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CHICAGO TRANSIT AUTHORITY

# MOBILITY, EQUITY, AND ECONOMIC IMPACT OF TRANSIT IN CHICAGO REGION



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Argonne National Laboratory is a  
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# WHO ARE WE?

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# TRANSIT IS THE BACKBONE OF URBAN TRAVEL DESPITE ITS SMALL MODAL SHARE

## Pandemic led to severe ridership loss

- Before the pandemic the regional mode share of transit was ~5.45%, with a total number of boardings of ~1.94M.
- In 2025, transit mode share and boardings are expected to be ~3.14% and ~1.35M respectively.

### Transit Usage Drop from 2019 to 2025

Ridership

-30%

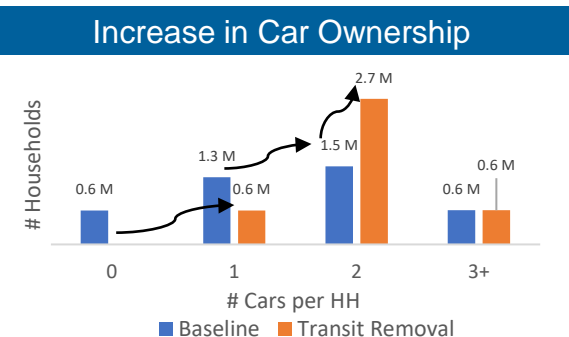
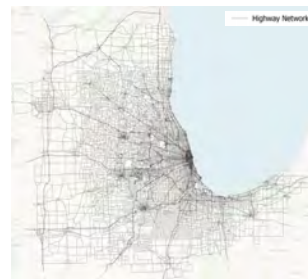
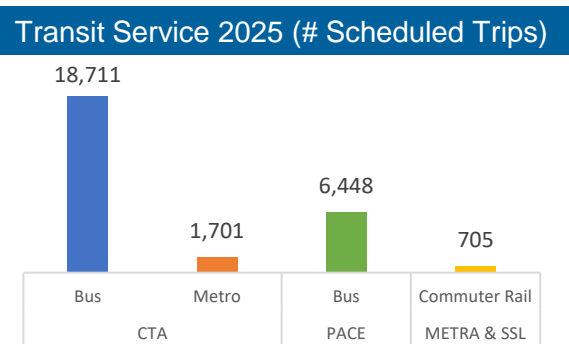
Mode Share

-42%



# WHAT WOULD HAPPEN IN A SCENARIO WITHOUT ANY TRANSIT?

- Scenario 1: Baseline (2025)
  - CTA service: Recovers to Fall 2019 levels
  - Other agencies: March 2024 levels
- Scenario 2: Transit Removal
  - The entire transit service is removed
  - Car ownership increases by 30%
    - Households with no cars buy one car
    - Households with one car buy another car



# TAKEAWAYS: TRANSIT IS CRITICAL TO MOBILITY, ECONOMY, AND EQUITY

SPEED (City)

**-33%**

DAILY ACTIVITY  
CANCELLATIONS  
(Region)

**2 Million**

ANNUAL DIRECT  
ECONOMIC ACTIVITY  
(Region)

**\$35B**

TRAVEL TIME (City)

**+35%**

ACTIVITY  
CANCELLATIONS (City)

**26%** by lowest 20%  
income

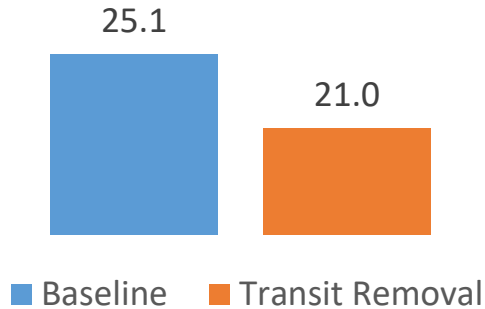
**53%** by women

RETURN ON  
INVESTMENT (Region)

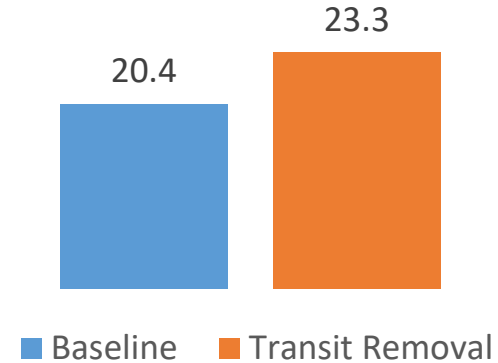
**13X**

# TRANSIT CRITICAL TO REGIONAL TRAVEL

Average Speed (mph)



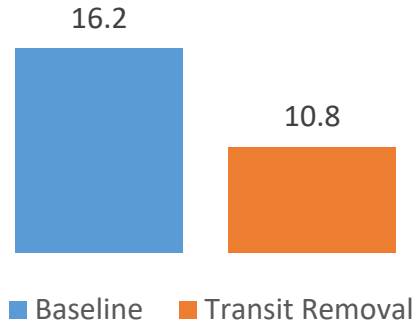
Average Travel Time (minutes)



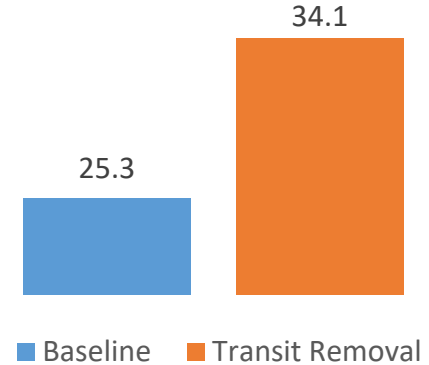
- Due to removal of transit and increase in car ownership, speeds decrease by 16%, and travel times increase by 14%.

# TRANSIT IMPORTANCE IS EXACERBATED IN THE CITY

Average Speed (mph)



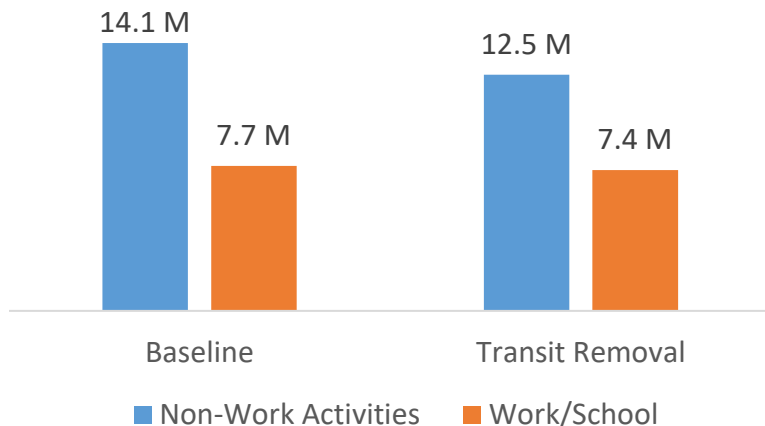
Average Travel Time (minutes)



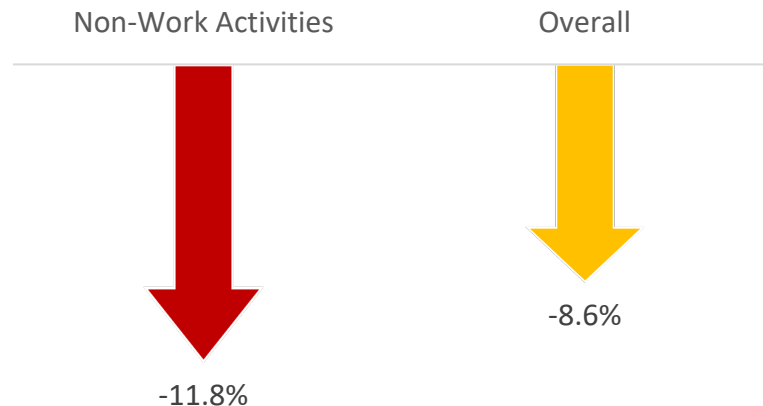
- Within the city, speeds decrease by 33%, and travel times increase by 35%.

