Flooding and Inequity: Policy Responses on the Front Line

Disparate impacts and recoveries for communities as flooding rises in Iowa

Joseph Wilensky

December 2019

The Iowa Policy Project
20 E. Market Street, Iowa City, Iowa 52245
(319) 338-0773
www.IowaPolicyProject.org

Authors and Acknowledgments

Joseph Wilensky is a graduate student in the School of Urban and Regional Planning at the University of Iowa. His anticipated graduation date is May 2020 with a M.S. in Urban Planning with an emphasis on transportation and land use planning. Joseph's previous work experience has been in the field of International Development and Governmental Relations, and he received a B.A. in Political Science and C.L.E.G (Communications, Law, Economics, and Government Studies) in 2008 from The American University in Washington, D.C.

The author would like to acknowledge the editorial contributions of IPP staff members David Osterberg and Nathan Shepherd.

This research was supported by a grant from the McKnight Foundation. The conclusions are those of the author and the Iowa Policy Project.

The Iowa Policy Project

Formed in 2001, the Iowa Policy Project is a nonpartisan, nonprofit organization. Its principal office is at 20 E. Market Street, Iowa City, IA 52245.

The Iowa Policy Project promotes public policy that fosters economic opportunity while safeguarding the health and well-being of Iowa's people and the environment. By providing a foundation of fact-based, objective research and engaging the public in an informed discussion of policy alternatives, the Iowa Policy Project advances accountable, effective and fair government.

All reports produced by the Iowa Policy Project are made available to the public, free of charge, via the organization's website at http://www.iowapolicyproject.org.

The Iowa Policy Project is a 501(c)3 organization. Contributions to support our work may be tax-deductible. We may be reached at the address above, by phone at (319) 338-0773, by email at ipp@Lcom.net, or through other contacts available at our website.

The Iowa Policy Project

20 E. Market St. • Iowa City, Iowa 52245 • (319) 338-0773
www.iowapolicyproject.org

December 2019

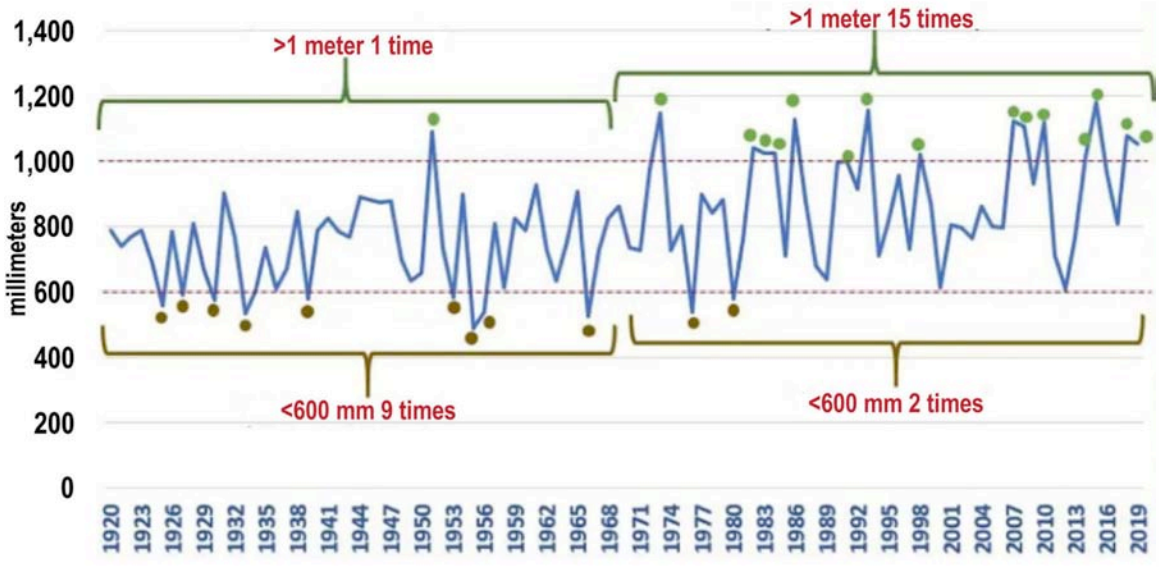
Flooding and Inequity: Policy responses on the front line

Disparate impacts and recoveries for communities as flooding rises in Iowa

By Joseph Wilensky

The Midwest has a history of catastrophic flooding, with recent floods killing dozens and costing billions of dollars in economic loss. While past flooding has had enormous impact, recent studies have shown that flood damage has increased over the past century as flooding has become more common[1] and Midwest developers have built in flood plains and modified stream and river flows. Public policy has contributed to these destructive trends, and in an era of climate change that could bring even greater problems, we need to examine how policy responses have fared on an equity scale, and how that focus can be greater.

