



ASSESSING DISPARITIES OF URBAN FLOOD RISK FOR HOUSEHOLDS OF COLOR IN CHICAGO

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Illinois Association for Floodplain and Stormwater Management | March 9, 2020



ABOUT CNT

- CNT is a national hub for research, strategies and solutions to help cities use resources more efficiently and equitably.
- We believe solving problems like poverty, climate change and urban sprawl starts with making neighborhoods, cities and regions work better.

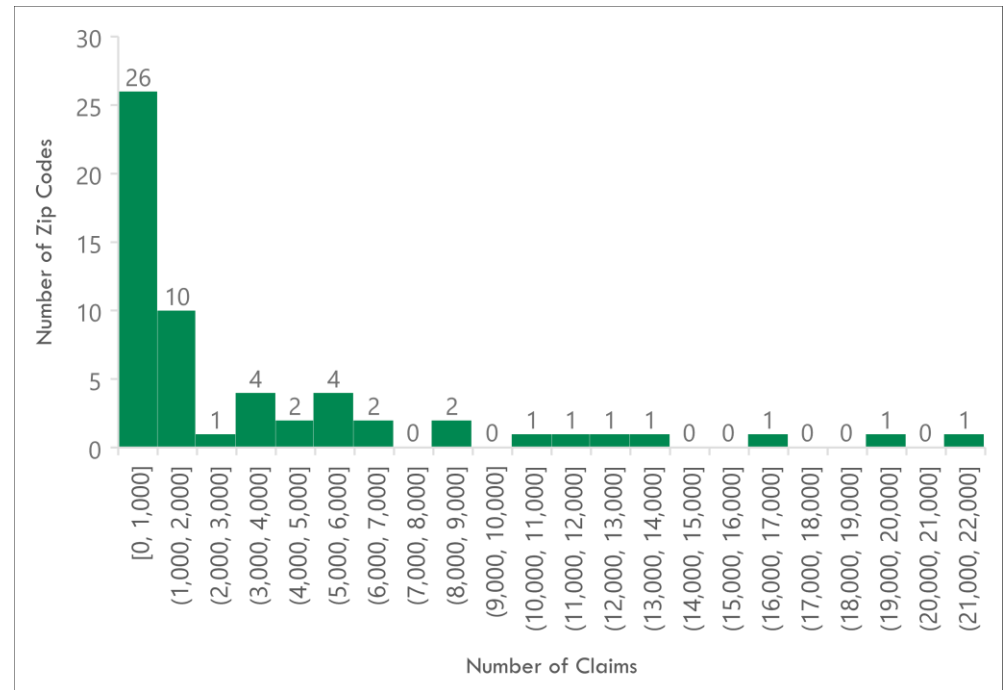
RACIAL DISPARITIES IN URBAN FLOODING

- Flood claim payouts were made in **56 of the 59 ZIP codes** that intersect and are within the city boundary, between 2007 and 2016.
- In total, the **229,743 claims** amounted to **\$433 million** in payouts.
- **87%** of flood damage insurance claims were paid in **communities of color**.

DISTRIBUTION NUMBER OF CLAIMS

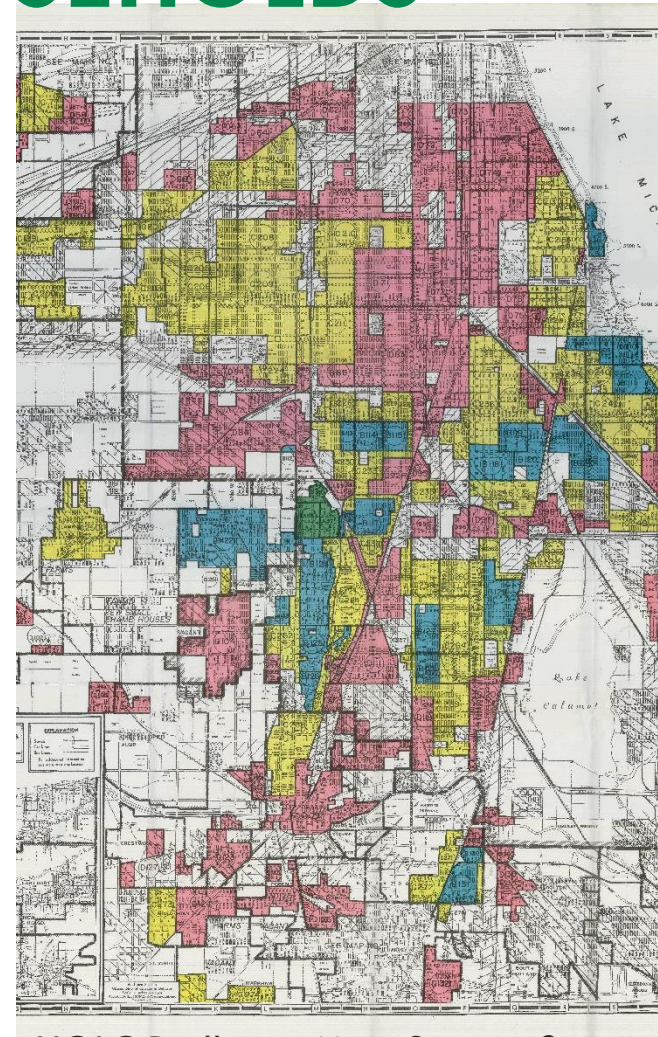
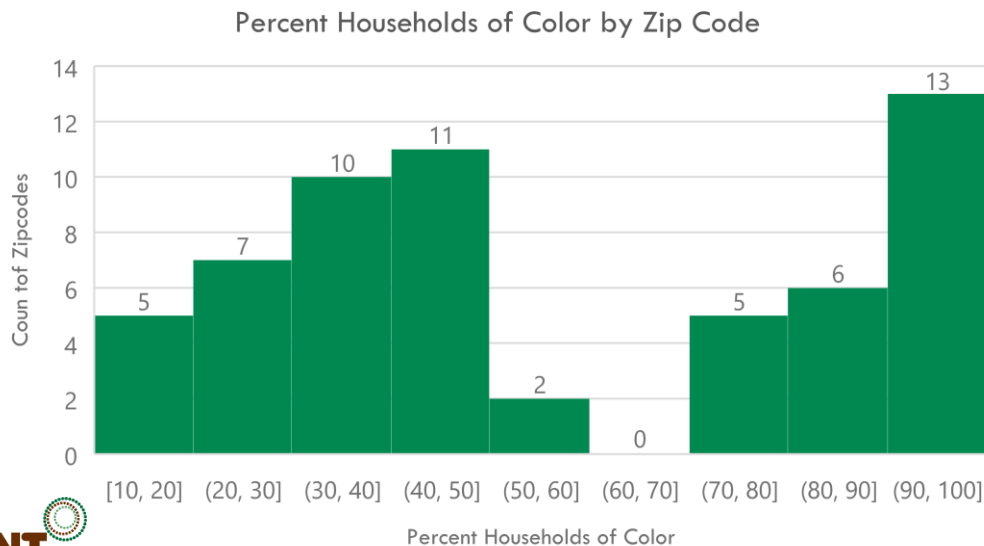
The distribution of flood claims among Chicago's ZIP codes is **severely skewed**

