

How were residents of the Upper Iowa River (UIR) Watershed affected by the 2016 Floods?

A Snapshot of Findings from a Watershed-wide Survey

Background:

- In August and September of 2016, residents of the Upper Iowa River (UIR) Watershed experienced significant flooding.
- Researchers from Luther College, supported by the Iowa Flood Center and Upper Iowa River Watershed Management Authority, sent out a watershed-wide survey the summer of 2018 to understand the impacts of flooding on residents.



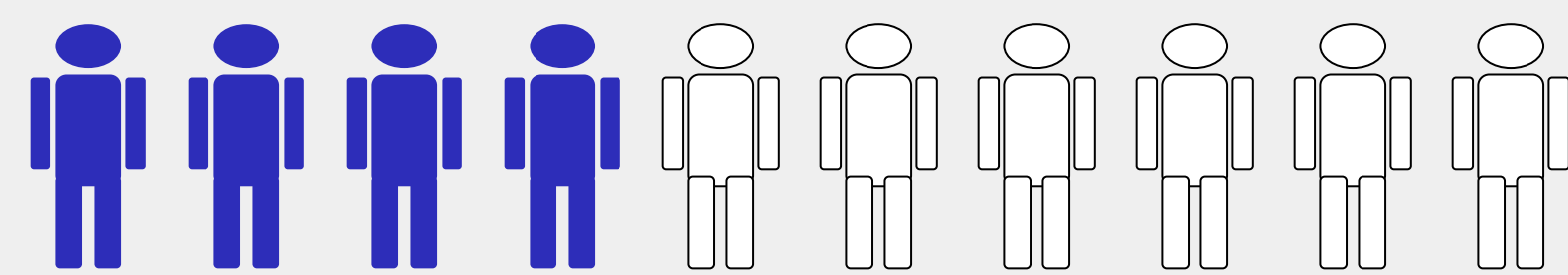
The Survey:

- We sent a paper survey to a randomly selected sample of 2250 households in the Iowa portion of the UIR Watershed.
- The survey was designed to understand the diversity of flooding experiences, including direct and indirect impacts of flooding.
- We received 470 useable surveys back, for a 21.5% response rate.

Here is a snapshot of what we've learned:

WHO was flooded in 2016?

40% of people indicated their home or property had been flooded in some way.



However, **flooding occurred** in these households in several different ways.