Figure 1. Rainfall increase is illustrated in Raccoon River Watershed trends
Raccoon River Watershed annual precipitation (mm), 1920-2019



Source: Chris Jones, U of Iowa Research Engineer, blog post: "Cry Me A Raccoon River," December 2, 2019.

Precipitation levels in the Upper Mississippi River Basin have risen on average about one inch per decade since the 1970s. Specifically looking at rainfall within the Raccoon River Watershed, in the 50 years before 1970 annual rainfall exceeded one meter only once. In the 50 years following 1970, annual rainfall has exceeded one meter 15 times, including in seven times since 2007. exceeding one meter. Drought occurrences have also markedly decreased, with nine years recording annual rainfall below two feet per year in the 50 years before 1970, but only two years of precipitation below two feet since 1970 and no occurrences below two feet since 1980.[2]

These trends are only expected to accelerate. Current climate models predict that the number of five-year record two-day storm rainfall occurrences will increase by an additional 30 percent by 2041-50, with the largest increases to be found in the Midwest.[3]

While the tie between extreme rainfall and flood events is not always clear, it brings the question of how frontline communities, impacted first and most directly by climate change and the least able to respond on their own — can cope with this new potential detriment to their well-being. This paper will first show that frontline communities are more in danger from flooding. Second, the paper will evaluate the consequences of actual flooding on frontline communities.

Frontline communities

Frontline communities are the first to be impacted by flooding and are often hit the hardest. Members of frontline communities impacted by recurring flooding are more likely to live below the poverty level, experience unemployment, have a lower level of education, have a disability, speak English as a second language, lack vehicle access, have children, be elderly, identify as African American or Latino, or be the female head of a household.[4]

Frontline communities are more vulnerable at all stages — before, during, and after — a disaster. Residing in a frontline community is "an important indicator of everything from evacuation compliance during an event to successful long-term recovery after one," and members of frontline communities are "more likely to die in a disaster event and less likely to recover after one."[5] Additional efforts by federal, state and local governments are warranted to address the challenges these communities face.[6]

One reason for lower levels of resiliency in frontline communities is that these homes are often more susceptible to damage. Low-income communities are often located in areas more susceptible to damage, such as areas along fault lines or in flood plains. This placement near danger reduces the desirability of land, making it cheaper and more financially accessible for low-income communities to locate in disaster prone areas.[7] The nexus of income status and geographic location creates frontline communities where dwelling units are often of lower build quality than those of wealthier residents, making frontline community structures more susceptible to damage.

Resilience

Resiliency, in the disaster mitigation and recovery context, refers to a community's ability to absorb and rebound from the impacts of a disaster, both man-made and natural. Basically, if two communities are hit by a storm or flood of the same strength or magnitude, the one that is least disrupted and returns to either normal operations or exceeds the previous normal level is the more resilient. In this context, recovery and mitigation efforts are important in gauging the resiliency of a community.

Resiliency can be improved through a variety of means, but community characteristics, especially community wealth, can provide strong indicators of the underlying resiliency. Households with the means to wait for slow disaster response assistance have more options, and historically have received more federal disaster funds than households without resources to fall back on. This sets up inequities in flood response that can become cumulative as frontline communities manage repeated disasters.

