

# Trends in Pedestrian and Cyclist Motor Vehicle Crashes in Wichita, Kansas

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Communities and cities have started to diversify transportation resources



Walking and cycling are:

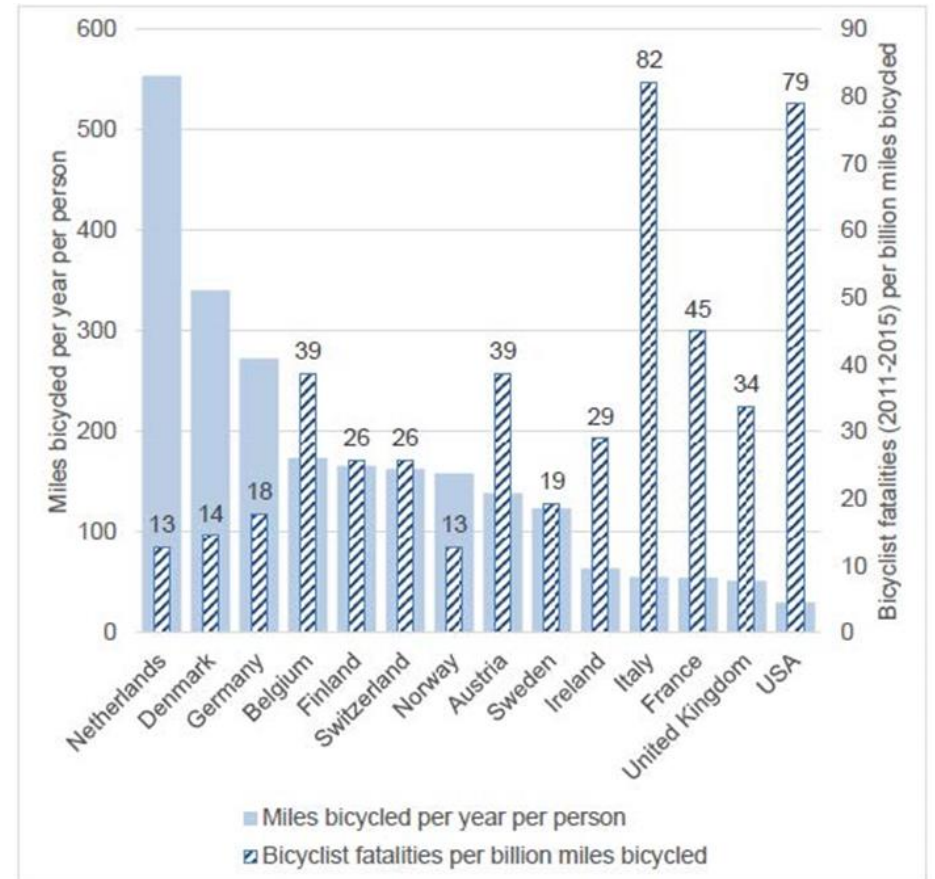
- Sustainable
- Healthy
- Environmentally – friendly
- Inexpensive
- Convenient

# What We Know

# U.S. Compared to Other Countries

- The United States has a higher traffic fatality rate per capita than most countries (Buehler & Pucher, 2017)

Cyclist Fatalities between 2011 and 2015  
(National Transportation Safety Board, 2019)



# Project Methods



DATA ENTRY



STATISTICAL  
ANALYSIS



GIS MAPPING

## Crashes Reported

- A total of **1,818 pedestrian/cyclist motor vehicle crashes were reported** between 2008 and 2018

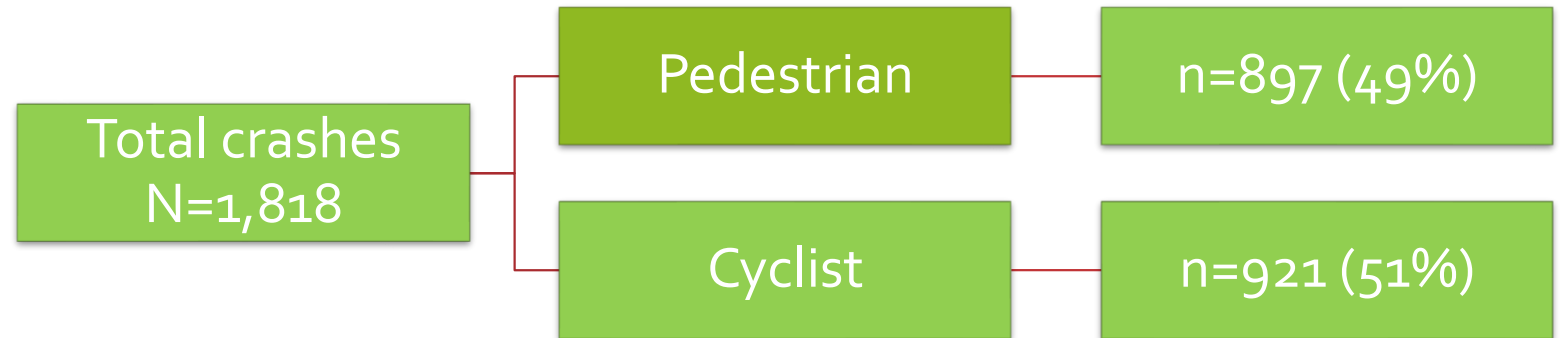
# Crashes Reported

- On **average 165** (*SD* = 24.6) pedestrian/cyclist crashes were reported each year