40% indicated **rain** as the primary source

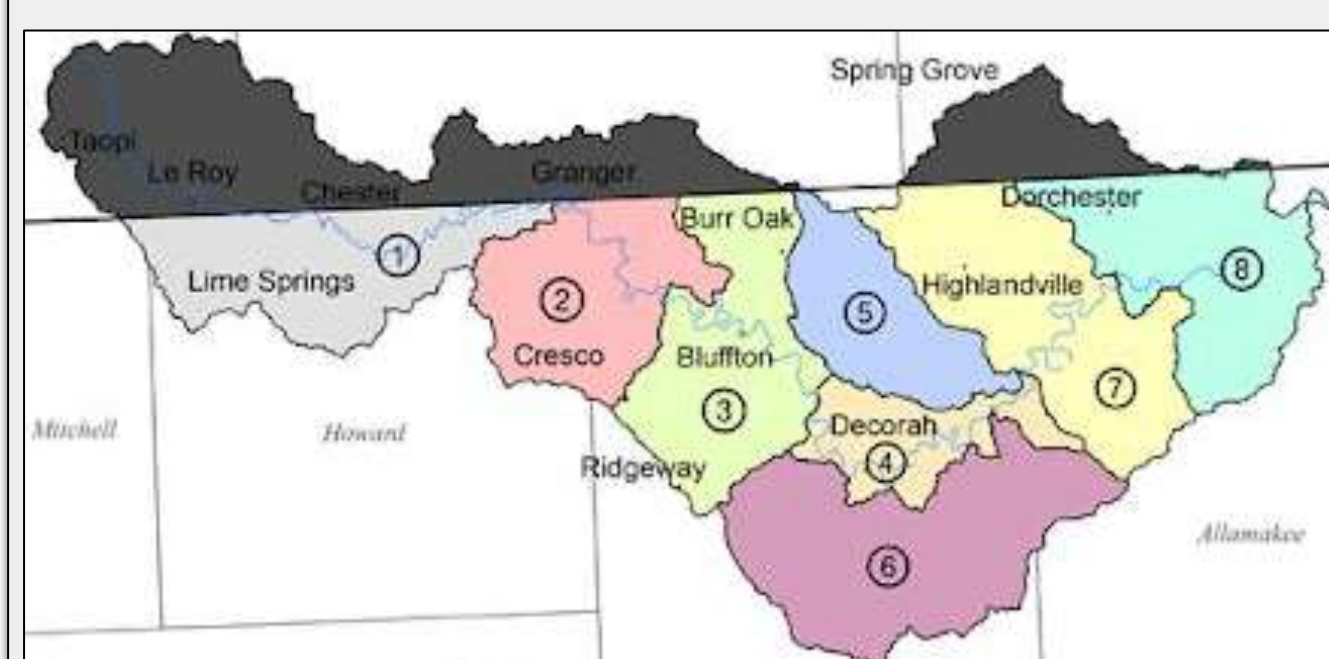


28% said **overflowing rivers or creeks** (flood waters)



20% said **rising groundwater** caused their flooding

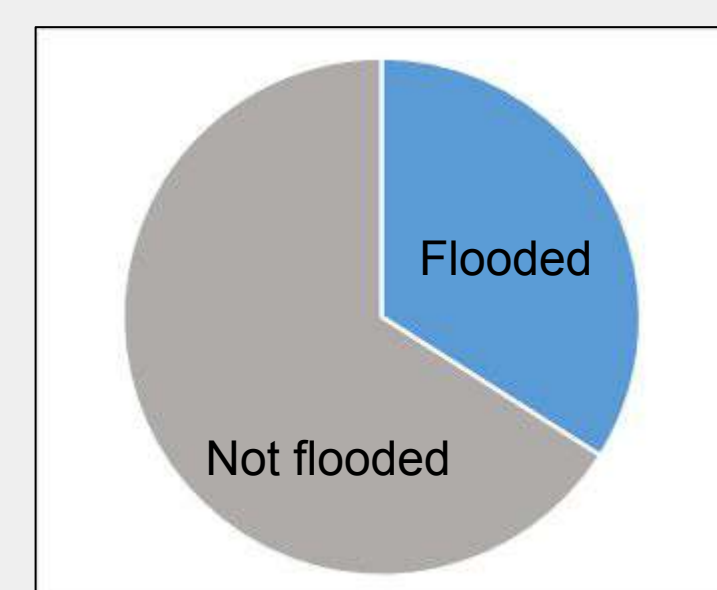
Homes & properties in **all regions of the watershed experienced flooding**, but those in the upper half of the watershed flooded at the highest rates.



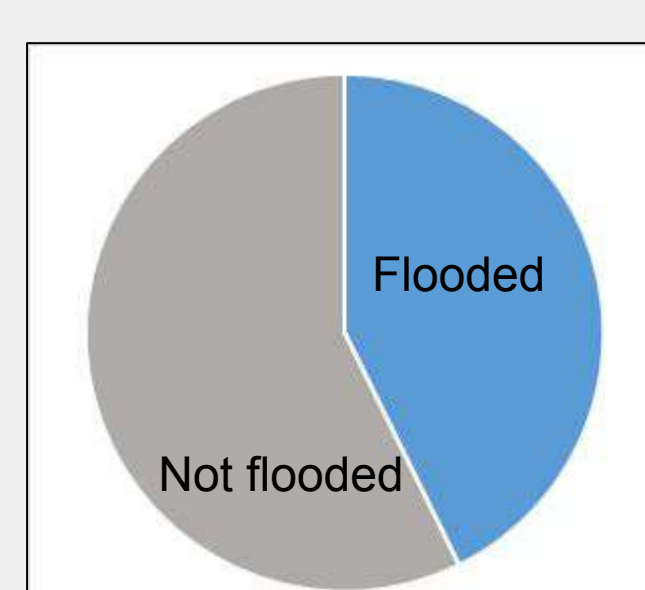
- 53% of households upstream from Decorah indicated flooding (regions 1,2,3)
- 35% of properties in Decorah & Freeport indicated flooding (region 4)
- 47% of households the lower portion of the watershed (excluding Decorah) indicated flooding. (regions 5,6,7,8)