Examples of Frontline Community Inequity

In a study of the recovery efforts following several natural disasters in the United States (Hurricane Hugo in the Carolinas and Georgia; Hurricane Andrew in Florida; and the Loma Prieta and Northridge earthquakes in California) low-income communities recovered more slowly than more affluent communities. After the two California earthquakes, most affected homes were restored less than a year after the incident, but rental properties and homes belonging to low-income owners took considerably longer. Additionally, the character of neighborhoods may change. As seen in reconstruction following Hurricane Andrew, middle- and upper-middle class homes were rebuilt, while many properties previously rented or owned by frontline individuals were not.[8]

Compounding the impacts of slow replacement of frontline housing, FEMA-provided temporary housing is only offered for six months. While extensions are possible, experience in previous disasters such as Hurricane Michael in 2018 show that extensions are rarely granted. The sudden loss of housing coupled with a lack of rebuilt homes for frontline communities leaves people scrambling for homes, often for more money and farther from their old communities and jobs.[9]

Iowa examples of recovery inequity

As an example of the challenge frontline communities face in Iowa, researchers at the University of Iowa looked at recovery indicators for flood-susceptible and non-susceptible communities in Cedar Rapids, Palo, and Iowa City following devastating floods in 2008. As expected, researchers found that frontline communities in these areas faced less-complete recoveries than their wealthier neighbors and took longer to recover to pre-flood levels. Also mirroring the national trend, these communities were less likely to receive full financial compensation and what compensation they did receive took longer to reach them.[10]

One year after the 2008 flooding, Iowa was only able to spend $24 million of $798 million in federal block grants due to federal distribution rules. To make up some of the shortfall, Cedar Rapids passed a local option sales tax for flood recovery and damaged property buyout programs. Buyout programs work to prevent future economic losses by purchasing flood damaged property with the condition that the purchased homes would be demolished and the parcels never redeveloped, creating natural buffers for future flooding. With the slow pace of assistance in Cedar Rapids, local community leaders report that individuals in these flood areas were unsure if properties would qualify for buyouts or rebuilding assistance, and, in a panic, sold for pennies on the dollar to land speculators.[11] Through these speculator purchases, whole communities of people were scattered within the Cedar Rapids metropolitan area.

This confusion may be repeating itself on the western edge of the state along the Missouri River in the unincorporated community of McPaul, Iowa. Recent flooding has left residents in a limbo, with local officials taking months to decide whether to initiate FEMA-backed buyouts with an estimated program backlog of two years between the flooding event and a buyout closing.[12] Additionally, while buyout programs are federally funded, local matching funds must also be brought to the table. While Cedar Rapids as the second largest city in Iowa has the economic base and resources to have a local option sales tax to create local matches, many low-income communities already struggling with the expenses and economic disruption that a large-scale disaster brings may be unable to generate these required matches.

Federal treatment of individuals with different income levels

After a disaster, residents' financial needs are immediate, but recovery funding often is not. Initial funds available from FEMA or Small Business Administration (SBA) loans may only be a few thousand dollars. FEMA directly states that federal assistance is an aid in recovery but will not recoup all that is lost in disaster.

Impacted communities looking for assistance, beyond that initially allocated, are often forced to wait years for additional assistance. Congress allocated recovery funds reactively, and action has become increasingly delayed. Recovery funds for Hurricane Katrina (2005) were appropriated within 10 days while funds for Hurricane Michael (2018) took seven months to be approved.[13]

Compounding the challenge of delayed relief funding, affected residents who use early federal funds may be penalized for doing so. Residents of Baton Rouge who accessed SBA loans following 2016 flooding found that by doing so, they were prevented from accessing more substantial recovery funds that were appropriated later.[14]

Iowa interventions — and limitations — for devastated communities

Iowa does offer assistance programs for individuals impacted by natural disasters, but participation in the program comes with many qualifications. Once the Governor has declared a state of emergency, the Iowa Individual Disaster Assistance Program allows qualifying individuals or families (individuals and families under 200 percent of the national poverty rate, or $51,500 yearly income for a family of four in 2019) to claim reimbursement for "un-met needs," up to $5,000.[15]

While $5,000 may be allocated for qualifying individuals and families, any assistance that applicants receive (public funds, private charity, non-profit donations, private insurance policies), whether financial or in-kind assistance, is counted against their total claimable amount. Individuals must provide several documents when submitting a claim, some of which (tax records, vehicle registration records, proof of residence) may have been destroyed. Although most of these documents can be replaced, all expenses must be submitted within 45 days of being incurred. This timing element may be difficult to overcome for individuals who are struggling to make ends meet.