- Average # Claims/ZIP Code: 3,895
- Median # Claims/ZIP Code: 1,383



DISTRIBUTION OF HOUSEHOLDS OF COLOR

Many of Chicago's ZIP Codes are **racially segregated** – a legacy of historical government policies

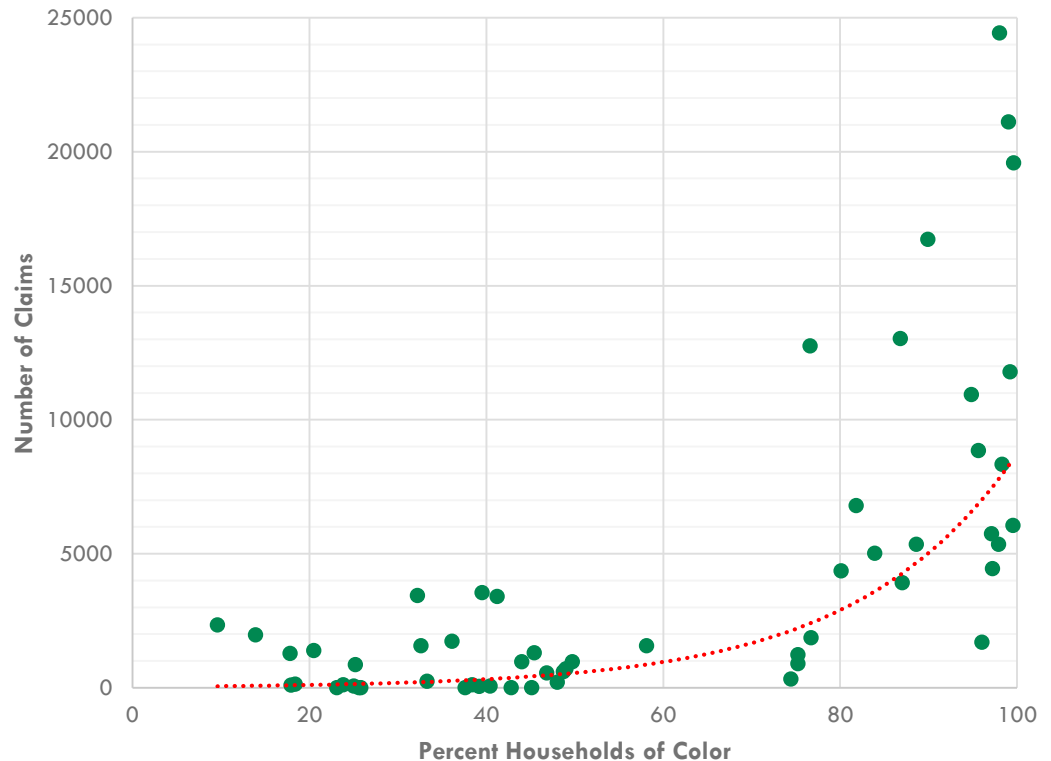


HOLC Redlining Map Section 2:
Chicago – South (1940)

Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," American Panorama, ed. Scanned Map, Creative Commons.

RELATIONSHIP BETWEEN FLOOD CLAIMS AND HOUSEHOLDS OF COLOR

Flooding impact becomes larger as the percentage of households of color increases past 60%



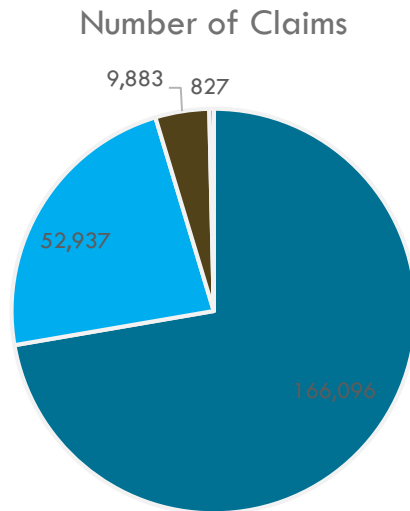
METHODOLOGY – FLOODING CLAIMS BINNED BY QUARTILES OF HOUSEHOLDS

1. Zip Codes are ordered by the number of claims from high to low.
2. Running through the Zip Codes, breaks in the data are made once the aggregated sum of the number of households in the Zip Codes equals approximately 25% of the total Chicago households.
3. Thus, each bin contains the same number of households, approximately 25% of the city's total.