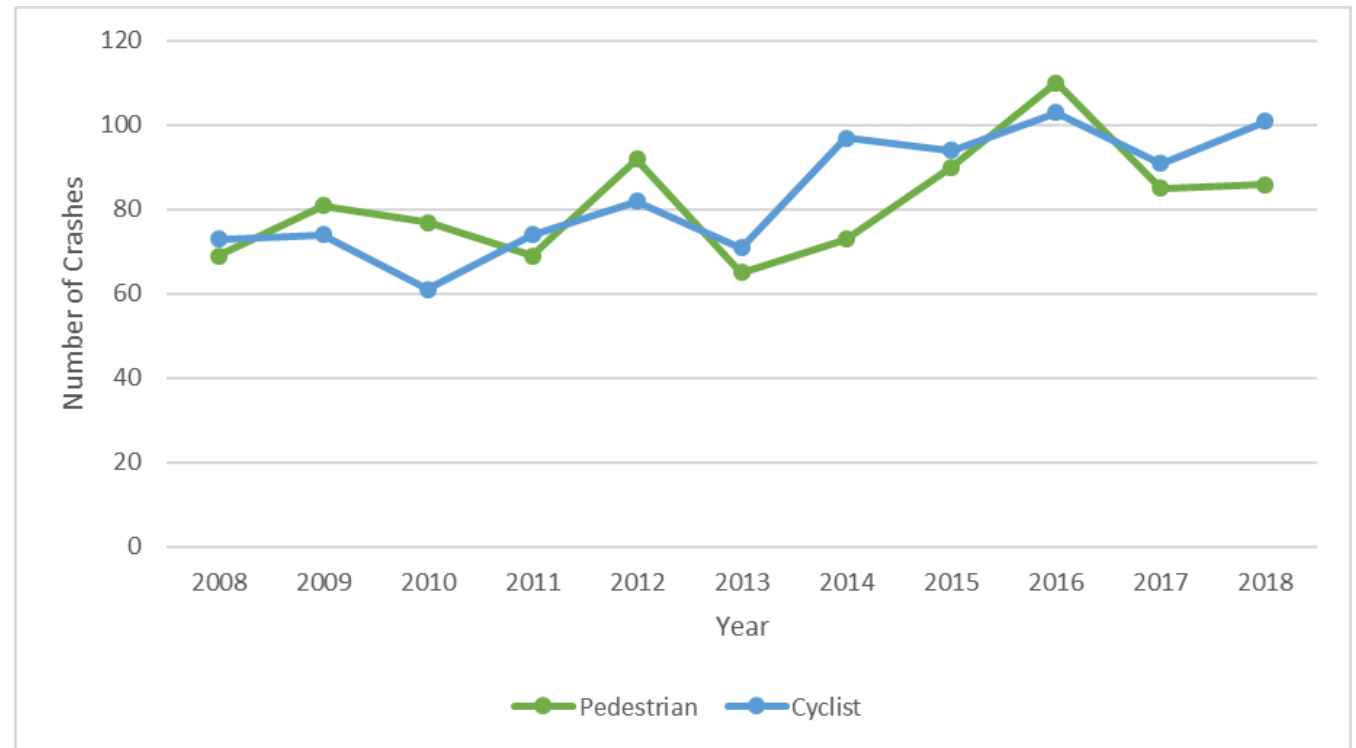
Total Pedestrian and Cyclist Crashes Reported from 2008 through 2018

Year	Number of Crashes Reported
2008	142
2009	155
2010	138
2011	143
2012	174
2013	136
2014	170
2015	184
2016	213
2017	176
<u>2018</u>	<u>187</u>
<b>Total</b>	<b>1,818</b>

# Pedestrian and Cyclist Crashes



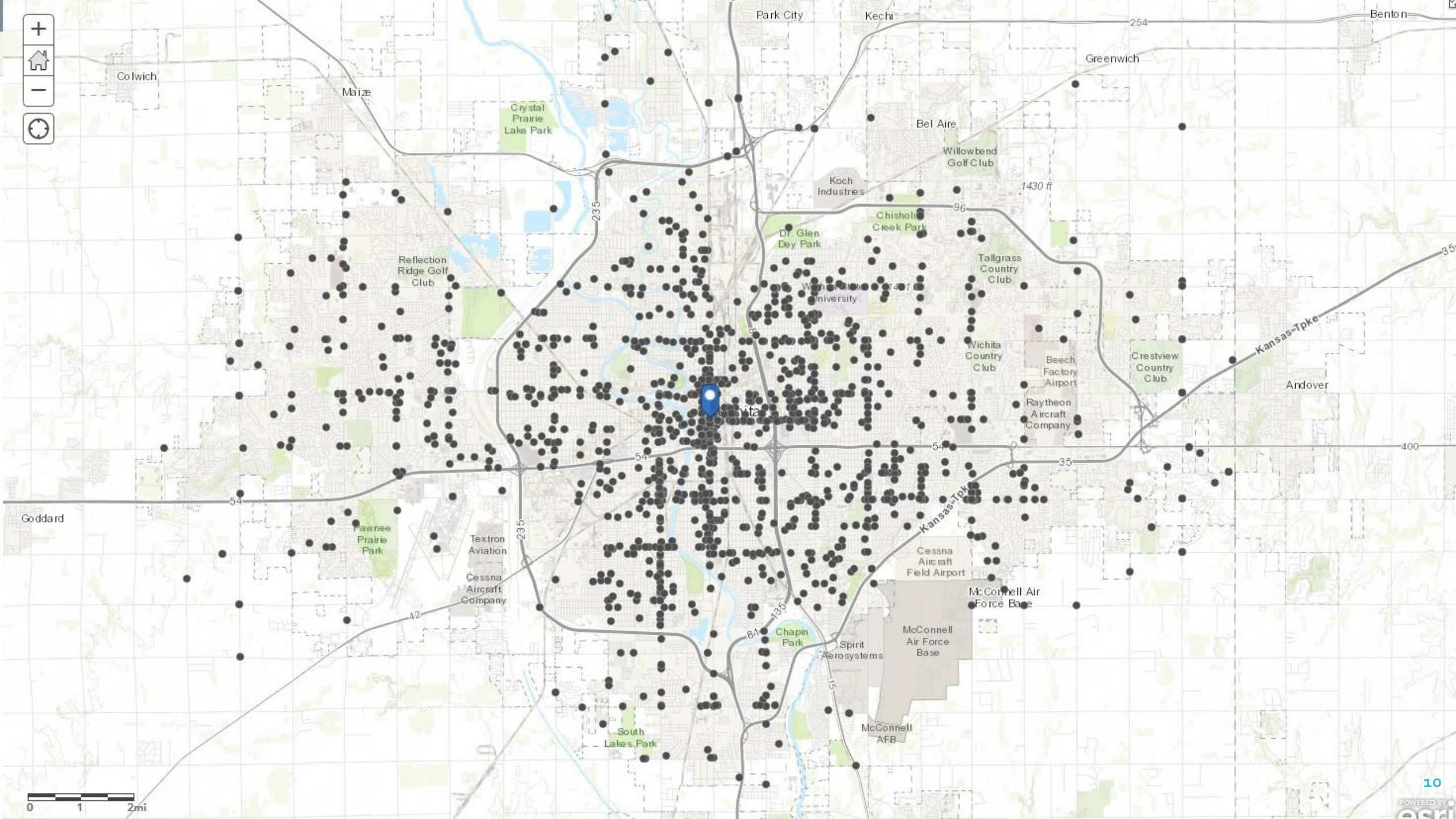
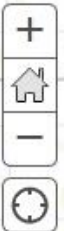
# Pedestrian and Cyclist Crashes: Trends over Time





