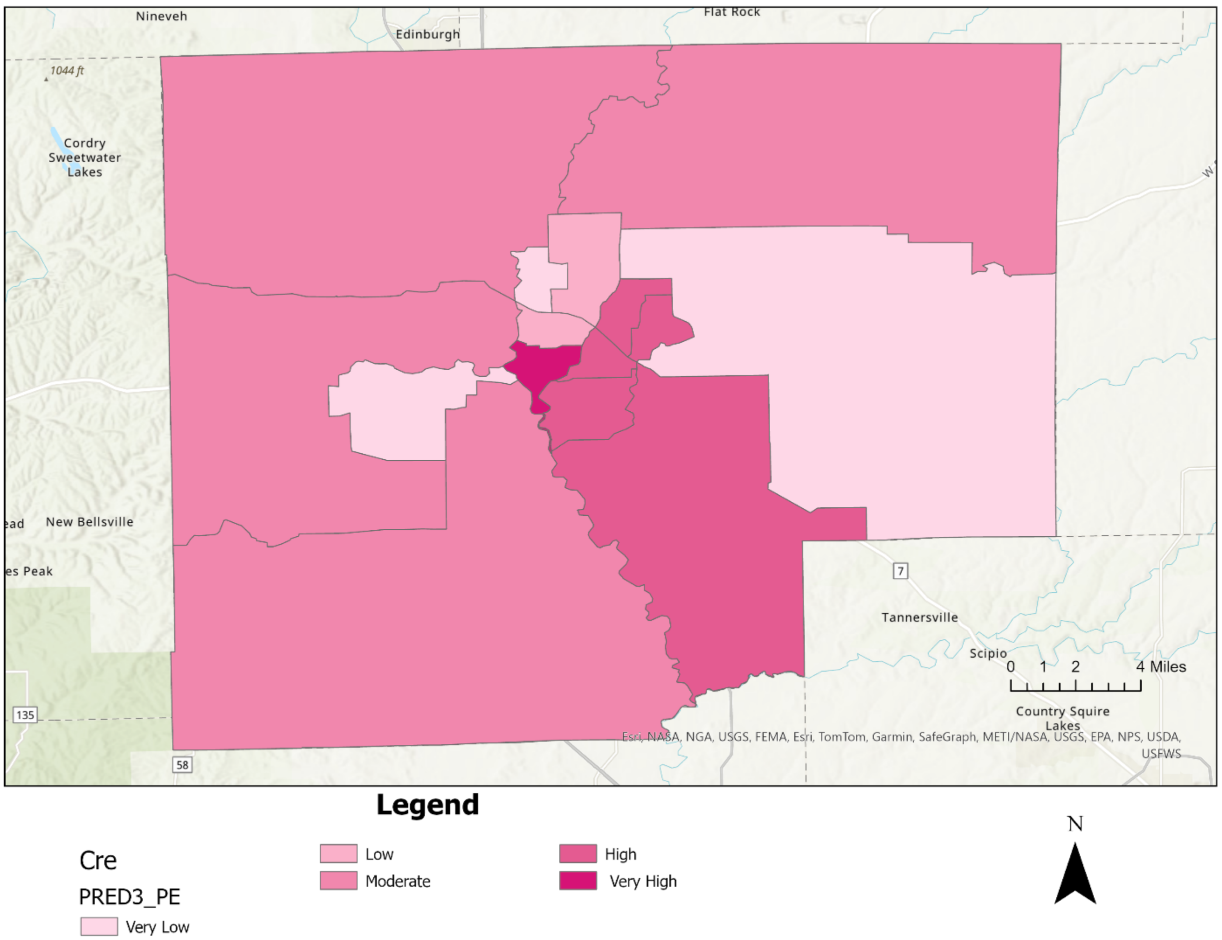

Figure:4.1 Predicted Community Resilience in Bartholomew County, Indiana. This map shows resilience levels by census tract, with darker shades indicating higher resilience. Most rural areas display low to moderate resilience, while central tracts near Columbus show higher resilience.

National Risk Index (NRI)

FEMA's NRI provides three key ratings that help evaluate disaster risk at the community level:

A. Expected Annual Loss (EAL)

- Indicates how much economic and structural loss a community might face each year from natural hazards.

In Bartholomew County, southern and southeastern tracts show relatively high or moderate loss ratings, while northern areas like Edinburgh show relatively low loss.

