

# The Prevalence and Cost of Urban Flooding

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*A Case Study of Cook County, IL*

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Updated May 2014





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A Case Study  
of Cook County, IL



**PREPARED BY  
THE CENTER FOR NEIGHBORHOOD TECHNOLOGY**

**MAY 2013 - PHASE ONE**

*MAY 2014 - REVISED VERSION*

## ABOUT THE CENTER FOR NEIGHBORHOOD TECHNOLOGY

The Center for Neighborhood Technology (CNT) is an award-winning innovations laboratory for urban sustainability. Since 1978, CNT has been working to show urban communities in Chicago and across the country how to develop more sustainably. CNT promotes the better and more efficient use of the undervalued resources and inherent advantages of the built and natural systems that comprise the urban environment.

As a creative think-and-do tank, we research, promote, and implement innovative solutions to improve the economy and the environment; make good use of existing resources and community assets; restore the health of natural systems and increase the wealth and well-being of people—now and in the future. CNT's unique approach combines cutting edge research and analysis, public policy advocacy, the creation of web-based information tools for transparency and accountability, and the advancement of economic development social ventures to address those problems in innovative ways.

CNT works in four areas: transportation and community development, water, energy and climate. CNT has two affiliates, Alternative Transportation for Chicagoland and Elevate Energy.

CNT is a recipient of the 2009 MacArthur Award for Creative and Effective Institutions.

More information about CNT is available at [www.cnt.org](http://www.cnt.org)

This research is part of CNT's Smart Water for Smart Regions initiative dedicated to inventive solutions and advocacy focused on water supply and stormwater in the Great Lakes states. Visit [www.cnt.org/water](http://www.cnt.org/water) for more information. The report is one of a series that will be published over the next two years that addresses the challenges, and potential solutions, associated with urban flooding. Funding for this research was generously provided by State Farm Insurance Companies®, The Joyce Foundation, Surdna Foundation, and Grand Victoria Foundation.

We would particularly like to thank the insurance companies and FEMA who released data for this research and spent time advising us on the analysis.

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**COVER: RESCUE WORKERS ON A FLOODED STREET IN WESTCHESTER**

Photo Credit: Flickr User U.S. Coast Guard, CC License

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**OPPOSITE PAGE: FLOATING AND DAMAGED ITEMS IN A CHICAGO BASEMENT**

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# Summary

This report is the updated version of our Phase One research on the prevalence and cost of flooding to property owners—such as homes and businesses—in urban and suburban areas. Urban flooding is caused by too much rain overwhelming drainage systems and waterways, and making its way into basements, backyards, and streets.

This is the first report to collectively analyze flood damage claims and sewer- and drain-backup claims data from multiple providers of insurance and other financial assistance. It consists of claims paid out for property damage in Cook County, IL, between 2007–2011, aggregated by ZIP code. The claims data comes from private insurance companies (endorsement policies for sewer and drain-backups) and from the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP), Disaster Relief Assistance Program, and Public Assistance Grant Program; and Small Business Administration (SBA) Disaster Loan Program. It also includes an analysis of the 100 responses to our online survey of property owners in Cook County that have suffered from property flooding in the last five years.

While the claims data gives some indication of the cost and prevalence of urban flood damage, it represents a significant understatement of total flood damage (see ‘Data Limitations’). **Key points emerging from the research include:**

- **Urban flooding in Cook County, IL is chronic and systemic, resulting in damage that is widespread, repetitive and costly.** Over 181,000 claims were made across 97 percent of Cook County ZIP codes, and in each of the five years. Average payouts per claim were \$4,272 across all types of claims, with total claims amounting to \$773 million over the five years examined. Seventy percent of the online survey respondents estimate that they had flooded three or more times in the last five years, 20 percent have flooded 10 or more times.
- **There are multiple social and economic impacts on residential property owners:** our online survey found that 84 percent suffered stress and 13 percent ill health. Forty-one percent lost the use of part of their property, 63 percent lost valuables and 74 percent lost hours of work to clean up.
- **There is no correlation between damage payouts and the floodplains:** when all types of claims are aggregated, some of the Cook County ZIP codes with the highest concentration of payouts (number and value) have no land area within federally designated floodplains.
- **Claims were made across income groups,** however 67 percent of the 27 ZIP codes with the highest concentrations of damage earn below the average median household income for Cook County.
- **Flood insurance is not carrying the burden of damage payouts:** claims via the National Flood Insurance Program—the only formal ‘flood’ insurance program—represent just 8 percent of total payouts.
- **No clear solutions for property owners:** the vast majority—76 percent of online survey respondents—had invested in measures to prevent future flooding, such as downspout disconnection and pumps, but only six percent believed that the investment had solved their flooding problem.

Research conducted by CNT in 2012 indicates that communities across the Great Lakes region are suffering from the impacts of urban flooding caused by moderate and heavy rain running off roofs, roads, and parking lots. The economic and social consequences can be considerable: experts estimate that wet basements decrease property values by 10-25 percent, and that almost 40 percent of small businesses never reopen their doors following a flooding disaster.

Our research finds that communities affected by urban flooding are not benefiting from state and federal programs and incentives designed to support them. Recommendations are also made for further research.

# Urban Flooding

Urban flooding occurs when rain overwhelms drainage systems and waterways and makes its way into the basements, backyards, and streets of homes, businesses, and other properties. There are several ways in which stormwater can cause the flooding of a property: overflow from rivers and streams, sewage pipe backup into buildings, seepage through building wall and floors, and the accumulation of stormwater on property and in public rights-of-way.

As cities, towns, and suburbs have developed to accommodate increasing population, more impermeable surfaces (roads, roofs, parking lots, driveways, alleys, sidewalks, and patios) have led to increased stormwater runoff, and natural drainage systems have been replaced with man-made sewer and stormwater infrastructure. This infrastructure has fallen into disrepair in many places, and increasingly heavy rainfall events are putting additional strain on the deteriorating drainage systems.

The economic, social and environmental consequences of urban flooding can be considerable: chronically wet houses are linked to an increase in respiratory problems, and insurance rates and deductibles may rise to compensate for repeated basement flooding claims. Industry experts estimate that wet basements can lower property values by 10-25 percent and are cited among the top reasons for not purchasing a home (see Appendix K). According to FEMA, almost 40 percent of small businesses never reopen their doors following a flooding disaster. Between 2006–2010 the average commercial flood claim made to the NFIP amounted to just over \$85,000.<sup>1</sup> Urban flooding also erodes streams and riverbeds, and degrades the quality of our drinking water sources and the health of our aquatic ecosystems.

Although the term ‘urban flooding’ is used more widely in

Europe and Canada (with varying definitions), research undertaken by CNT in 2012 documents that urban flooding problems may also be widespread in the United States. Of the 30 stormwater departments and utilities that responded to our research survey (serving 330 municipalities with a population of approximately 19.7 million people), all received flooding complaints, with 80 percent characterizing the annual number of complaints as medium or large. Water from storms and waterways is flooding into people’s backyards, streets, and parking lots (90 percent of respondents reported), into the interior of buildings through sewer backups (83.3 percent), and through the walls of homes and buildings (46.7 percent).<sup>2</sup>

Since different flood events and water-damage scenarios trigger very different payout consequences (chronic versus random events, sewer backup versus snowmelt or overland flooding), the costs associated with urban flooding are not typically aggregated, but rather are analyzed according to the provider (private insurance companies, FEMA National Flood Insurance Program, FEMA Disaster Relief Assistance Program, FEMA Public Assistance Grant Program and Small Business Administration Disaster Loan Program). This paper summarizes the first research project to collectively analyze the mix of damages in order to get a more comprehensive picture of the actual risks faced by property owners in urban areas, as well as the collective cost to society.

The research is part of a broader program: CNT’s Smart Water for Smart Regions initiative, which helps communities in the eight Great Lakes states (Illinois, Indiana, Michigan, Minnesota, New York, Ohio, Pennsylvania, Wisconsin) design strategies for delivering water services to homes and businesses more efficiently, effectively, and transparently, while sustaining the region’s water resources.

# Research Methodology

The area of Cook County, IL was selected as a case study for this research. It is the second-most populous county in the United States with 5,231,351 residents (40.5 percent of all Illinois residents). The county is mainly urban and is very densely populated. The City of Chicago makes up approximately 54 percent of the population of Cook County. There are over 130 incorporated municipalities in Cook County and 169 ZIP codes. The percentage of land area covered by impervious surfaces varies across the county; average coverage is 42 percent (Appendix A). The majority (82 percent) of the county's one million residential properties have full or partial basements.<sup>3</sup>

There are two key data sources for this research:

## 1. Claims paid out for property damage in Cook County.

This data has been made available to CNT as part of a data sharing agreement with several insurance companies, FEMA, and the SBA. The data covers a five-year period (2007–2011), is aggregated by ZIP code, and is derived from private insurance claims against sewer and basement endorsement policies, flood damage claims via the National Flood Insurance Program, and those made via the FEMA Disaster Relief Assistance Program (Disaster Relief Declaration-1800-IL, 2008, and Disaster Relief Declaration-1935-IL, 2010). Further details about these data sources are described in Appendix B.

The data includes the number of claims and claim amount; both were analyzed and mapped by ZIP codes, when available, and by quartiles (or four equal groups, each representing approximately 25 percent of total households). Separate maps were prepared for each of the data sources and, where this data were available, by year. The aggregated five-year data were also mapped to better understand the collective risks. ZIP codes in the highest quartile for both number of claims and claim amount were defined as those with the highest concentrations of damage.

## 2. Responses to an online survey of property owners in Cook County

that have suffered from property flooding within the last five years. The survey was promoted through local groups, aldermen, churches, etc., and the respondents were self-selecting. The responses were sorted, removing those that were from outside Cook County, or that had not suffered from flooding in the last five years. The remaining 115 responses were then analyzed.

CNT is continuing to gather data from providers and property owners in Cook County in order to enhance our understanding of urban flood impacts. This paper summarizes the preliminary research finding.



ROAD CLOSURE DUE TO FLOODED STREET IN ELMHURST  
Photo Credit: Flickr User clarkmaxwell, CC License

# Data Limitations



FLOODED STREET IN CHICAGO'S LINCOLN SQUARE NEIGHBORHOOD  
Photo Credit: Flickr User smussyolay, CC License

Although the claims data gives some indication of the cost and prevalence of urban flood damage, it should be noted that it represents a significant understatement of flood damage:

**The data set is incomplete:** The data underrepresents the private insurance claims for sewer and drain backups since not all insurance companies serving the Cook County market released data for this analysis.

**A significant proportion of property owners are not covered by NFIP flood insurance, or for basement and sewer backups,** and property owners with insurance coverage often choose not to make claims.

**Claims payouts often do not cover all costs incurred:**

Insurance policies typically have limits, and some costs incurred may not be covered. Our online survey of property owners that have been flooded in the last five years seeks to get a preliminary understanding of some of these wider costs (see Tables 6 and 7).