BREAKOUTS: NUMBER OF FLOODING CLAIMS IN EACH QUARTILE

Flooding claims are **not distributed evenly among households**

- Chart: Average Claims per 1,000 households
- Four Quartiles (each approx. 25% of Chicago households)

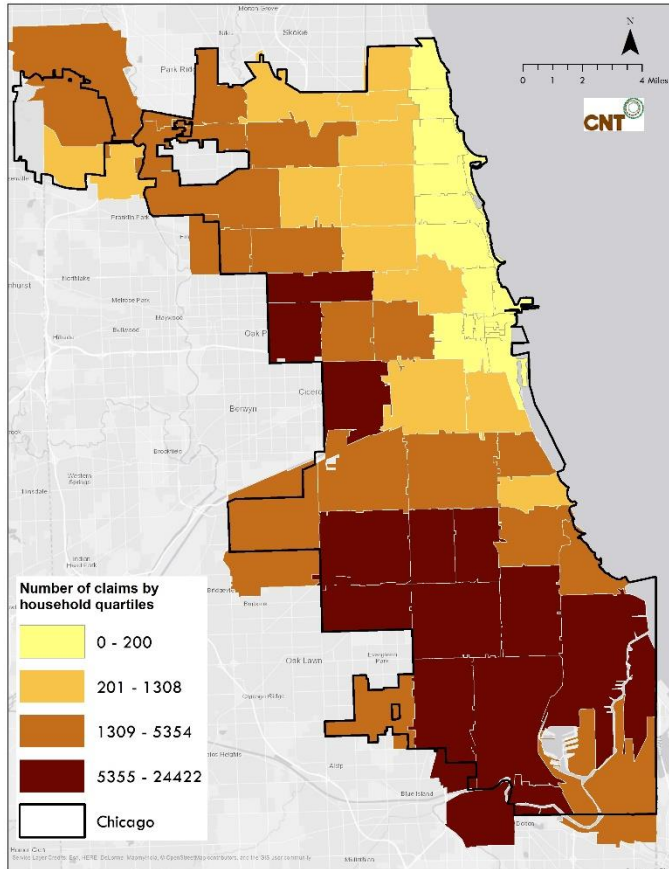


	Household Intensity Index
Q1: Most Claims	643.6
Q2	190.0
Q3	36.8
Q4: Fewer Claims	2.9

QUARTILE 1 VERSUS QUARTILE 4

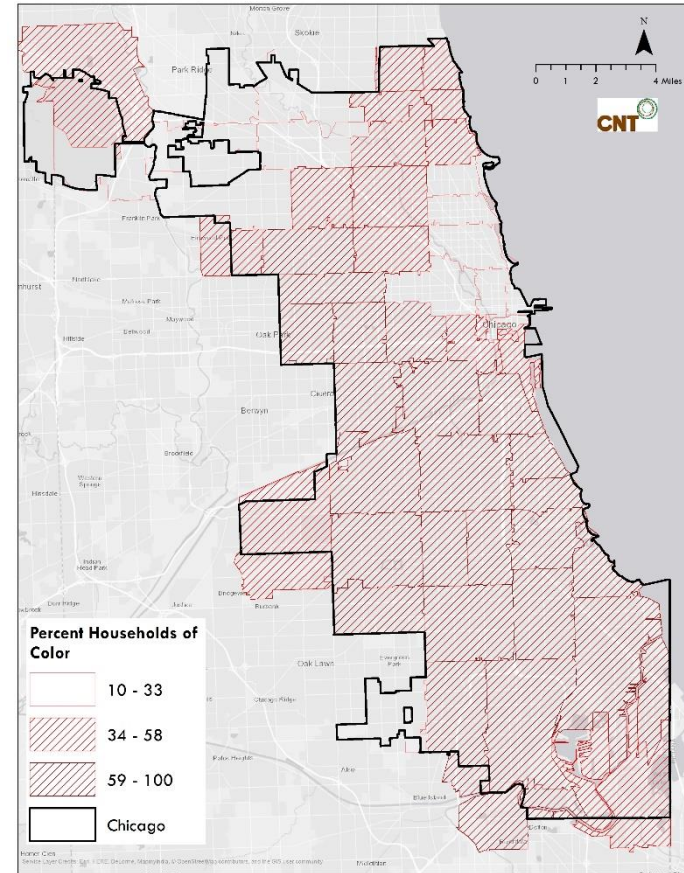
	Quartile 1: Most Claims	Quartile 4: Least Claims
% of Chicago Flood Claims	72	0.4%
% Chicago Flood Damage Payouts	59	1%
Average Payout / Claim	\$1,582	\$5,432
Minimum # Claims/Zip Code	~5,750	0
Maximum # Claims/Zip Code	~24,500	200
% Households of Color	93	30
Median Household Income	\$32,401	\$92,545