# CONGESTION AND LOSS OF ACCESS RESULTS IN MAJOR ACTIVITY CANCELLATIONS IN THE REGION

Number of Activities



% Change in Activities

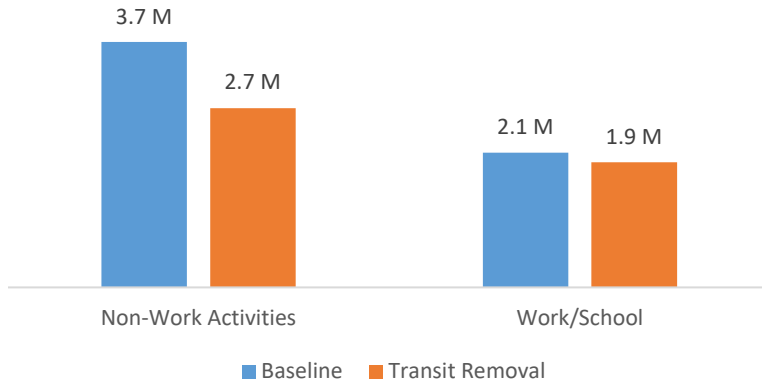


- 12% of non-work activities (1.6 M) and 9% of overall activities (1.9 M) get cancelled
  - Drivers lose access due to congestion, and transit dependent riders lose access without a car or face the new financial burden of car ownership

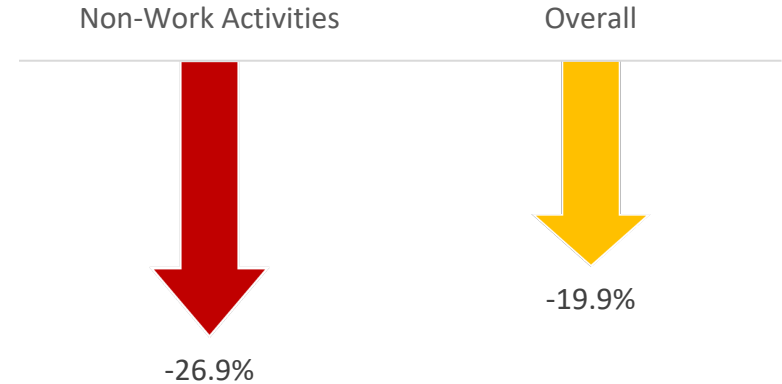


# ACTIVITY CANCELLATION IS MOST SEVERE IN THE CITY

Number of Activities



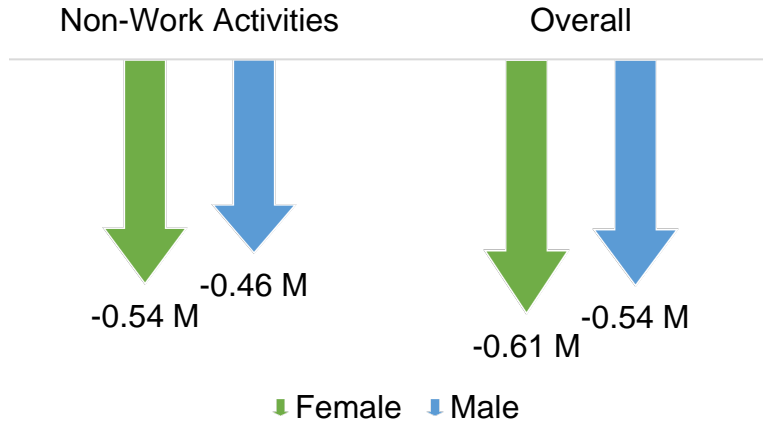
% Change in Activities



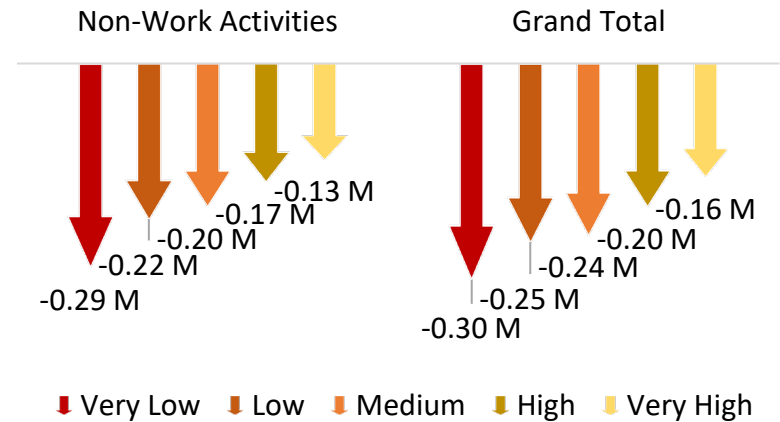
- 27% of non-work activities (1.0 M) and 20% of overall activities (1.2 M) get cancelled.

# TRANSIT FACILITATES THE ABILITY OF WOMEN AND LOWER INCOME GROUPS TO ACCESS OPPORTUNITIES

## Activity Cancellations by Gender



## Activity Cancellations by Income

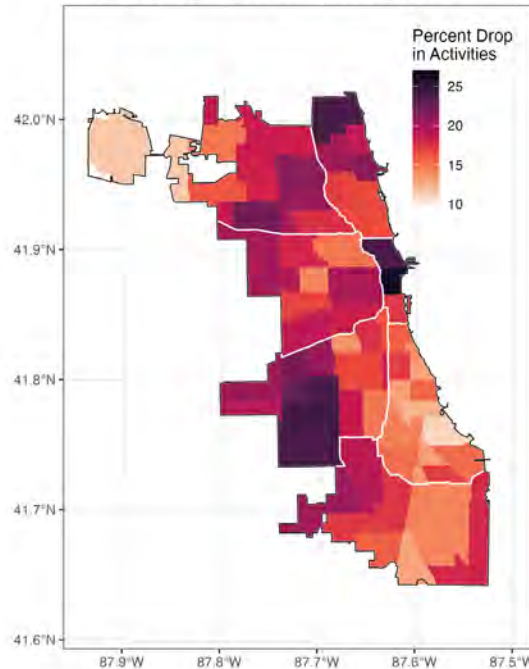


- Women account for 53% of overall activity cancellations
- The lowest 20% income group accounts for 26% of overall activity cancellations
- The lowest 40% income group accounts for 48% of overall activity cancellations

