Urban Economics

Flint Water Crisis and Neighborhood Based Interventions

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Outline for Today

1. **The Flint Water Crisis**

2. **Neighborhood Based Interventions**

Tulane University

This week

- **Wednesday (11/12) and Friday (11/14)**: You can work on your third group briefing note
  - No specific reading assignments to students
  - No groups assigned
  - Pick your own groups
  - You you have to be in a group to receive credit
  - I will not be in class on both days
  - **First draft due Friday 11/14**

The Flint Water Crisis

The Flint Water Crisis: An Urban Economics Perspective

The Geography of Vulnerability

Pre-crisis conditions shaped who was exposed:

- Population declined from 200,000 to 100,000 (deindustrialization)
- Majority Black population (~60%)
- ~40% poverty rate
- 1 in 6 homes abandoned

Key insight: Where you lived determined your exposure

- Older neighborhoods = older lead pipes = higher contamination
- Low-income residents less able to relocate
- Geographic sorting created differential vulnerability

A series of unfortunate events that led to a crisis

From Cost-Cutting to Contamination

State official took over the management of Flint

In a bid to save money, the water source was switched from the great lakes to the Flint river

The Flint river water was highly corrosive

To save more money, corrosion control treatment was not applied

- Water authorities put a treatment in water to prevent lead from leaching into water from old pipes

Residents began to complain about water quality

- Brown color
- Bad smell
- Health issues

Doctor Mona Hanna observed a spike in lead levels in children

As a pediatrician in Flint, she noticed a significant increase in blood lead levels among children

She came to the conclusion that only one thing could have caused this spike in children from different neighborhoods, race, and income levels:

The water

Neighborhood Effects in the Flint Crisis

Pre-Switch Geography Mattered:

- Housing age distribution
- Property values and maintenance
- Infrastructure quality
- Distance from treatment centers

Post-Switch Neighborhood Variation:

- Lead levels tripled in some neighborhoods
- ~17% of homes exceeded 15 ppb federal limit
- >40% exceeded 5 ppb "serious problem" threshold
- Blood-lead levels in children doubled citywide, tripled in certain areas

The Economics of Place-Based Exposure

Why Location Determined Health Outcomes

1. Housing stock characteristics

- Older homes → lead service lines
- Lower property values → deferred maintenance
- Concentrated in specific neighborhoods

2. Immobility constraints

- Poverty limits residential mobility
- Homeownership as trap during crisis
- Information asymmetries about contamination

3. Institutional neglect

- Under-resourced neighborhoods = weaker advocacy

Long-Run Neighborhood Effects

Health Impacts and Future Outcomes

Immediate crisis (2014-2015):

- Around 9,000 children exposed for 18 months
- 12 deaths from Legionnaires' disease

Long-term neighborhood consequences:

- Lead exposure → cognitive impairment
- Reduced educational attainment
- Lower lifetime earnings
- Perpetuates neighborhood disadvantage

The urban economics lesson:

Neighborhood effects matter

Urban Economics Takeaways

Where You Live = What You're Exposed To

The Flint case demonstrates:

1. **Neighborhood quality is multidimensional**
   - Not just schools, crime, amenities
   - Also infrastructure, environmental hazards, institutional capacity
2. **Residential immobility amplifies shocks**
   - Poor residents can't easily relocate
   - Housing wealth trapped during crisis
   - Creates concentrated, persistent disadvantage

Discussion Questions

1. How does the Flint crisis illustrate the concept of "neighborhood effects" in urban economics?
2. How might lead exposure perpetuate neighborhood disadvantage across generations?
3. What are the implications for infrastructure investment in other declining cities?