FLOODING CLAIMS BY QUARTILES: HIGHER IN COMMUNITIES OF COLOR



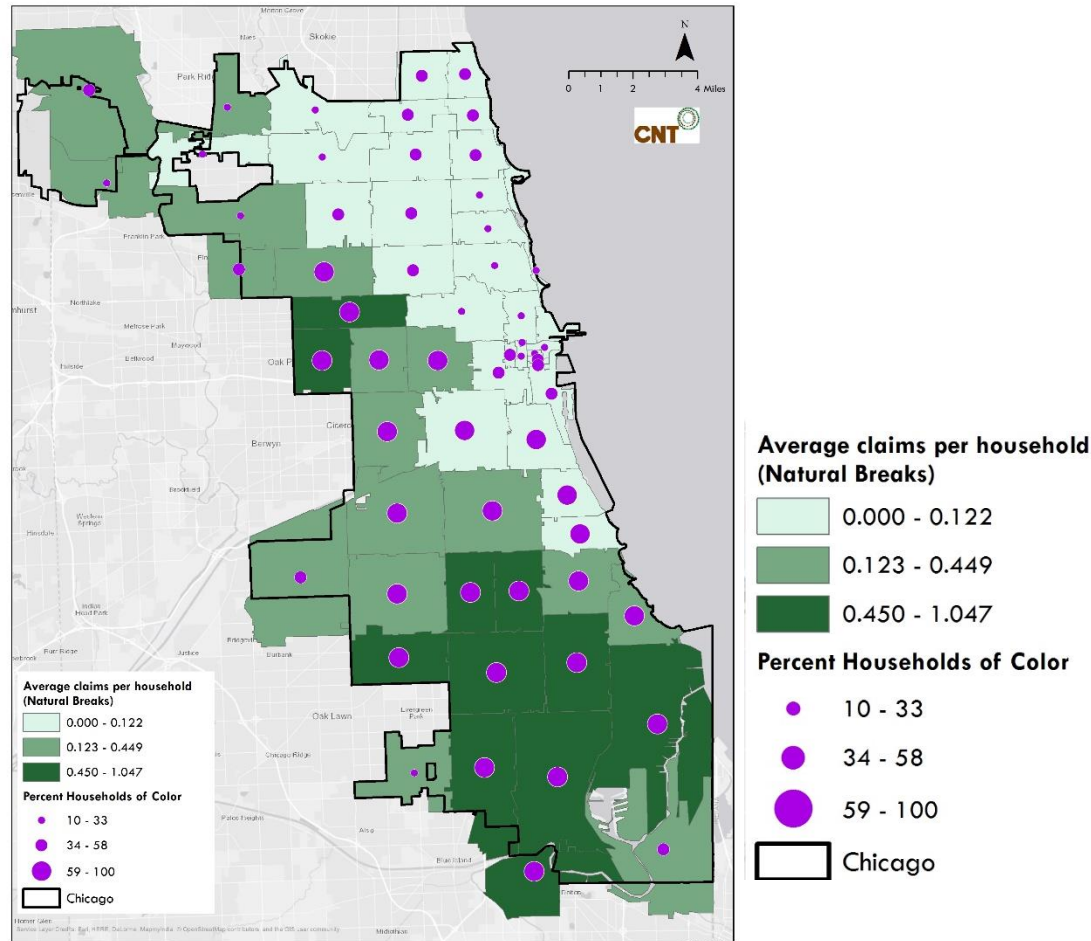
ZIP Codes by Flood Claim Quartile

Aggregated flooding claims, 2007-16



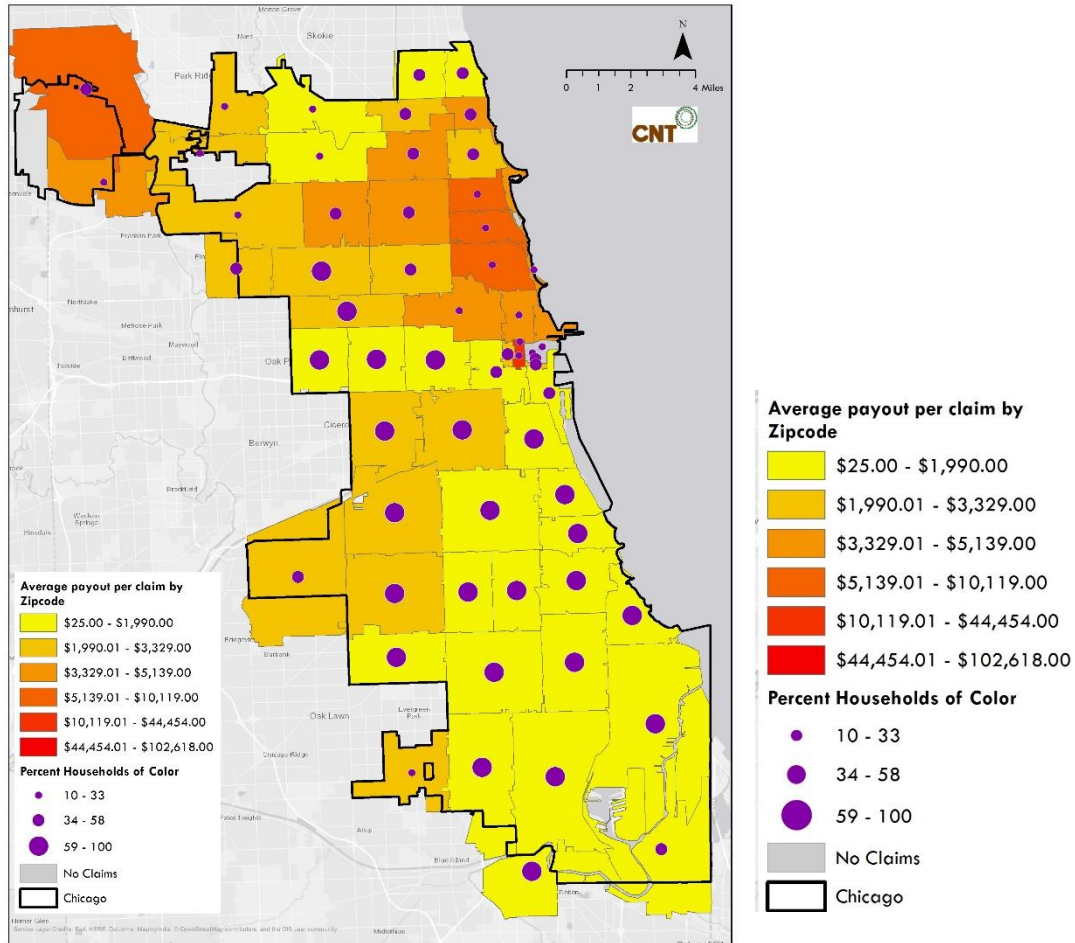
ZIP Codes by % Households of Color

CLAIMS PER HOUSEHOLD OF COLOR



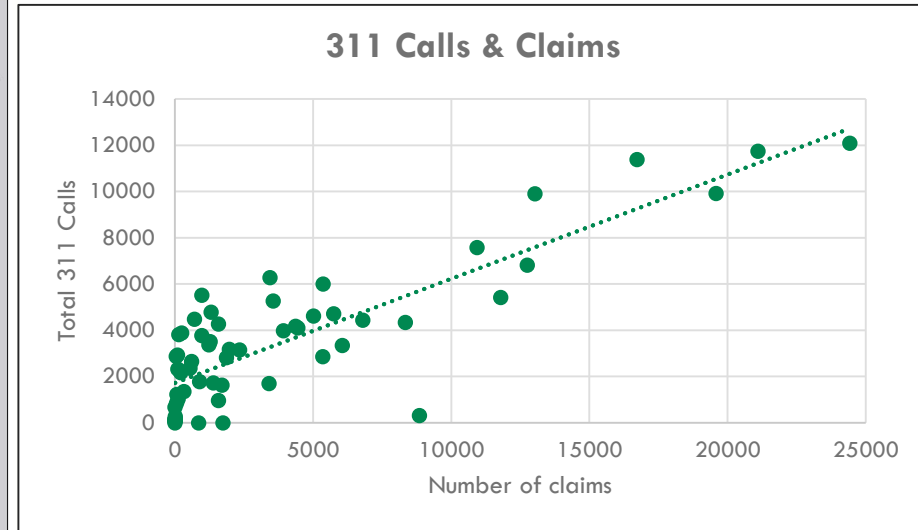
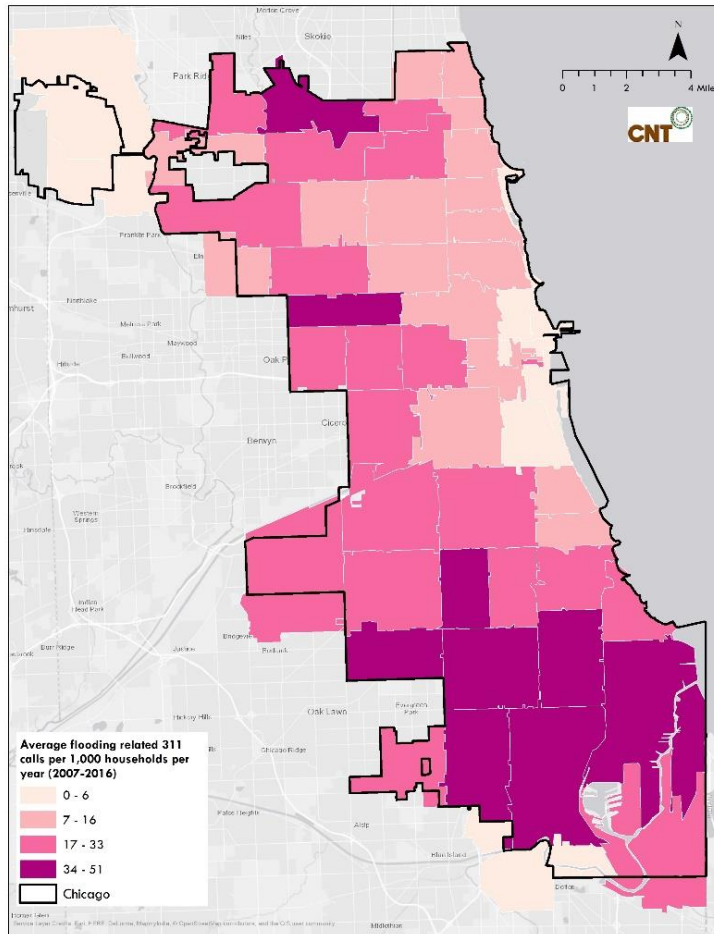
AGGREGATED FLOODING CLAIMS BY ZIP CODE, 2007-16

AVERAGE PAYOUT PER CLAIM

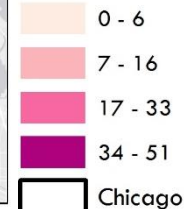


AGGREGATED FLOODING CLAIMS BY ZIP CODE, 2007-16

311 FLOODING CALLS



Average flooding related 311 calls per 1,000 households per year (2007-2016)