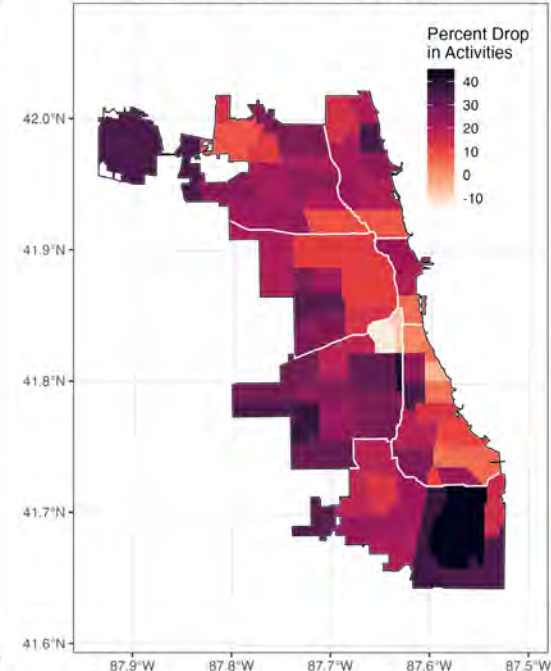
# TRANSIT IS ESSENTIAL TO RESIDENTS AND BUSINESSES ON THE SOUTH AND WEST SIDES

- Households that cancel activities affect both their own quality of life and the neighborhoods where they would have gone
- Cancellations by activity location concentrate in the outer neighborhoods of the city, threatening businesses and institutions

Activity Cancellations by Household Community under Transit Removal Scenario, Long Term



Activity Cancellations by Activity Community under Transit Removal Scenario, Long Term



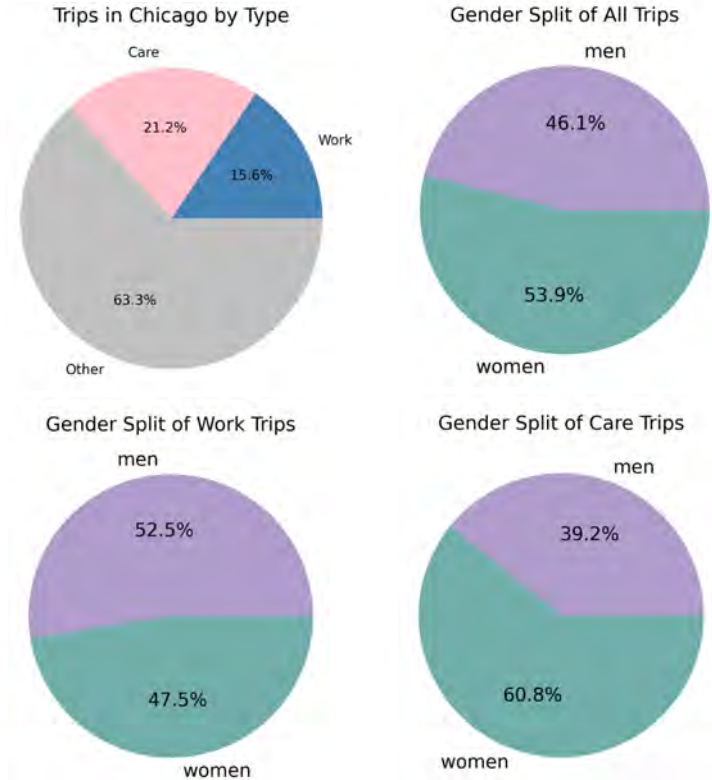
# TRANSIT SPENDING HAS A SUBSTANTIAL POSITIVE IMPACT ON REGIONAL ECONOMY

Category	Annual Total
Due to Activity Cancellations	\$4.6 billion
<i>Entertainment</i>	\$2.4 billion
<i>Restaurants</i>	\$1.6 billion
<i>Sales</i>	\$0.6 billion
Travel Time Losses	\$10.4 billion
Annual Car Ownership Increase	\$20.4 billion
<b>Grand Total</b>	<b>\$35.4 billion</b>

- Every \$1 invested in transit generates \$13 in economic activity and travel time savings in the Chicago region (assuming \$2.7 billion total operating funding)
- This is a partial analysis. Additional factors to consider:
  - Ripple effects on job losses, business closures, cost of living increases
  - Public health costs due to air pollution and increased motor vehicle crashes

# MOBILITY OF CARE TRIPS ARE HEAVILY GENDERED

- Mobility of care encompasses trips taken to do the unpaid labor involved with caring for a household
  - Pickups/drop offs to schools and daycares
  - Accompanying elderly parent to the hospital
  - Going grocery shopping
- In the Chicago region, more care trips are made than trips to work



Source: 2019 CMAP My Daily Travel Survey

# TRANSIT CARRIES SIGNIFICANT PORTION OF MOBILITY OF CARE TRIPS

- In the Chicago region, 229,000 mobility of care trips are made on public transit every day
  - Mostly made by women (59%)
  - Disproportionately low income (66%)
- Without transit many of these trips would never be made
- Removing transit service would cause a **12% drop in mobility of care trips**: 27,000 fewer daily trips

Trips in Chicago by Type (Upper Income)

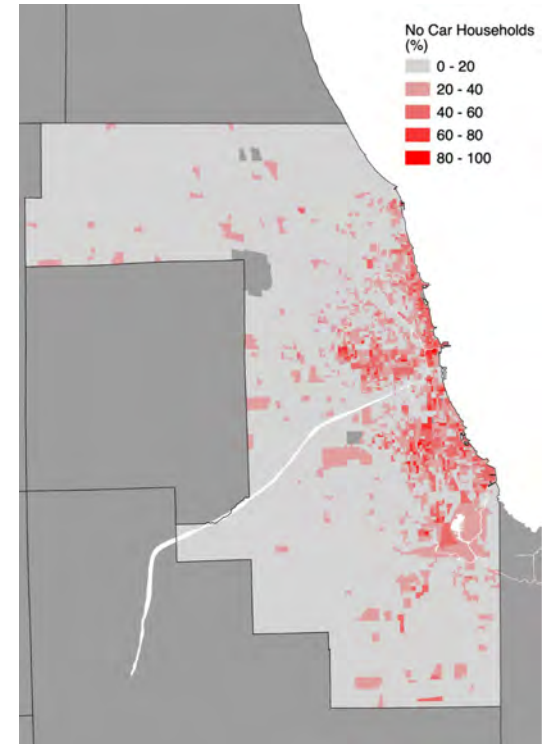


Trips in Chicago by Type (Lower Income)



# TRANSIT ALLEVIATES ECONOMIC AND SOCIAL BURDEN OF CAR OWNERSHIP

- The cost of owning a car in the U.S. has risen to \$10,728 per year
- There are 639,000 households in the Chicago area with no vehicles, and 1.26 million households with one vehicle
  - $\frac{3}{4}$  of Chicago no-car households are below the 400% poverty line
- If, without transit service, every zero-vehicle household in Chicago purchased a car, it would cost them an extra **\$6.8 billion** annually.
- If every 1-vehicle household bought another car, it would cost them an extra **\$13.6 billion** annually



