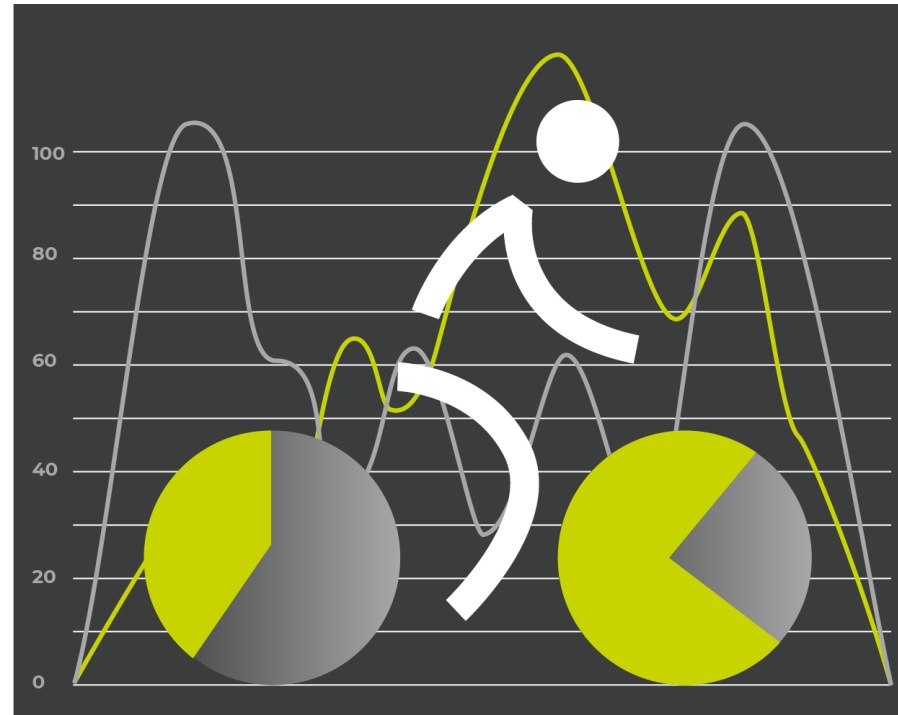# How to Make Your Bike Data Count

Co-hosted by Eco-Counter and the League of American Bicyclists
Tuesday, July 20, 2021

eco counter

Downtown Management

Active Transportation

Natural Areas

Smart Cities & ITS

Parks & Recreation

Bicycle Tourism

THE LEAGUE » BICYCLE FRIENDLY AMERICA

city of san luis obispo

THE LEAGUE » BICYCLE FRIENDLY AMERICA

BICYCLE FRIENDLY
STATE

THE LEAGUE » BICYCLE FRIENDLY AMERICA

BICYCLE FRIENDLY
COMMUNITY

THE LEAGUE » BICYCLE FRIENDLY AMERICA

BICYCLE FRIENDLY
BUSINESS

THE LEAGUE » BICYCLE FRIENDLY AMERICA

BICYCLE FRIENDLY
UNIVERSITY

10.10.14
Cyclists today
278

RIDES

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

ROUTE OF THE WEEK

BINGO

WATCH FOR BICYCLES

Meet & Greet with Coryn Rivera

TAKE US FOR A SPIN

EVERY MILE COUNTS!

Log your miles and reap the benefits every month! (see below)

NAME	MILES EA. WAY	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOV.	DEC.

08.30.13
CYCLISTS TODAY
1241

CYCLISTS THIS YEAR

Thank you for bicycling

SFMTA

Is it safe or dangerous to ride a bicycle in your neighborhood? (n=22,335)
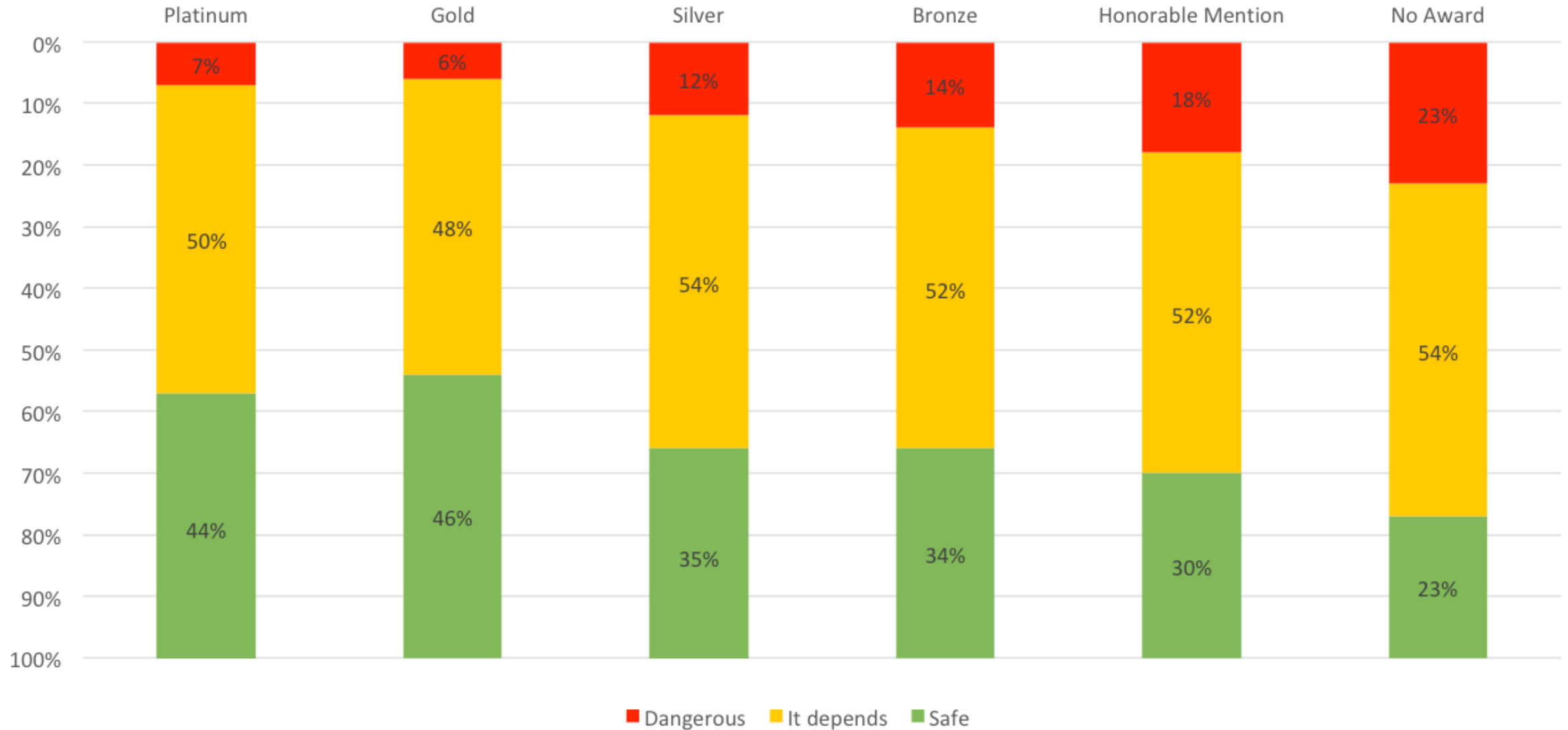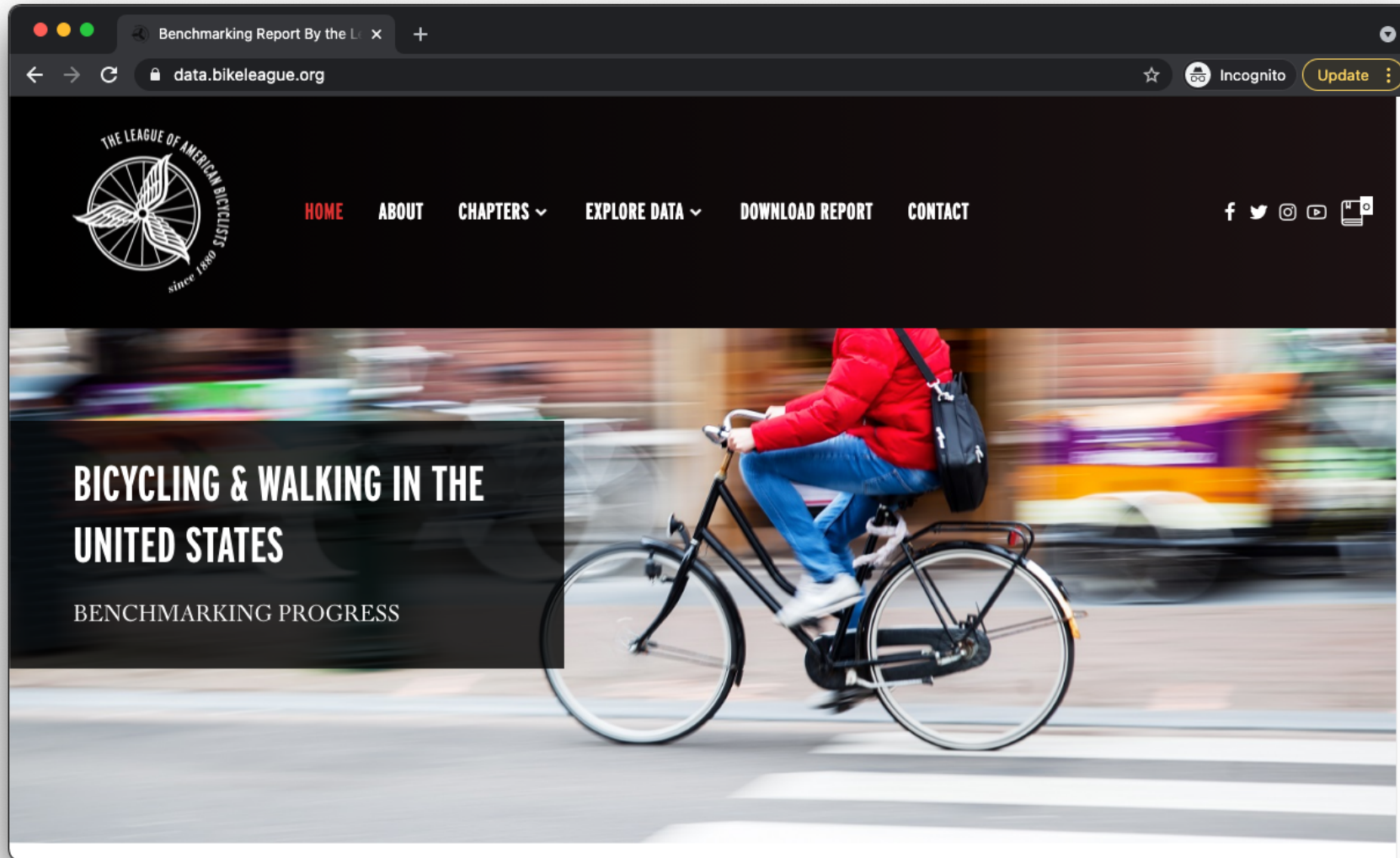
	Platinum	Gold	Silver	Bronze	Honorable Mention	No Award
Dangerous	7%	6%	12%	14%	18%	23%
It depends	50%	48%	54%	52%	52%	54%
Safe	44%	46%	35%	34%	30%	23%

■ Dangerous ■ It depends ■ Safe

data.bikeleague.org

data.bikeleague.org
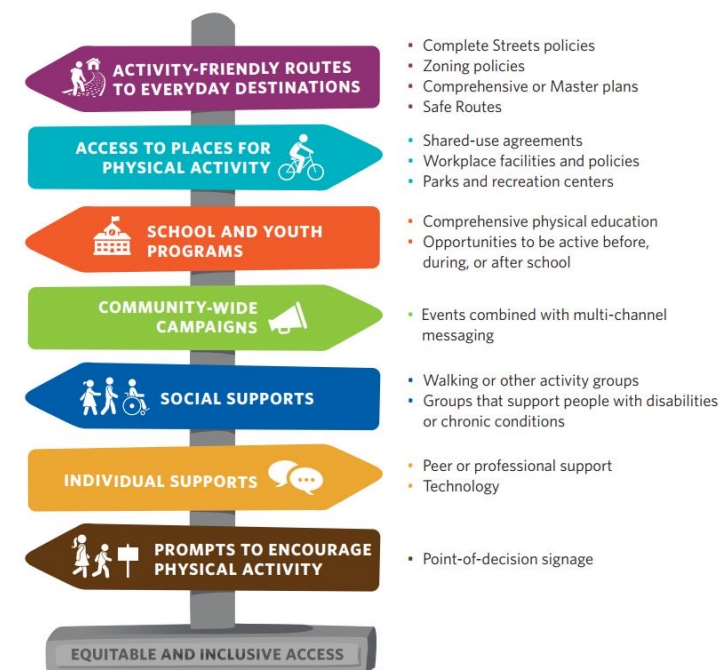
BIKES COUNT:
a data competition this bike month

STAY UP TO DATE

Receive Bicycle Friendly America news delivered straight to your inbox every other week.