# Pedestrian and Cyclist Crashes: 2008 – 2018 Trends

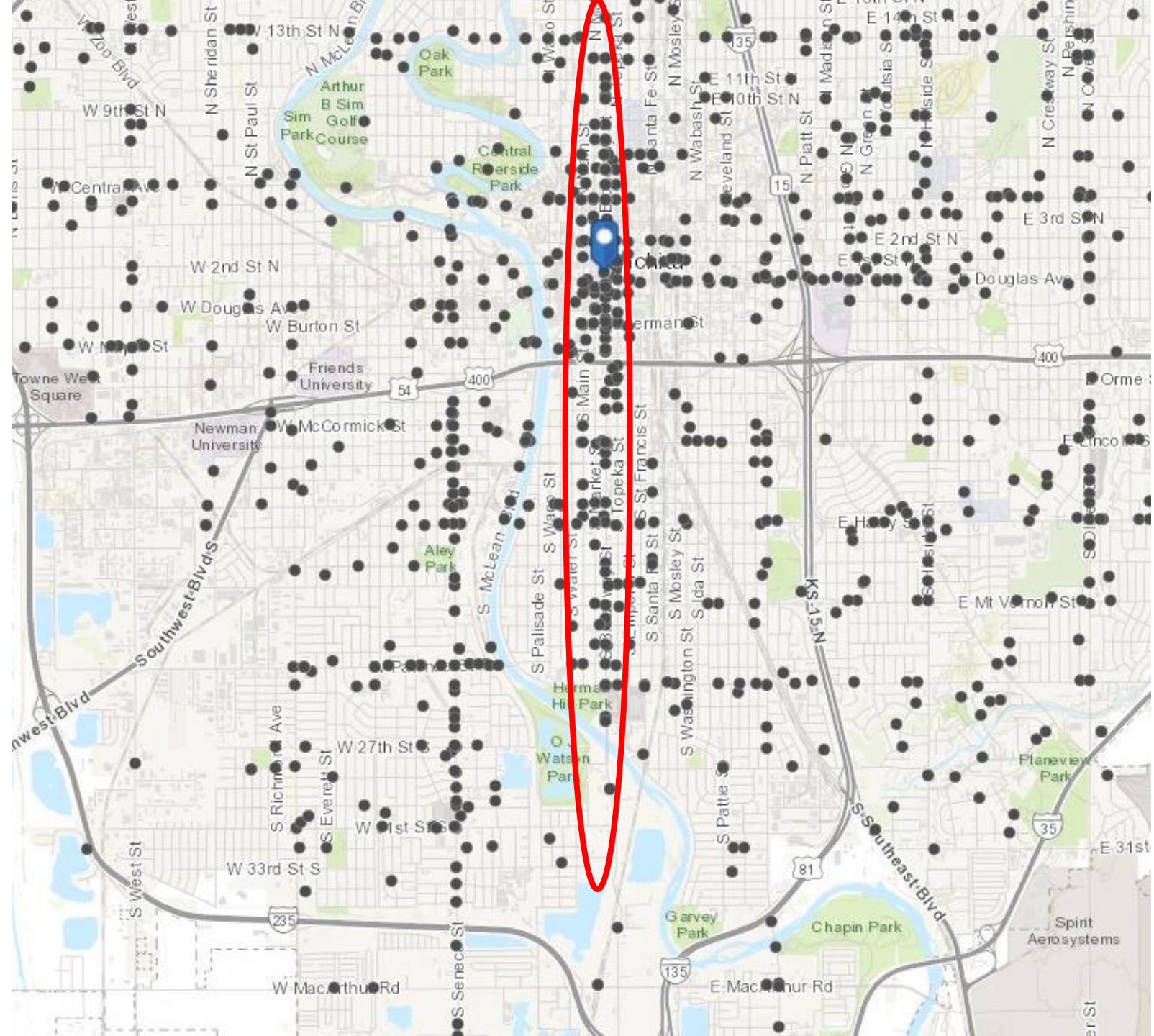
- In Wichita, Kansas 1,818 pedestrian and cyclist crashes with a motor vehicle were reported from 2008 through 2018
- A large portion of these crashes occurred in the downtown area

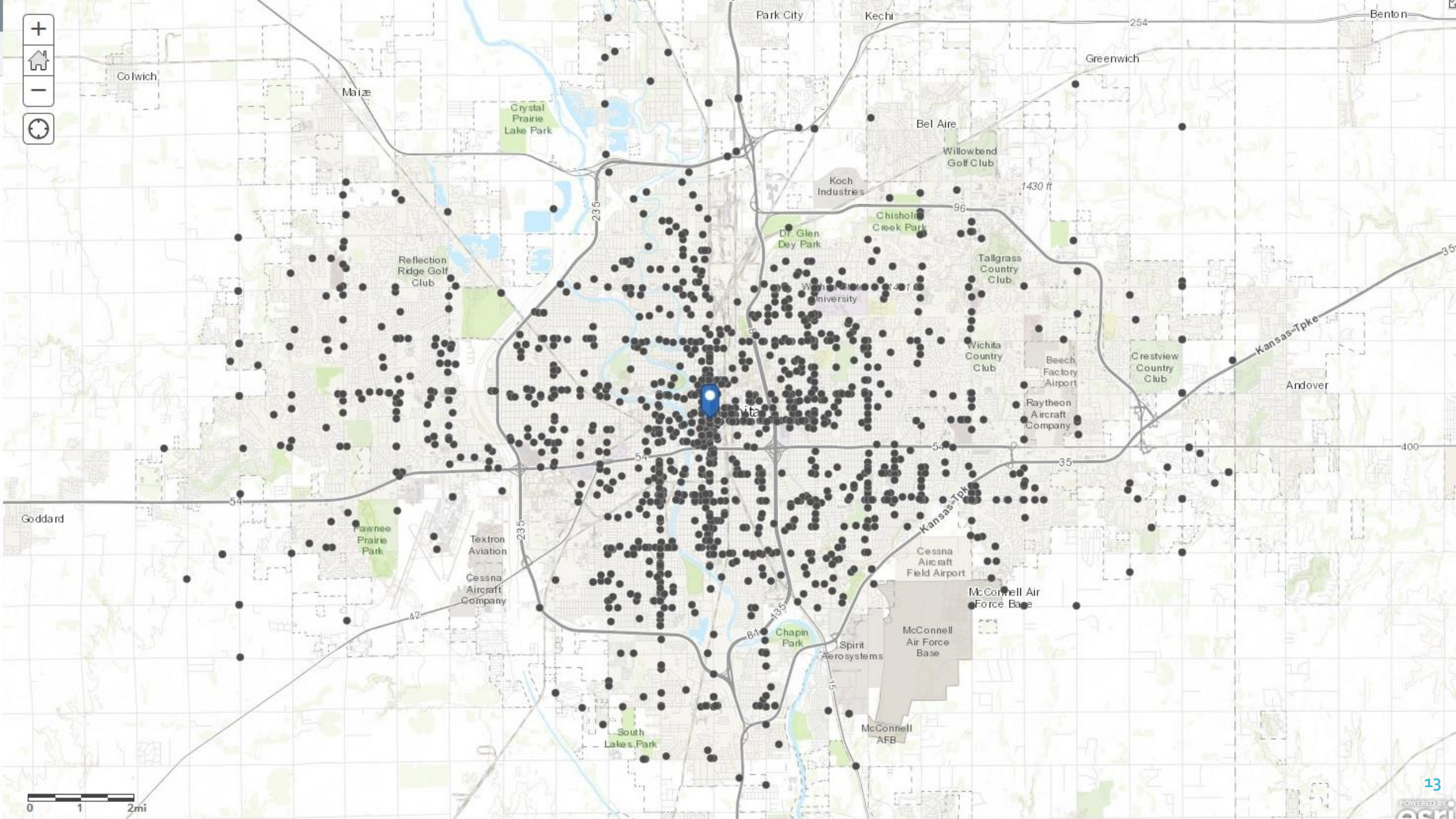
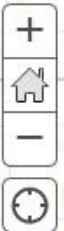