Source: ACS 2018-2022

# TRANSIT FACILITATES MOBILITY OF NON-DRIVERS

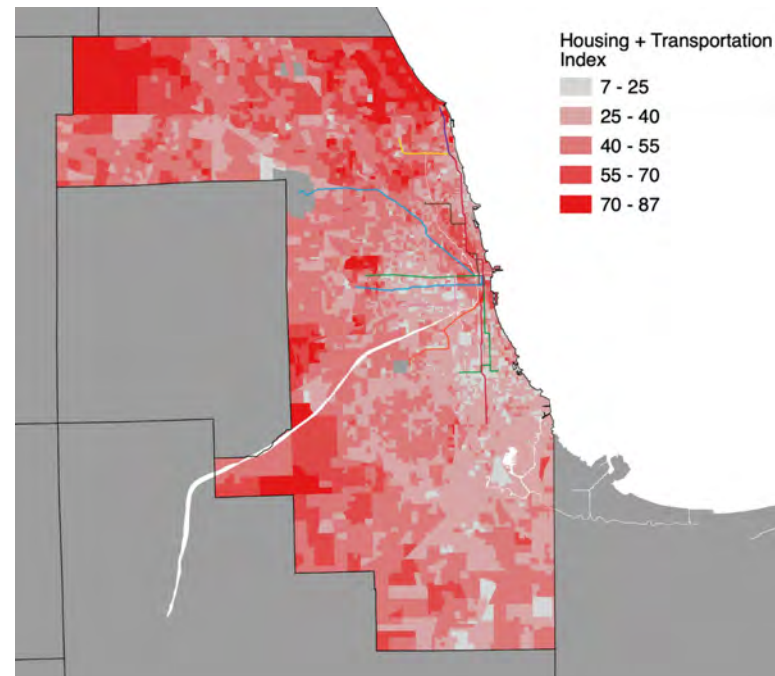
- Many people are ineligible to drive because they are too young, too old, or are otherwise unable to obtain a driver's license
  - **Over a third** of Illinois residents (4.4 million people) do not have a license
- Transit access provides independent mobility to people who would otherwise be dependent on someone else or not have access at all





# ROBUST PUBLIC TRANSIT HELPS KEEP THE COST OF LIVING IN CHICAGO BELOW THE NATIONAL AVERAGE

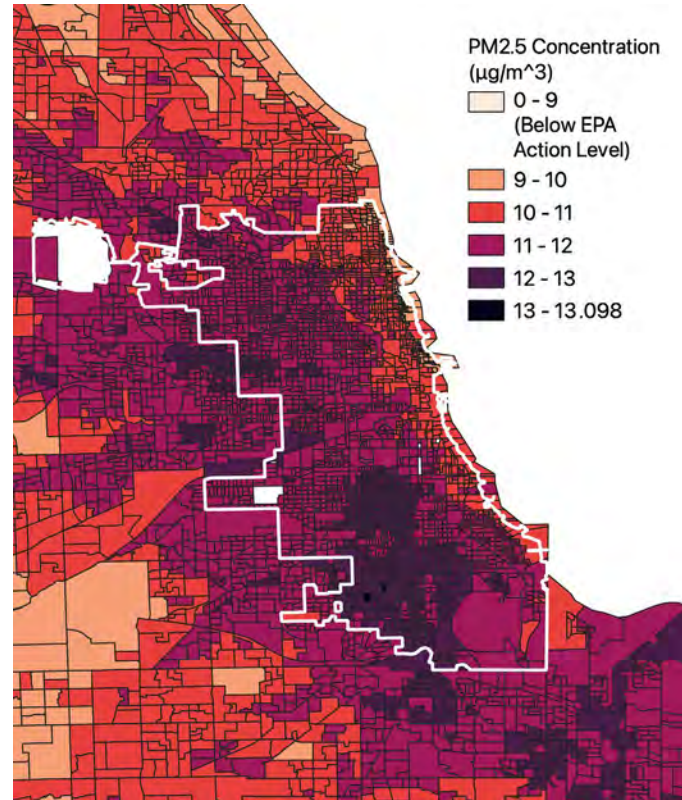
- Chicagoans spend 37% of their income on housing, **more than** the nationwide average of 34%
- Chicagoans have the **5<sup>th</sup>-lowest** transportation costs of all large US cities at 13% of income, **lower** than nationwide average of 17%
- Overall housing + transportation costs in Chicago are more affordable than the country as a whole
- In Cook County, **housing + transportation costs are the lowest around CTA rail lines on the south side** of the city where **both** housing costs are low and transit ridership is high



Source: Center for Neighborhood Technology

# TRANSIT ALLEVIATES DANGEROUS PM2.5 POLLUTION

- PM2.5 is fine particulate matter increasing death rates from respiratory disease, heart attacks, and strokes
- 25% of urban PM2.5 is attributable to vehicular traffic
- EVs still generate PM2.5 from brake, tire, and road wear as well as electricity generation
- In Chicago, PM2.5 concentrates on the South and West sides
- In 2021, PM2.5 contributed to 2154 attributable deaths in Chicago (6% increase)



Source: Center for Air, Climate, & Energy Solutions, LUR Model, 2011-2015

# THANK YOU FOR YOUR TIME! QUESTIONS?

SPEED (City)

**-33%**

DAILY ACTIVITY  
CANCELLATIONS  
(Region)

**2 Million**

ANNUAL DIRECT  
ECONOMIC ACTIVITY  
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CANCELLATIONS (City)

**26%** by lowest 20%  
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**53%** by women

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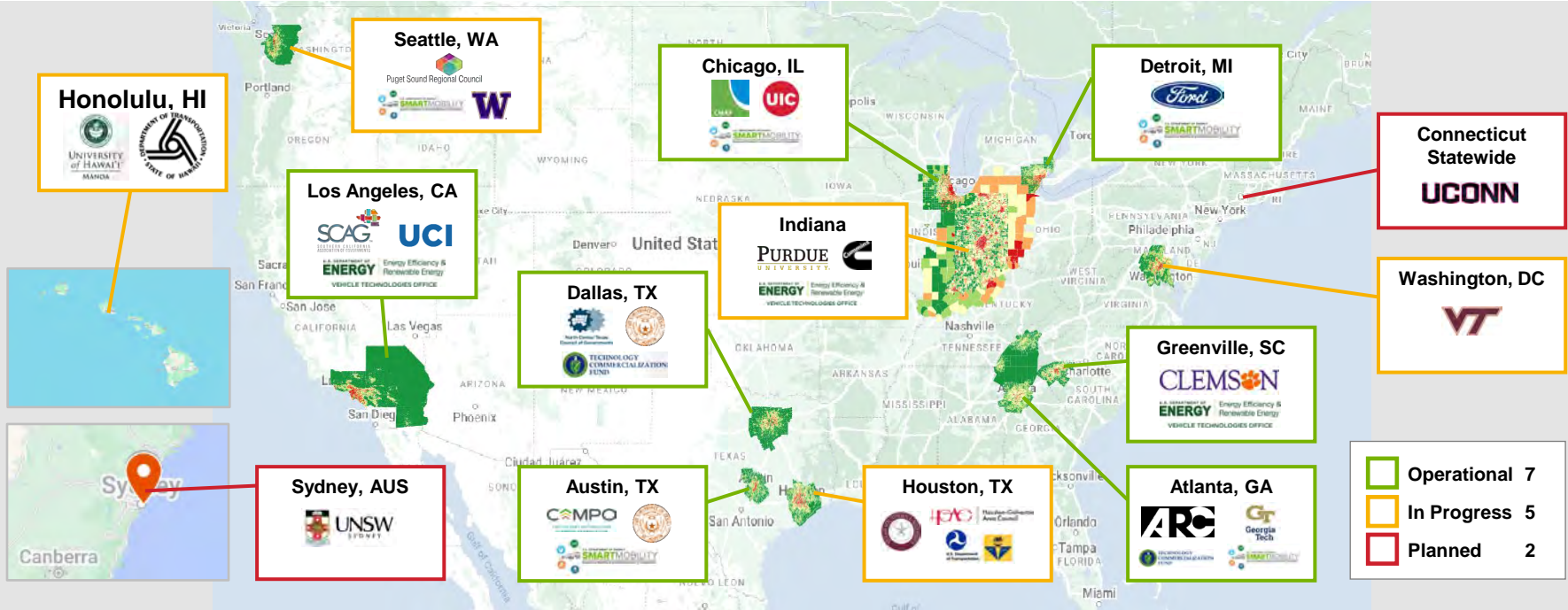
Argonne