Subscribe by RSS

SHARE THIS
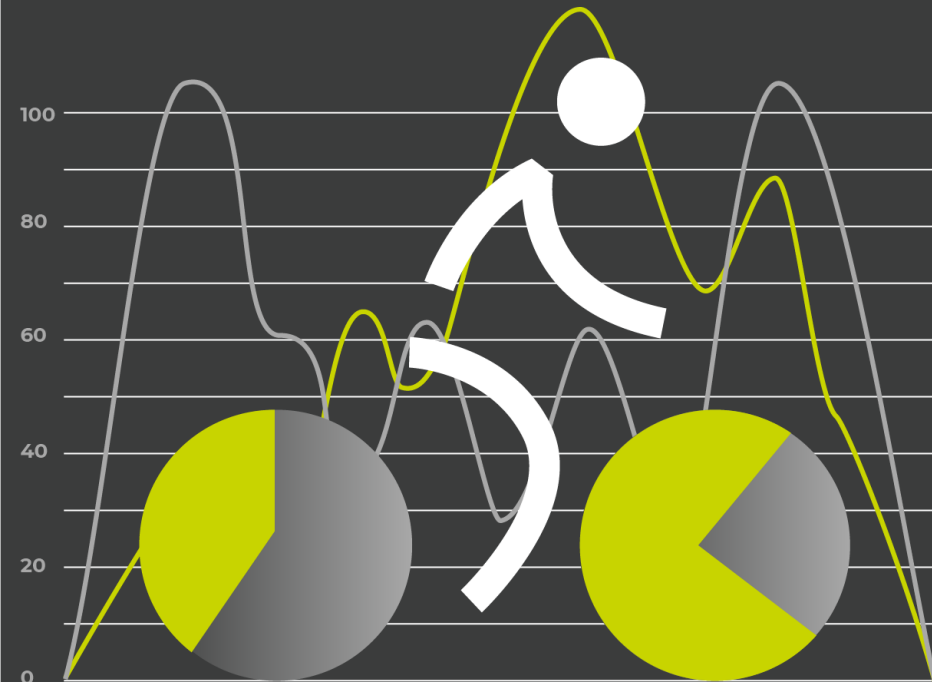
May 3, 2021

BIKES COUNT: A DATA COMPETITION DURING BIKE MONTH WITH ECO-COUNTER

BICYCLE FRIENDLY AMERICA
BICYCLE FRIENDLY COMMUNITY

by Amelia Neptune

*Eco-Counter and The League are proud to announce the **Bikes Count** data competition during this May's Bike Month! Check out the following blog from our friends at Eco-Counter for more details on how to enter!*

INTRODUCING THE FIRST EVER 'BIKES COUNT' COMPETITION

We have been working on something really exciting for Bike Month! In collaboration with The League of American Bicyclists, are we proud to announce 'Bikes Count', a data competition during this May's Bike Month.

Are you looking to use **bike data to make an impact in your community**? Have you been putting off analyzing and communicating that messy Excel sheet on your desktop? Do you have some bike data that never really got used or made a splash? **Send us your data!**

Bikes Count

Bike count data analysis, trends and key takeaways for the City of Charlottesville, Virginia

July 2021

1,535,898

Charlottesville, VA

Count Program Timeline

Manual Counts

TJPDC-led to support LRTP
21 locations

West Main Street

1 Tube Counter
+TJPDC Counts
11 locations

Expand Count Equipment

2 Zelt Loops
2 Tube Counters
1 Mobile Multi

2009 **2011** **2013** **2015** **2016** **2018** **2020**

Manual Counts

Volunteer-led
5 sites

Student Research

1 Tube Counter
+ TJPDC Counts
18 locations

Emmet Street

3 PYRO Box

....

All equipment installed
+ TJPDC counts
10 locations

Equipment

- 4 - Tube Counters ("Temporary" Bikes)

- 3 - PYRO Box ("Temporary Pedestrians/Bikes* *does not distinguish)

- 1 - Mobile Multi ("Temporary" Bike/Ped)

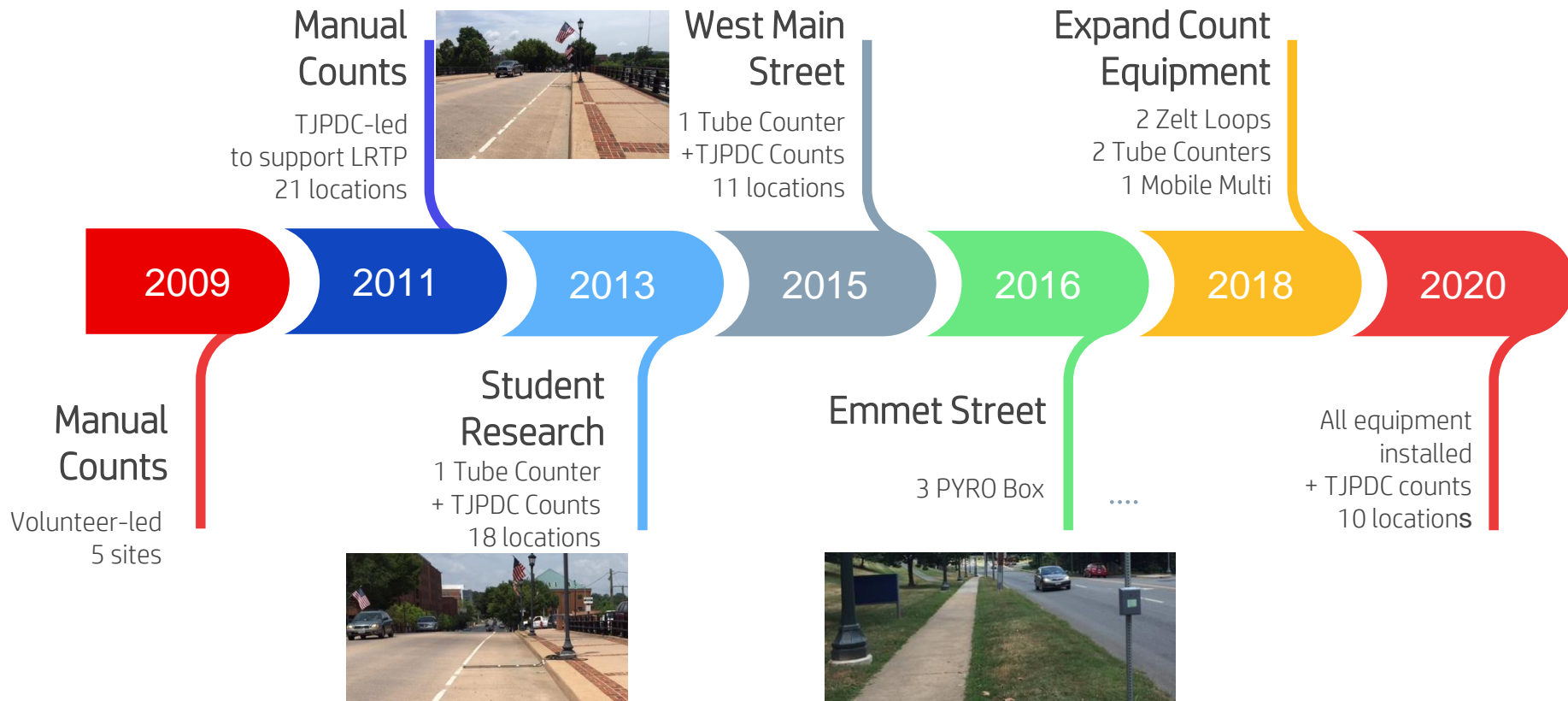- 2 - Zelt Loops (Permanent In-Road Bikes)
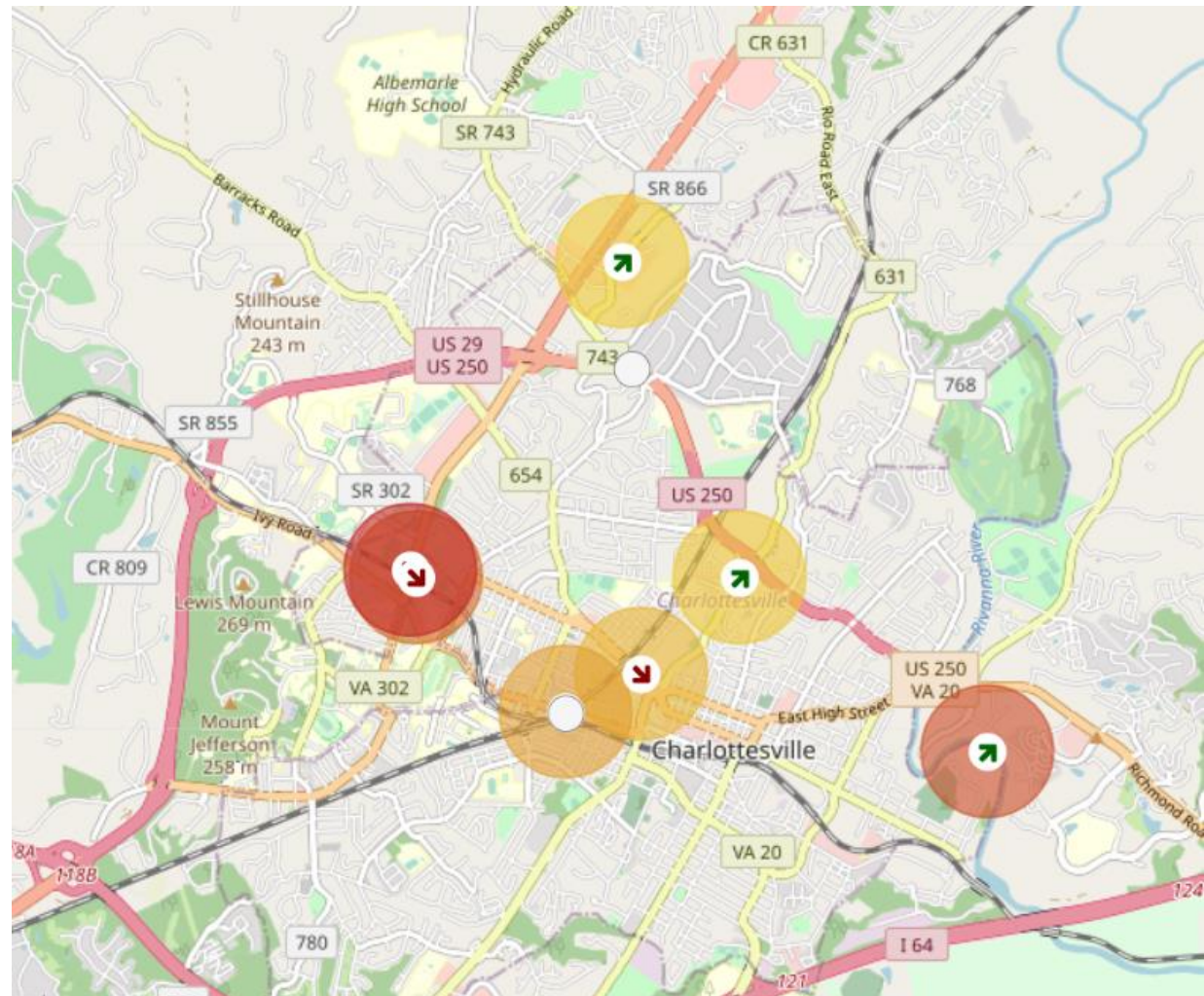
Issues that affect data quality