Neighborhood Based Interventions

Rx Kids: Universal Prenatal and Infant Cash Transfers

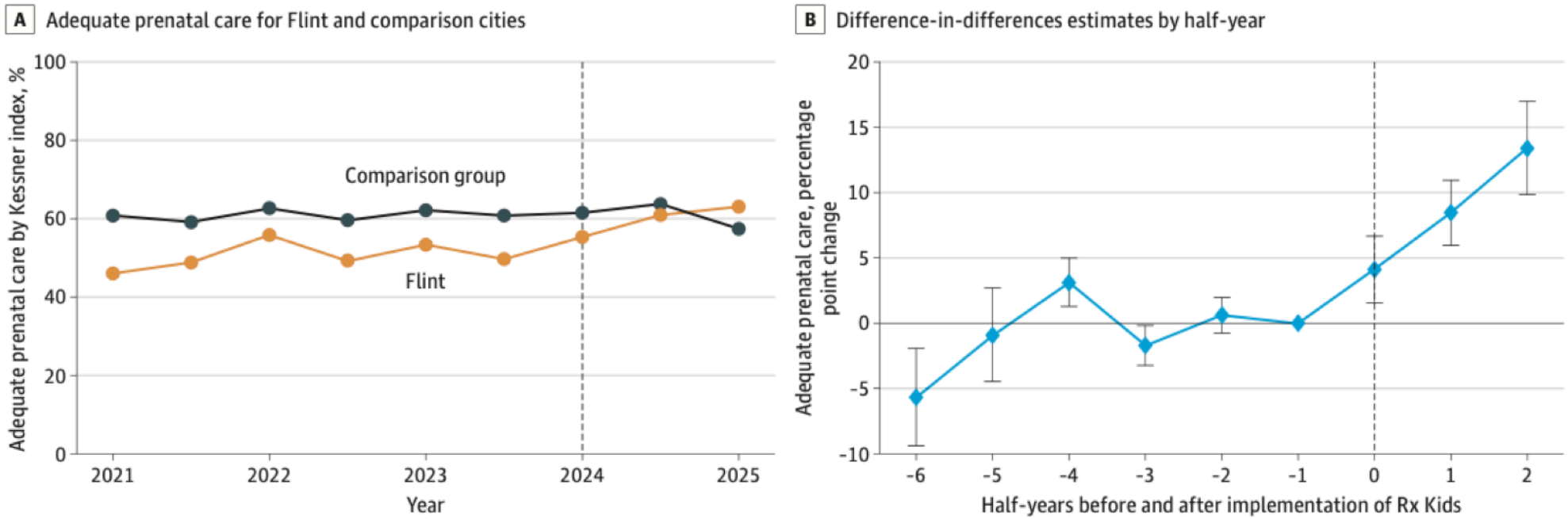
The Rx Kids Program: An Overview

Program Design

- **Location**: Flint, Michigan (launched January 2024)
- **First universal, unconditional prenatal & infant cash transfer in US**
- **Eligibility**: All expectant mothers in Flint
- **Benefits**:
  - $1,500 one-time payment mid-pregnancy (~20 weeks)
  - $500/month for 12 months after birth
  - Total: $7,500 per family

Key Features

Figure. Prenatal Care Adequacy Before and After Implementation of the Rx Kids Cash Transfer Program



Prenatal Care Utilization Effects

Study Design

- **Sample**: 32,157 births across Flint and 21 matched Michigan cities (2021-2025)
- **Method**: Difference-in-differences using vital records data
- **Key Outcome**: Kessner Index (adequacy of prenatal care)

Main Findings

- **+9.1 percentage points** increase in adequate prenatal care (95% CI: 5.6-12.5)
- **-1.9 percentage points** reduction in no prenatal care (95% CI: -2.6 to -1.2)
- **+0.8 visits** increase in total prenatal visits (95% CI: 0.2-1.4)
- **+5.6 percentage points** increase in first trimester initiation (95% CI: 2.5-8.7)

TABLE 3— Association Between Exposure to the Rx Kids Program and Outcomes Among New Mothers in Flint, MI, and Surrounding Region: 2023–2024

Outcome	b (95% CI)
Material hardship and economic well-being	
Food did not last	−0.05 (−0.11, 0.01)
Worry about food	0.00 (−0.06, 0.06)
Not enough foods we want	−0.14 (−0.20, −0.08)
Owes back rent or mortgage	−0.13 (−0.17, −0.09)
Back rent or mortgage owed, $	−301.76 (−371.16, −232.36)
Back rent or mortgage owed for if > $1, $	−1004.41 (−1254.34, −754.48)
Evicted after birth	−0.04 (−0.06, −0.02)
Fewer diapers than would like	−0.05 (−0.10, 0.00)
Not buy something needed to buy diapers instead	0.00 (−0.06, 0.06)
Free to choose how to spend cash	0.19 (0.13, 0.25)
Enough cash emergencies	0.05 (−0.01, 0.11)
Maternal mental health and well-being	
CES-D-10 depression score ≥ 10	−0.14 (−0.20, −0.08)
GAD-7 question 1 (Feeling nervous, anxious, or on edge)	−0.08 (−0.16, 0.00)
GAD-7 question 2 (Not being able to stop or control worrying)	−0.06 (−0.11, −0.01)
Mental health good, very good, or excellent	−0.20 (−0.51, 0.11)
Perceived Hope Scale score ≥ 30	0.12 (0.05, 0.19)
Feel loved	0.11 (0.06, 0.16)
Have hope	0.13 (0.07, 0.19)
Feel respected	0.15 (0.09, 0.21)
Feel valued	0.12 (0.06, 0.18)
Feel empowered	0.09 (0.02, 0.16)
Trust in institutions	
High trust in health care	0.10 (0.05, 0.15)
High trust in government	0.06 (0.03, 0.09)