The amount of money authorized for each claimed item is small, including authorizations for no more than $145 of clothing expenses per person, $500 for vehicle repairs, and $65 per night at a licensed lodging location, provided your home is inaccessible or uninhabitable.

Accepting state-level funds does not prevent individuals from claiming federal funds if a disaster is declared, but any previously provided state funds must be repaid if an applicant receives federal assistance. Additionally, once a federal disaster is declared, no new state level assistance applications are accepted for the same event, and any pending applications are canceled.

When combined with the extensive delays in federal assistance outlined earlier, individuals and their communities may be without funds or may have access to limited funds for quite some time. Wealthier families may be able to absorb these timing constraints for their losses, but those without are again forced to accept early money, even if money allocated later proves to be of greater amounts.

With these recovery inequities and challenges in mind, is there a similar concern for unequal flood prevention actions?

Location-based flood mitigation efforts

Below is a map of areas for consideration for state-funded mitigation programs as identified by the Iowa Department of Natural Resources. Originally, these watersheds were chosen for water quality improvement purposes and not flood mitigation, but the existing state water coordinators were leveraged to identify possible flooding mitigation project opportunities. The mitigation measures funded by the Iowa Flood Center (IFC) — a $4.5 million Housing and Urban Development (HUD) grant for efforts on 150 projects over six years[16] — were demonstration pieces and targeted toward projects specific engineering criteria based on a detailed hydrological assessment by the IFC, with qualifying locations further culled by local watershed management authorities. Mitigation measures that were funded included projects such as ponds, terraces, wetlands, water and sediment control basins, and on-road structures improve quality and quantity. Project locations align with that of Hydrological Unit Code 12 (HUC-12) streams. These mitigation projects in the chosen watersheds began in 2010 and ran until 2016.

Figure 2. State-identified areas chosen for flood mitigation
Iowa Watersheds Project participating watersheds

Source: Iowa Flood Center. Flood Mitigation Projects: Iowa Watershed Approach.

Based on the success of these projects, in 2016 Iowa was awarded a new $96.9 million HUD grant to continue mitigation projects in all nine major watersheds.[17] The objectives and review criteria for the new "Iowa Watershed Approach" will be based on the framework previously used in the Iowa Watersheds Project. This new phase of project funding may provide the Iowa Watershed Approach an opportunity to include additional project selection criteria that are more inclusive of social considerations moving forward.

Comparing the location of these mitigation projects against the location of frontline communities in Iowa provides a window into additional mitigation and recovery challenges faced by these communities. The IFC mitigation projects were based on criteria of benefit cost analysis, coordinator familiarity and comfort with local implementers, and project feasibility. Generally, when running a benefit cost analysis, the cost of protection provided, or prevention put into place must not exceed the value of the property being protected. This benefit cost ratio

It is much easier to justify an expensive mitigation project to protect higher-valued homes or land than homes or land of frontline communities, even if wealthier locations are better positioned to recover due to inherent community wealth.

must at least equal 1. It is much easier to justify an expensive mitigation project to protect higher-valued homes or land than homes or land of frontline communities, even if these wealthier locations are better positioned to recover due to inherent community wealth.

The Army Corps of Engineers also uses benefit cost analysis when deciding whether to fund a project and what priority to give projects. As noted previously, "higher property values mean a bigger benefit and a higher benefit-to-cost ratio," but Midwestern cities are at a national disadvantage in this formula due to relatively cheap homes and fewer expensive commercial properties.[18]

Problems with this benefit cost ratio become readily apparent when Cedar Rapids' flood protection plans are considered. Following historic floods in 2008, the Army Corps of Engineers undertook a flood mitigation study to analysis the benefits and costs of improving Cedar Rapids' flood protection. Upon review, the benefit cost ratios only qualify a small portion of wall and levee construction, with enhanced protection on the east bank of the Cedar River working out to be a ratio of 1:1.1, barely above the 1:1 threshold. If a ratio of 1:1.1 only exists to protect the most valuable city properties near the downtown, the qualifying requirement does not justify projects on the west bank of the Cedar River. The west bank contains hundreds of homes that were demolished in the 2008 flood, but property values in these areas are not high enough to pass the 1:1 threshold ratio.[19]