- Improper installation
- Trees/bushes/vegetation
- Maintenance vehicles displacing/destroying equipment
- No Replacement parts on hand
- Roadway closures
- Weird signals/interference
- Bugs
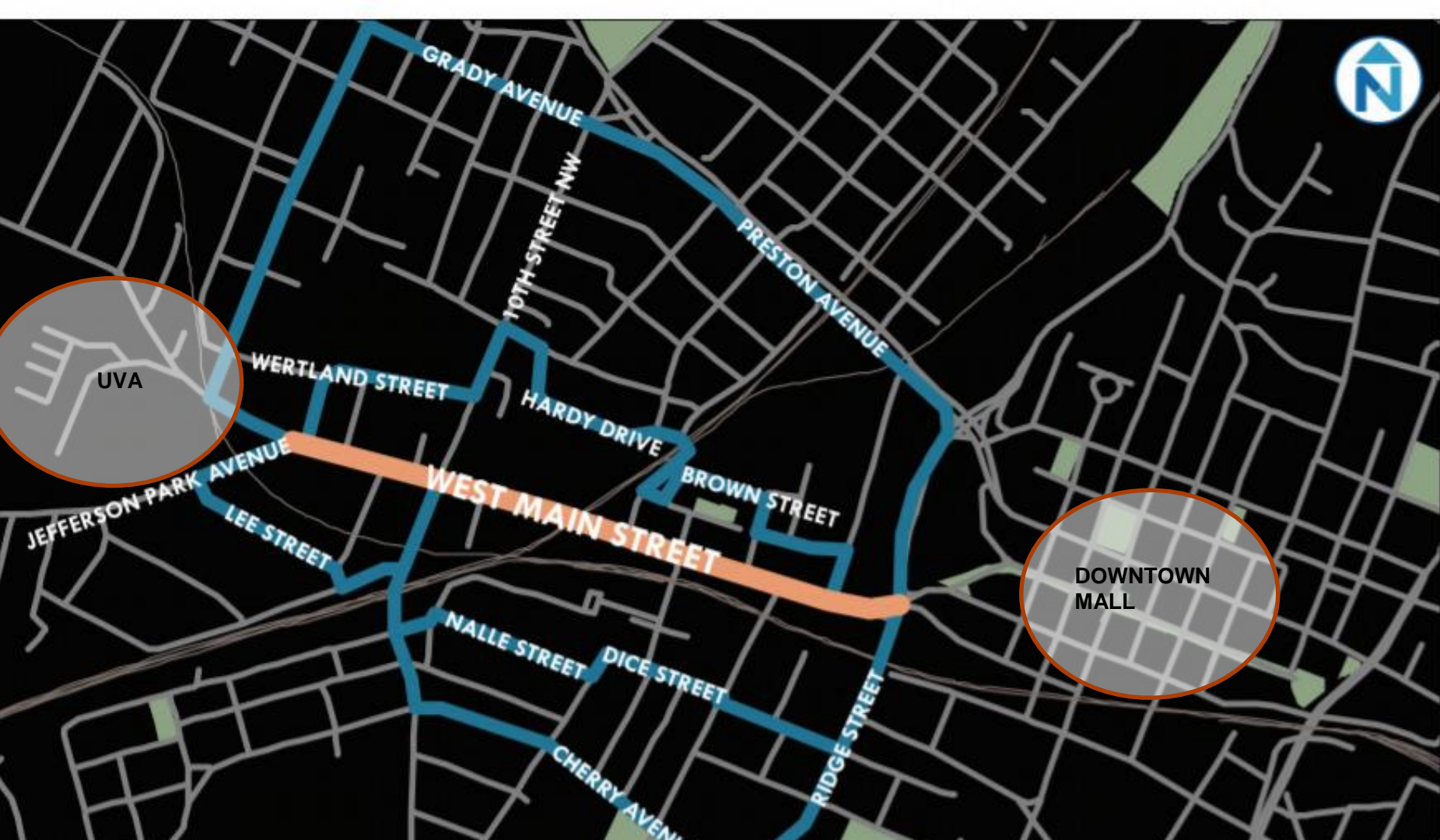
Narrow Bike Lanes and Potential for "Dooring"

Bicycle + Pedestrian Counts

What did we learn?

Bike commuters travel west (to UVA) in the AM and east in the PM

West Bound – Morning Commute
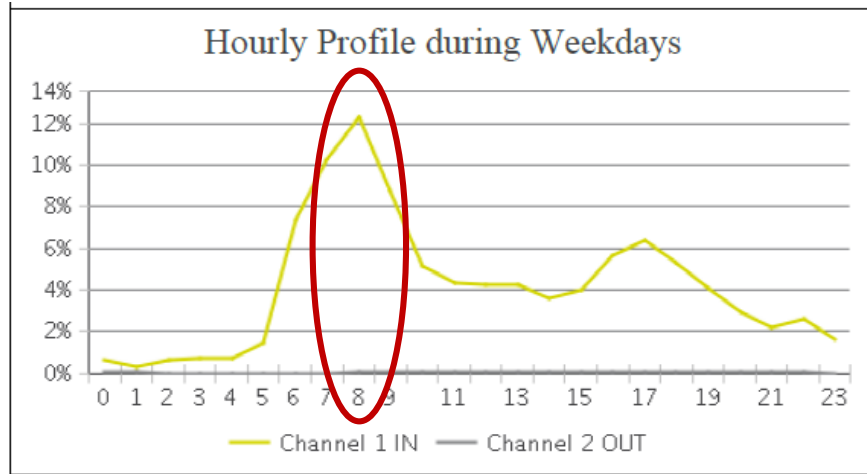
East Bound – Evening Commute

What did we learn?

Weekly Traffic
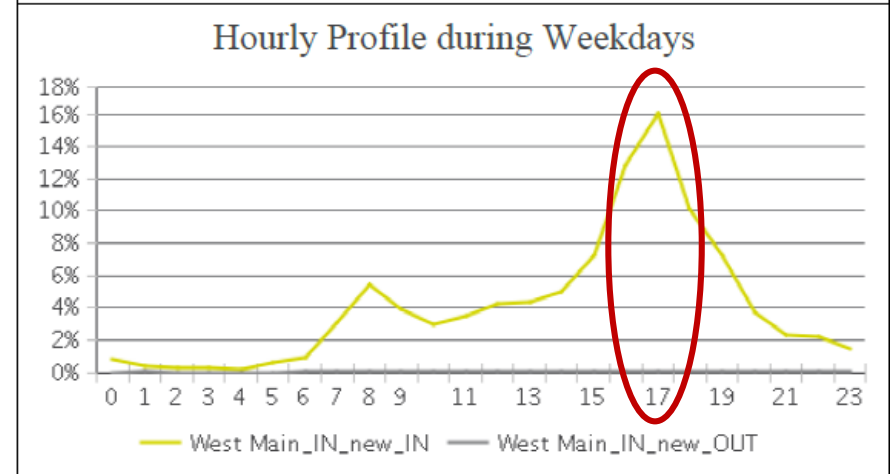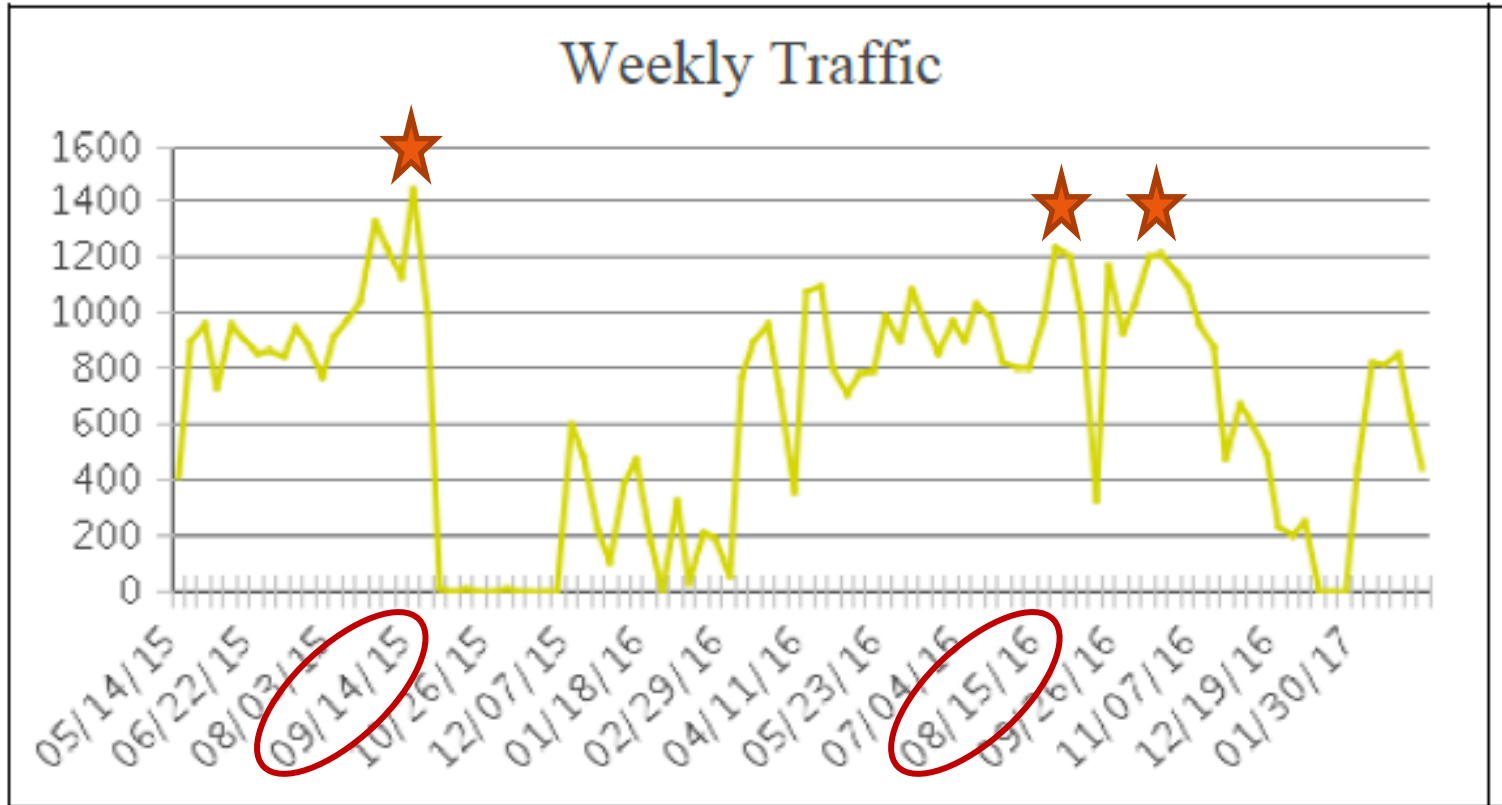
What did we learn?

- Low incidence of wrong way riding
  (Caveat – sidewalks)

• Distribution by Direction:
■ IN: 99%
■ OUT: 1%
1%
99%

• Distribution by Direction:
■ IN: 99%
■ OUT: 1%
1%
99%
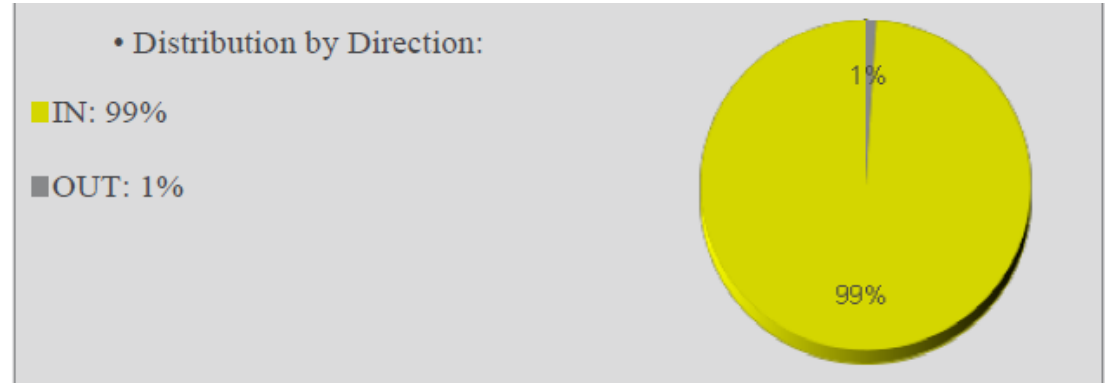
What did we learn?