## Pedestrian and Cyclist Crashes: 2008 – 2018 Trends

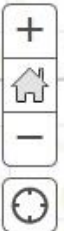
- Of the reported crashes, 37% (n = 676) occurred within seven specific roadways:
  - Broadway Street (10.8%, n = 197)
  - Douglas Street (5.8%, n = 105)
  - Central Avenue (5.7%, n = 103)
  - Seneca Street (4.5%, n = 82)
  - Harry Street (3.6%, n = 66)
  - 21<sup>st</sup> Street (3.5%, n = 63)
  - 13th Street (3.3%, n = 60)

# Broadway Street

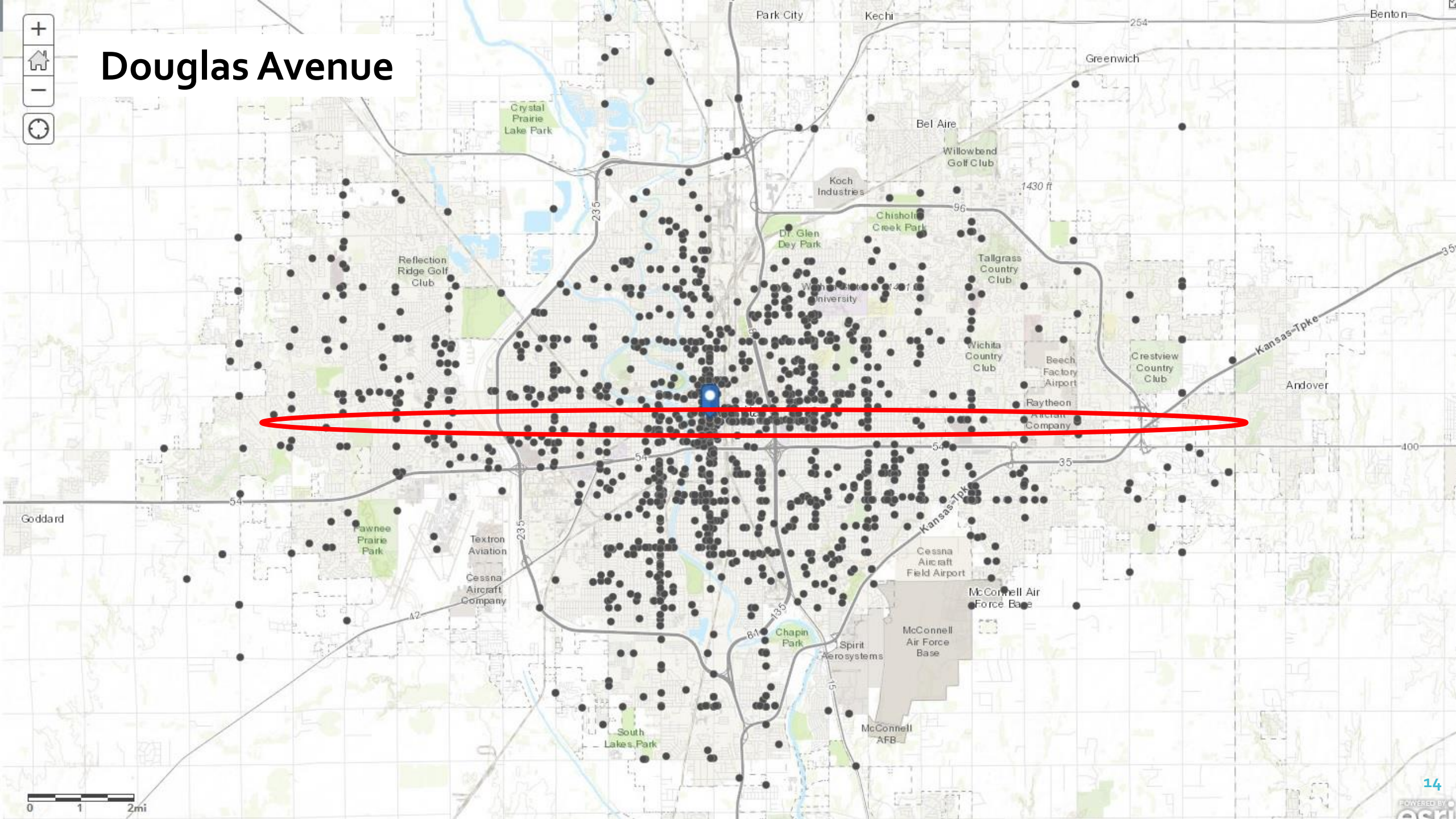




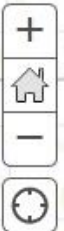
0 1 2mi



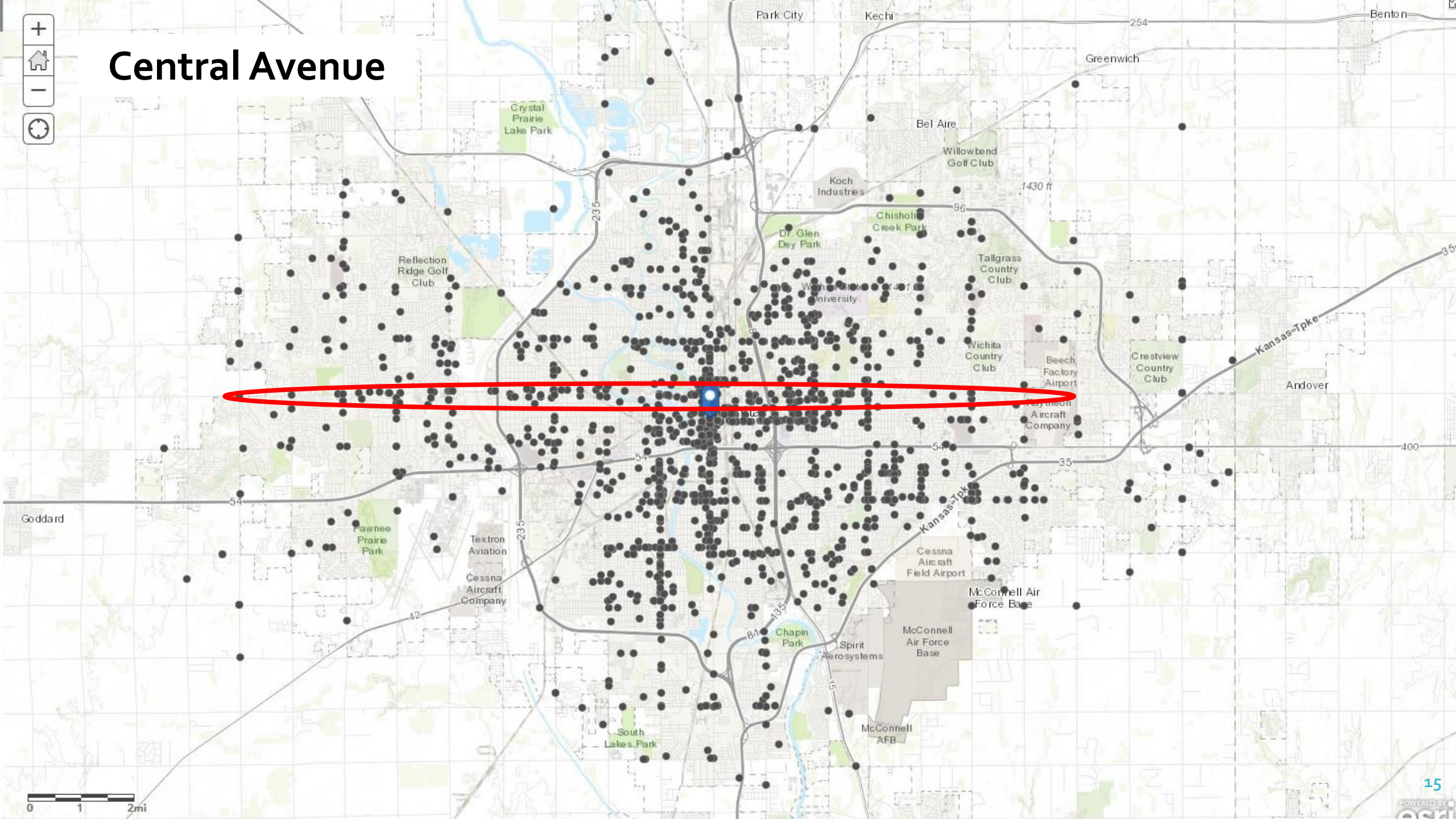
# Douglas Avenue



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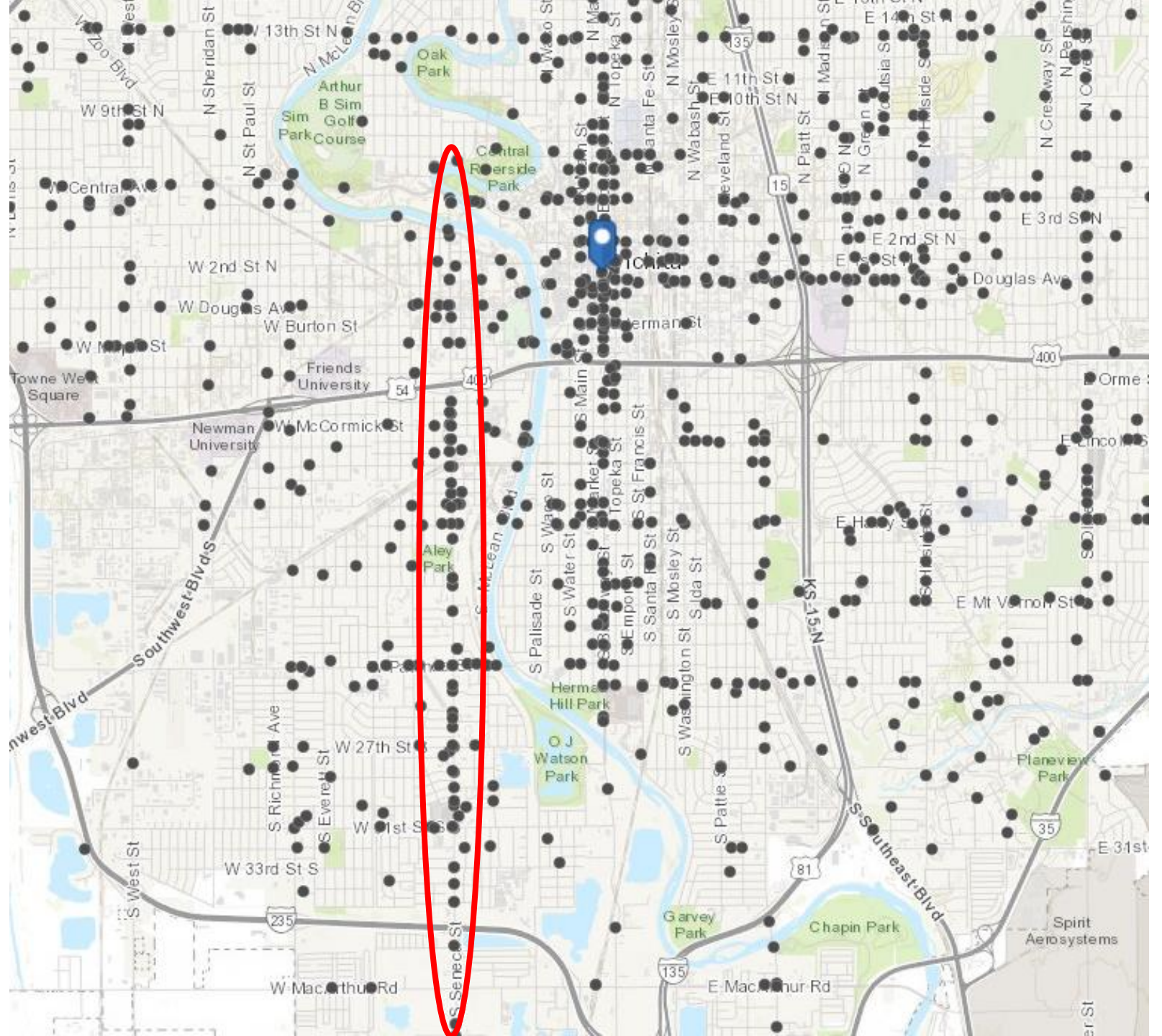