AGGREGATED 311 CALLS BY ZIP CODE, 2007-16

RACIAL DISPARITIES REPORT

CNT (2018), *Assessing Disparities of Urban Flood Risk for Households of Color in Chicago*

Full report:

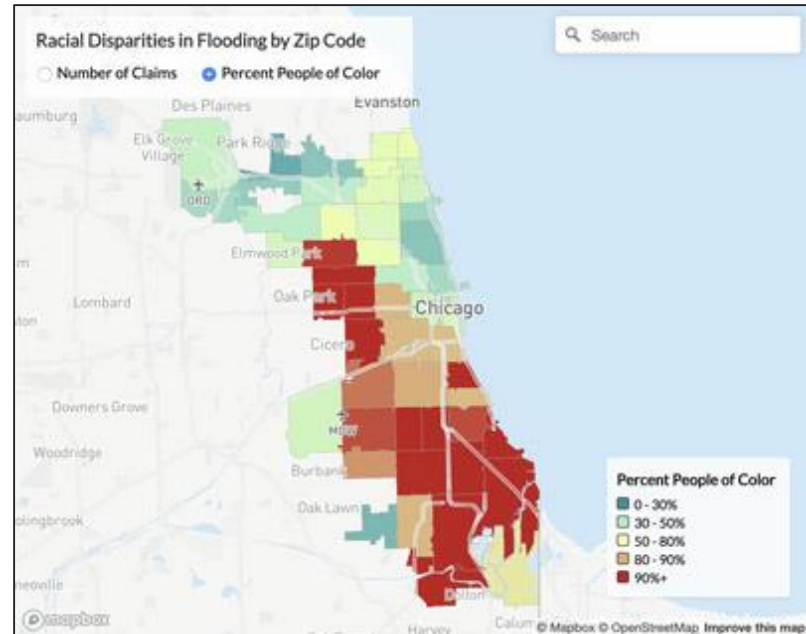
<https://www.cnt.org/publications>

Flood Equity interactive map:

<https://www.cnt.org/urban-flooding/flood-equity-map>

Blog post (8/23/19):

<https://www.cnt.org/blog>



ILLINOIS URBAN FLOODING AWARENESS STUDY

IDNR (2015) Study of urban flooding across Illinois

- Prevalence and Cost (Insurance claim analysis)
- Infrastructure Policy
- Risk Evaluation
- Stormwater Management Best Practices
- Funding Options