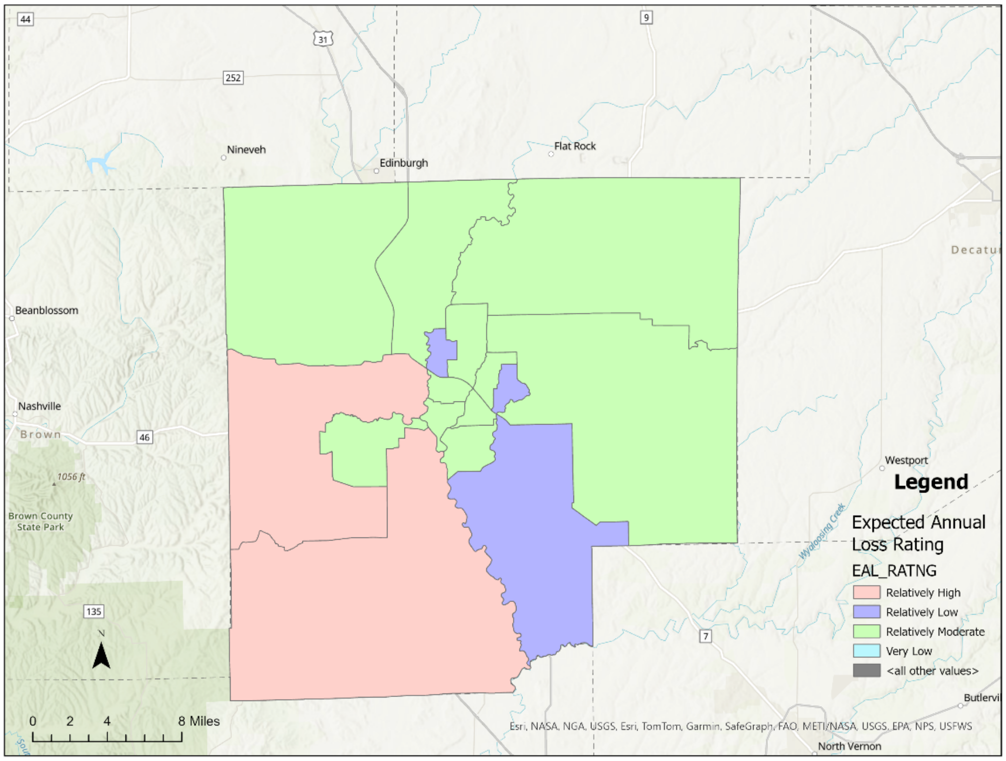

Figure 4.2: Expected Annual Loss Ratings in Bartholomew County, Indiana
This map displays the estimated annual loss from natural hazards by census tract. Southern and southeastern areas show relatively high to moderate loss, while northern and northeastern tracts face lower expected losses, indicating varied hazard exposure across the county.

B. Social Vulnerability (SoVI)

(1) Reflects how social factors (e.g., poverty, age, housing) increase vulnerability to hazards.
(2) Large parts of the central, southern, and northeastern county are colored purple, indicating relatively high or very high vulnerability.
(3) A few central tracts near Columbus show moderate vulnerability, which is slightly better.