- Low occurrence of bicycle riding on Sunday

- Peak time occurs after regular church services

Weekly Profile

Hourly Profile during the Weekend
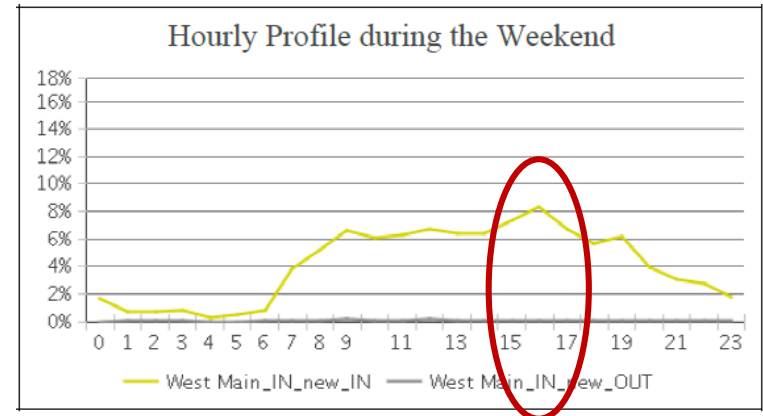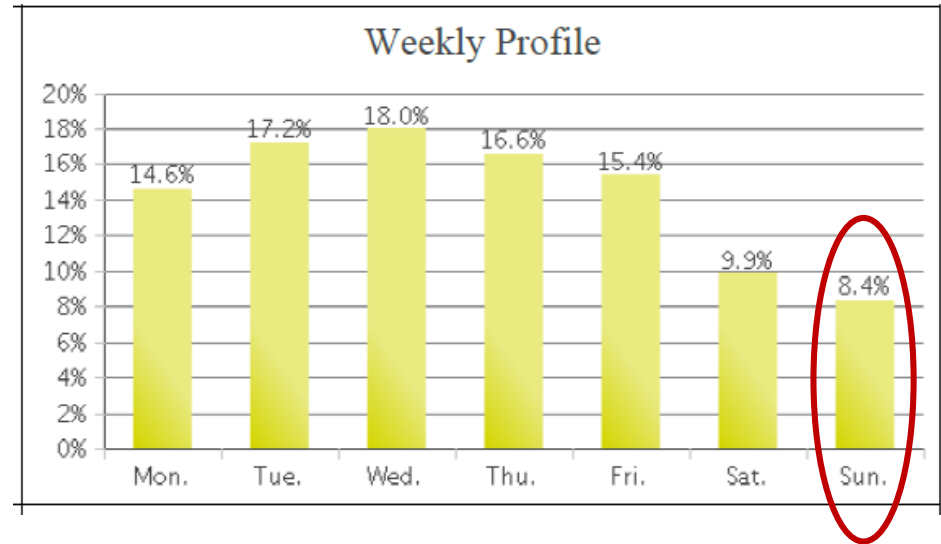
Cycling over the years: 2015-2021 West Main Street at the bridge

Seasonal (winter)
dip in bikes counted

Construction
for almost one year

Significant growth
in cycling during summer 2019

Summer 2021
off to a strong start

3500
3000
2500
2000
1500
1000
500
0

6/1/2015   6/1/2016   6/1/2017   6/1/2018   6/1/2019   6/1/2020   6/1/2021

eco counter
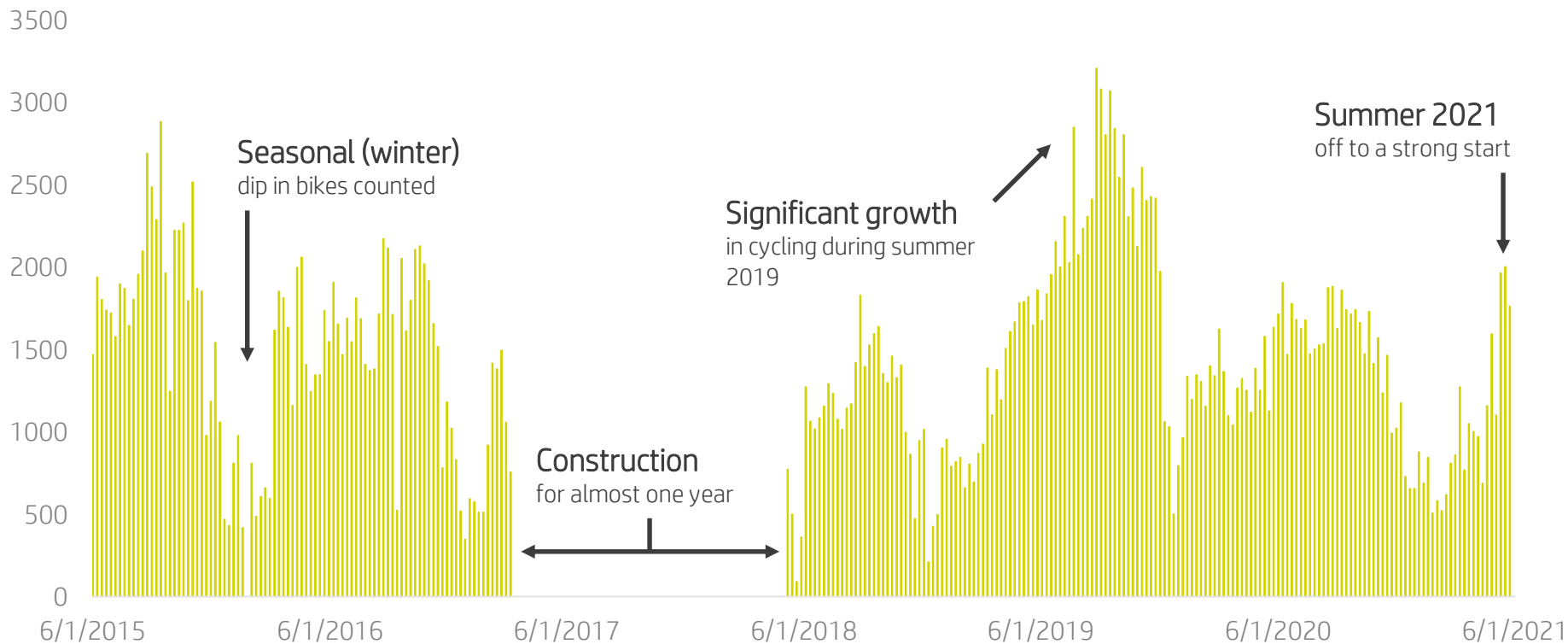
Weekly total bike counts for West Main EB/WB at the bridge.

West Main Street at the bridge - cycling over the years

53,270

Bikes counted
during the 2015 cycling
season

50,450

Bikes counted
during the 2016 cycling
season, down 5% from
the year before

+26%

Growth in cycling during
the 2019 season,
compared to 2015

-10%

Decrease in bikes counted
during 2020, likely due to
the pandemic

Weekly bike counts for West Main EB/WB Total at the bridge.
Bicycle counts did not span the entire 2015 cycling season: April 1 to May 16 were not captured.
Total bike season counts have been estimated for the missing periods to generate a full-season count.

eco
counter

Average daily traffic across the network, April to October, 2020

Legend:
- > 200 cyclists / day (dark red)
- 100 < < 200 cyclists / day (orange)
- 50 < < 100 cyclists / day (yellow)
- < 50 cyclists / day (grey)

Map labels:
- Hillsdale Drive
- JWW at Rescue Station
- Emmet Street
- Preston Avenue
- West Main Street at Bridge
- Riverview Park 2

eco counter
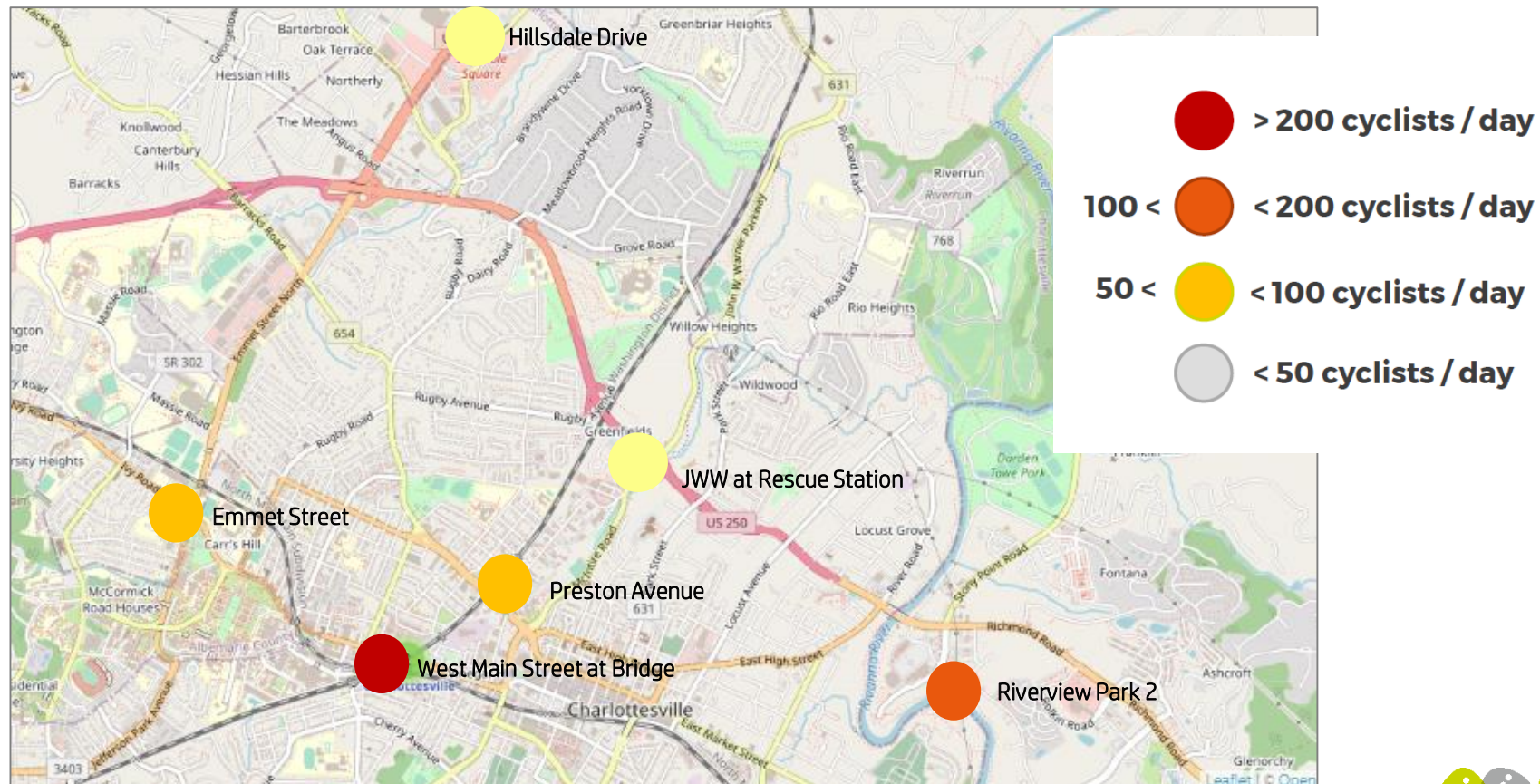
The 2020 cycling season: daily average bike counts

Bar chart showing daily average bike counts:

- West Main at The Bridge: 225
- Riverview Park 2: 101
- Emmet Street: 55
- Preston Avenue: 52
- JWW at Rescue Station: 21
- Hillsdale Drive: 6

Y-axis values: 0, 50, 100, 150, 200, 250
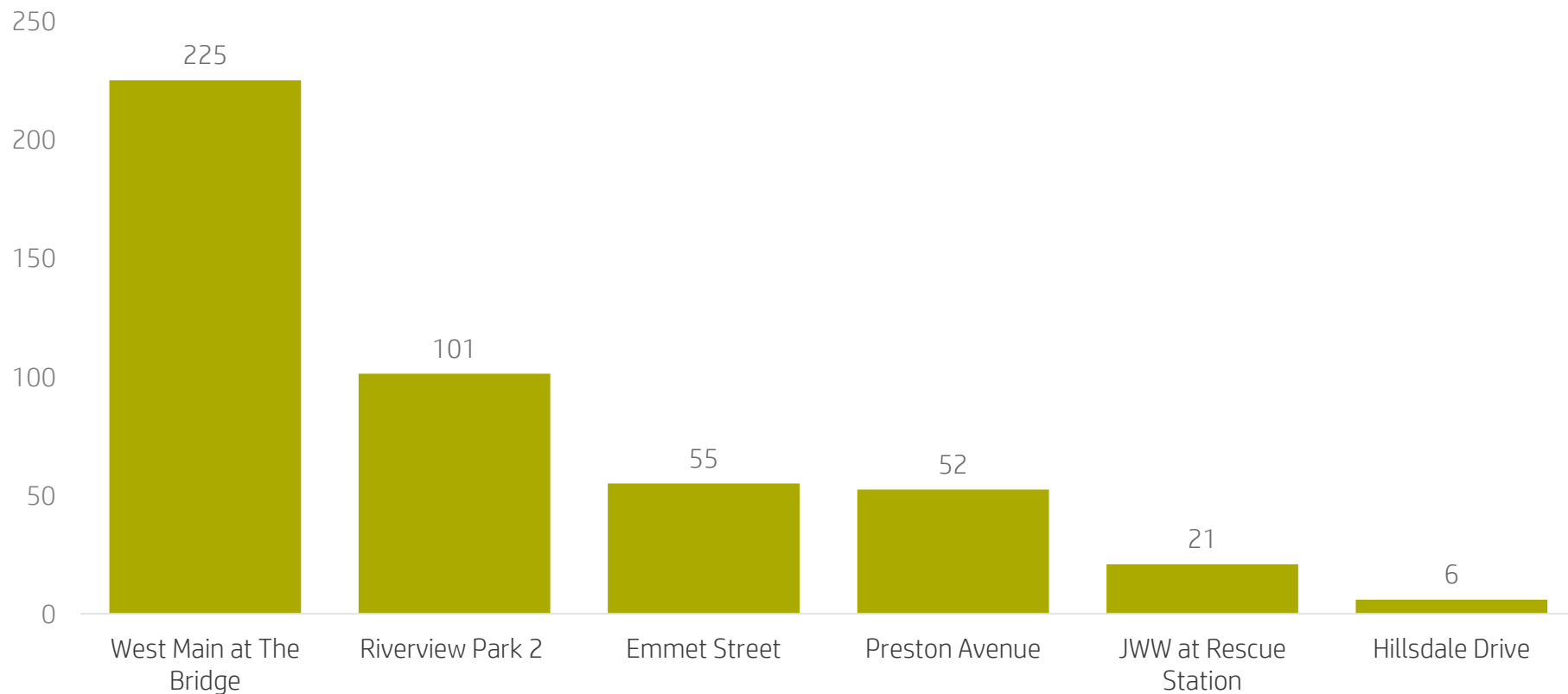
Calculated based on average daily cyclist counts between April 1, 2020 and October 31, 2020

eco counter

The pandemic reduced weekday cycling in Charlottesville, but increased weekend cycling