Flooding isn't only an "in town" phenomenon. **Rural households**, and those respondents indicating **farmland** in particular, **flooded at the highest rates.**

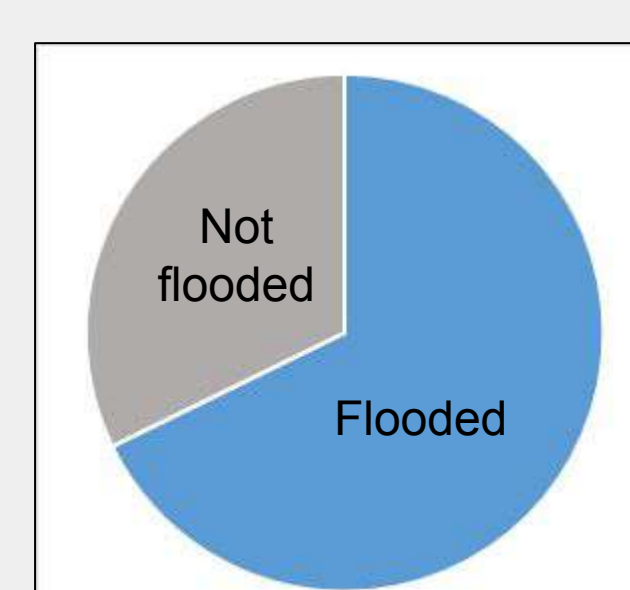
34% of households **in town** indicated flooding



47% of **rural households** indicated flooding



61% of properties containing **farmland** indicated flooding



HOW were THOSE THAT WERE FLOODED impacted?

Many residents **experienced damages** to their homes, property, and belongings in 2016.