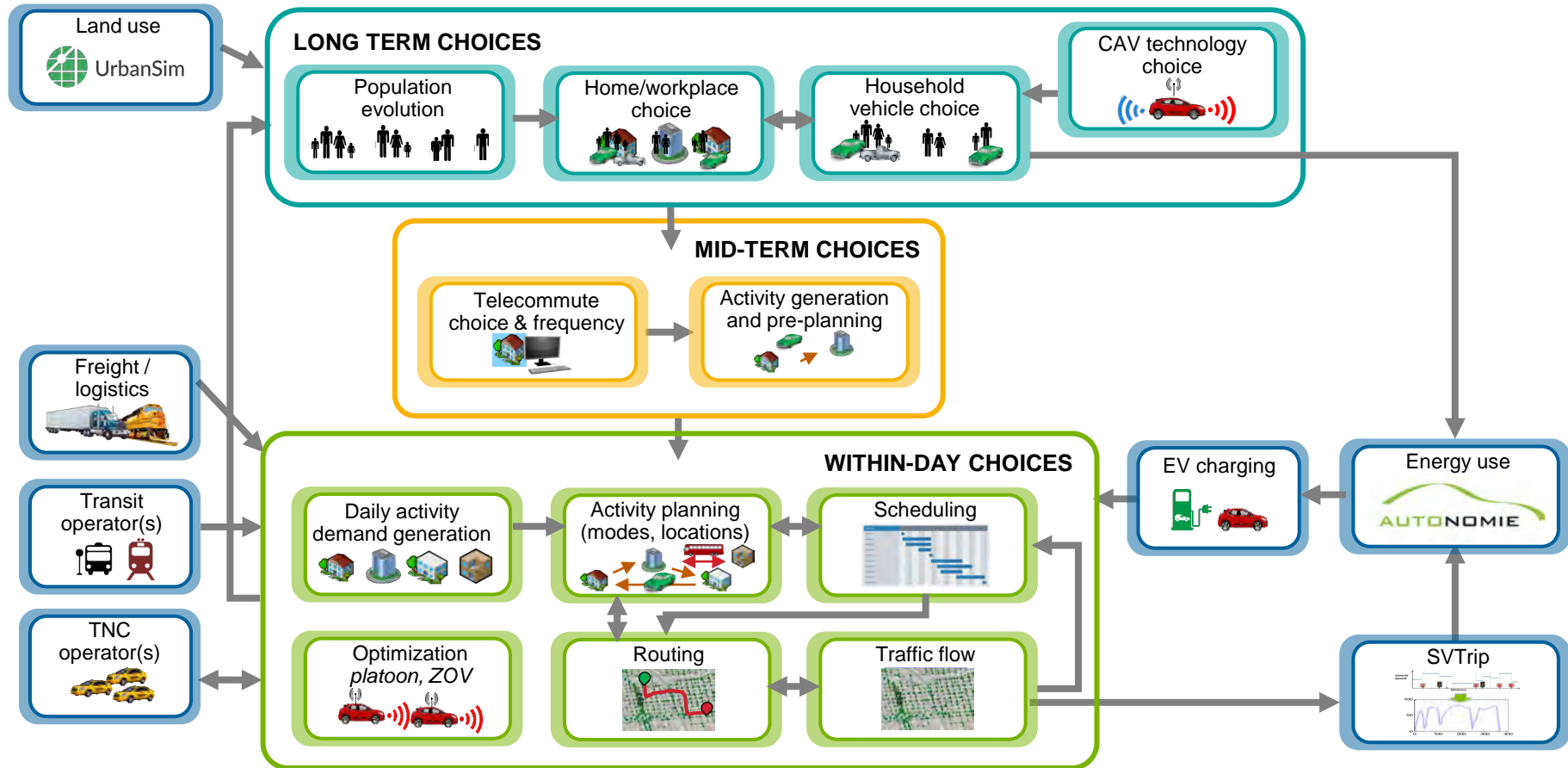
NATIONAL LABORATORY

# POLARIS DEPLOYMENT IS ACCELERATING

From one city in 2016 to 14 operational and planned models

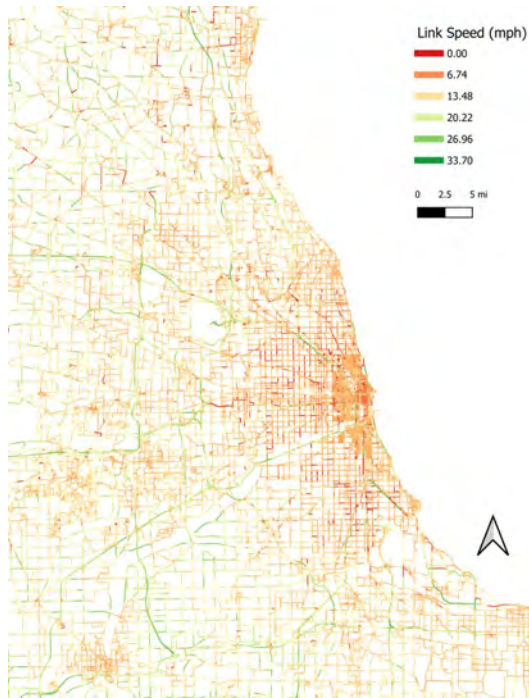


# POLARIS TRANSPORTATION SYSTEMS SIMULATOR

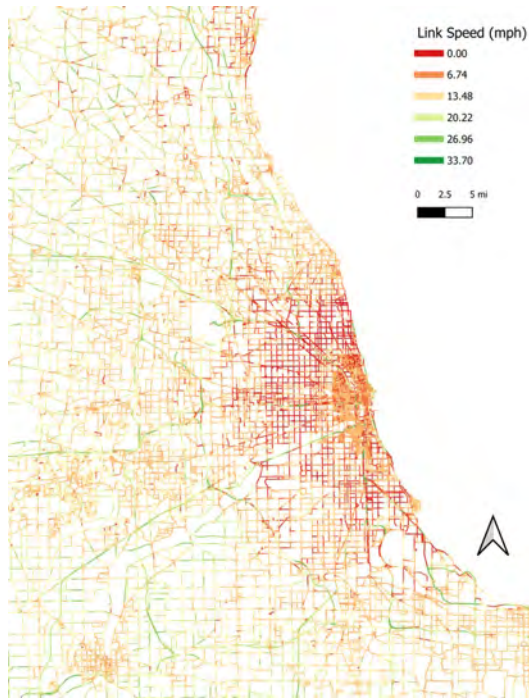


# TRANSIT PREVENTS GRIDLOCK-LEVEL CONGESTION

Baseline - 2025

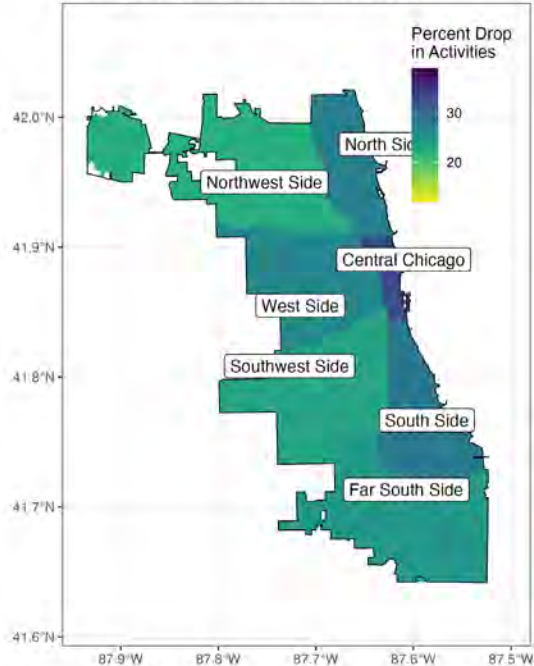


Transit Removal

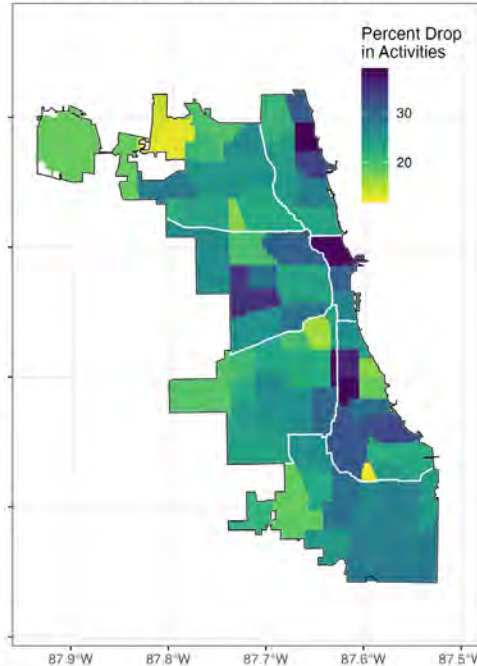


# ACTIVITY CANCELLATION BY ACTIVITY LOCATION, DAY 1

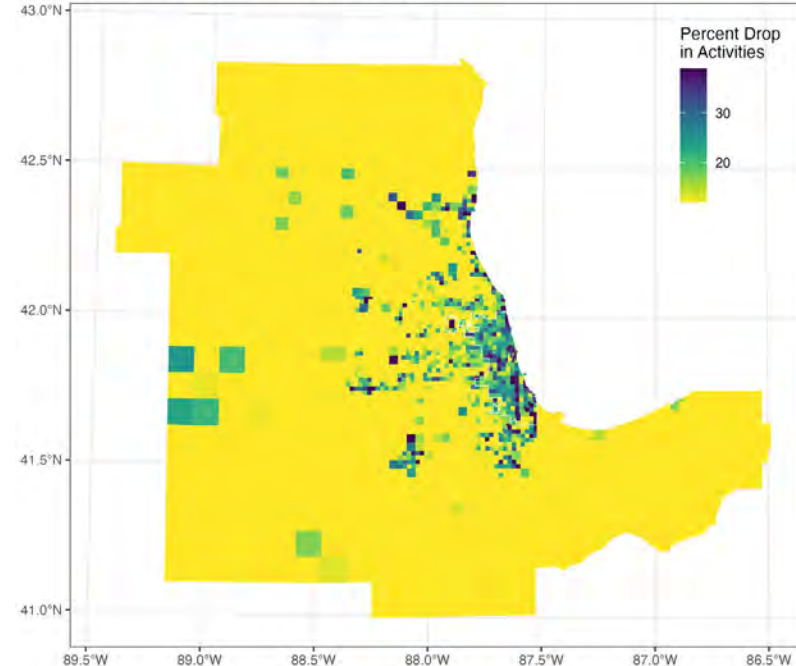