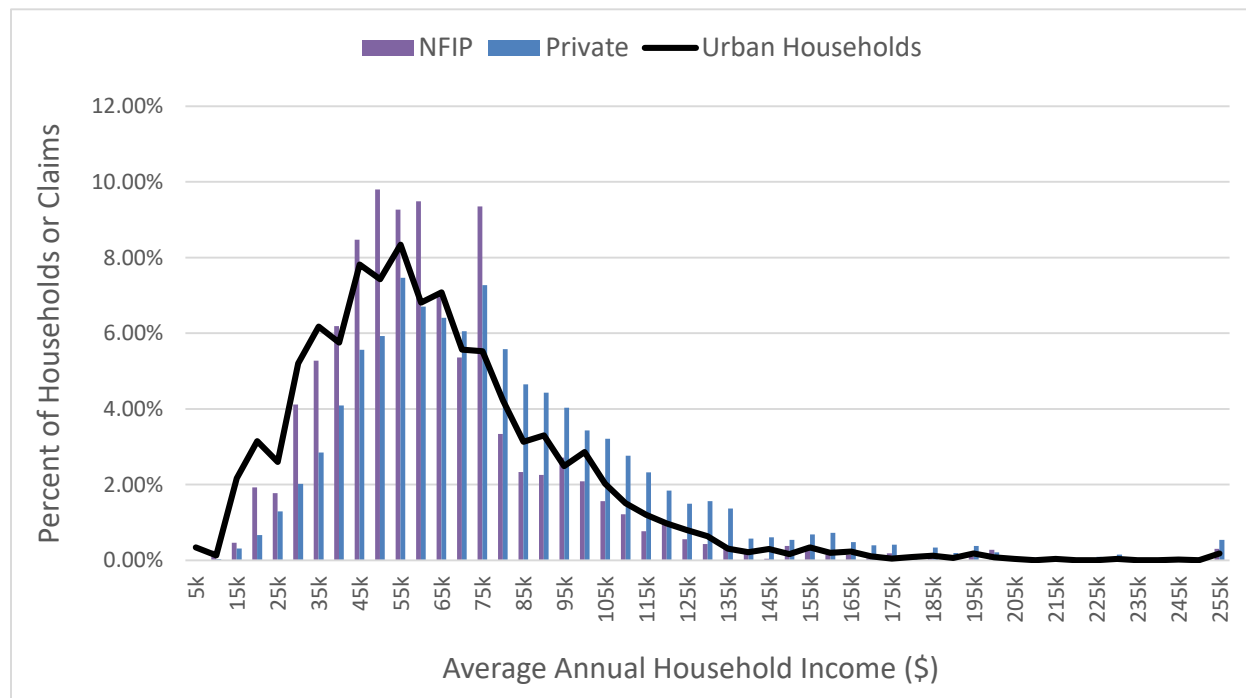
Findings: Illinois Flood Insurance Claims Data (2007-2014)

- Total Claims Paid: 353,603
- Percent of Counties Represented: 99%
- Total Paid: **\$2.319 Billion**
- Percent of Claims Outside Floodplain: **92.3%**