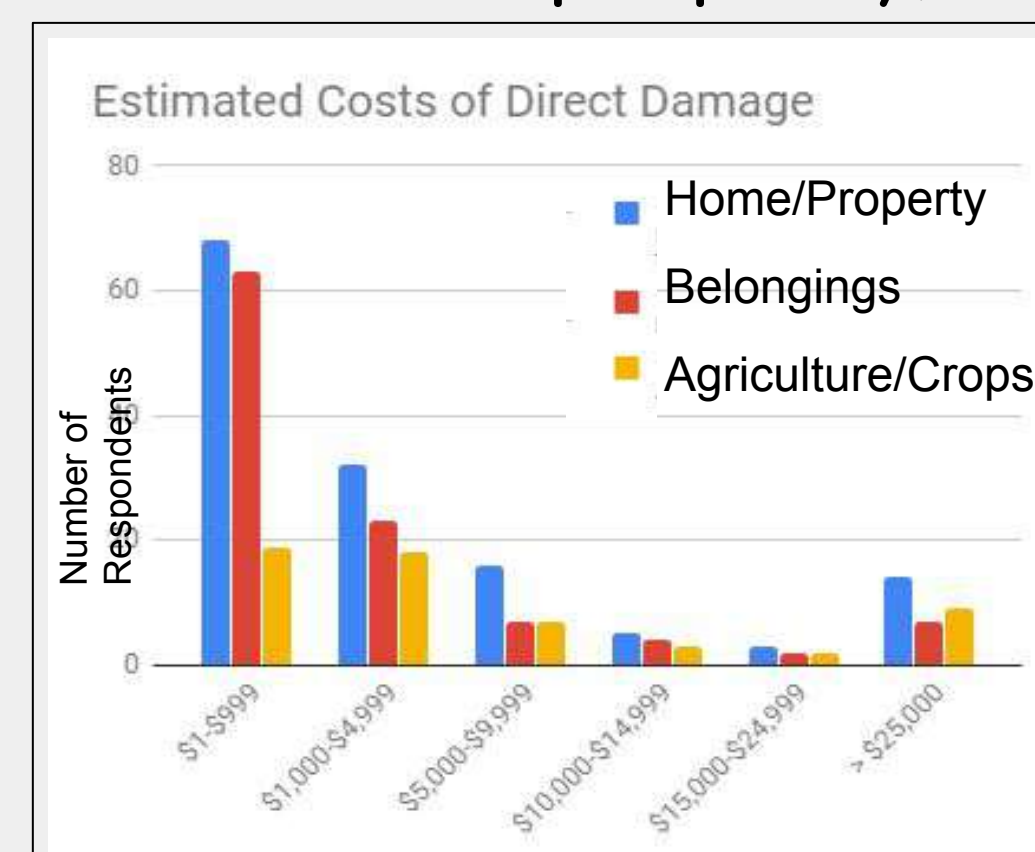


Figure 1. This graph shows the number of survey respondents indicating damage to home/property, belongings, and agriculture/crops at various amounts.

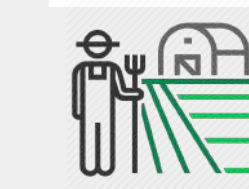
Of all respondents (n=470) to the survey:



29% indicated damage to their **home or property.**



22% indicated damage to **their belongings**



12% indicated damage to **agricultural lands or crops.**

These damages represent **significant economic impacts** for households in the UIR watershed.

Table 1. This table shows the average estimated damage per household that indicated they were directly flooded in the 2016 floods by the type of damage. The average total damage per household was an estimated \$8029.74.

Type of Flood Damage	Average Damage per Flood-affected Household
Home or Property	\$3713.51
Belongings	\$2116.22
Agriculture/Crops	\$2200.00
Combined Damage	\$8029.73

- Of those households that were flooded, **damages to home/property** accounted for the **greatest estimated economic impact.**
- On average, flood-affected survey respondents experienced an **average of \$8029.73 of damages per household.**
- Extrapolated to the entire watershed (assuming a 25-35% flood rate across the watershed and 7875 households in the watershed) total flood damages to households in the UIR watershed could **range from an estimated \$15.8 million to \$21.1 million in damages** to home/property, belongings, and agriculture/crops.

The estimated **economic impact of flood damages**, however, **are not evenly spread across income brackets.**