# Central Avenue



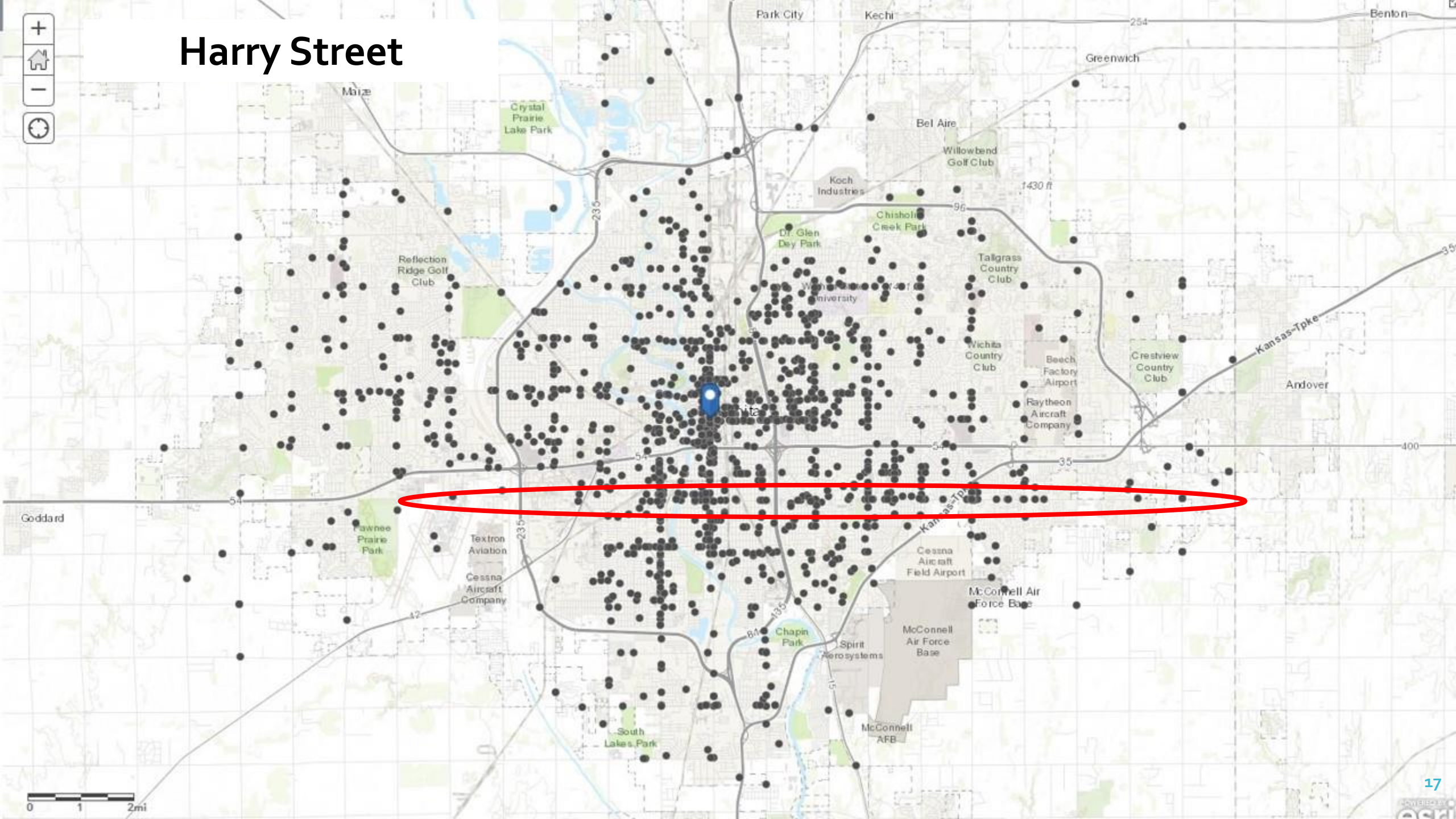
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# Seneca Street

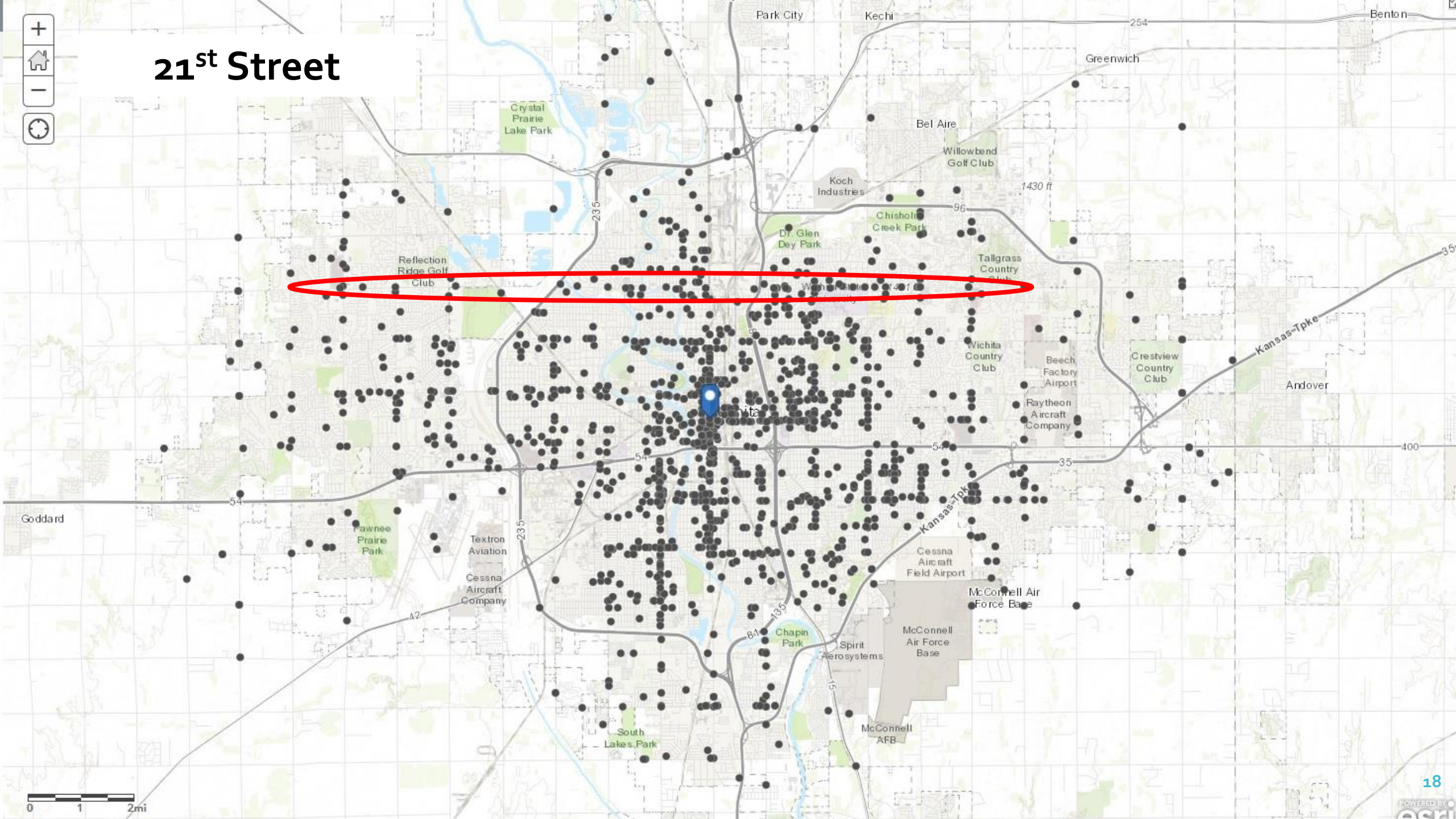
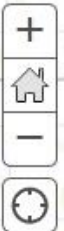




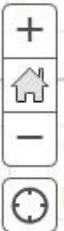
# Harry Street



# 21<sup>st</sup> Street



# 13<sup>th</sup> Street



## Crash Locations: Designated or Not

### Pedestrian Crashes

- **40.7%** (n = 354) occurred in a **pedestrian-designated area**
- **26.7%** (n = 232) occurred **outside a pedestrian-designated area**
- **32.6%** (n = 283) of crashes occurred in an area where **no pedestrian-designated space** was available