**The online survey is self-selecting** (with the inevitable biases that this brings) and is based on the respondents' estimated versus actual costs incurred.

# Research Findings

## Costly

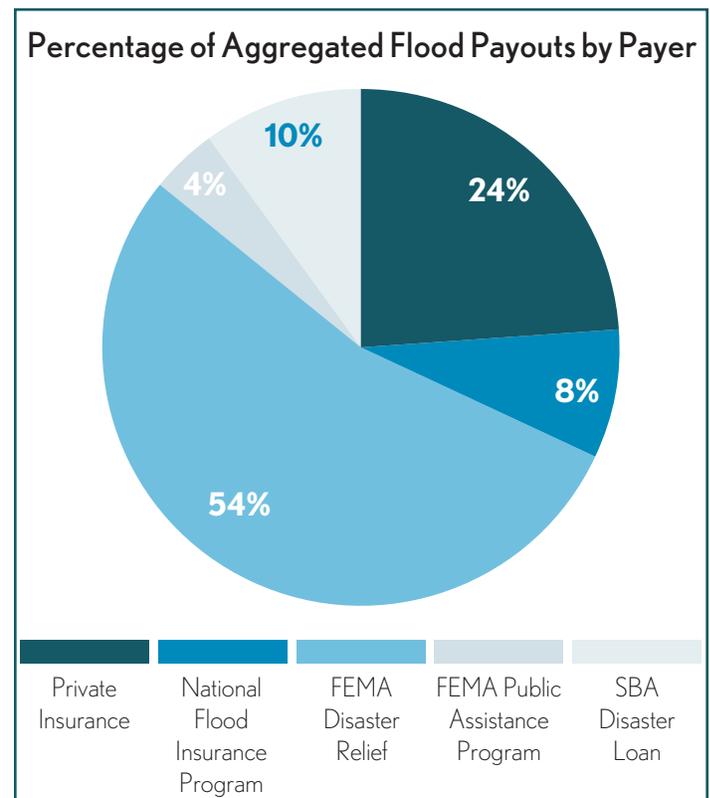
Total claims paid for urban flooding incidents over the five years are more than \$773 million, and average payouts per claim are \$4,272 across all types of claims (Table 1). In total, 181,094 claims were made.\* As noted above, this figure is a considerable understatement of the economic damage caused.

The data (Tables 1 and 2) illustrates the level of reliance on disaster relief (FEMA Disaster Relief, FEMA Public Assistance Program, and SBA Disaster Loan), which adds up to 68% of aggregated payouts. Recipients of disaster relief are not required to have a policy in order to claim disaster relief, although this funding is only available if a disaster has been declared.

In contrast, the National Flood Insurance Program—the only formal mechanism by which property owners can protect themselves from the economic cost of flood damage (rather than sewer and drains backup)—represents only 8 percent of the claims payouts. The proportionally smaller payout reflects the fact that few property owners beyond the officially designed floodplains (comprising 0.3 percent of the total acreage in Cook County) have chosen to take out flood insurance coverage via the program.

	Total Number of Claims	Total Dollars	Average Payout
Private Insurance	20,461	\$185,104,184	\$9,047
FEMA National Flood Insurance Program	3,872	\$63,907,684	\$16,505
FEMA Disaster Relief Data	152,864	\$415,322,894	\$2,716
FEMA Public Assistance Grant Program	206	\$28,396,689	\$137,848
SBA Disaster Loan Program	3,691	\$80,980,700	\$21,940
<b>Total</b>	<b>181,094</b>	<b>\$773,772,151</b>	<b>\$4,272</b>

**TABLE 1**  
Number of claims, claims amount, and average payout according to payer



**TABLE 2**  
Percentage of aggregated flood payouts by payer

\* Some households may have made multiple claims.

## Claims Variability

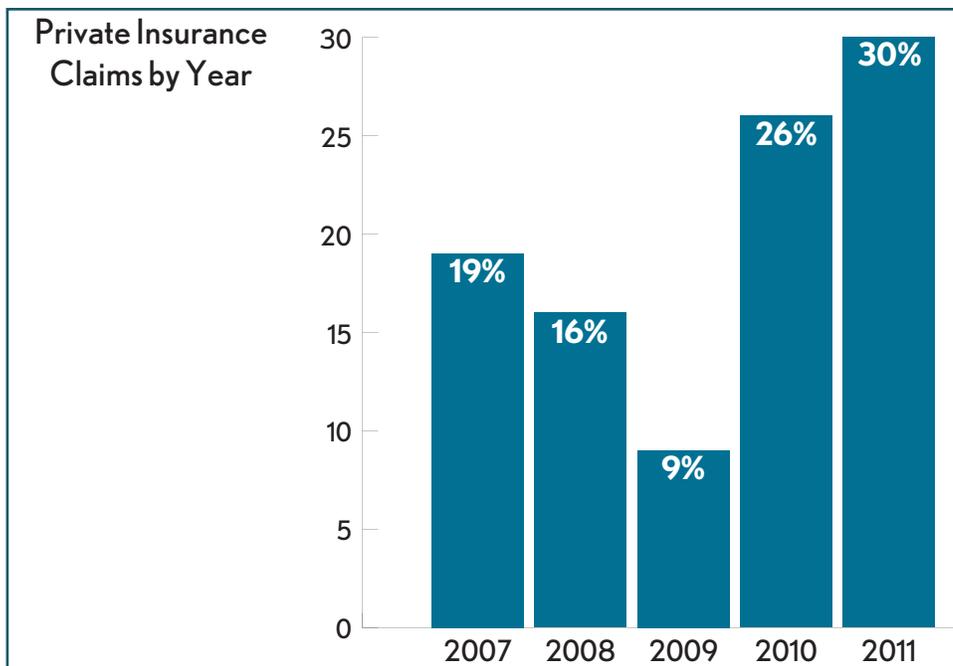
When mapped separately according to the data provider or year, the variability of the claims is revealed, with pockets of concentrated damage in certain parts of the county. The number of claims, total claims amount, and average claim payouts differ widely from one ZIP code to another (see Appendices C–G).

There are many possible explanations for these differences: rain events often vary considerably in intensity over the affected areas; communities vary in their housing density, stormwater infrastructure capacity, and levels of impervious surface; providers have different stipulations over what damage is covered and to what extent; and different providers have different customer bases (private insurance is more likely to be purchased by higher-income households).

## Prevalent and Repetitive

When aggregated, the maps reveal that claims were made in 97 percent of Cook County ZIP codes (see Appendix H). Although varying year-by-year, a breakdown of insurance data (Table 3) shows that there were a significant number of claims in each of the five years.

Our online survey results reinforce the characterization of urban flooding as being repetitive. Seventy percent of respondents estimated that they had flooded three or more times in the last five years, and 20 percent estimated that they have suffered 10 or more events.



**TABLE 3**  
Total private insurance claims broken down by year (data excludes FEMA data)

## No Correlation with Floodplains

Our analysis found that there is **no correlation** between ZIP codes having land located within the floodplains and the aggregated number of damage payouts from all data sources (Table 4). Floodplains constitute just 0.3 percent of the total acreage in Cook County. Twenty percent (33) of the ZIP codes in Cook County have no floodplains in them at all. Nine of these ZIP codes are among those with the highest concentrations of damage claims.

When NFIP data is considered alone, there is a strong correlation between floodplains and payouts. This is because floodplains are designated as Special Flood Hazard Areas (SFHA) and the owners of properties located within SFHA are required to have NFIP insurance in order to secure a mortgage. However, the correlation is not absolute; one of the ZIP codes with the highest concentrations of NFIP claims payouts contains no floodplains.

## Impervious Surface Area

Although scatter plot found that the relationship between impervious surface area and claims is insignificant, 10 of the 23 ZIP codes with highest numbers of aggregated claims (Appendix G) also fall within the ZIP codes with highest levels of impervious surface (60.3 - 88.3 percent).

## Low-Income Most Affected

Claims were made across all income groups; however, 67 percent (18) of the 27 ZIP codes with the highest concentrations of damage have below the median household income for Cook County (\$50,813) (see Appendix I).

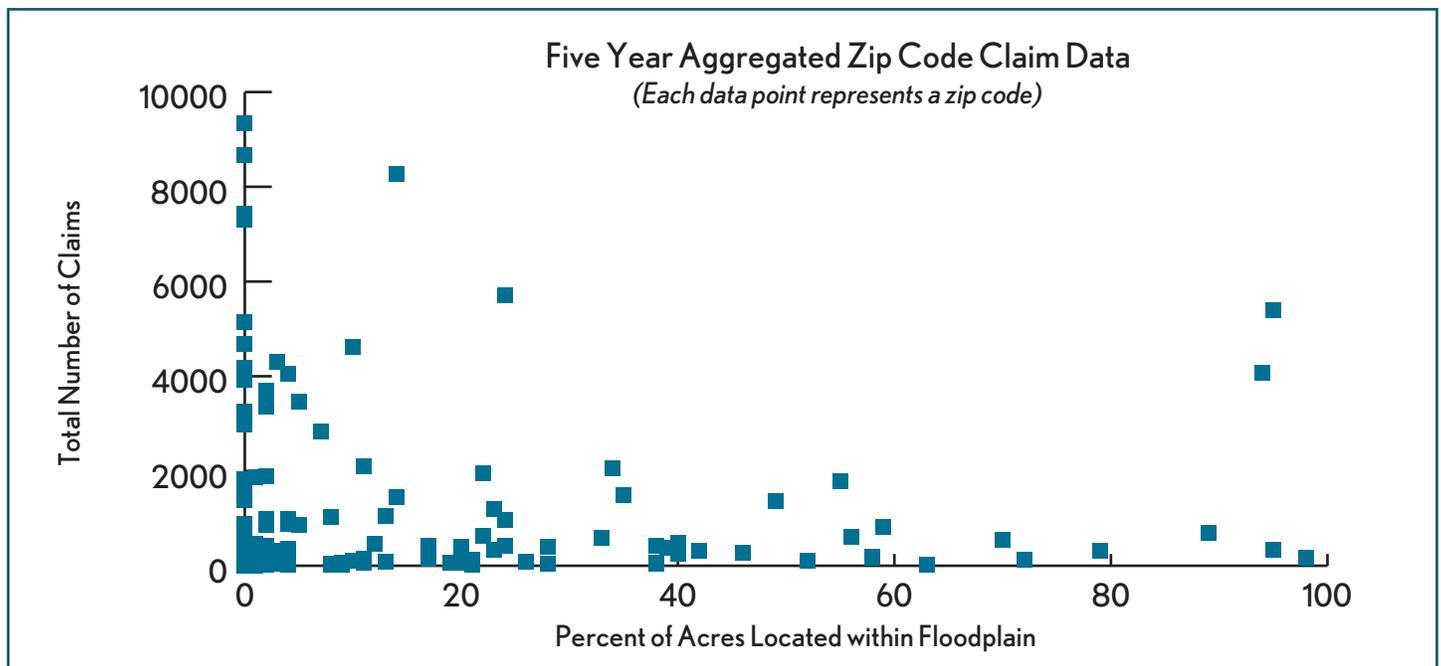
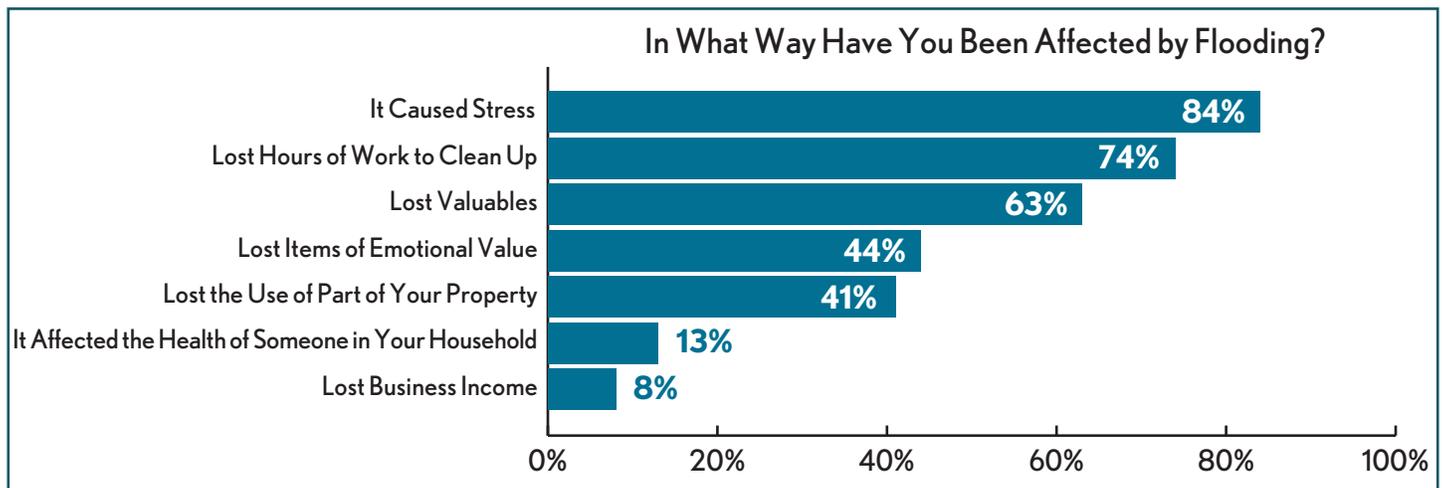