Activity Cancellations by Activity Area under Transit Removal Scenario, Day 1



Activity Cancellations by Activity Community under Transit Removal Scenario, Day 1



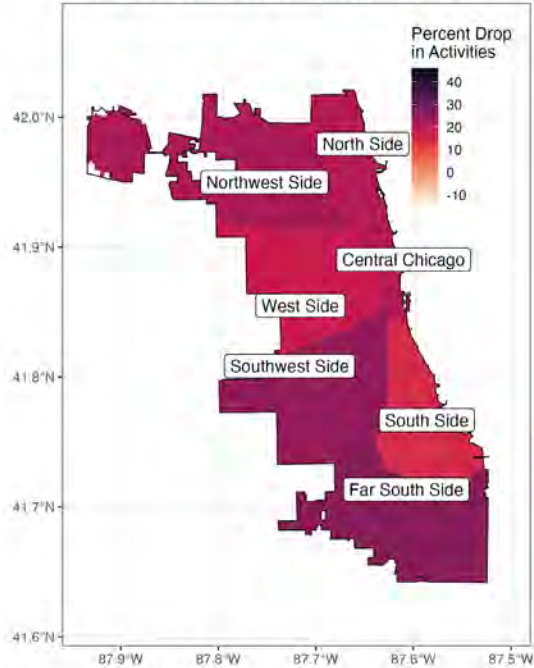
Activity Cancellations by Activity Location under Transit Removal Scenario, Day 1



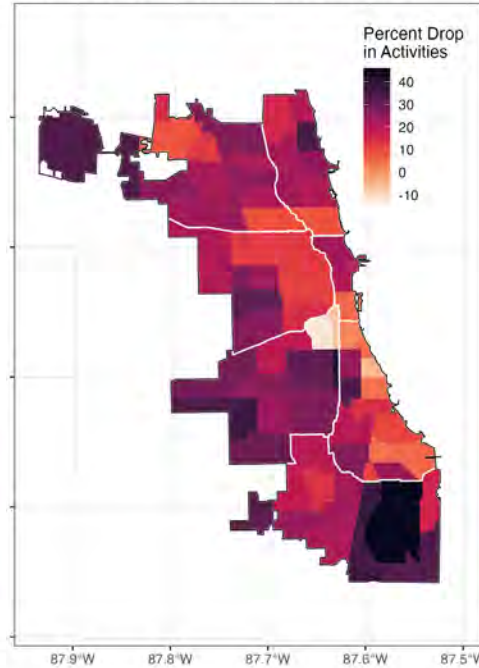


# ACTIVITY CANCELLATION BY ACTIVITY LOCATION, LONG TERM

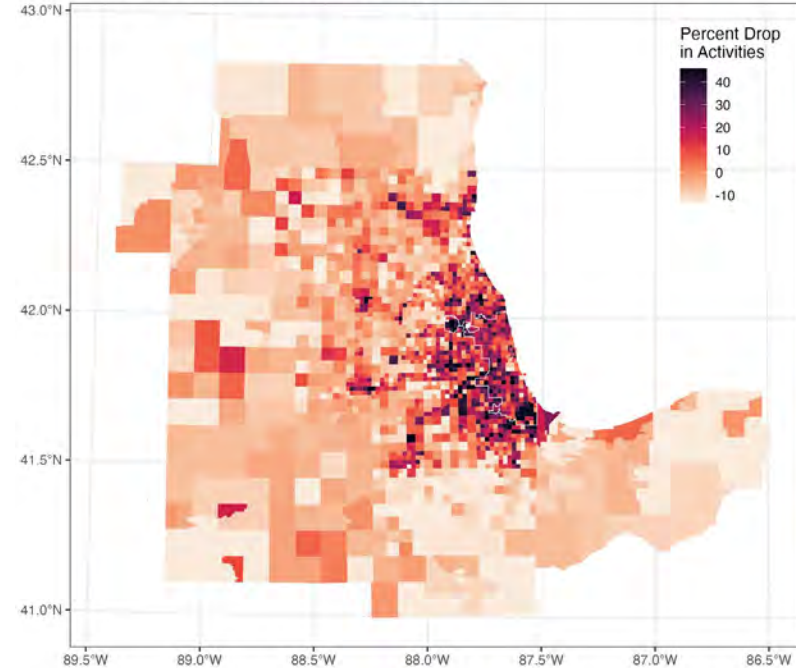
Activity Cancellations by Activity Area under Transit Removal Scenario, Long Term