Weekend cycling increased in 2020 compared to 2019, overall reducing some of the weekday losses

10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0

12:00 AM 1:00 AM 2:00 AM 3:00 AM 4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM 7:00 PM 8:00 PM 9:00 PM 10:00 PM 11:00 PM

—— 2020 (Weekdays)   —— 2020 (Weekends)   —— 2019 (Weekdays)   —— 2019 (Weekends)
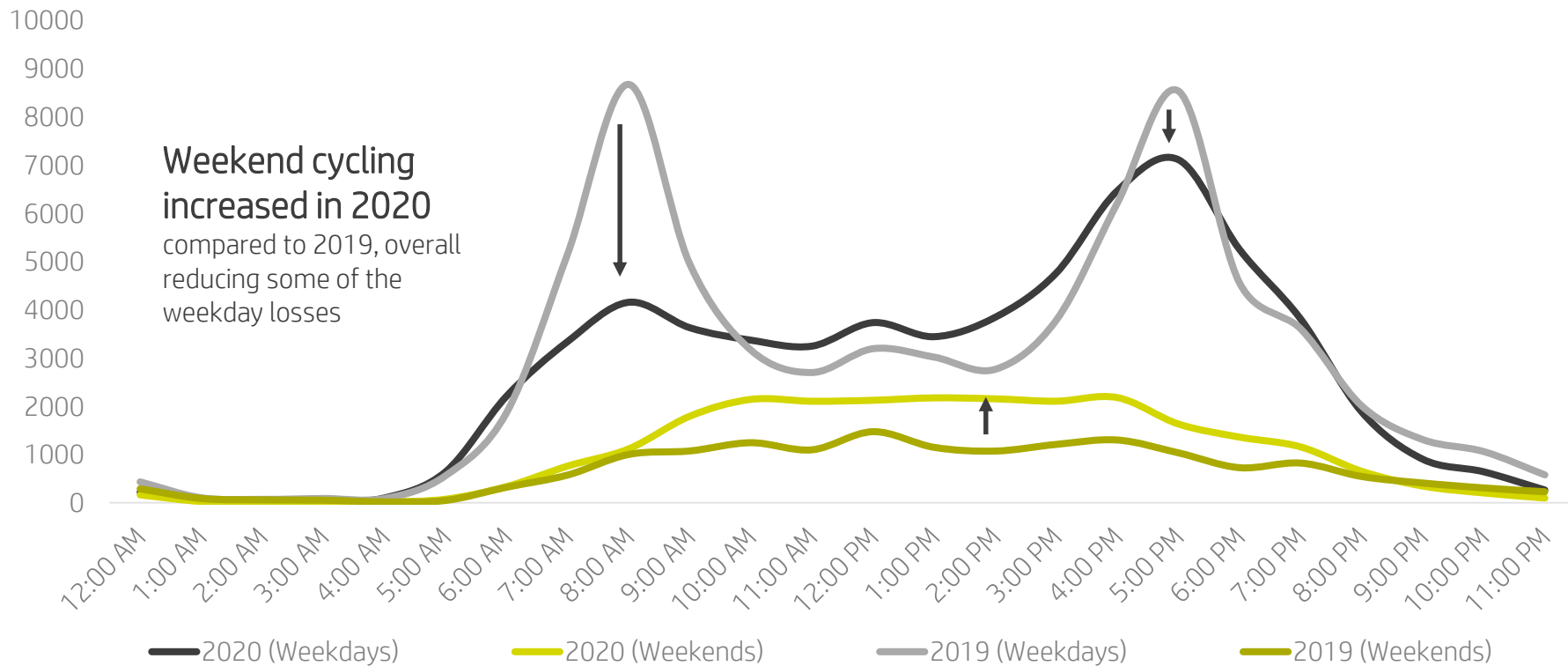
Calculated using data from all sites, comparing the 2020 cycling season (April to October) to the 2019 cucling season.

eco counter

Key takeaways

Recreational counting locations (JWW at Rescue Station and Riverview Park) had strong counts throughout 2020 and 2021, notably on weekends

At West Main, activity in 2019 **was 33% higher than in 2016** and 26% higher than in 2015

Overall, **the pandemic suppressed bike counts** in Charlottesville. Early 2021 signs suggest a possible return to 2019 levels

Tips to make your data COUNT...

Tip #1: Right equipment/right location

Tip #2: Have a plan!

Tip #3: Validate, validate, validate
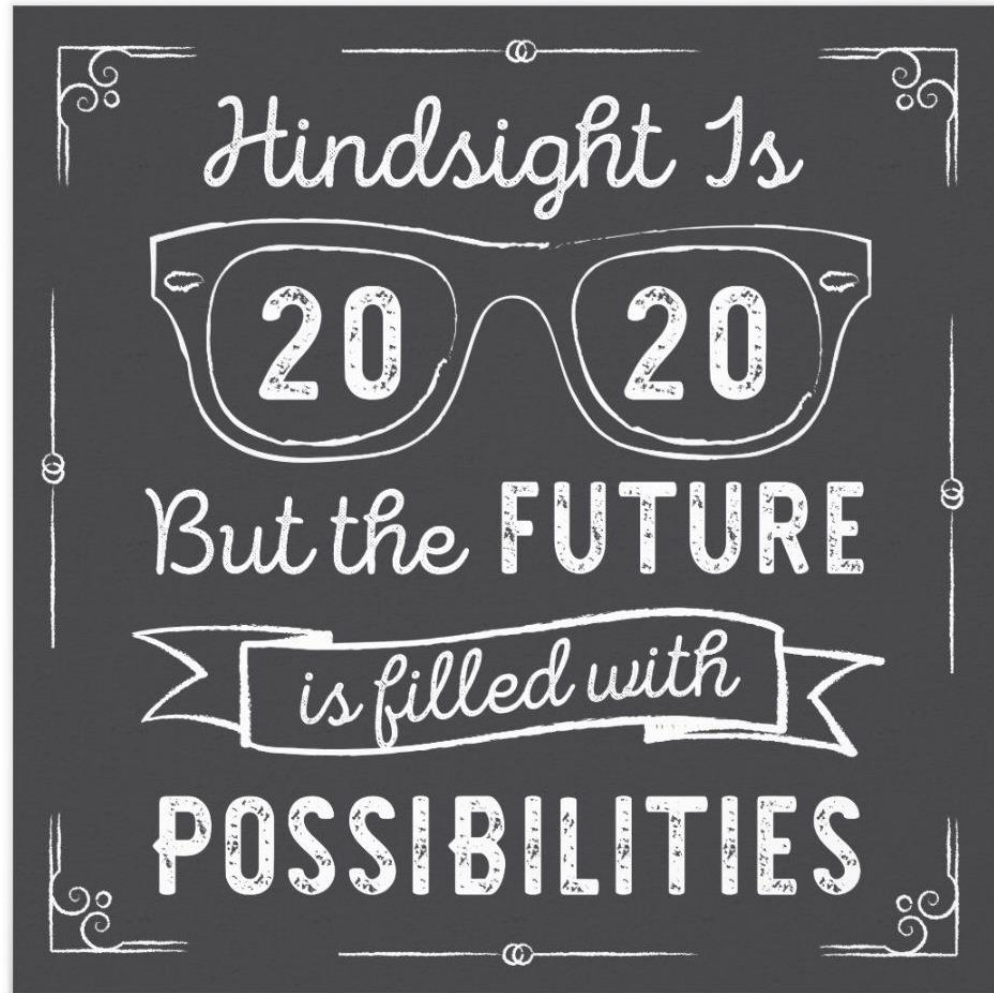
Questions?

Amanda Poncy, Bicycle and Pedestrian Coordinator
City of Charlottesville
poncy@Charlottesville.gov

MORE PEOPLE ON BIKES

What do we do?

Removing barriers to cycling

both real and imagined.

improving cycling infrastructure

advocating for policy change to benefit cyclists, and

educating the community on cycling topics and issues.

Why do we count?

1. Better understand cyclist behaviors.

2. Data helps to advocate for infrastructure

3. Engages volunteers

Goals

1. Coordinate counts with bike-ability network audit

2. Conduct neighborhood requested bike counts throughout the year

3. Continue to partner with Boise State University students to conduct counts

4. Continue to leverage our bike counts to help agencies make better bike infrastructure decisions.

5. Count more times (Sat., Mid-day) and locations throughout the year to capture core cyclists.

Registration

Shifts and Dates

Tuesday, May 4th, 2021

1 - 3 of 3 Shifts

Shift ⇕	Start Time ⇕	End Time ⇕	Registrants Needed ⇕	
Title...	Start Time...	End Time...		⌄
AM Bike Count	7:00am (MT)	9:00am (MT)	1/1	Over
Noon Bike Counts	11:00am (MT)	1:00pm (MT)	1/1	Over
PM Bike Count	4:00pm (MT)	6:00pm (MT)	1/1	Over

Wednesday, May 5th, 2021

1 - 3 of 3 Shifts

Shift ⇕	Start Time ⇕	End Time ⇕	Registrants Needed ⇕	
Title...	Start Time...	End Time...		⌄
AM Bike Count	7:00am (MT)	9:00am (MT)	0/1	Over
Noon Bike Counts	11:00am (MT)	1:00pm (MT)	0/1	Over
PM Bike Count	4:00pm (MT)	6:00pm (MT)	0/1	Over

Every September and June

Since 2007

Month long

Additional Research

- Impact of Construction

- School Culture

- Neighborhood Socioeconomic status comparison

- Helmet use vs infrastructure

- Commuter vs leisure

Publish & Share
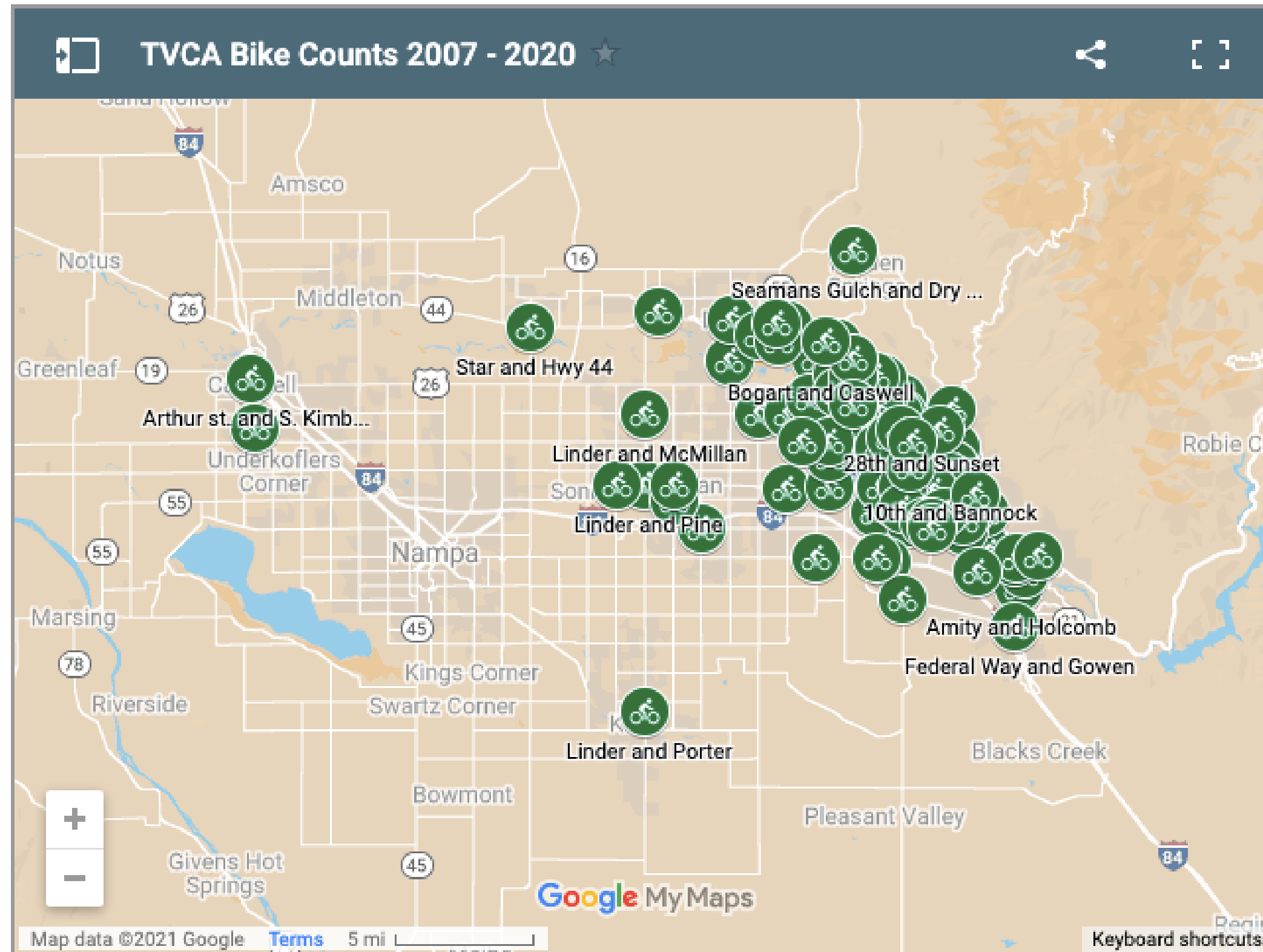
Challenges

- Data organization

- Consistently counting locations

- Analyzing data

- Telling a story

Average Daily Cyclists (2007-2019)