TABLE 4  
Correlation between number of claims and percent (of acres) of ZIP codes within a floodplain

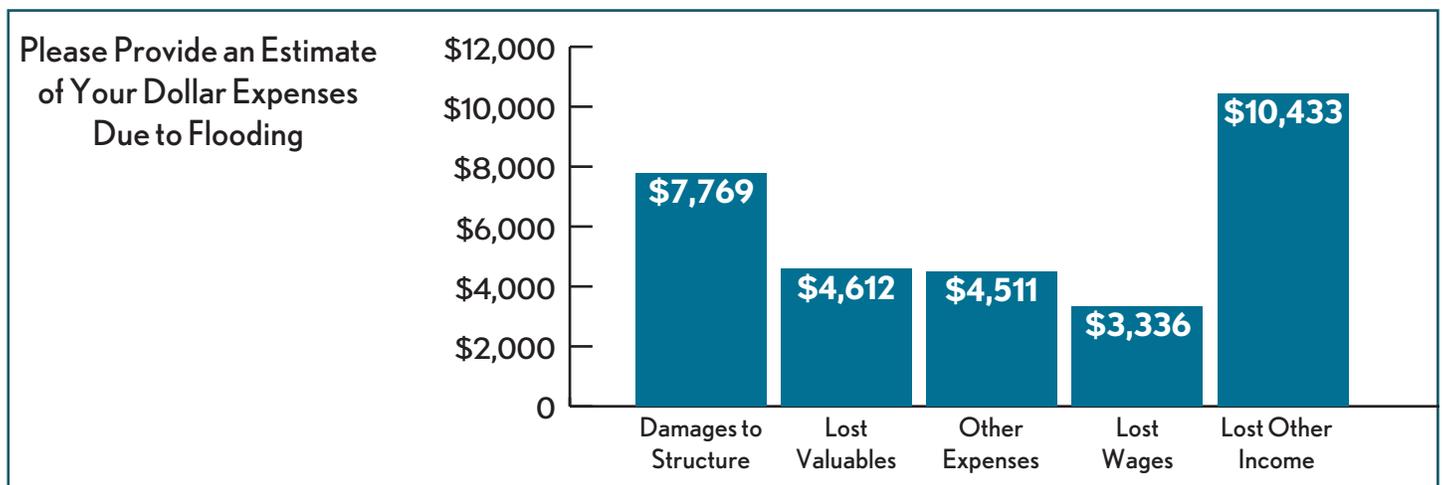
## Wider Social and Economic Impacts

Our online survey revealed the wider impacts of urban flooding. Eighty-four percent suffered stress and 13 percent ill health. Forty-one percent lost the use of part of their property, 63 percent lost valuables, 44 percent lost items of emotional value, 74 percent lost hours of work to clean up, and eight percent lost business income.

Estimated costs of flood damage included damage to the property structure, lost valuables, lost wages and other income, and other expenses in their estimates. Not surprisingly, costs varied significantly from one claim to another. For example, the estimated total cost (in dollars) of damages to property structure varied from \$200 to \$100,000.



**TABLE 5**  
The impacts of flooding on property owners



**TABLE 6**  
Average estimated cost associated with the impact of property flooding

## Measures to Prevent Future Flooding

The vast majority of respondents—76 percent—had invested in measures to prevent future flooding, such as downspout disconnection, rain gardens, structural modifications, and pumps; each with associated costs. Downspout disconnections and pumps were the most common investments.

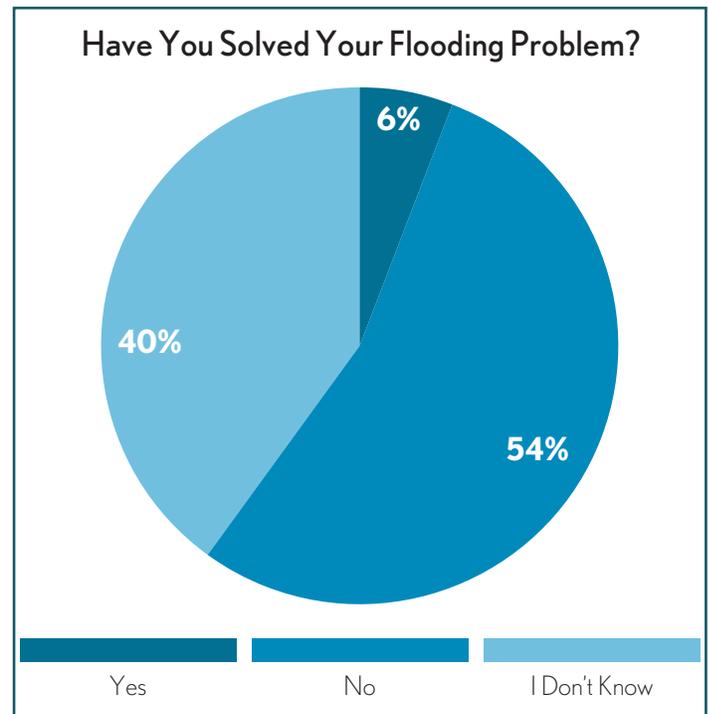
Issue	Percent Respondents	Estimate Average Cost
Downspout disconnection	33	\$964
Pumps	31	\$2,832
Plumbing	23	\$4,305
Basement sealing	21	\$3,728
Structural modifications to your home	17	\$7,328
Rain garden(s)	11	\$1,064
Other	16	\$3,564
None	24	\$0

**TABLE 7**  
Investments made by property owners in measures to prevent future flooding

## Uncertainty

Only six percent of respondents believed that the investment in measures to prevent future flooding had solved their flooding problem. Fifty-four percent of respondents said that it had not solved their problem, the remaining 40 percent did not know.

Our survey provided the opportunity for respondents to give qualitative responses to the survey. These reveal the mix of issues facing property owners when dealing with urban flooding (See Appendix J).



**TABLE 8**  
Percent of property owners who believe that they have solved their flooding problem

# Conclusions and Further Research

Between 2007–2011, over 181,000 claims—worth in excess of \$773 million—were filed for damaged property in Cook County as a result of urban flooding. This is the first time this information has been collected, analyzed and made available, primarily because it has been in the possession of several different payers.

Urban flooding damages the buildings and valuables of property owners and occupants. It causes them to miss days off work, and suffer ill-health and stress. Many are suffering repeated flooding and wet basement damage, and have found no clear solution to the problem. The increasing number of heavy precipitation events that has been experienced over the last several years suggests that the frequency and magnitude of urban flood damage is likely to worsen in the future.

Although the data from our research is restricted to Cook County, IL, the overall picture portrayed—of widespread and prevalent damage caused by urban flooding—seems likely to be reflected in other cities in the Great Lakes region and Midwest in general. In the Midwest, very heavy precipitation events increased by 31 percent between 1958 and 2007, and the trend is set to continue.<sup>4</sup> Meanwhile, the number of roads, roofs, parking lots, driveways, sidewalks, and patios that constitute our cities have expanded, accelerating storm water run-off into streets and properties.

The research demonstrates that urban flooding is chronic and systemic, and suggests that property owners cannot be left to tackle this challenge alone. Cities and municipalities will need to adopt a comprehensive suite of measures to tackle the problems. Although state and federal programs and funding exist to support communities implementing such measures—such as FEMA’s Community Rating System (CRS)<sup>5</sup> and

their Multi-Hazard Mitigation<sup>6</sup> assistance and grants program—many at-risk communities are not taking advantage of these opportunities. For example, our research shows that only 19 of the 133 communities in Cook County are participating in the CRS (see Appendix L), and that Cook County does not have a Multi-Hazard Mitigation Plan.<sup>7</sup> This means that the majority of property owners in ZIP codes with high urban flood damage payouts are unable to benefit from reduced flood insurance rates and other protective measures that form part of the programs.

