

Mapping Emergency Services: Distribution and Income Analysis in Greater Indianapolis

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The Problem

Why Emergency Access Matters

- Brain Damage begins in 4-6 minutes during cardiac arrest
- 1.9 million brain cells die per minute during stroke
- House fires double in size every 60 seconds

Research Question & Hypothesis

Research Question:

Do all neighborhoods in Greater Indianapolis have equal access to hospitals and fire stations?

Hypothesis:

Lower-income neighborhoods will have fewer nearby hospitals and fire stations compared to higher-income neighborhoods.

Methods

How I Conducted This Study:

- Mapped 98 emergency facilities:
 - 16 hospitals
 - 10 urgent care centers
 - 72 fire stations
- Collected income data for 39 Zip codes from U.S. Census Bureau
- Calculated distances from each neighborhood to nearest facilities
- Analyzed statistical correlations

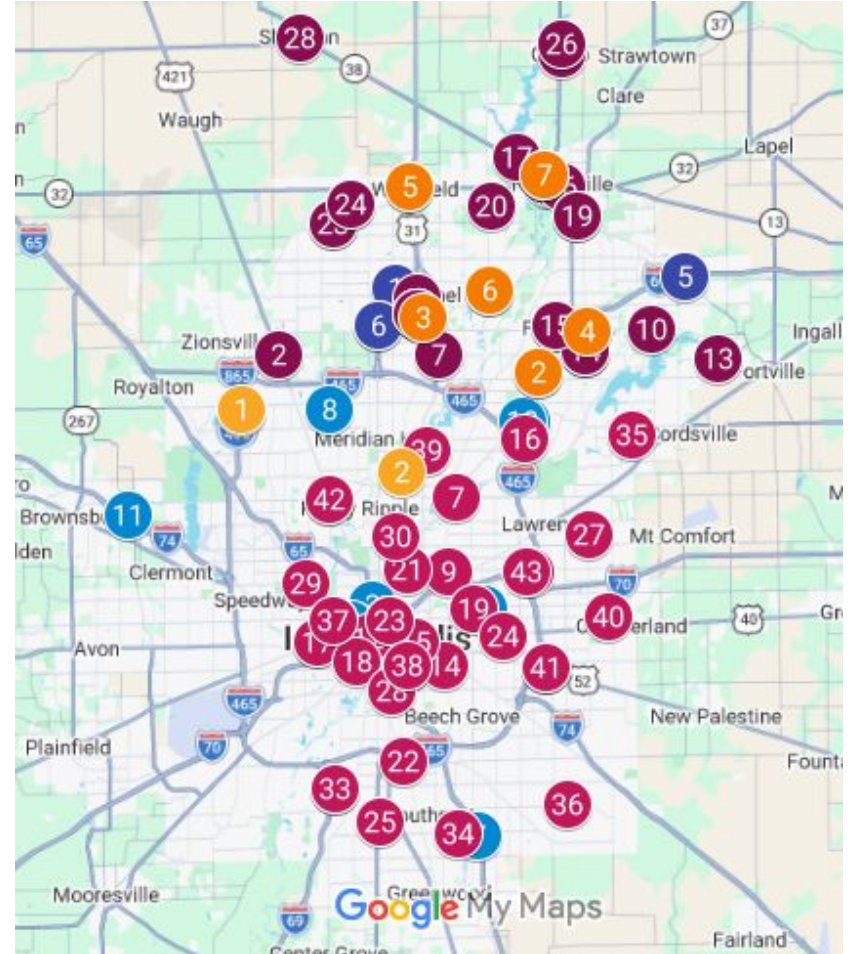
Study Area Map

Study Area: Greater Indianapolis
(Marion & Hamilton County)