STAR

EAGLE

GARDEN CITY

MERIDIAN

BOISE

KUNA

Average Daily Cyclists
- 0 – 150
- 150 – 300
- 300 – 550
- 550 – 1000
- 1000 – 1600

Level of Traffic Stress
- Low Stress
- Moderate Stress
- High Stress

0   1   2 mi

eco counter

Average Daily Cyclists (2007–2019)

Average Daily Cyclists
- 0 – 150
- 150 – 300
- 300 – 550
- 550 – 1000
- 1000 – 1600

— Existing Bike Facilities

0   0.25   0.5 mi

eco counter
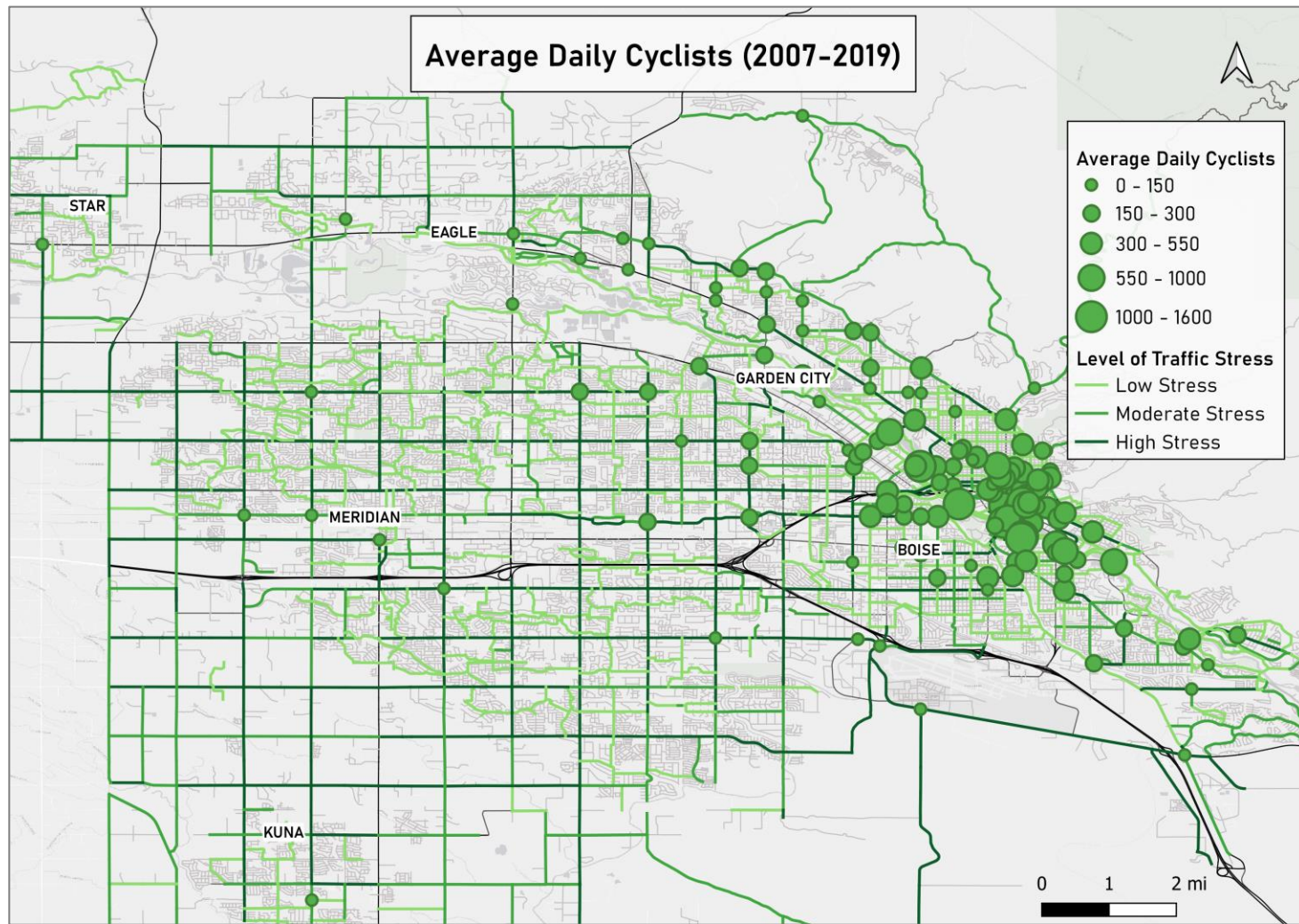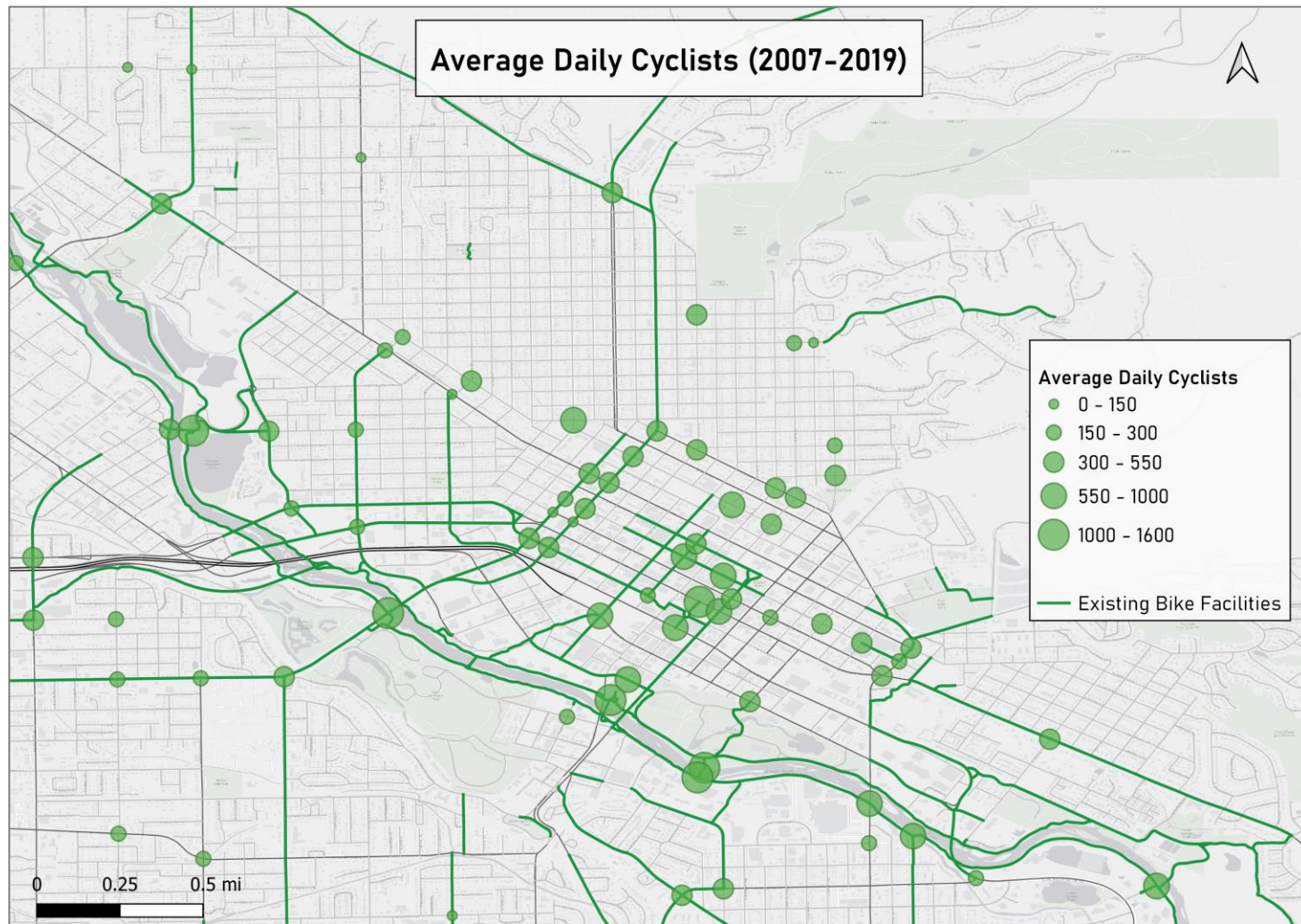
Focus on a busy intersection: 8th & Bannock in Boise, Idaho

A consistently well used intersection
with AADT of 842 between 2010 and 2019

The pandemic drastically reduced counts
in May 2020, complicating year over year comparisons

Legend: 8th / Bannock
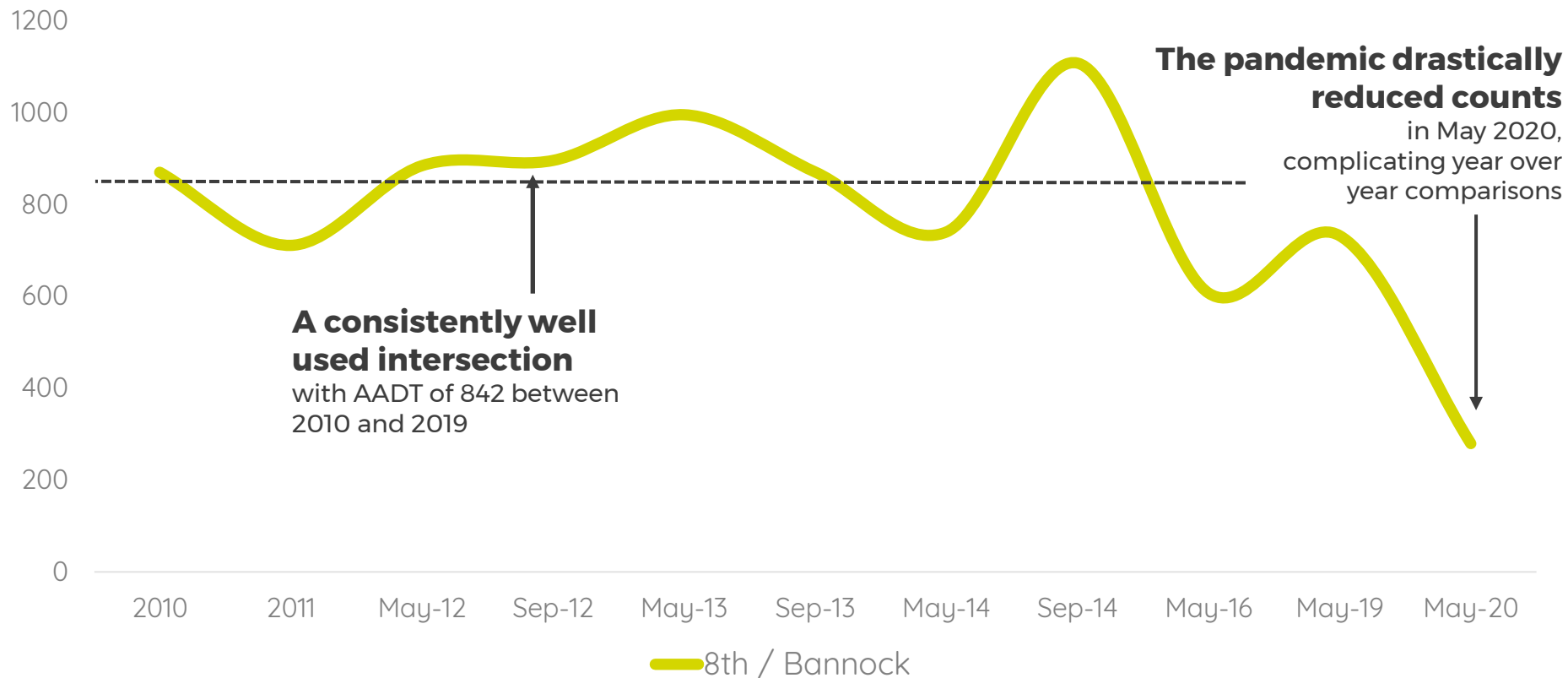
Calculated based on extrapolated weekday average annual daily traffic (AADT). Some years are missing as manual counts were not conducted at the intersection that year