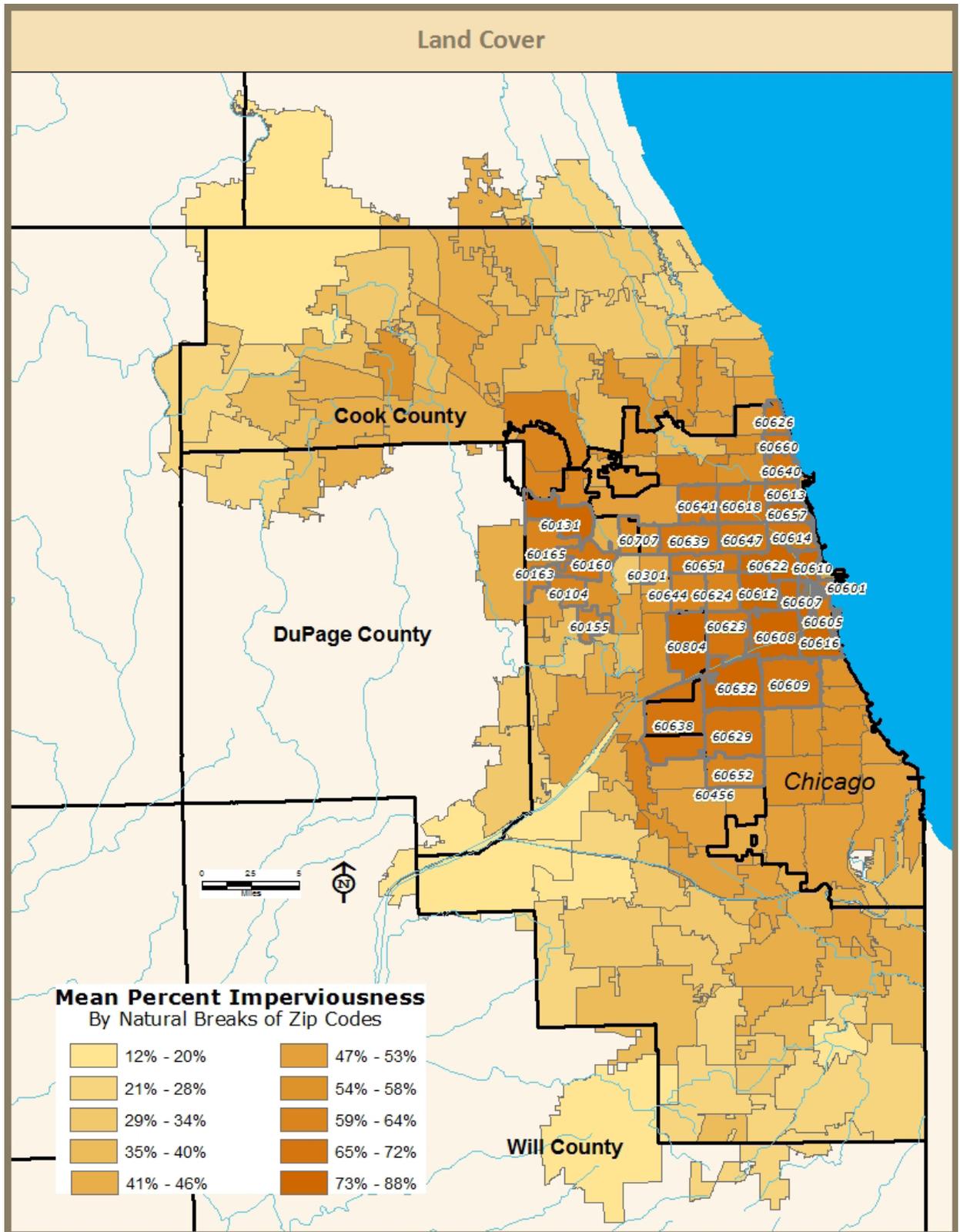
Government should strengthen programs that encourage or require developers and property owners to reduce impervious surface area, and retain and manage stormwater run-off on the property. The use of impervious surface fee-based budgeting (known as ‘Rain Funds’),<sup>8</sup> the adoption of ordinances that require new development or redevelopment to have on-site retention measures, and the use of State Revolving Funds for green infrastructure are good examples.

CNT has pioneered several initiatives and services to help property owners, towns and cities, and states tackle urban flooding:

- **Wetrofit** is a pilot service that helps homeowners identify cost-effective solutions to their flooding problems with coordinated landscaping, plumbing and building improvements.
- **Rain Ready** ([www.rainready.org](http://www.rainready.org)) provides information and technical assistance to help individuals, communities and states identify and adopt solutions.
- The **2014 Urban Flooding Awareness Act** provides model state legislation, introduced in the State of Illinois.

# Appendix A

## Impervious Surface Area by ZIP Code



# Appendix B

## Description of FEMA and Private Insurance Programs

### Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) oversees two programs which may provide homeowner assistance in addressing property flooding. FEMA makes flood insurance available at subsidized rates and it offers disaster recovery funding through the Disaster Relief Assistance program. FEMA also administers the Public Assistance Grant Program, which provides disaster assistance to state and local governments impacted by flooding.

### National Flood Insurance Program

FEMA's National Flood Insurance Program (NFIP) policies provides coverage for flooding. For NFIP insurance purposes a "flood" is a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area, or two or more properties (one of which includes the insured structure). This specifically includes overflow from inland or tidal waters, unusual and rapid accumulation or runoff of surface waters from any source, and flowing liquid mud over the surface of normally dry land ("mudflow," but not landslide or mudslide).

FEMA produces maps called Flood Insurance Rate Maps (FIRMS) that depict the areas (special flood hazard areas or SFHAs) where modeling predicts that there is a one percent chance of flooding in any given year. Usually this is associated with a river, lake, or ocean. For properties located in a SFHA, federally regulated lending institutions must require flood insurance coverage in order to loan money secured by a building. Most, but not all, people who have flood insurance have it because they are in a SFHA and their bank requires it in order to secure a mortgage. Those outside of SFHAs and/or without mortgages from federally regulated banks are not required, but can choose to buy NFIP flood insurance as

long as the community in which the property is located participates in the NFIP.

Flood coverage can be purchased for one- to four-family residential buildings (up to \$250,000 in damage) and some of its contents (up to \$100,000). A standard policy covers the building, electrical/plumbing systems, carpeting and major appliances like stoves, refrigerators and water heaters, but an additional premium is required to cover contents like clothing, furniture, and electronics. For non-residential buildings, the maximum building coverage under the NFIP is \$500,000, and the maximum contents coverage for non-residential buildings is also \$500,000.

Renters can purchase NFIP flood insurance coverage for their personal property regardless of whether the building in which they rent is insured by the owner or anyone else. NFIP insurance does not cover additional living expenses or loss of use, regardless of whether the building, personal property, or both coverages are purchased.

NFIP flood insurance coverage for personal property and for building elements located in basements (any area of a building with its floor below grade on all sides) is limited. Where an NFIP-insured building was damaged by a flood but the damage was confined to a finished basement, the payment will not fully reflect the extent of the damage. Finished basements and split-level floor plans are very common in northeastern Illinois. Other uncovered items include swimming pools, plants, and fences.

Although the program is administered by the federal government, NFIP flood policies are sold through private insurance companies (see 'Write Your Own Program' below).

### Disaster Relief Assistance

Disaster Relief Assistance is made available for property owners in an area that is declared a federal disaster area, regardless of whether a household has flood or other property insurance. By law, federal disaster assistance

cannot duplicate insurance coverage, but households may apply for damage amounts above those that their private or NFIP insurance policy covers. Relief may be in the form of a loan from the Small Business Administration, which must be repaid, or a grant from the Individual and Households Program, which does not need to be repaid. Disaster assistance payments are usually much lower than what an insurance policy would reimburse.

A Major Disaster can be a result of hurricanes, earthquakes, flood, tornados or major fires. The event must be clearly more than state or local governments can handle alone, and must be declared by the President of the United States. Joint federal, state, and local Preliminary Damage Assessments (PDAs) are conducted at the request of a state's governor, in requested counties. PDAs estimate damages immediately after an event and are considered, along with several other factors, in determining whether a disaster is of such severity and magnitude that effective response is beyond the capabilities of the state and the affected local governments, and that federal assistance is necessary. If declared, funding comes from the President's Disaster Relief Fund, managed by FEMA and disaster aid programs of other participating federal agencies.

A Presidential Major Disaster Declaration puts into motion long-term federal recovery programs, some of which are matched by state programs and designed to help disaster victims, businesses, and public entities.

Between 2007 and 2011, two events qualified for Federal Disaster Relief assistance in Cook County:

- On September 24, 2008, Governor Rod R. Blagojevich requested a major disaster declaration due to severe storms that produced torrential rain resulting in flooding and flash flooding beginning on September 13, 2008, and continuing. The governor requested a declaration for Individual Assistance and Hazard Mitigation for seven counties, including Cook. On October 3, 2008, President George W. Bush declared that a major disaster existed in the State of Illinois, making Individual Assistance requested by the governor available to affected individuals and households. This declaration also made Hazard Mitigation Grant Program assistance requested

by the governor available for hazard mitigation measures statewide. Of homeowners that received assistance, 25 percent were insured residences and 16 percent were low income. In Cook County, households were eligible to apply for more than one type of assistance, including home repair, housing assistance, rental assistance, replacement housing, and transient accommodations.

- On August 16, 2010, Governor Pat Quinn requested a **Presidential Major Disaster Declaration** due to severe storms and flooding during the period of July 22 to August 7, 2010. The governor requested a declaration for Individual Assistance for seven counties, including Cook, and Hazard Mitigation for the entire State of Illinois. On August 19, 2010, President Barack Obama declared that a major disaster existed in the State of Illinois. Of homeowners that received assistance, 14 percent were insured residences and 18 percent were low income.

While the 2008 and August 2010 incidents did meet the qualifications to be declared federal disasters, most storms that may cause considerable losses will not qualify and disaster relief assistance would not be available to cover these losses.

## Public Assistance Grant Program

The Public Assistance Grant Program provides assistance to State, Tribal and local governments, and certain types of Private Nonprofit organizations so that communities can respond to and recover from major disasters or emergencies declared by the President via a Presidential Major Disaster Declaration.

Through the program, FEMA provides supplemental Federal disaster grant assistance for debris removal, emergency protective measures, and the repair, replacement, or restoration of disaster-damaged, publicly owned facilities and the facilities of certain Private Non-Profit (PNP) organizations. The program also encourages protection of these damaged facilities from future events by providing assistance for hazard mitigation measures during the recovery process.

Criteria through which FEMA determines eligibility to

receive funds includes assessment of four components: the applicant, facility, work, and cost. If all components meet the criteria, funds may be provided. The Federal share of assistance is not less than 75% of the eligible cost for emergency measures and permanent restoration.

Guidelines are in place to assess eligible costs. Generally, costs that can be directly tied to the performance of eligible work are eligible. Such costs must be: reasonable and necessary to accomplish the work; compliant with Federal, State, and local requirements for procurement; and reduced by all applicable credits, such as insurance proceeds and salvage values.

With regards to the federally designated disaster in 2008, Public Assistance Grant funds were approved and granted. For the disaster in 2010, preliminary estimates of eligible costs for applicant organizations in Cook County were provided for this study. No assistance was awarded but there were estimates of damage.

Actual costs would have likely changed if Cook County was included in the declaration and FEMA had taken a detailed look at the costs being claimed.