ILLINOIS URBAN FLOODING AWARENESS STUDY

IDNR Urban Flooding Study of Illinois

- Low- and Moderate-Income Households



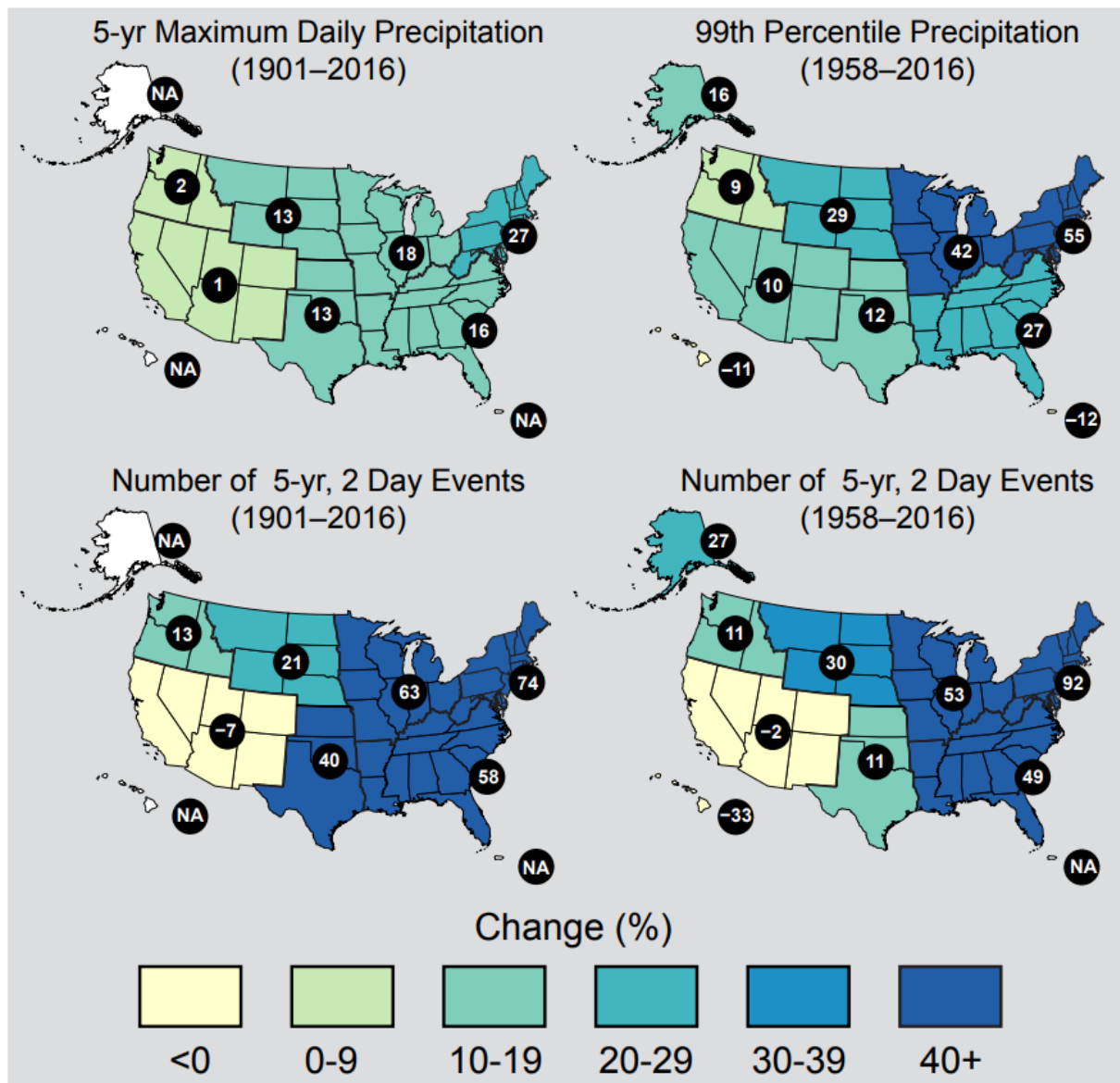


Why is it happening?

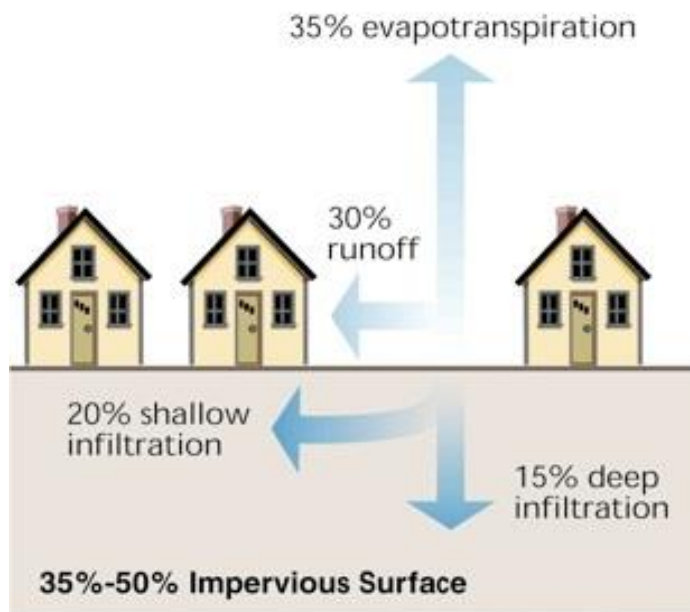
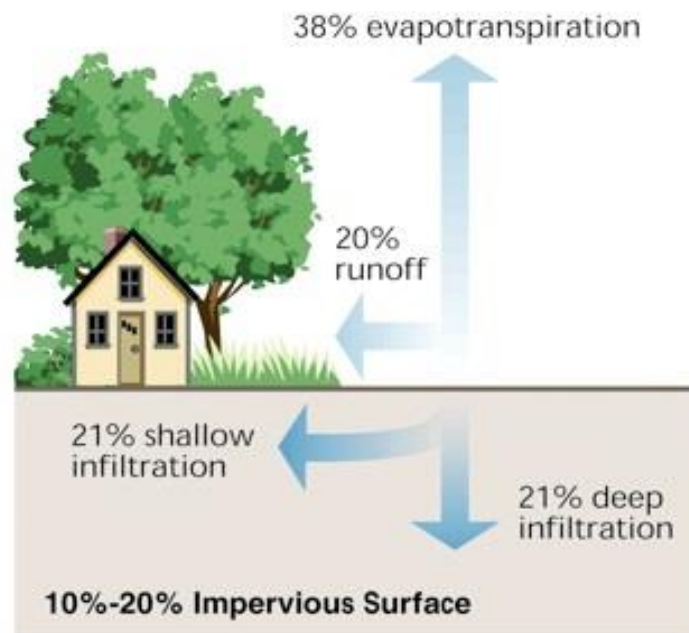
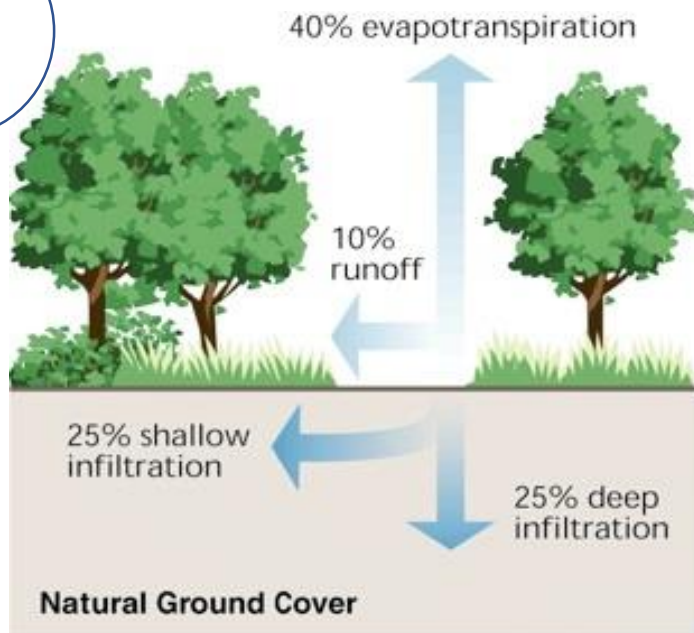


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Observed Change in Heavy Precipitation