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Other key takeaways

Cycling is significant in Boise. Daily AADT bike counts at many intersections are higher than in a similarly sized comparable city

As elsewhere, **the pandemic dramatically reduced bike counts** during the spring of 2020

With some of the highest overall counts, the **Greenbelt is an important commuting axis** for Boise cyclists

There is a **need for weekend data collection** to better distinguish commuting vs. recreation trends
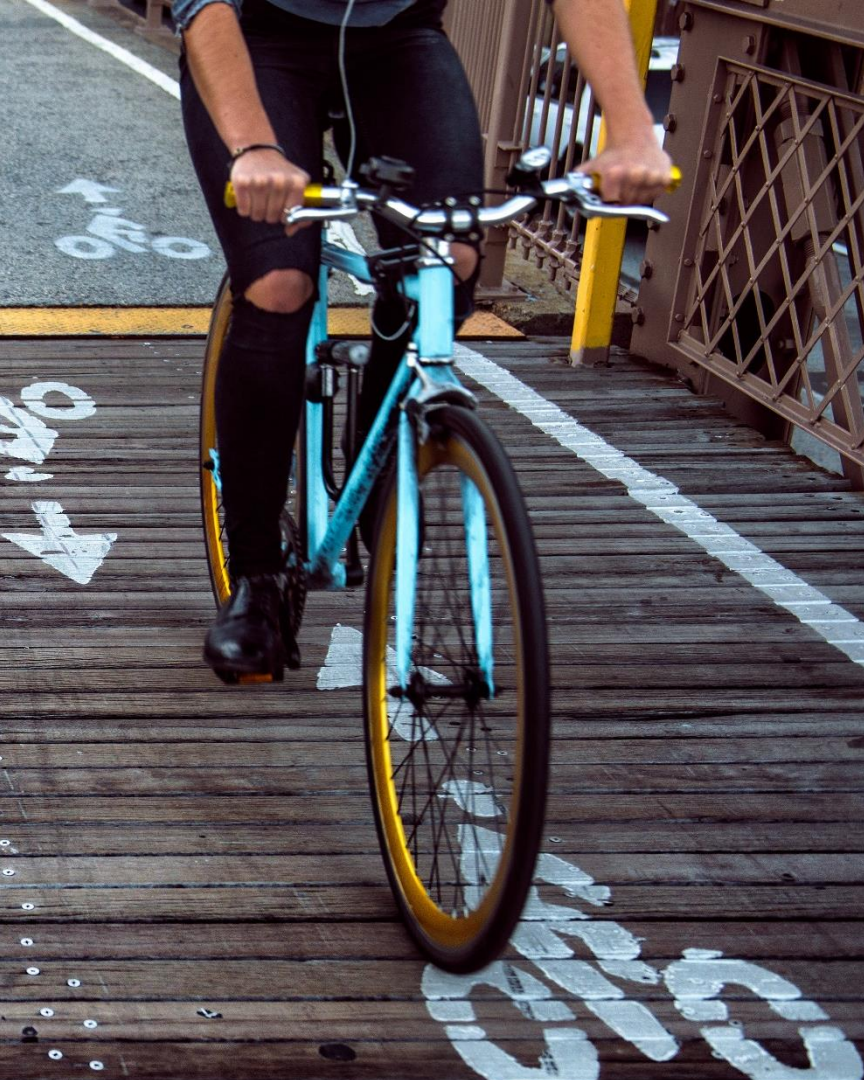
Making Count Data Count
Best practices for collecting, managing, and sharing data

July 20, 2021

eco
counter

A step-by-step guide to building a count program

Step 1
Define need

Step 2
Assess resources

Step 3
Develop a plan

Step 4
Implement and adapt

Step 5
Managing data and counters

Step 6
Show & tell

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Manual and automatic counting

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Manual counting

Best Practices

- At least 30 minutes at a time
- Schedule - varying times and days
- Varying weather conditions

Define parameters

- Who gets counted?
- Where do they get counted?
- What characteristics get recorded?

Automatic counting

Best Practices

- Site selection
- Equipment selection
- Proper installation
- Counter validation
- Regular care and maintenance

Short-term Counts

- Create a schedule
- At least 2 weeks per site

Recordkeeping

Site photos

Take photos of each count site

- Future reference and replication
- Useful for reports and presentations

Take photos of counter installation

- Troubleshooting
- Counter maintenance and field visits

Location

Record site location

- GPS coordinates
- Street address
- Side of street/trail

Why?

- Consistency and replication
- Counter maintenance visits
- Mapping and GIS

Latitude	Longitude
45.48265510084659	-73.56359482859263

Direction of travel

Record traffic flows by direction

- Distinguish counts by direction
- Record directions consistently (e.g. north/south, east/west)
- For manual counts, define thresholds

Events

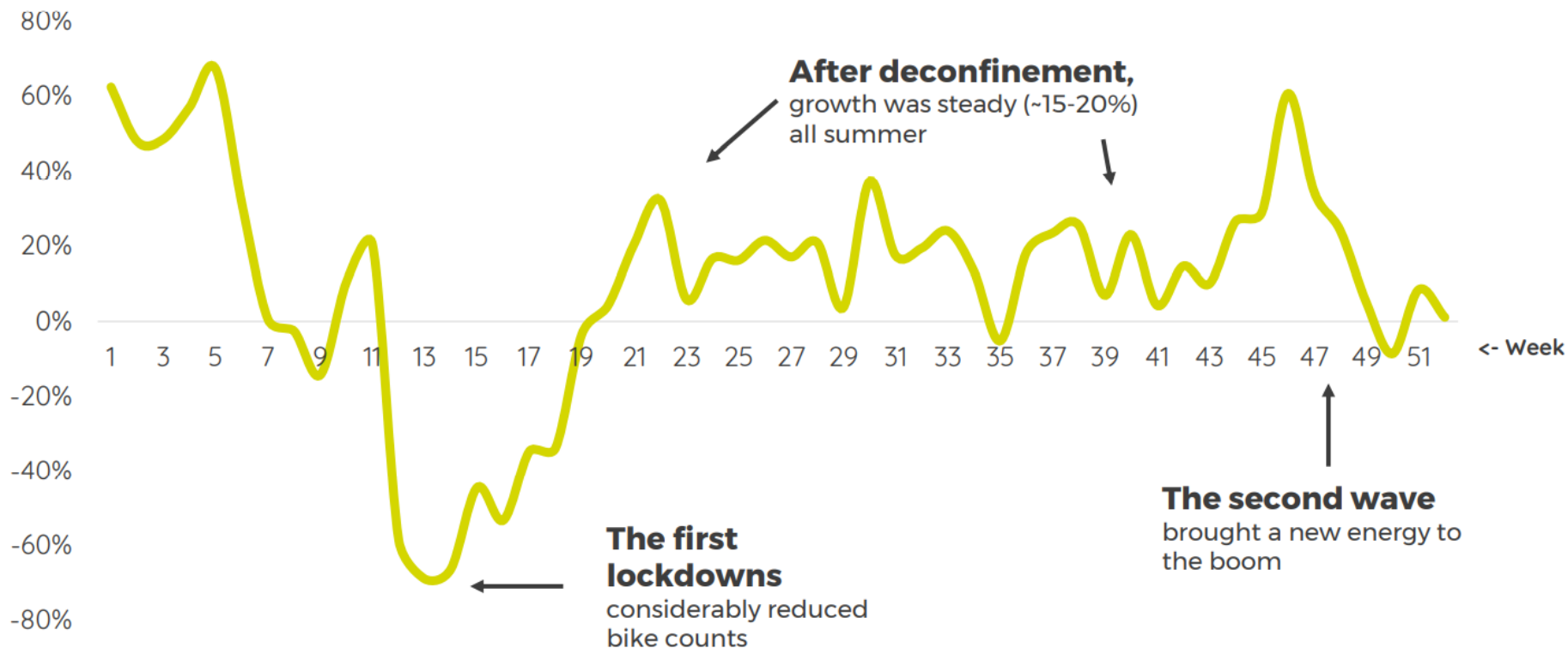**Take note of events that may impact count data, such as:**

- Festivals
- Road work
- Trail closures
- COVID-19 restrictions
- Bike to Work Day
- Extreme weather events

COVID-19 measures' impact on bike counts

After deconfinement, growth was steady (~15-20%) all summer

The first lockdowns considerably reduced bike counts

The second wave brought a new energy to the boom

<- Week

eco counter

Weather

Weather data can be recorded manually or automatically

- Record extreme events like ice storms or wildfires
- Day-to-day weather data is nice info for automatic counts, and important info for manual counts

Counter and data management

Validate counts

Make sure automatic counters are functioning properly

- Validate automatic counters with manual counts
- Calibrate counter accordingly by adjusting settings and sensitivity
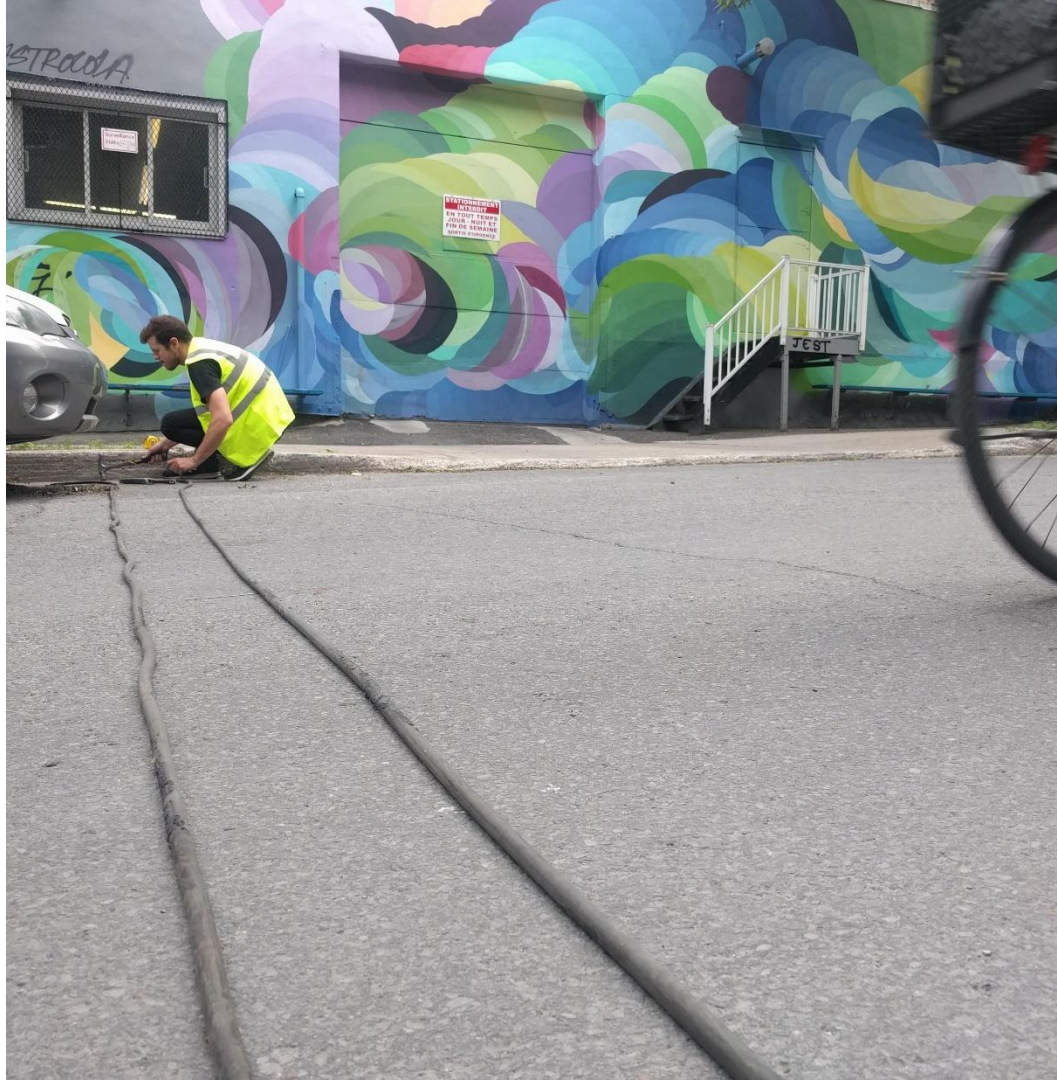- Apply a correction factor if needed