## Small Business Administration

Coverage for water damage from sewer and drain Homeowners, renters, business owners and small agricultural cooperatives located in a declared disaster area may be eligible for financial assistance from the U. S. Small Business Administration (SBA). Only uninsured or otherwise uncompensated disaster losses are eligible. Any insurance proceeds which are required to be applied against outstanding mortgages are not available to fund disaster repairs and do not reduce loan eligibility. However, any insurance proceeds voluntarily applied to any outstanding mortgages do reduce loan eligibility.

Three types of loans are available:

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- **Home Disaster Loans** – Loans to homeowners or renters to repair or replace disaster damaged real estate or personal property owned by the victim. Renters are eligible for their personal property losses, including automobiles. SBA regulations limit home loans to \$200,000 for the repair or replacement of real estate and \$40,000 to repair or replace personal property. Subject to these maximums, loan amounts cannot exceed the verified uninsured disaster loss.

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  - **Business Physical Disaster Loans** – Loans to businesses to repair or replace disaster-damaged property owned by the business, including real estate, inventories, supplies, machinery and equipment. Businesses of any size are eligible. Private, non-profit organizations such as charities, churches, private universities, etc., are also eligible. The law limits business loans to \$2,000,000 for the repair or replacement of real estate, inventories, machinery, equipment and all other physical losses. Subject to this maximum, loan amounts cannot exceed the verified uninsured disaster loss.

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  - **Economic Injury Disaster Loans (EIDLs)** – Working capital loans to help small businesses, small agricultural cooperatives and most private, non-profit organizations of all sizes meet their ordinary and necessary financial obligations that cannot be met as a direct result of the disaster. These loans are intended to assist through the disaster recovery period. EIDL assistance is available only to entities and their owners who cannot provide for their own recovery from non-government sources, as determined by the U.S. Small Business Administration (SBA). The law limits EIDL(s) to \$2,000,000 for alleviating economic injury caused by the disaster. The actual amount of each loan is limited to the economic injury determined by SBA, less business interruption insurance and other recoveries up to the administrative lending limit. SBA also considers potential contributions that are available from the business and/or its owner(s) or affiliates.

## Private Insurance

### Residential Policies

Coverage for water damage from sewer and drain backups, and sump pump overflow, is often available as a rider to conventional homeowners insurance. A household needs to have a general household policy if it would like to purchase the rider. These policies specifically cover sewage/seepage backup to the basement. The usual coverage is \$5,000 or \$10,000 with a deductible.

## Commercial Policies

Coverage for water damage from sewer and drain backups, and sump pump overflow is often available as a rider to conventional business insurance policies. A business needs to have a general business policy if it would like to purchase the rider policy. Coverage amounts vary widely based on type of business operations. The policies specifically cover accidental direct physical loss directly and immediately caused solely by water or sewage that enters through a sewer or drain located inside the interior of the structure; or which enters into and overflows from within a sump pump, sump pump well, or any other system located inside the interior of the structure, designed to remove subsurface water.

From the insurance industry point of view, there are a lot of differences between “flooding” and “water backup.” “Flooding” means that a house is taken over by surface water, such as overland flood and river, regardless of whether the surface water is driven by wind. On the other hand, “water backup” means sewage/seepage backup into the basement. Typically, flooding is covered by NFIP rather than private insurance companies. Water backup damage can be covered by the insurance companies through the water backup policy, which is a rider of the general policy.

Not represented in the insurance company information in this study are claims made under typical homeowner or renter insurance policies. Most homeowners’ and renters’ policies do cover additional living expenses if individuals are temporarily displaced due to a direct physical loss. This typically includes payment of hotel bills, restaurant meals or a temporary rental. Coverage may also apply if individuals

are subject to a mandatory evacuation order, though probably not if the hotel stay was due to lost power during a storm but with no damage to the home. There are limits on how much an insurance company will pay and for how long.

Also not represented are “excess flood insurance” riders. Companies may sell “excess flood insurance” to customers who want more than the NFIP maximum \$250,000 in coverage. These riders are mostly used by large commercial and industrial properties.

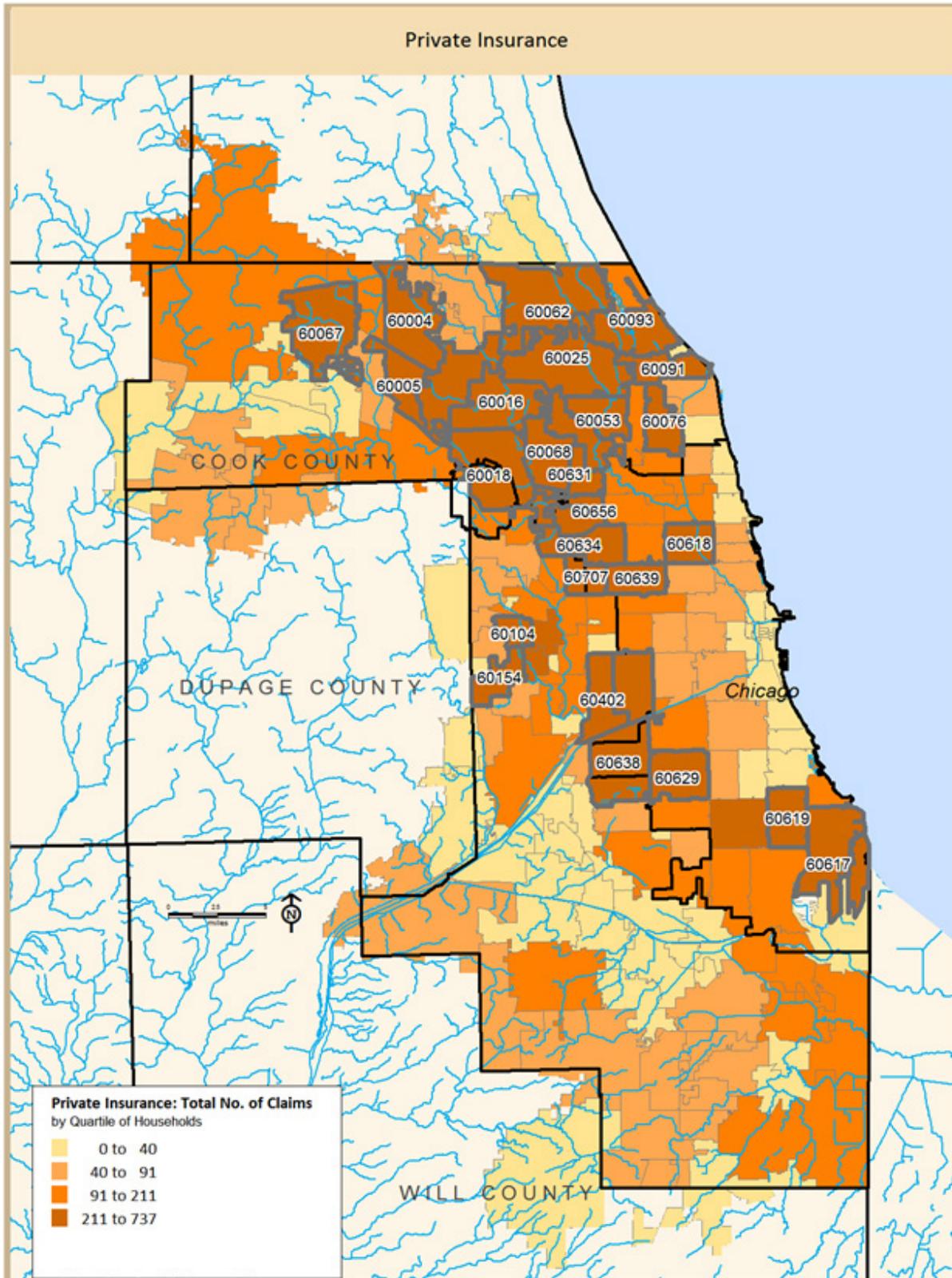
## Write Your Own Program

As mentioned, FEMA is the underwriter of NFIP, but not the vendor. The Write Your Own (WYO) Program began in 1983 and is a cooperative undertaking of the insurance industry and FEMA. The WYO Program allows participating property and casualty insurance companies to write and service the National Flood Insurance Policy in the insurance companies’ names. The companies receive an expense allowance for policies written and claims processed, while the federal government retains responsibility for underwriting losses. The WYO Program operates as part of the NFIP, and is subject to its rules and regulations.

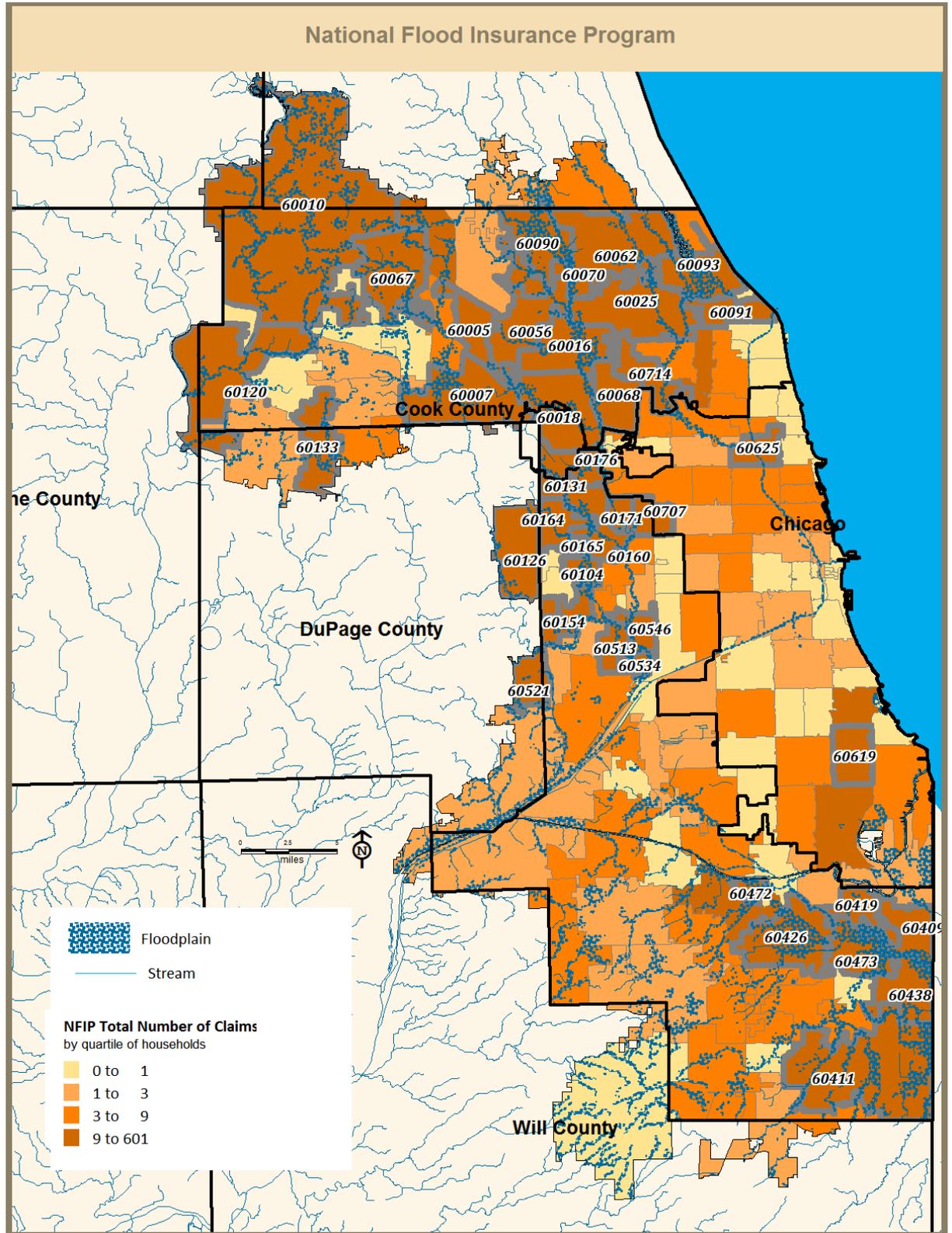
The goals of the WYO Program are as follows: Increase the NFIP policy base and the geographic distribution of policies; Improve service to NFIP policyholders through the infusion of insurance industry knowledge; and provide the insurance industry with direct operating experience with flood insurance.