A federal criteria system that considers the location and economic conditions of residents would provide an opportunity to improve benefit cost calculations by highlighting frontline communities and their unique challenges. Current benefit cost calculations are required to consider the cost to society of taking or not taking action, but the standard by which FEMA calculates benefits cost analysis explicitly notes that their calculation methods "does not usually reflect effects on income distribution."[20] Additionally, until the most recent update of FEMA's benchmark disaster planning software HAZUS, social vulnerability was not noted for disaster planning purposes.[21]

Policy implications

Frontline communities often lack the ability to fully recover or move away from hazardous areas and are subject to the impacts of the next large disaster. With the increasing potential for severe flooding incidents outlined earlier, these communities may be trapped in a cycle of disaster and recovery, coming out worse each time until communities are broken apart and their members forced to move to other locations (locations that may not be any safer, just different).[22] Displaced families and shattered communities are unable to economically contribute to their communities and have constrained capacity to pursue health and education goals.

Communities may be trapped in a cycle of disaster and recovery, coming out worse each time until they are broken apart and members forced to move.

With these impacts in mind, what role is there for state and federal intervention? One possible intervention is to review the benefit cost analysis for mitigation efforts with an emphasis on community impact and vulnerability rather than up-front economic loss. The FEMA flood risk areas are determined by reported economic losses, which can be very large in areas where

Rebalancing benefit cost analysis may shift mitigation priorities toward projects that emphasize the needs of frontline communities.

the population (through wealth levels) inherently lose more. However, wealthier communities also possess more personal resources with which to recover or mitigate losses in the first place.[23] This benefit cost analysis is employed by federal and state disaster assistance and disaster agencies and declaration benchmarks. Rebalancing benefit cost analysis may shift mitigation priorities for communities toward projects that emphasize the needs of frontline communities.

FEMA also faces administrative hurdles in considering mitigation proposals that span multiple jurisdictions. Watersheds do not respect jurisdictional boundaries, but mitigation or assistance funding requests are accepted as individual pieces. Counties and cities may work together on applications, but they must submit individual applications to receive FEMA attention. Flexible program guidelines that allows for cross-jurisdictional applications could ease community burdens and allow for creative use of funds.

Similarly, the Department of Housing and Urban Development (HUD) programs currently require that Community Block Development Grant (CBDG) funds be spent within the qualifying census block. While this may be appropriate for housing projects, recovery efforts, or community revitalization, it becomes a challenge for flood mitigation. Flood mitigation is best placed upstream and, depending on the size of census tracts and the configuration of the watershed, the best place for mitigation efforts may be well outside the qualifying census block.

Programs require grant funds to be spent within a census block, but the best place for flood mitigation efforts may be upstream, well outside the qualifying census block.

Iowa currently stops processing and paying disaster claims once a federal disaster is declared, but federal funds may not arrive to a community in a timely fashion. While the stop-payment measure was implemented to reduce state governmental expenditures in favor of federal funds, its implementation leaves residents without relief and leaves low-income communities vulnerable to severe disruption. Keeping funds flowing while applying for direct reimbursement from the federal government would require program change on a state and federal level but would directly benefit citizens and should be considered.

Keeping state funds flowing pending reimbursement from the federal government would directly benefit citizens.

Finally, to apply for mitigation efforts, project areas must have a well-supported, well-documented application. This includes not just project scope and engineering specifications, but also land agreements for impacted areas. Putting all the pieces together for such a proposal is a challenging and expensive undertaking, and state support for a watershed coordinator to guide these applications in impactful watersheds would be a good use of state resources. Those job duties will be used again and again as Iowa adapts to severe weather driven by climate change.

State support for a watershed coordinator would help affected communities produce well-documented and well-supported project applications.

