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Flood early warning can significantly mitigate monetary damage

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Flood warning systems have a long track record of protecting human lives, but monetary damage continue to increase. Knowledge about the effectiveness of early flood warnings in reducing monetary damage is sparse, especially at the individual level. To gain more knowledge in this area, we analyse a dataset that is unique in terms of detailed information on warning reception and monetary damage at the property level. The dataset contains 4,468 damage cases from six flood events in Germany. We show quantitatively that early flood warnings are only effective in reducing monetary damage if people know what to do when they receive the warning (with at least one hour's notice). The average reduction in contents damage is 4 percentage points, which corresponds to a reduction of EUR 3,800 for the average warning recipient. This is substantial compared to the mean contents damage ratio of 21% and an absolute contents damage of 17,000 EUR. For the building damage ratio, the average reduction is 2 percentage points, which corresponds to a damage reduction of EUR 10,000. This is a remarkable reduction compared to the mean building damage ratio of 11% and a mean absolute building damage of 48,000 EUR. We also show that particularly long-term preparedness is related to people knowing what to do when they receive a warning. Risk communication, training and (financial) support for private preparedness are thus effective in mitigating flood damage in two ways: through precautionary measures and more effective emergency measures.