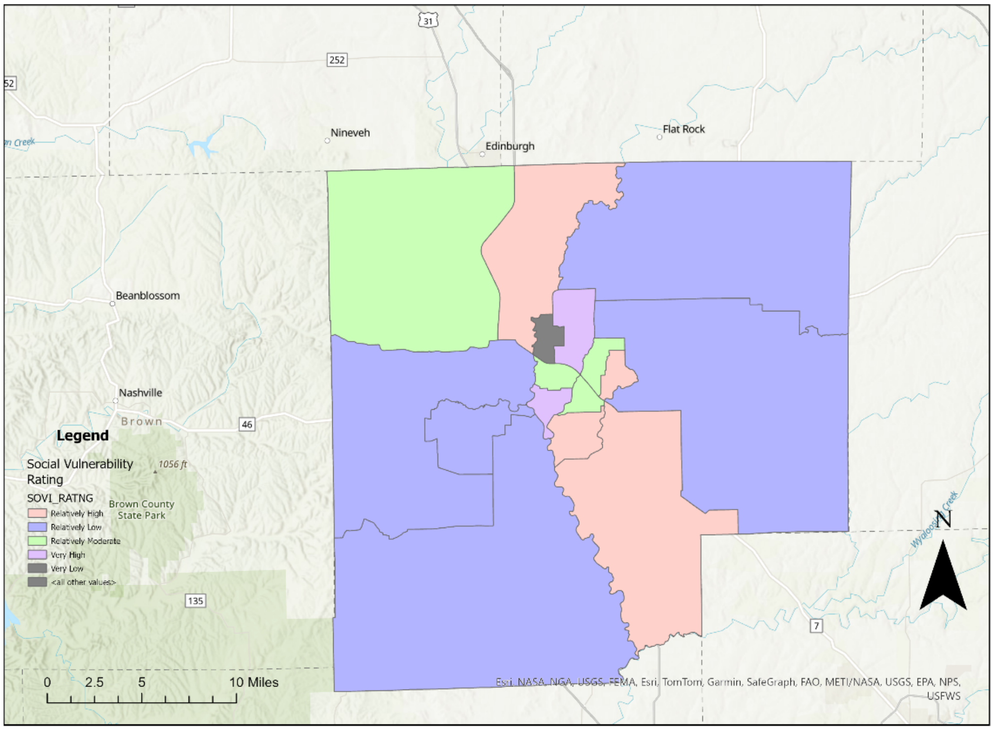

Figure 4.3 Social Vulnerability Ratings in Bartholomew County, Indiana. This map highlights social vulnerability by census tract. Areas in purple and pink mainly in the central, southern, and northeastern parts of the county have moderate to high vulnerability, while northwestern tracts show lower vulnerability, indicating unequal social capacity to cope with disasters.

C. Community Resilience (RESL)

- Reflects the community's ability to respond to and recover from a disaster.
- The entire county is shown in light pink, meaning relatively low resilience overall, consistent with CRE results.

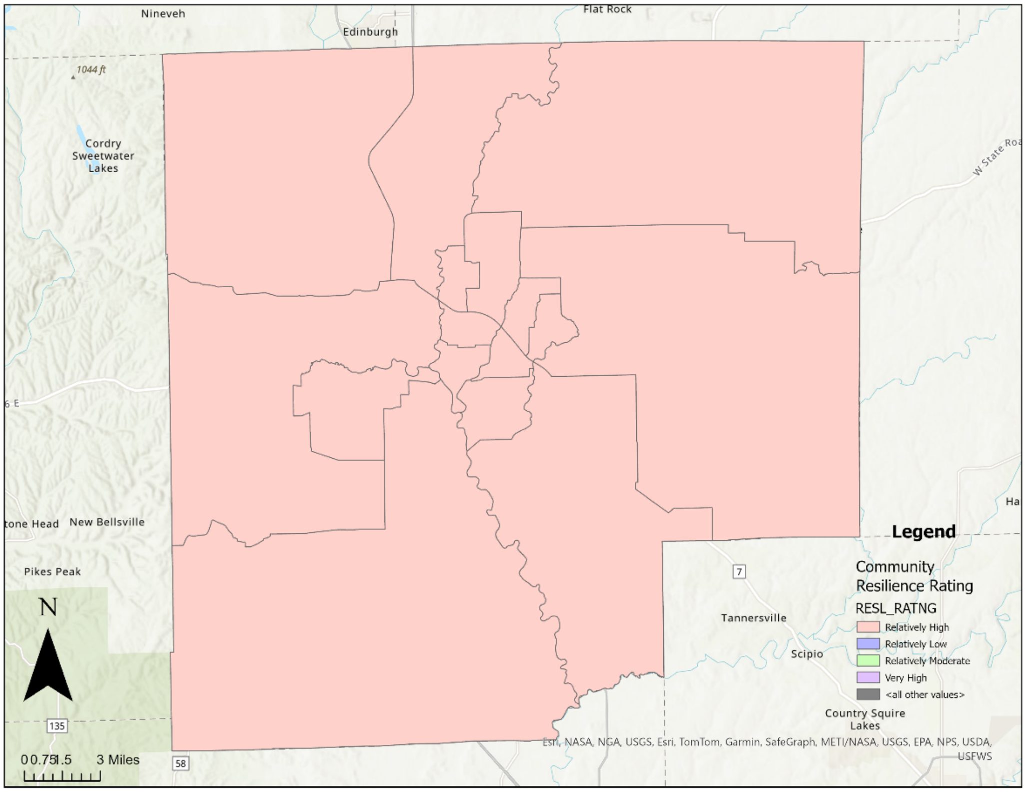

Figure 4.4 FEMA Community Resilience Ratings in Bartholomew County, Indiana This map shows FEMA's Community Resilience Rating by census tract. The entire county is shaded light pink, indicating a relatively low ability to recover from disasters uniformly across all areas.