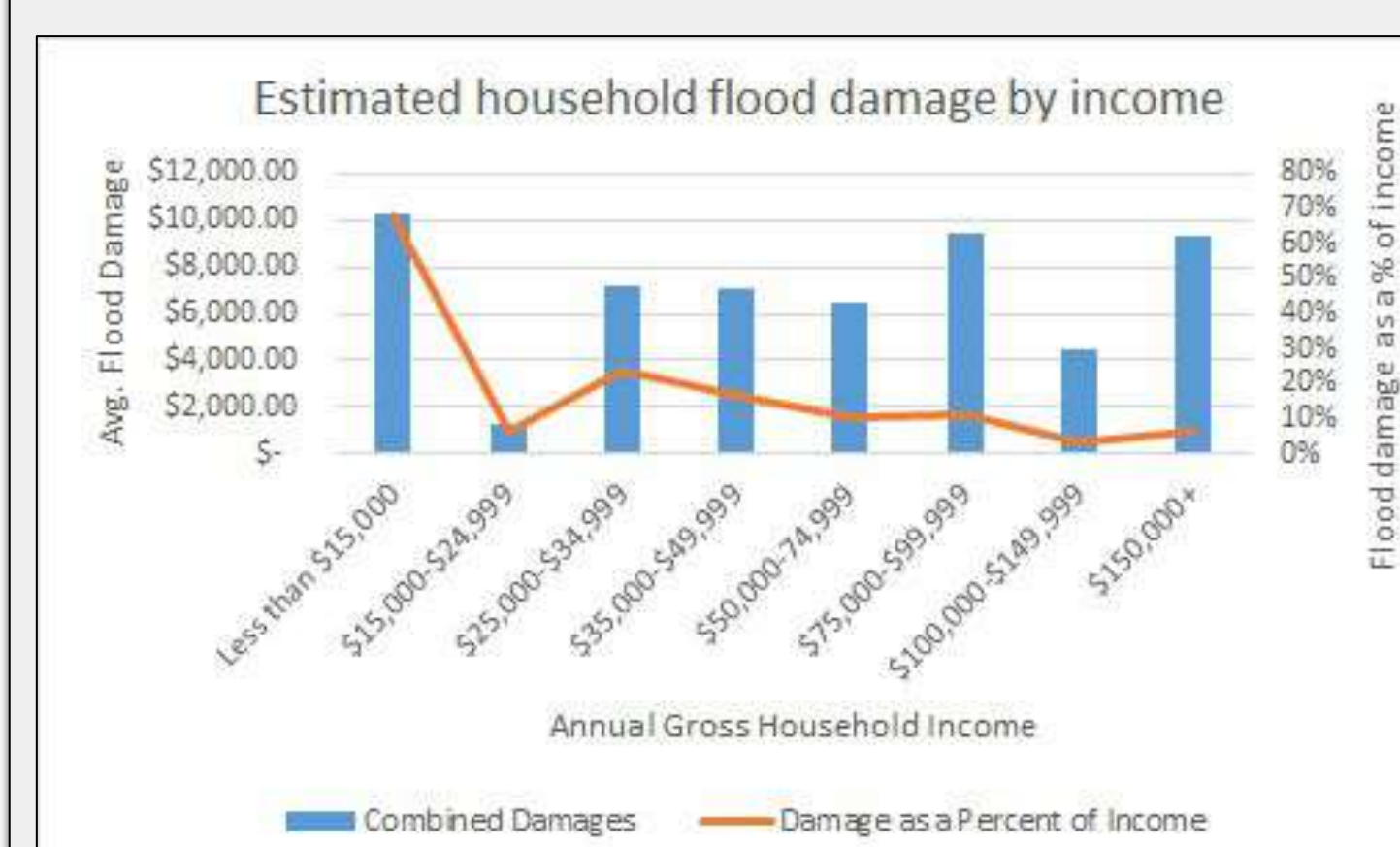


Figure 2. This graph shows the average estimated household flood damage by annual gross household income (blue bar) as well as the estimated flood damage as a percentage of income (orange line).

- People in the **lowest and highest income brackets** experienced the largest estimated damages.
- By proportion of income, however, **households in the lowest income brackets are most burdened by flood damages.**

HOW was the BROADER COMMUNITY impacted?

The 2016 floods affected the **daily activities of residents** of the UIR, even if their homes didn't have water in them.

- **44% of survey respondents** indicated experiencing indirect effects of flooding



27% of respondents indicated that they had to **drive alternate routes due to flooding.**



11% of respondents **missed work.** Many indicated that they volunteered to help others.



11% of respondents indicated a **loss of utilities**, most commonly power.

In addition, the 2016 floods had many broader public impacts such as cancelling the first two days of the 2016-2017 school year and closing bridges and roads.

Summary

- The 2016 UIR floods **directly impacted a broad swath of residents:** in town, rural, and across the geographic area of the watershed.
- The **UIR watershed is susceptible to multiple types of flooding** (floodwater, rain, groundwater) due to the unique geology and topography.
- The 2016 led to **significant economic damages** in households across the watershed, with particular burdens in the lowest income bracket.
- Even those households that were not flooded were impacted through **having to drive alternate routes, miss work, and loss of utilities.**

Acknowledgements & Partners

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- Our gratitude to all residents of the UIR that took the time to complete our survey.



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