2



3

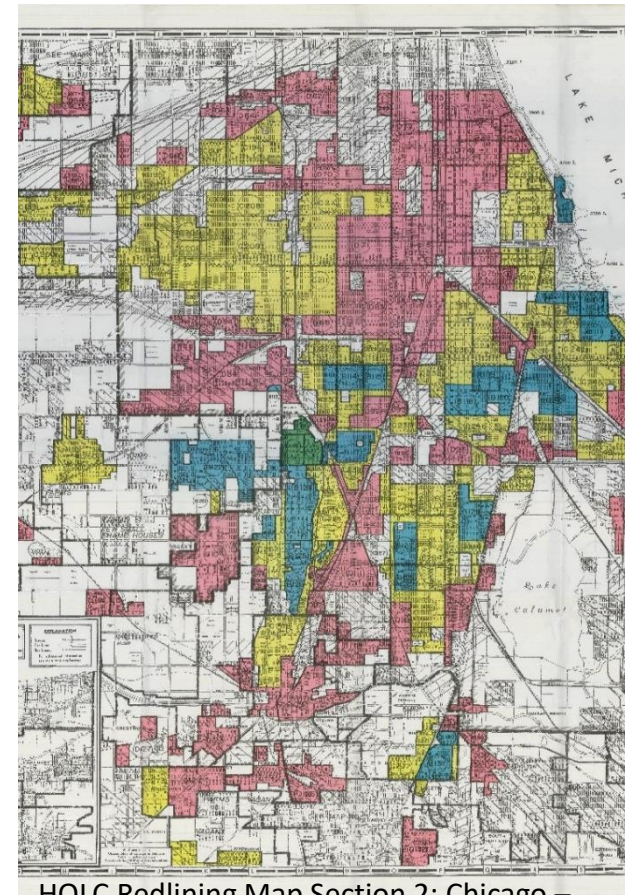
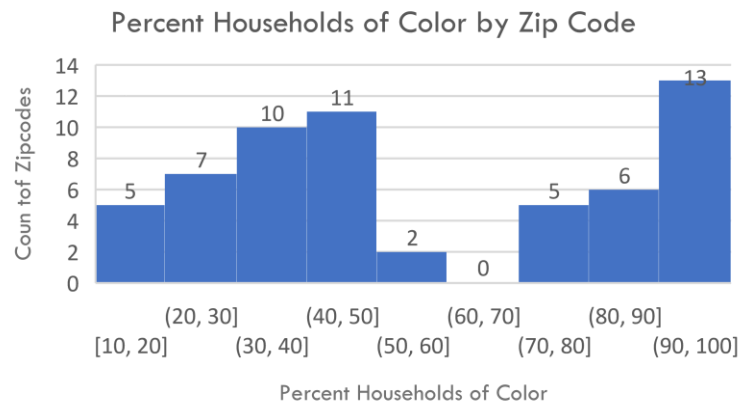
Aging Infrastructure



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Historical Policies + Practices

Many of Chicago's ZIP Codes are **racially segregated** – a legacy of historical government **policies**



HOLC Redlining Map Section 2: Chicago – South (1940)

Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., "Mapping Inequality," American Panorama, ed. Scanned Map, Creative Commons.

The U.S. EPA defines environmental justice is “the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income, with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.”

The findings in this report indicate that low-income and communities of color in Chicago disproportionately experience urban flooding impacts. Therefore, **policy development should be led by frontline communities in Chicago which are most impacted by environmental injustice.**

How can government agencies partner with communities to reduce flooding impacts?

1. Recognize urban flooding as an environmental justice concern in environmental reviews. Conduct an equity impact analysis when funding and permitting stormwater infrastructure.
2. Ensure that stormwater infrastructure is equitably and adequately funded.
3. Prepare neighborhood stormwater management plans and projects in partnership with community-based organizations.
4. Develop a methodology for mapping urban flood risk and social vulnerability, and update flood maps to include an “urban flooding” flood zone.
5. Adopt an enhanced flood protection standard for buildings and infrastructure that include provisions for urban flooding.

1. Recognize urban flooding as a potential environmental justice concern in municipal and state policies. Conduct an equity impact analysis when funding and permitting stormwater infrastructure.

- Governments should develop and implement environmental justice policies, establish an environmental justice office, and adopt an environmental justice ordinance.
- Environmental justice policies should adopt language to add urban flooding as a potential environmental justice concern.
- The IEPA should prepare an equity report for stormwater infrastructure funding programs to determine whether funds have been equitably distributed to environmental justice communities that experience flooding.

2. Ensure that stormwater infrastructure is equitably and adequately funded.

- The IEPA should update program guidelines to require loan recipients to demonstrate the equitable use of funds. Prioritize funding for frontline communities that experience flooding. Require community-based partners be included in funding proposals and project teams for stormwater infrastructure.
- Stormwater utilities and local governments should prepare equity reports for the stormwater infrastructure state of repair, and the capital investment programs.
- Public agencies should invest in flood mitigation assistance on both publicly-owned and privately-owned land. Provide dedicated funding and programs for frontline communities that experience flooding.

3. Prepare neighborhood stormwater management plans and projects in partnership with community-based organizations.

- Convene public listening sessions and community flood mapping workshops that identify “hidden” urban flooding areas. Conduct charrettes to co-design flood mitigation projects with residents.
- Design outreach and education activities to engage the specific preferences and needs of diverse communities. Train and employ community-based organizations to provide flood prevention education for residents.
- Develop neighborhood stormwater management plans that center community input gathered through the planning process.
- Prioritize stormwater management projects that have multiple community benefits, such as green infrastructure job training programs, that meet residents’ stated priorities.

4. Develop a methodology for mapping urban flood risk and social vulnerability, and update flood maps to include an “urban flooding” flood zone.

- Publish an urban flooding vulnerability map that incorporates flood exposure, sociodemographic, and community health factors.
- Partner with private insurers to add private insurance claim data to local urban flood risk maps.

5. Adopt an enhanced flood protection standard for buildings and infrastructure that include provisions for urban flooding.

- Many existing homes have inadequate flood protection measures. Building inspectors should be trained to assess flood risk and identify specific actions to mitigate risk.
- Establish policies to evaluation development which is not currently regulated under the existing local stormwater management ordinance, such as requiring the owner to maintain or improve existing levels of stormwater infiltration when conducting exterior renovations.

THANK YOU

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