Community Resilience Estimates (CRE):

This map displays the spatial distribution of social vulnerability across [your county name] based on the percentage of the population within each census tract that has three or more risk factors (3+ RF), as defined by the U.S. Census Bureau's Community Resilience Estimates. The tracts are shaded from light to dark green, representing increasing levels of vulnerability — with darker shades indicating a higher percentage of individuals with 3+ risk factors.

The data highlights areas within and around the urban core (such as [insert a local area name, if applicable]) as having relatively higher social vulnerability. In contrast, surrounding rural or suburban tracts tend to have lower percentages of at-risk individuals. These patterns suggest that certain parts of the county may face greater challenges in disaster preparedness, response, and recovery due to underlying social risk factors.

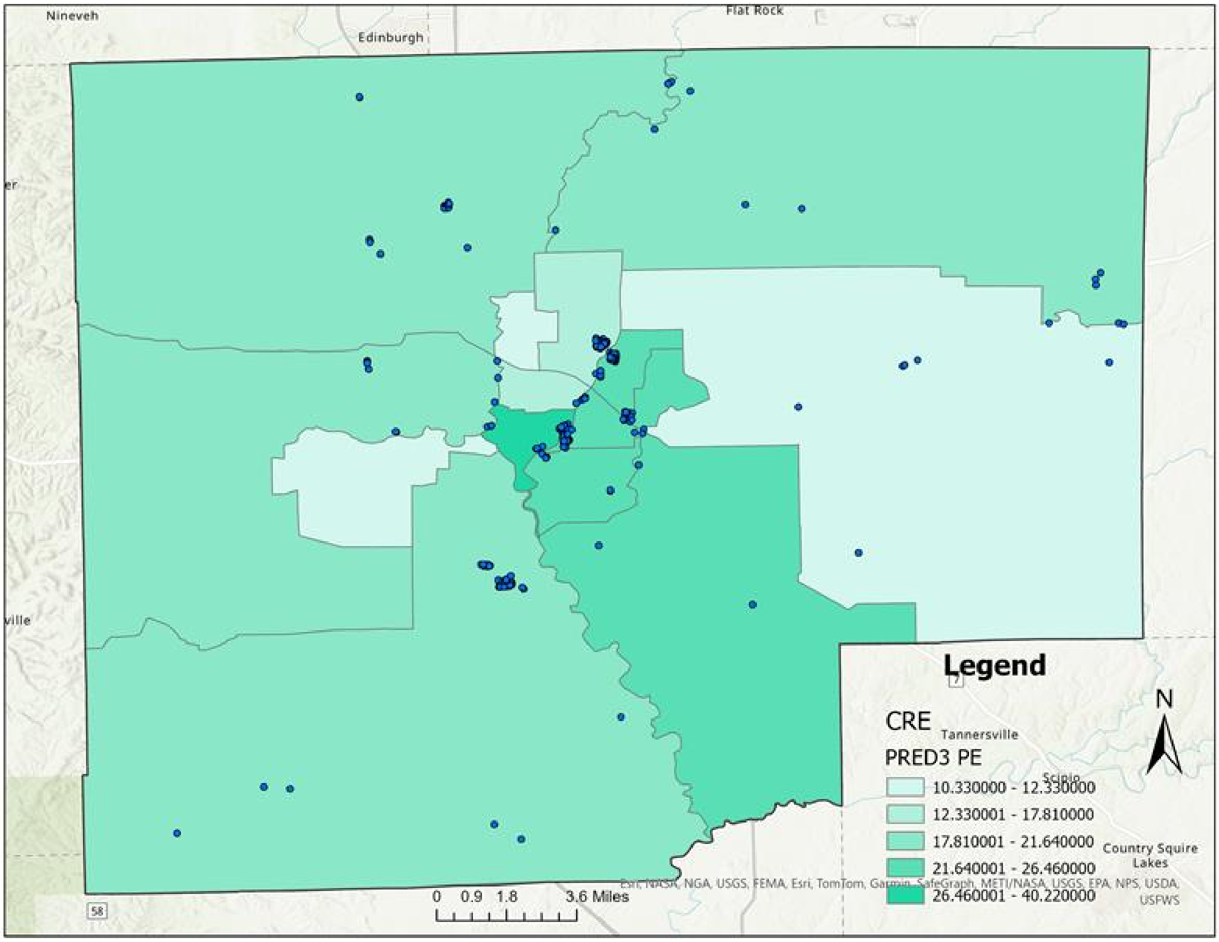

Figure 4.5 This map displays the percentage of residents with 3+ risk factors (PRED3_PE). Darker shades indicate higher social vulnerability, which may impact disaster recovery capacity.