Activity Cancellations by Activity Community under Transit Removal Scenario, Long Term

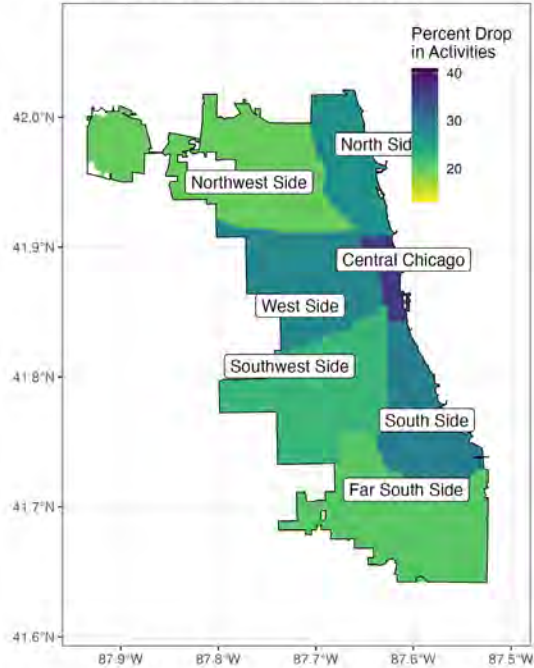


Activity Cancellations by Activity Location under Transit Removal Scenario, Long Term

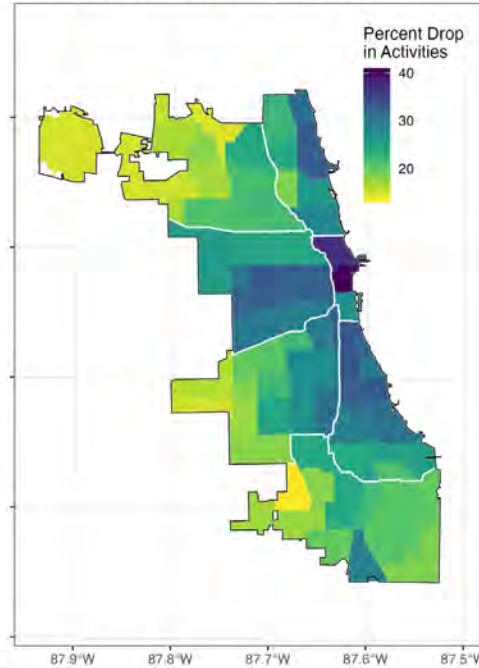


# ACTIVITY CANCELLATION BY HOUSEHOLD LOCATION, DAY 1

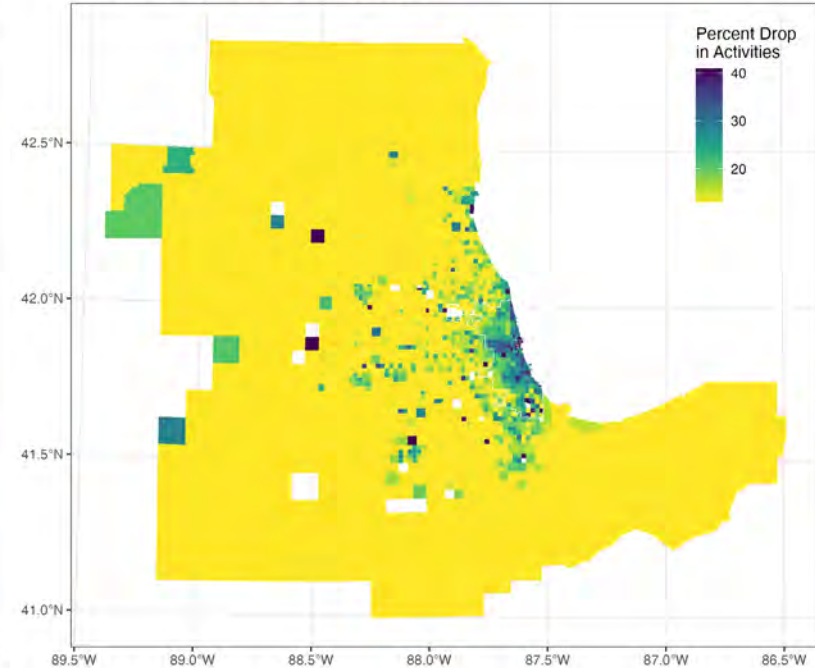
Activity Cancellations by Household Area under Transit Removal Scenario, Day 1



Activity Cancellations by Household Community under Transit Removal Scenario, Day 1

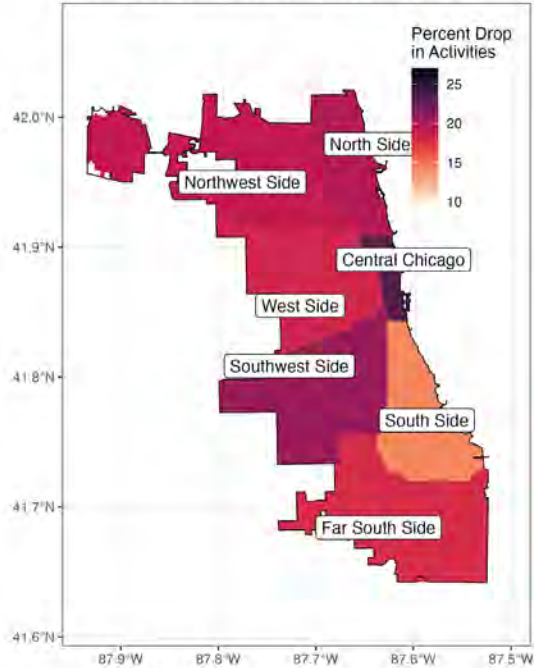


Activity Cancellations by Household Location under Transit Removal Scenario, Day 1