[1] Iman Mallakpour. A Tale of Flooding over the Central United States. The University of Iowa. April 2016. Online https://ir.uiowa.edu/cgi/viewcontent.cgi?article=6661&context=etd

[2] Chris Jones. "Cry Me A Raccoon River." December 2, 2019. Online available at: https://www.iihr.uiowa.edu/cjones/cry-me-a-raccoon-river/

[3] James Boulter, "An Uncertain Future: The Outlook for Iowa Communities and Flooding as our Climate Changes." September 2019. http://iowapolicyproject.org/2019docs/190905-Flood-Climate.pdf

[4] Iowa Flood Center. "Addressing Community Vulnerability and Building Flood Resilience". November 2019.

[5] Juntunen, L. 2005. Addressing Social Vulnerability to Hazards. Disaster Safety Review 4(2):3–10.

[6] Ibid.

[7] Mark Bernstein et al., "Rebuilding Housing Along the Mississippi Coast: Ideas for Ensuring an Adequate Supply of Affordable Housing." 2006. RAND Corporation. https://www.rand.org/content/dam/rand/pubs/occasional_papers/2006/RAND_OP162.pdf

[8] Ibid

[9] Guillermo Ortiz et. al., "A Perfect Storm: Extreme Weather as an Affordable Housing Crisis Multiplier". Center for American Progress. 2018. https://www.americanprogress.org/issues/green/reports/2019/08/01/473067/a-perfect-storm-2/

[10] Muñoz, Cristina E. and Eric Tate. "Unequal Recovery? Federal Resource Distribution after a Midwest Flood Disaster". Int. J. Environ. Res. Public Health 2016, 13(5), 507; https://doi.org/10.3390/ijerph13050507

[11] Betsy Rubiner. "A Year After the Flood, Cedar Rapids Struggles". Time. June 17, 2009. Online Available at: http://content.time.com/time/nation/article/0,8599,1904991,00.html

[12] Kim Norvell. "210 Days and Counting: Recovery from historic floods continues in western Iowa". The Des Moines Sunday Register. October 13, 2019. https://www.desmoinesregister.com/story/news/2019/10/09/iowa-flooding-2019-missouri-river-buyouts-flood-recovery-fema/2287374001/

[13] Alexandra Miller and Jeffrey Goodman. "Striving for Equity in Post Disaster Recovery". Planning Magazine. American Association of Planners. August/September 2019. https://planning.org/planning/2019/aug/postdisasterhousing/

[14] Ibid.

[15] Iowa Individual Disaster Assistance Program. "IIDAG – IDCM Effective Rules". Iowa Health and Human Services Rule – Chapter 58. May 2017. http://iowacommunityaction.org/wp-content/uploads/2016/06/IIAGP-IDCM-Rules-Effective-7.1.17.pdf

[16] Iowa Watershed Project. Iowa Flood Center. https://iowafloodcenter.org/projects/iowa-watershed-approach-hydrologic-network-4-2/

[17] Iowa Flood Center. Flood Mitigation Projects: Iowa Watershed Approach. 2017. Online Available at: https://iowawatershedapproach.org/programs/constructed-watershed-projects/

[18] Joel Aschbrenner. "Why Cedar Rapids' Flooding Plan Will Probably Never Get Federal Funding". Cedar Rapids Gazette. October 10, 2016. Online Available at: https://www.desmoinesregister.com/story/news/2016/10/09/why-cedar-rapids-flooding-plan-probably-never-get-federal-funding/91269958/

[19] Ibid.

[20] Office of Management and Budget. Circular No A-94: Guidelines and Discount Rates for Benefit-Cost Analysis of Federal Programs. Online available at: https://www.whitehouse.gov/sites/whitehouse.gov/files/omb/circulars/A94/a094.pdf.

[21] Flanagan, Barry E.; Gregory, Edward W.; Hallisey, Elaine J.; Heitgerd, Janet L.; and Lewis, Brian (2011) "A Social Vulnerability Index for Disaster Management," Journal of Homeland Security and Emergency Management: Vol. 8: Iss. 1, Article 3. DOI: 10.2202/1547-7355.1792

[22] Kerri Dickey, "Longitudinal Awareness: A Study of Vulnerability to Flooding in Polk County, Iowa." Iowa State University. https://pdfs.semanticscholar.org/4ea7/6eda7da8fe3d24fa34952213cf735b72d158.pdf

[23] Ibid.