Summary of Findings and Crisis Management Implications

The flood risk assessment of Bartholomew County using Hazus revealed significant exposure to 100-year flood events, especially around Columbus and major waterways. Over 500 buildings were damaged, with residential areas facing over $39.5 million in losses. Critical infrastructure, including wastewater facilities and bridges, was affected, posing risks to public health and mobility. Social vulnerability is high across most census tracts, with low community resilience observed throughout the county based on FEMA and Census datasets.

To mitigate future impacts, the county should strengthen zoning laws in floodplains, modernize stormwater systems, invest in green infrastructure, and protect essential utilities. Outreach programs and emergency preparedness in vulnerable areas are also essential.

Technology plays a crucial role in improving resilience. Tools like Hazus, GIS, and remote sensing support flood modeling and planning. Real-time sensors and alert systems enhance early warning and response, while interactive dashboards can guide decision-making.

However, the analysis has limitations. Hazus data may overestimate losses in rural areas, lacks coverage beyond the 100-year floodplain, and underrepresents indirect losses. Infrastructure data may not reflect recent upgrades, and elevation resolution can reduce map accuracy in flat areas.

To overcome these, Bartholomew County should incorporate local infrastructure data, use high-resolution elevation models, crowdsource imagery, and regularly update demographic datasets to improve flood planning and community resilience.

Appendix: Technical Methodology

Part II: Hazard Analysis

Tool Used:

- FEMA Hazus-MH (2023) – A GIS-based modeling tool for flood risk assessment.

Purpose:

- Simulated a 1% annual chance (100-year) flood for Bartholomew County, Indiana.

Parameters:

- Scenario: 100-year flood return period.
- Inventory: General Building Stock (GBS) and User-Defined Facilities (UDF).

Data Sources & Justification:

- Hazus Flood Risk Methodology (FEMA, 2023): For flood modeling and impact estimates. https://www.fema.gov/flood-maps/products-tools/hazus
- FEMA Flood Zones A and AE (FEMA Map Service Center): For regulatory comparison. https://www.fema.gov/disaster/1766
- Historical Flood Records: June 2008 and March 1964 events referenced from NWS (2008), NOAA NCEI (2017), and USGS (1965).

Process:

- Flood depth grids, infrastructure impacts, and building damage outputs were generated in Hazus.
- FEMA zones were overlaid to compare modeled and regulatory flood areas.
- Data were exported to ArcGIS Pro for mapping and visual refinement.

Part III: Physical and Economic Impact Analysis

Tool Used:

- Hazus-MH (FEMA, 2023)

Purpose:

- Estimate debris volume, building damages, utility losses, and transportation exposure during the modeled flood.

Data Sources:

- Built-in Hazus GBS and UDF data layers for building and infrastructure.
- FEMA's Debris Management Guidelines (Hazus internal logic) for debris estimation.

Process:

- Quantified damages by occupancy type and facility type.
- Estimated debris loads by material type.
- Mapped damage results using ArcGIS Pro (Figures 3.1–3.8).
- Transportation and utility facility damages analyzed using Hazus outputs and mapped spatially by location.

Part IV: Social Analysis

Tools Used:

- Community Resilience Estimates (CRE), U.S. Census Bureau (2022)
  https://www.census.gov/data/experimental-data-products/community-resilience-estimates.html
- National Risk Index (NRI), FEMA (2023)
  https://hazards.fema.gov/nri

Purpose:

- Evaluate social vulnerability, expected losses, and resilience by census tract.

Data Sources:

- CRE: Social risk factors like income, education, disability.
- NRI: Composite indices for Expected Annual Loss, Social Vulnerability, and Community Resilience.

Process:

- Downloaded NRI and CRE data in CSV format.
- Joined datasets with census tract shapefiles using GEOID in ArcGIS Pro.
- Mapped vulnerability and resilience using graduated color scales for clarity.

Supporting Land Use and Demographic Data

- Land Use: Multi-Resolution Land Characteristics (MRLC) Consortium (USGS, n.d.) for NLCD 2019 land cover.
  https://www.mrlc.gov/viewer

- Demographics: Bartholomew County profile and age/race/income statistics from STATS Indiana (Indiana Business Research Center, 2024)
  https://www.stats.indiana.edu/profiles
- Climate Context: Indiana Climate Change Impacts Assessment (IN CCIA, 2018) for regional flood trend projections.
  https://ag.purdue.edu/indianaclimate