Dark colors represents Hamilton

Light colors represents Marion

- Hospital
- Fire Station
- Urgent Care Center



Key Findings

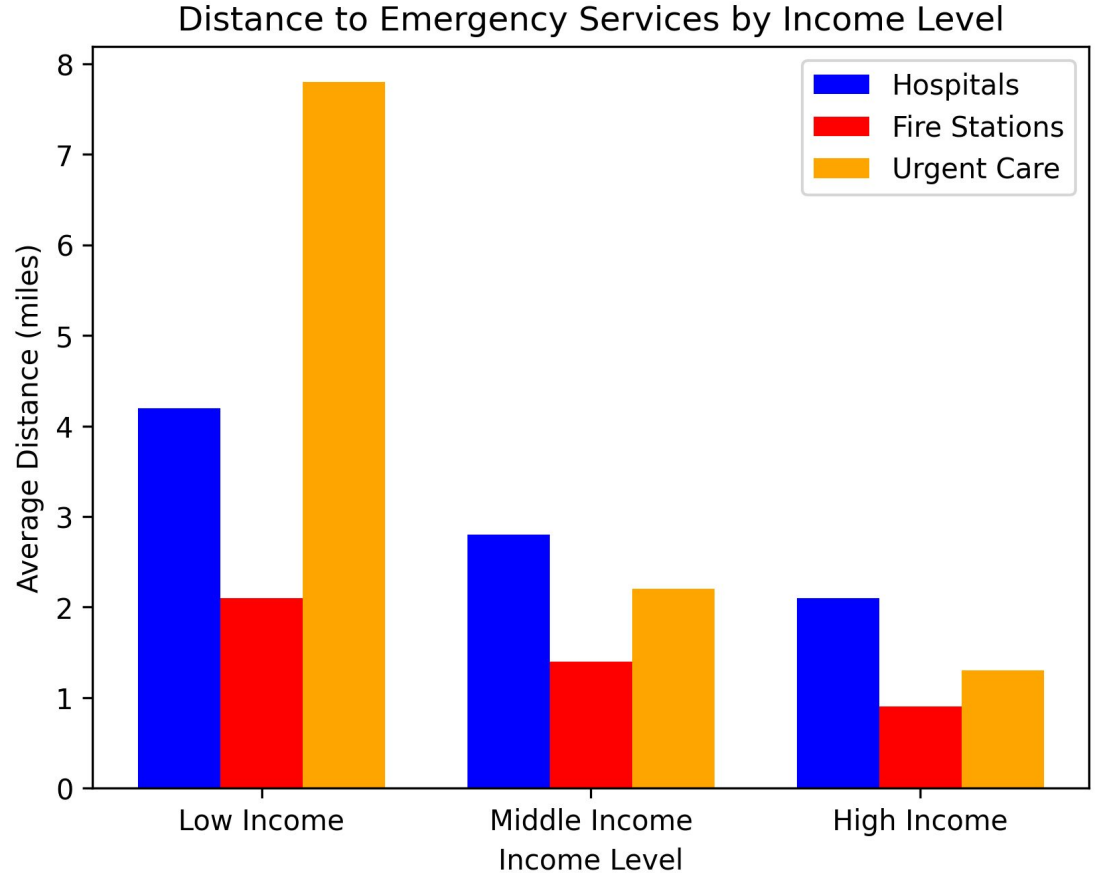
Average Distance to Emergency Services:

	Low-Income	High-Income	Difference
Hospitals	4.2 mil	2.1 mil	100% increase
Fire Stations	2.1 mil	0.9 mil	133% increase
Urgent Care	7.8 mil	1.3 mil	500% increase

Low-income residents travel 2-6 times farther to reach life-saving emergency services.

Bar Chart

Distance Comparison by
Income Level:



Statistical Proof

Correlation Analysis:

- Income vs. Hospital Distance: $r = -0.58$
- Income vs. Fire Station Distance: $r = -0.54$
- Income vs. Urgent Care Distance: $r = -0.72$

$p < 0.001$ (highly statistically significant)

Negative Correlation = As income decreases, distance increases

r represents Pearson's correlation coefficient (used a Pearson Correlation Coefficient Calculator to determine the values & interpret meanings)

Who's Affected

Critically Underserved Areas:

- 5 Zip codes identified with limited access
- 83,000 residents affected
- Farthest examples:
 - Southport: 12.1 miles to urgent care
 - East Indianapolis: 6.2 miles to hospital
 - West Marion: 7.8 miles to hospital

4 out of 5 underserved areas are low/middle income.

Conclusions & Recommendations

Conclusion:

Hypothesis was strongly supported:

- Income significantly affects emergency service access in Greater Indianapolis

Recommendations:

- Build 6-8 urgent care centers in underserved Marion County neighborhoods
- Expand fire station coverage in high-distance areas
- Decide on locations based on population or square mileage