# Appendix C

## Number of Private Insurance Claims by ZIP Code, 2007-11

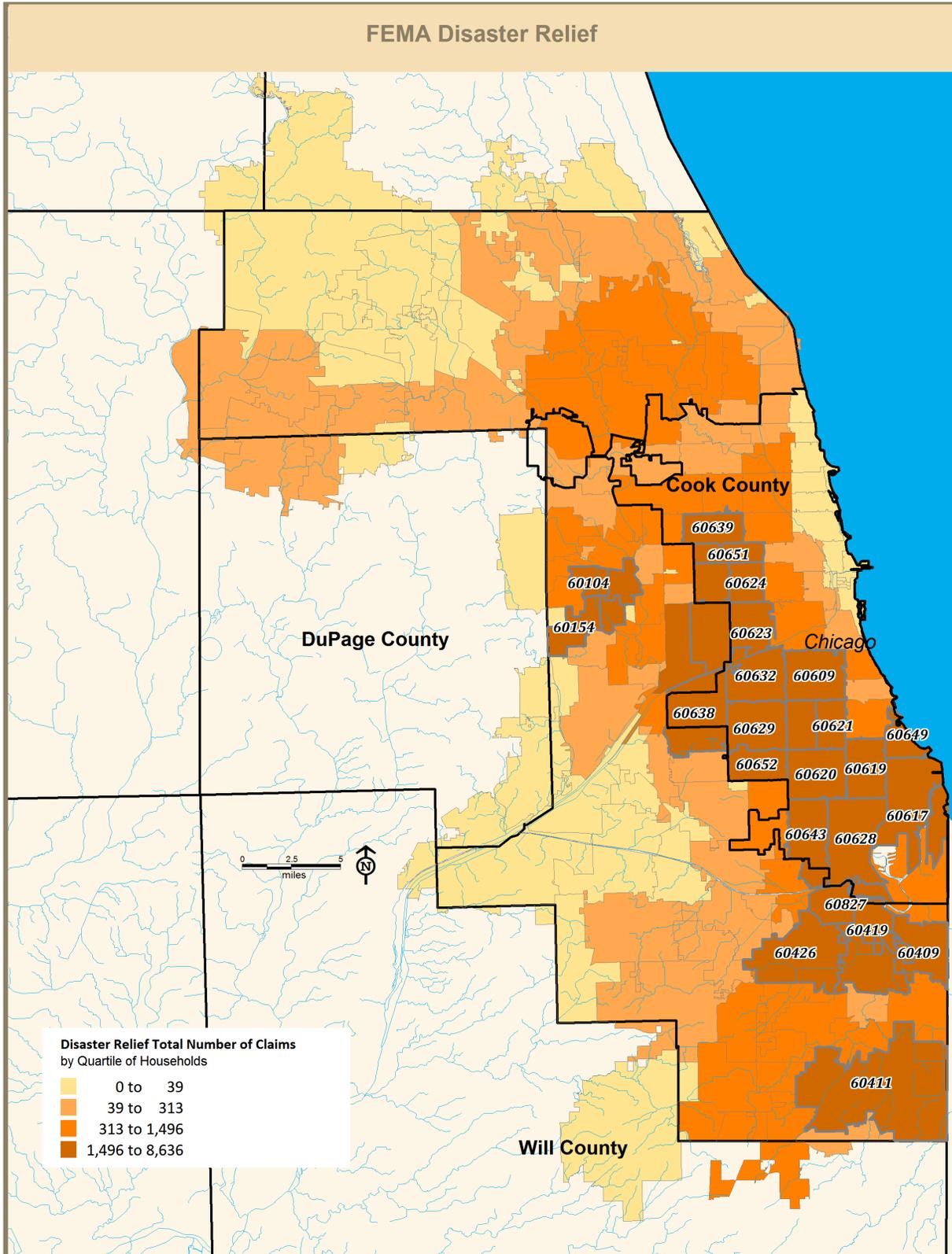


# Number of NFIP Claims by ZIP Code, 2007-11

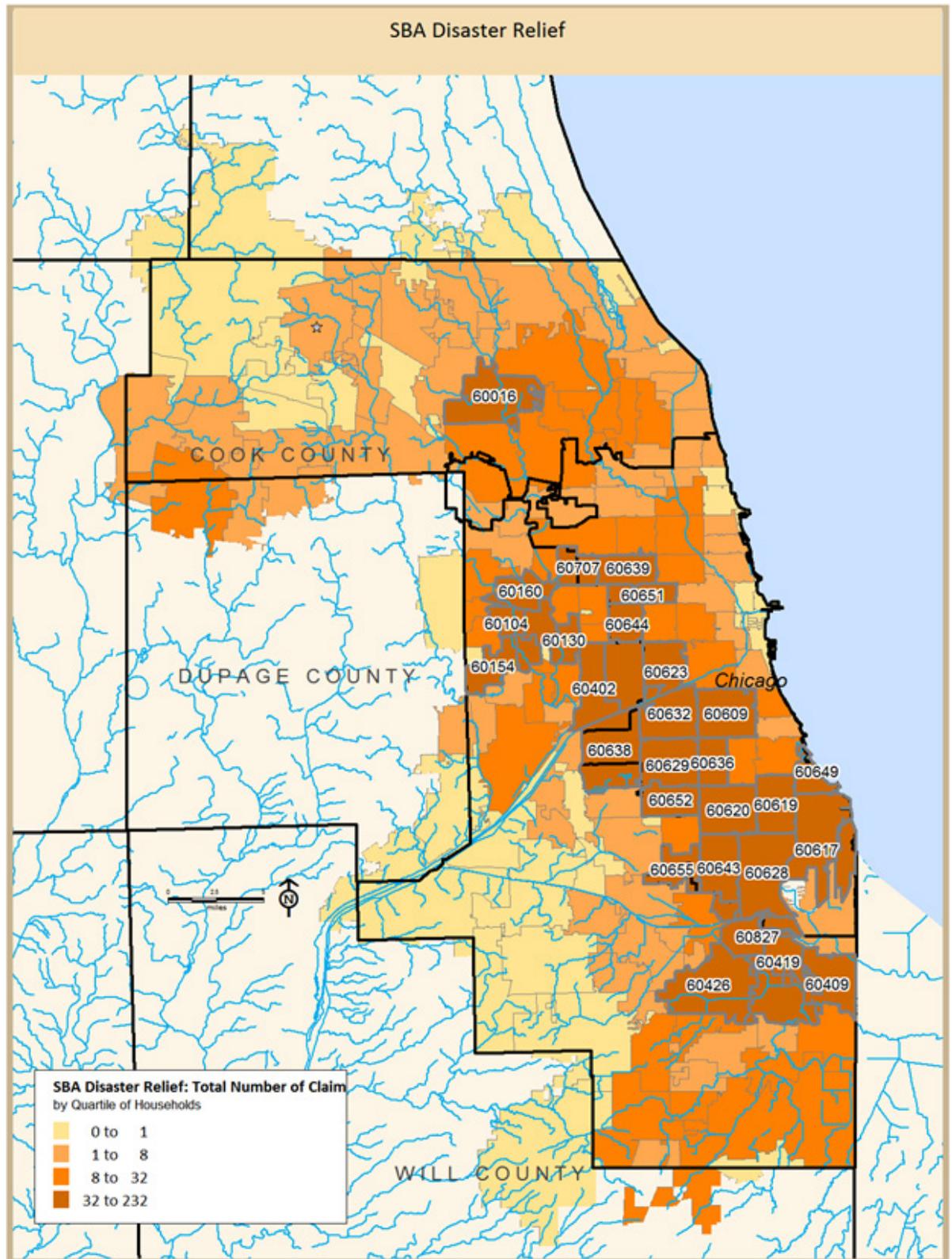


# Appendix E

## Number of FEMA Disaster Relief Claims by ZIP Code, 2007-11

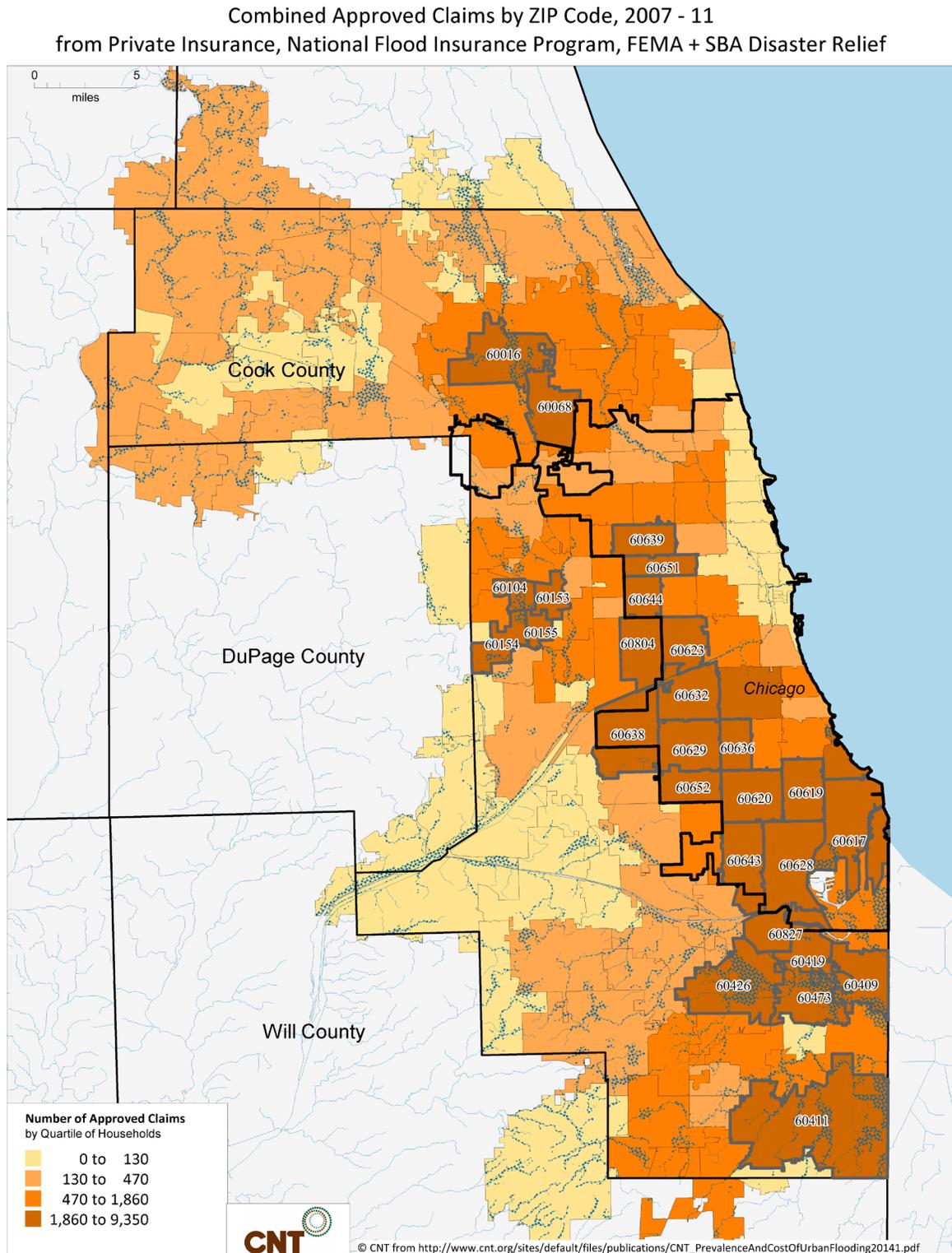


# Number of SBA Disaster Claims by ZIP Code, 2007-2011



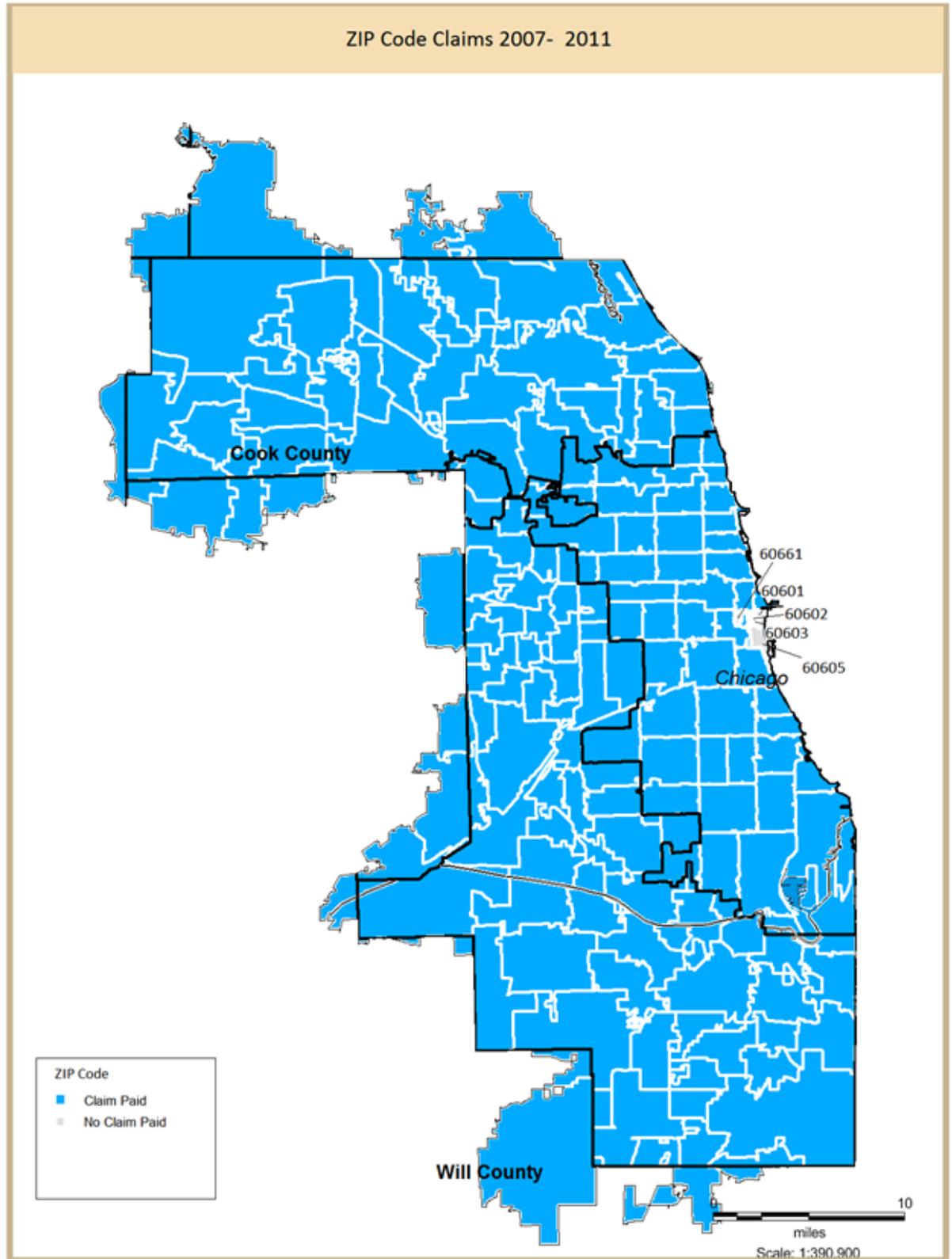
# Appendix G

## Aggregated Claims by ZIP Code, 2007-11



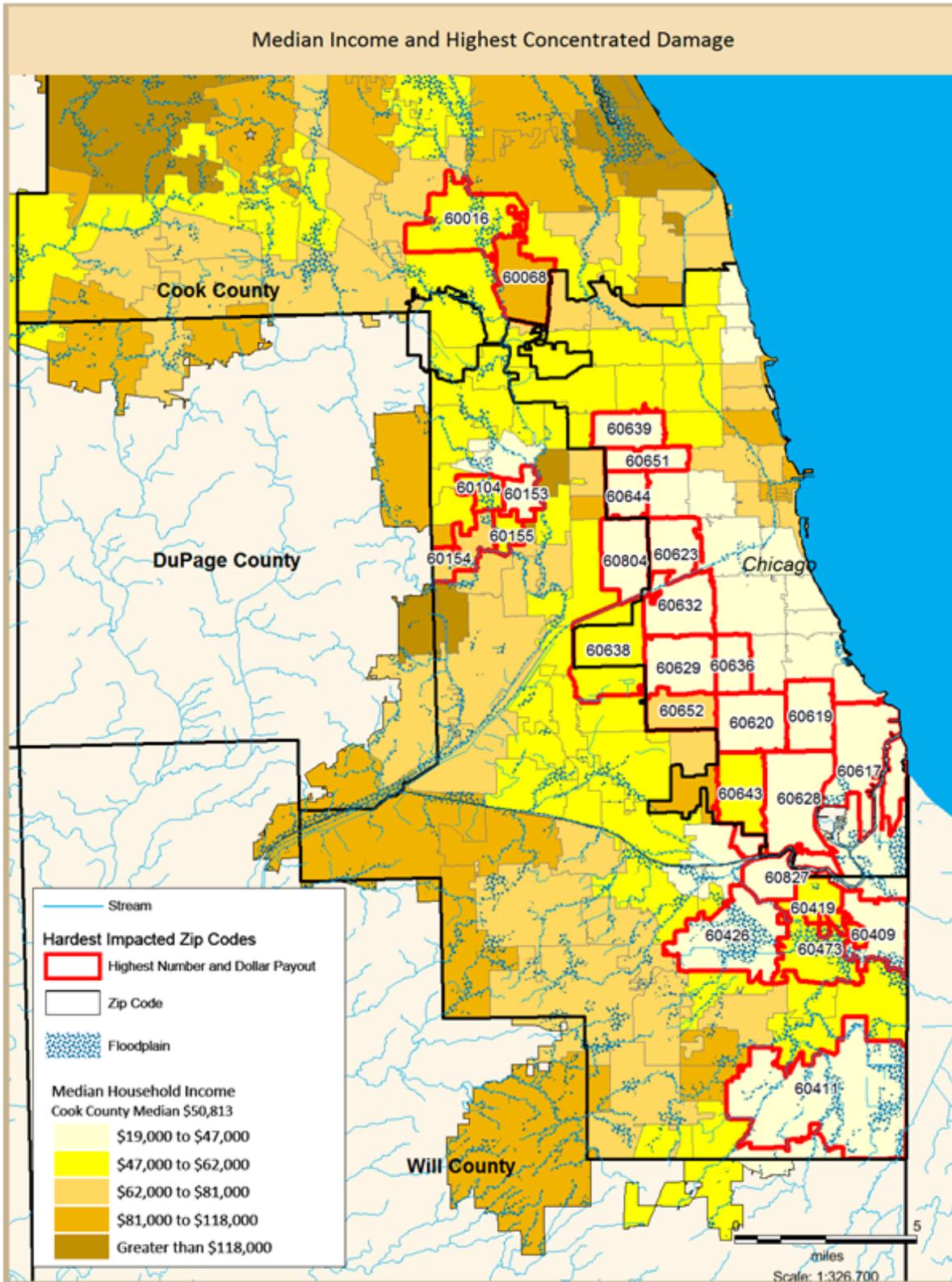
# Appendix H

## ZIP Codes with Claims, 2007-11



# Appendix I

## Median Household Income in ZIP Codes with Largest Total Claims (Number and Dollar Payout), 2007-11



# Appendix J

## Case Study Stories

### **Nonprofit:**

Estimated cost of damage and repairs, **\$330,000**  
Jeremiah works at a nonprofit organization on the southwest side of Chicago. He says flooding has caused “significant damage to our historic building. Nothing seems to help. We have undertaken many projects to deal with it without much success.”

### **Home of Lorna W:**

Estimated cost of damage and repairs, **\$54,000**  
“In 2008 flooded the finished basement, destroyed new carpeting, paneling and furnishings. We had it cleaned up and refinished, recarpeted, drywalled and it happened again. We cleaned up again, had water proofing done and added shutoff valves to prevent sewer backup, and sump pumps. So far, the basement remains dry, but we don’t have the heart or the money to refinish it again.”