### Cyclist Crashes

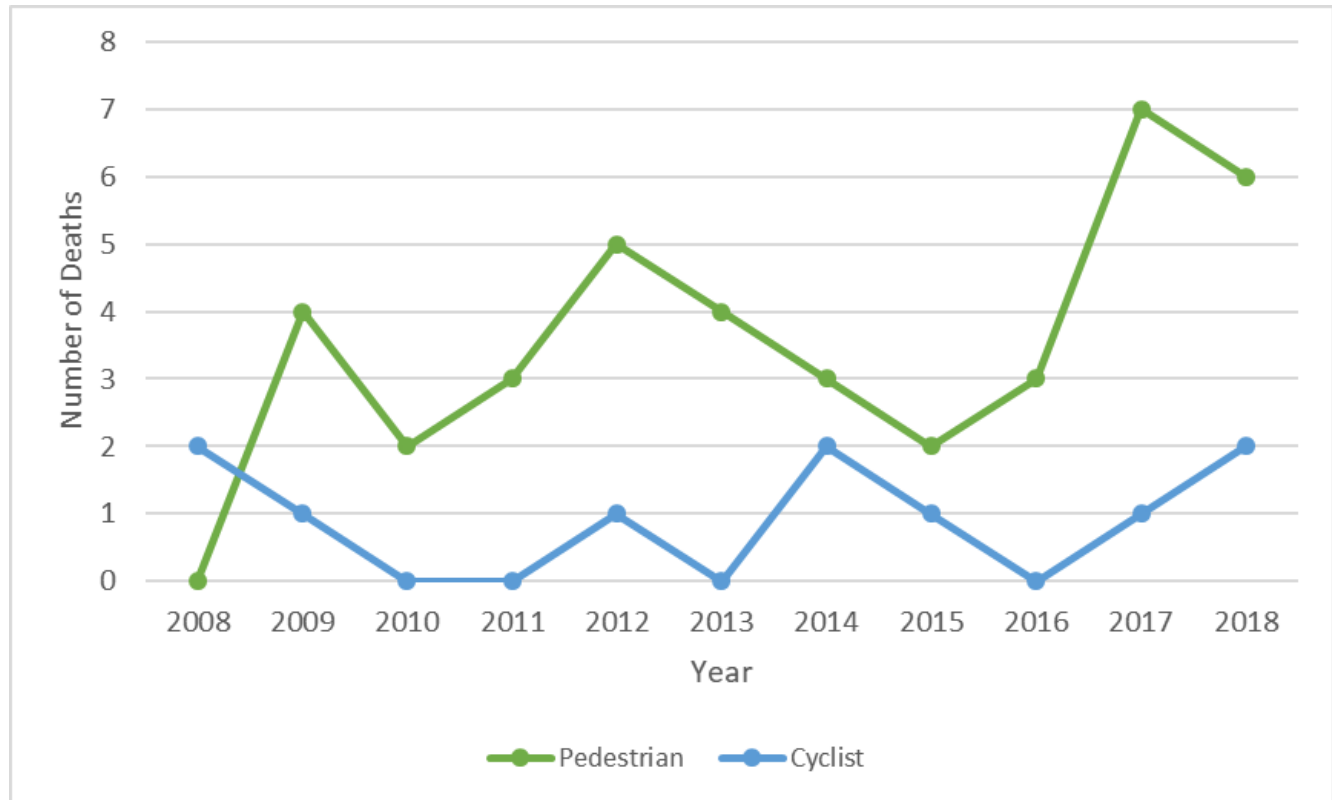
- **56.7%** (n = 506) occurred in a **cyclist-designated area**
- **16.3%** (n = 145) occurred **outside a cyclist-designated area**
- **27.0%** (n = 241) of crashes occurred in an area where **no cyclist-designated space** was available

# Injuries

- **93.4% (n=1,696)** of reported crashes resulted in an **injury**
- Among the crashes with reported injuries, **78.8% (n=1,336)** included information on whether pedestrian or cyclist requested medical assistance

# Fatalities

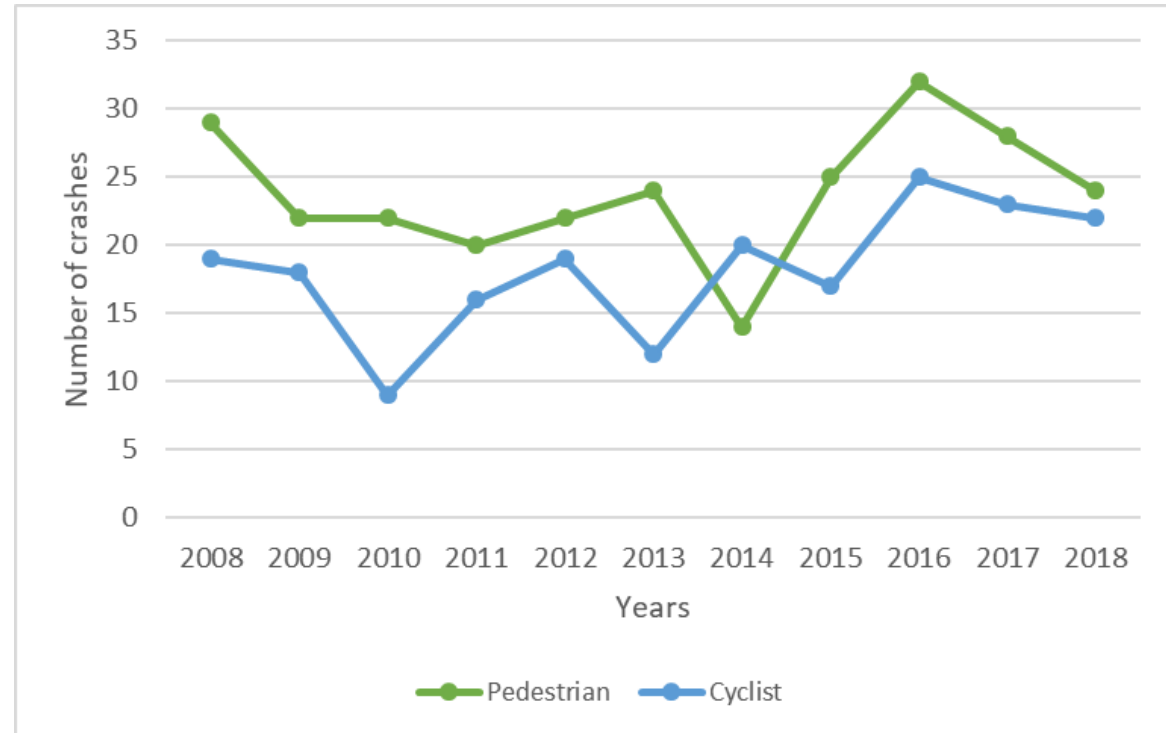
## Number of Pedestrian and Cyclist Deaths from 2008 through 2018



**2.7% (n=49)** of all crashes resulted in the **death** of a pedestrian or cyclist

# Hit and Run

## Hit and Run Crashes: Trends Over Time



# Citations

- **91.6%** (n = 1,666) included citation information
  - Of these, **28.9%** (n=481) indicated having **issued a citation** to one or more of the involved parties
- Who was cited?
  - **Pedestrian/cyclist** only cited (22.1%, n = 106)
  - **Driver** only cited (74.5%, n = 357)
  - **Both** parties cited (3.3%, n = 16)