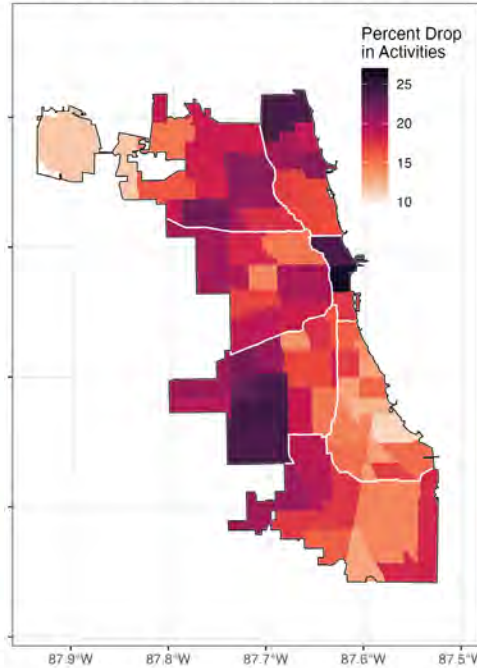


# ACTIVITY CANCELLATION BY HOUSEHOLD LOCATION, LONG TERM

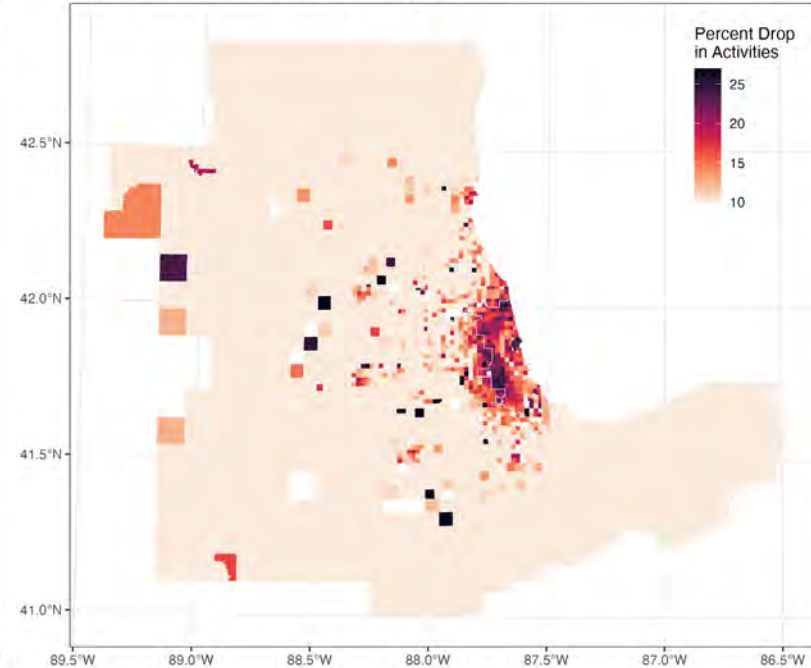
Activity Cancellations by Household Area under Transit Removal Scenario, Long Term



Activity Cancellations by Household Community under Transit Removal Scenario, Long Term

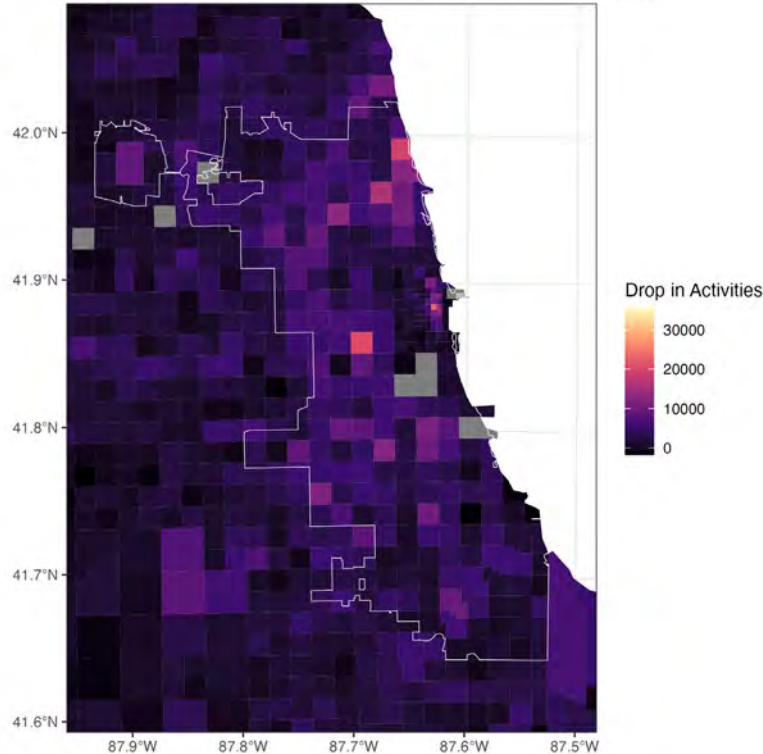


Activity Cancellations by Household Location under Transit Removal Scenario, Long Term



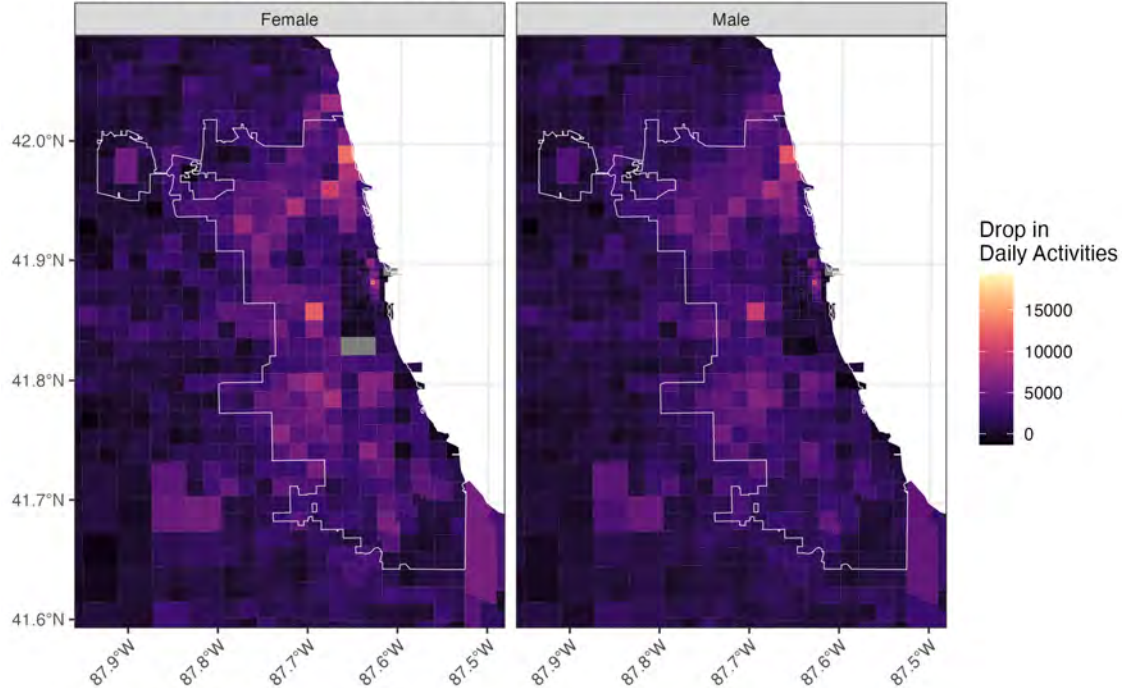
# TRANSIT FACILITATES MORE ACTIVITIES, ESPECIALLY IN THE CITY

Daily Activity Cancellations under Transit Removal Scenario



# TRANSIT ENABLES MORE MOBILITY FOR WOMEN

Activity Cancellation by gender under Transit Removal Scenario



# TRANSIT ALLOWS LOWER INCOME HOUSEHOLDS TO TRAVEL MORE AND ENGAGE IN MORE ACTIVITIES

Activity Cancellation by income\_quintile under Transit Removal Scenario