### **Home of Pam K:**

Estimated cost of damage and repairs, **\$35,000**  
“On September 13, 2008, the Chicago River flooded most of the block. The water was six feet deep in my basement & came within one foot of reaching the first floor. I lost many precious items belonging to my mother & grandmother. Three friends who stored items in my basement lost many valuable possessions. I was evacuated in the middle of the night & whenever it rains hard and long, I am afraid again.”

### **Church:**

Estimated cost of damage and repairs, **\$500**  
Flooding at the church has brought water into the church library on a consistent basis. “The water seeps in at an area where the downspout does not effectively drain into the sewer. The water floods the library floor and also empties water into a room where valuable program materials have been stored. It disrupts our programs, gives additional work to the maintenance crew, and renders the affected room unusable for short periods of time.”

### **Home of Juli L:**

Estimated cost of damage and repairs, **\$1,000**  
Juli has flooded eight times in the last five years. “Every time we get a thunderstorm it is incredibly stressful for us. We worry about the basement flooding - in the past two years it has flooded a lot. My husband or mother has to start a sump pump and manually push out water often in the dead of night. Our drywall had to be cut out near the ground because of mold.”

### **Home of Glen S:**

Estimated cost of damage and repairs, **\$8,000**  
Glen lives in a 1920s bungalow and has dealt with flooding 15 times in the last five years. He estimates that flooding has caused about \$2,000 in damage to his property and is saving up to install a \$6,000 overhead sewer system.

### **Home of Peter R:**

Estimated cost of damage and repairs, **\$23,000**  
“We lost carpeting, drywall and bathroom vanity as well as some furniture in the July 2011 ‘hundred-year storm.’ We had installed a sump pump years ago and that could not even stop summer 2011’s flooding. Seems like several neighbors have backflow valves now that have helped them and hurt us. Not sure how that is legal.”

### **Home of Ilene D:**

Estimated cost of damage and repairs, **\$85,000**  
Ilene has flooded four times in five years. “We had to strip out a professionally finished basement, damaged electrical circuit breakers, flooring, walls, drywall, mold growth, no hot water in kitchen, flooring and drywall damage throughout, cabinets fallen apart due to water damage, no working bathtub; doors don’t close properly, window seals broken, siding, damaged so wind/water et al come in the house, leaks everywhere!”

## Appendix K

# Wet Basements and Property Values, Realtors' Perspectives

The impact of wet basements and flooding on property values is widely referenced by realtors and basement experts. A wet basement, for example, is listed among the [12 Red Flags](#) that Realty Times recommend home buyers to watch out for,<sup>9</sup> and About.com counts wet basements among the [top ten reasons](#) buyers will hate your home.<sup>10</sup> The basement specialty contractor company Basement Systems claims that wet basements [decrease the value](#) of a home by 10-25 percent.<sup>11</sup>

*“...leaking basement always ranked highest as the home improvement problem most likely to send buyers running for the nearest open house.”*

– [Tom Kraeutler](#), AOL Home Improvement Editor<sup>12</sup>

*“Solving wet-basement problems is one of the most important things you can do to protect the value of your home and health of your family.”*

– [Joe Goldian](#), REALTOR @ RE/MAX PROS<sup>13</sup>

*“Around 38 percent of basements with moisture problems develop mold and fungus growth.”*

– [The American Society of Home Inspectors](#)<sup>14</sup>

*“Nothing poses a greater long-term risk to your home’s value than a wet basement. If left unchecked, basement moisture can ruin floors and walls, encourage mold, even damage roofing.”*

– [Jeanne Huber](#), home improvement author<sup>15</sup>

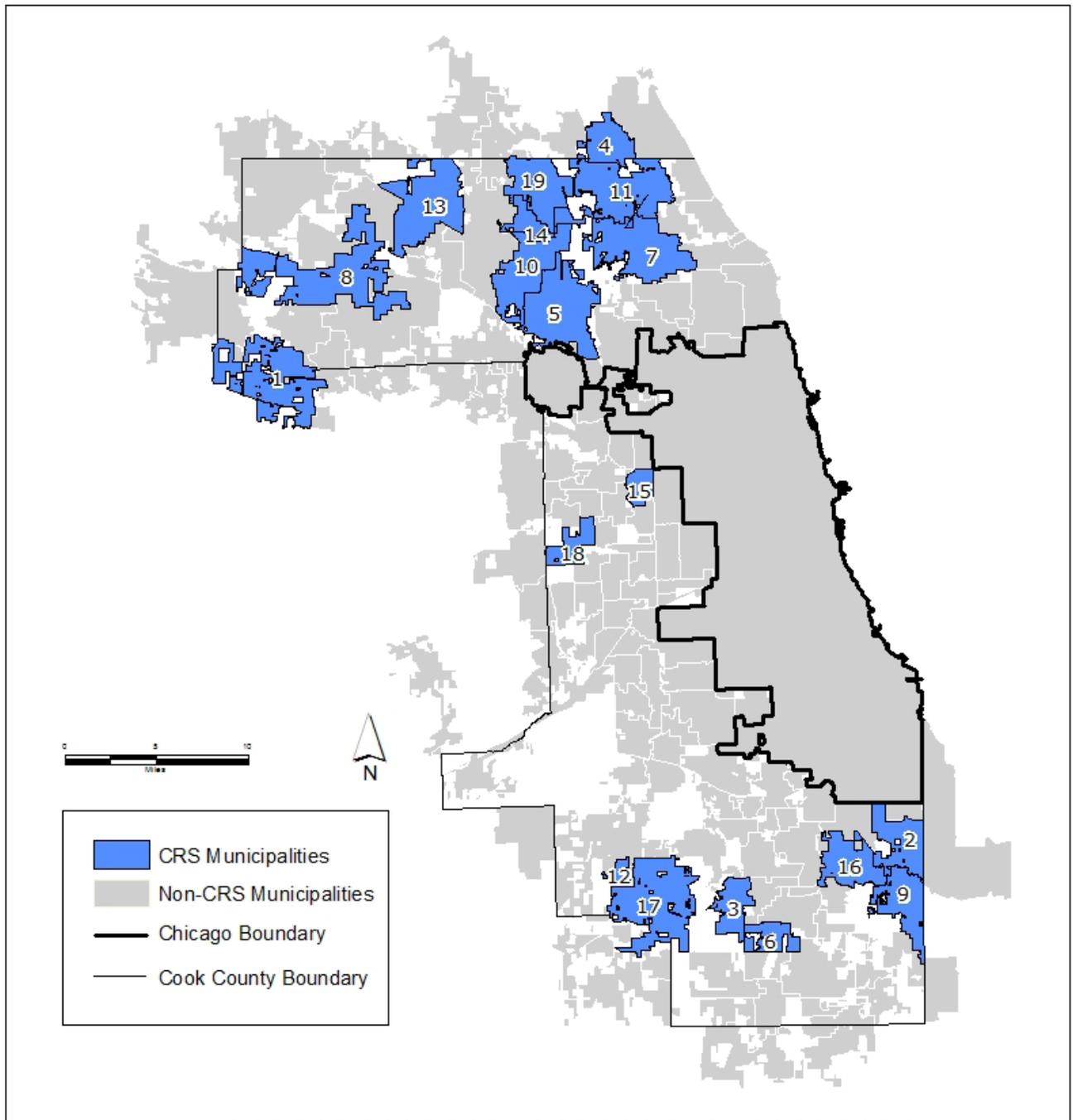
*“Anytime there is penetration — even seepage, even if only under extreme circumstances... it will affect property value.”*

– [Robert Lindsay](#), Coldwell Banker agent<sup>16</sup>

*“Selling your home with a wet basement can be virtually impossible. Many potential buyers are turned off by musty-smelling, damp, leaky and moldy basements. They simply don’t want the hassles that come with it.”*

– [Mary Watkins](#), Keller Williams Realty<sup>17</sup>

# Communities Participating in the Community Rating System



1	Bartlett	8	Hoffman Estates	15	River Forest
2	Calumet City	9	Lansing	16	South Holland
3	Country Club Hills	10	Mount Prospect	17	Tinley Park
4	Deerfield	11	Northbrook	18	Westchester
5	Des Plaines	12	Orland Hills	19	Wheeling
6	Flossmoor	13	Palatine		
7	Glenview	14	Prospect Heights		

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- <sup>2</sup> Center for Neighborhood Technology (CNT), *Urban Flooding in the Great Lakes States: A Municipality/Utility Survey Report* (Chicago: CNT, 2011), 1.
- <sup>3</sup> Cook County Assessor, 2010.
- <sup>4</sup> Jim Angel, “Climate Change in Illinois” presentation, Illinois State Water Survey, Prairie Research Institute, University of Illinois.
- <sup>5</sup> “National Flood Insurance Program Community Rating System,” last updated March 21, 2013, <http://www.fema.gov/national-flood-insurance-program/national-flood-insurance-program-community-rating-system>.
- <sup>6</sup> “Multi-Hazard Mitigation Planning,” last updated September 12, 2012, <http://www.fema.gov/multi-hazard-mitigation-planning>.
- <sup>7</sup> “Mitigation Planning,” as of April 15, 2013, <http://www.state.il.us/iema/planning/MitigationPlanning.asp>.
- <sup>8</sup> See for example “Funding Stormwater Programs,” April 2009, <http://www.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf>.
- <sup>9</sup> “12 Red Flags That Should Raise Concern,” as of April 15, 2013, <http://www.realtor.com/home-finance/real-estate/buyers/home-inspection-importance-before-buying.aspx>.
- <sup>10</sup> “Top 10 Ways to Make Home Buyers Hate Your House,” as of April 15, 2013, [http://homebuying.about.com/od/howtosellahome/a/buyer\\_peeves.htm](http://homebuying.about.com/od/howtosellahome/a/buyer_peeves.htm).
- <sup>11</sup> “Buying and Selling a Home with a Wet Basement,” as of April 15, 2013, <http://www.basementsystems.com/company/press-release/131-buying-and-selling-a-home-with-a-wet-basement.html>.
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- <sup>13</sup> “8 Solutions to Common Wet-Basement Problems,” as of April 15, 2013, <http://clevelandhousehunt.com/homeowners/8-solutions-to-common-wet-basement-problems>.
- <sup>14</sup> “Don’t Ignore a Wet Basement,” as of April 15, 2013, <http://www.realty101.com/don%E2%80%99t-ignore-a-wet-basement>.
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- <sup>16</sup> “How Flooding Hurts Home Values,” as of April 15, 2013, [http://travel.nytimes.com/2011/09/11/realestate/how-flooding-hurts-home-values-in-the-region-new-jersey.html?\\_r=2&](http://travel.nytimes.com/2011/09/11/realestate/how-flooding-hurts-home-values-in-the-region-new-jersey.html?_r=2&).
- <sup>17</sup> “Selling Your Home with a Wet Basement,” as of April 15, 2013, <http://activerain.com/blogsviw/1227788/selling-your-home-with-a-wet-basement->