## Citation Reason

- **26.7%** (n = 119) of citations were issued for **failure to yield**, whether that was failing to yield to traffic, a stop sign, or a private drive
- **22.7%** (n = 101) of citations were issued for **not having proof of insurance** or expired tag
- **18.0%** (n = 80) were issues for **inattentive driving**
- **12.8%** (n = 57) were issued for **failure to obey traffic regulations**

## Crash Conditions – Time of Day/Lighting

### Pedestrian Crashes

- **57.4%** (n = 509) occurred in the **daylight**, and **33.1%** (n = 294) occurred at **dark with streetlights**

### Cyclist Crashes

- **76.0%** (n = 691) of cyclist crashes occurred in the **daylight**, and **18.0%** (n = 164) occurred at **dark with streetlights**

## Crash Conditions - Weather

### Pedestrian Crashes

- In **92.0%** (n = 819) of motor vehicle crashes involving a pedestrian, **no adverse weather conditions** were reported

### Cyclist Crashes

- **94.1%** (n = 852) occurred when there were **no adverse weather conditions**

## Crash Conditions – Surface Type

### Pedestrian Crashes

- **52.7%** (n = 470) occurred in **blacktop** surfaces
- **46.1%** (n = 411) of crashes occurred in **concrete** surfaces

### Cyclist Crashes

- **52.5%** (n = 474) occurred on a **blacktop** surfaces
- **46.7%** (n = 421) occurred on a **concrete** surface

## Crash Conditions – Surface Conditions

### Pedestrian Crashes

- **89.2%** (n = 791) of crashes occurred on a **dry** surface

### Cyclist Crashes

- **92.2%** (n = 832) of crashes occurred on a **dry** surface

## Crash Conditions - Location

### Pedestrian Crashes

- **46.0%** (n = 419) occurred in **non-intersections**
- **34.4%** (n = 307) occurred in **intersection-related** locations
- **11.0%** (n = 99) occurred in an **intersection**

### Cyclist Crashes

- **42.4%** (n = 387) occurred in **intersection-related areas**
- **23.2%** (n = 212) occurred in **intersections**
- **20.2%** (n = 184) occurred in **non-intersections**
- **12.1%** (n = 110) occurred in **parking lots or driveways**

## Crash Conditions – Vehicle Type

### Pedestrian Crashes

- **56.0%** (n = 488) of crashes involved an **automobile**

### Cyclist Crashes

- **51.9%** (n = 469) of crashes involved an **automobile**

## Crash Conditions – Vehicle Maneuver Before Crash

### Pedestrian Crashes

- In **62.0%** (n = 534) of crashes, the vehicle was **driving straight following the road**
- In **29.9%** (n = 258) of crashes, the vehicle was **making a turn** before the crash

### Cyclist Crashes

- In **52.0%** (n = 462) of crashes, the vehicle was **driving straight, following the road**
- In **26.7%** (n = 237) of crashes, the vehicle was making a **right turn**
- In **10.9%** (n = 97) of crashes, the vehicle was making a **left turn**



## Crash Conditions – Vehicle Damage

### Pedestrian Crashes

- Of the pedestrian crashes reported, **81.9%** indicated **minimal damage** (36.7%; n = 249) to **no damage** (45.2%; n = 307)

### Cyclist Crashes

- Of the cyclist crashes reported, **87.9%** (n = 650) indicated **minimal damage** (60.0%; n = 450) to **no damage** (27.9%; n = 209)

## Pedestrian or Cyclist Actions – Crash Locations

### Pedestrian Crashes

- **36.5%** (n = 317) in a **crosswalk or bikeway** before impact
- **22.6%** (n = 22.6) in an **area without a crosswalk or bikeway**
- **19.0%** (n = 165) were not in **available crosswalk or bikeway** (not in an intersection)

### Cyclist Crashes

- **50.4%** (n = 450) in a **crosswalk or bikeway** before the impact
- **14.0%** (n = 125) in an **intersection without a crosswalk or bikeway**
- **13.0%** (n = 116) in an **area without a crosswalk or bikeway**

## Pedestrian or Cyclist Actions – Action Before Crash

### Pedestrian Crashes

- In **61.4%** (n = 536) of cases, **the pedestrian was entering or crossing the road** before the crash
- In **23.3%** (n = 203) of cases, the pedestrian was **playing or standing** before the crash

### Cyclist Crashes

- In **56.3%** (n = 506) of the cases, cyclists were **riding on road**
- In **42.1%** (n = 378) of cases, cyclist were **entering or crossing road** before the crash

## Pedestrian or Cyclist Actions – Obedience to Traffic Signal

### Pedestrian Crashes

- In **58.8%** (n = 472) of the reported crashes, there was **no pedestrian signal** to obey

### Cyclist Crashes

- In **52.5%** (n = 427) of cyclist crash reports, there was **no cyclist traffic signal** to obey

## Driver License Status and Restrictions

### Pedestrian Crashes

- In **86.8%** (n = 560) of motor vehicle crashes involving a pedestrian, the driver's license was valid
- Of those, **60.2%** (n = 373) reported no license restrictions

### Cyclist Crashes

- In **91.5%** (n = 665) of motor vehicle crashes involving a cyclist, the driver's license was valid
- Of those, **59.3%** (n = 424), reported no license restrictions

# Impairment

## Pedestrian Crashes

- **80.0%** (n = 805) of crashes involving a pedestrian, there was no evidence of the pedestrian's impairment
- **92.7%** of pedestrian crashes (n = 841), there was no evidence of driver impairment

## Cyclist Crashes

- **91.4%** (n = 850) of crashes involving a cyclist, there was no evidence of the cyclist's impairment
- **97.8%** of cyclist crashes (n = 869), there was no evidence of driver impairment

# Crash Fault

## Pedestrian Crashes

- In **46.3%** of cases (n = 211), the **pedestrian** was at fault
- In **43.0%** of cases (n = 196), the **driver** was at fault
- In **<5%** (n = 20) of cases, **both** were at fault

## Cyclist Crashes

- In **46.9%** of cases (n = 239), the **driver** was at fault
- In **42.4%** of cases (n = 216), the **cyclist** was at fault
- In **<5%** of cases (n = 20), **both** were at fault

## Crash Reason

### Pedestrian Crashes

- Failure to yield (32.1%, n = 135)
- Inattentiveness (24.0%, n = 101)
- Running red light (13.6%, n = 57)

### Cyclist Crashes

- Failure to yield (38.1%, n = 175)
- Inattentiveness (29.6%, n = 136)
- Failure to obey traffic regulations (15.9%, n = 73)



# Next Steps



Multi-level approach



Conflicting turning signals



Infrastructure and environmental related projects



Motor vehicle safety features



At-risk groups



Psychological implications



Policy Changes

## Summary

- This study suggests that, on average, **165 pedestrian and cyclist crashes occur each year** in the city of Wichita, Kansas
- This study also suggests that pedestrian and cyclist **crash incidents have continually increased** from 2008 through 2018
- Motor-vehicle crashes involving a pedestrian or cyclist **occurred often in pedestrian/cyclist-designated spaces**



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Thank you!

**QUESTIONS ?**

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