Counter maintenance

**Outdoor counters require regular care and maintenance!**

- Visit the site regularly
- Check sensor position and direction
- Check for obstructions (e.g. insects, debris, parked vehicles)
- Clean components
- Check battery

Data management

Keep an eye on your data

- Compile data in a database (e.g. spreadsheet, vendor software)
- Routinely monitor data to check for anomalies (e.g. unusually high or low counts)
- Eco-Visio's Eco-Alert service sends email alerts

MAX

Maximum Exceeded

Triggers whenever a counter has exceeded the maximum counts defined
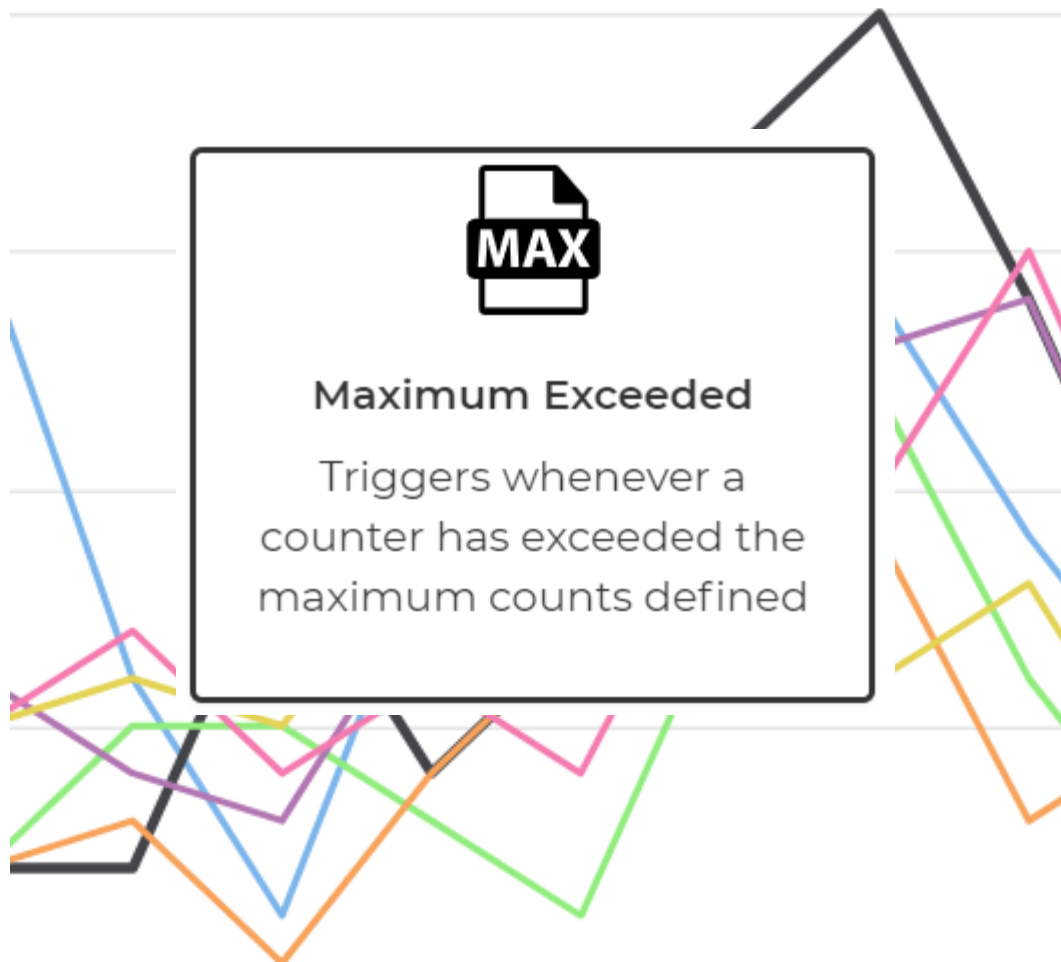
Data reconstruction

Sometimes automatic counters will lose count

- Explain unusually high or low counts – was there an event?
- Omit or reconstruct incorrect data

Eco-Counter tools
- Eco-Visio auto-reconstruction tool
- Eco-Counter Data Services team
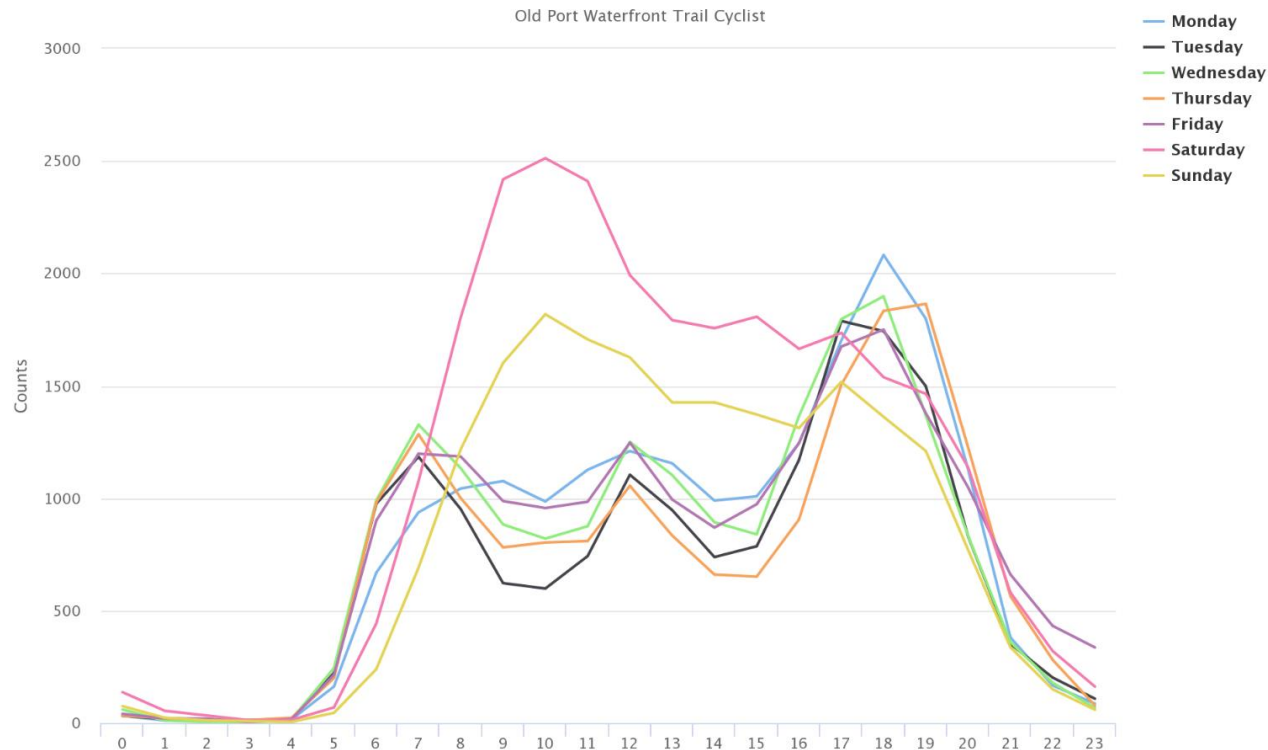
Tell a story with your count data

eco counter

Observe patterns and trends

What's important to you?

- Direction of travel
- Weekend vs. weekday
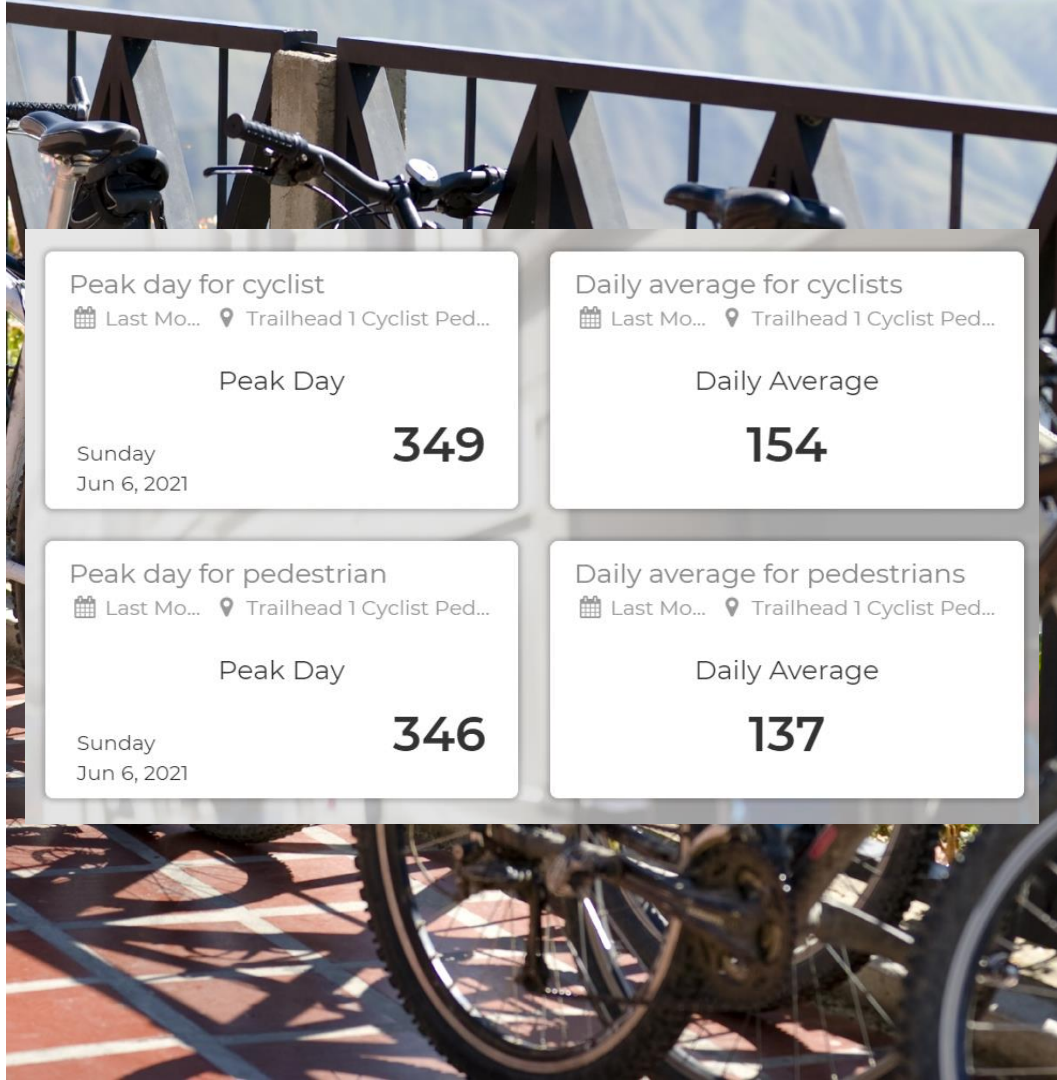- Mode (e.g. bike, pedestrian)

Weekday to weekend comparison demonstrates this trail is both a commuter and recreational facility

Old Port Waterfront Trail Cyclist

Legend: Monday, Tuesday, Wednesday, Thursday, Friday, Saturday, Sunday

Highlight key figures

Sometimes less is more!

- Peak hour
- Peak day
- Daily average

Peak day for cyclist
Last Mo... Trailhead 1 Cyclist Ped...
Peak Day
Sunday
Jun 6, 2021   349

Daily average for cyclists
Last Mo... Trailhead 1 Cyclist Ped...
Daily Average
154

Peak day for pedestrian
Last Mo... Trailhead 1 Cyclist Ped...
Peak Day
Sunday
Jun 6, 2021   346

Daily average for pedestrians
Last Mo... Trailhead 1 Cyclist Ped...
Daily Average
137

Capture trends over time

2 weeks
+ **Capture** baseline trail use data
+ **Understand** hourly, daily and weekly patterns
+ **Estimate** use trends across a trail network
+ **Determine** mountain bike volumes on different trails and at different network entrance points

6 months
+ **Justify** investment in new or improved trails
+ **Capture** monthly trends and peak usage periods
+ **Adapt** maintenance practices on well-used trails
+ **Communicate** with local stakeholders, such as tourism agencies and local businesses

12 months
+ **Understand** seasonal trends
+ **Determine** high-traffic areas in need of expansion or improvement
+ **Inform** funding and grant applications
+ **Assess** the demand for beginner, intermediate and advanced trails

24 months
+ **Publish** long-term monitoring reports
+ **Analyze** year-on-year trends
+ **Quantify** the economic impact to local communities
+ **Justify** network expansion & long-term strategy

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Qualitative data

Combine count data with qualitative data to understand user profiles

Examples of qualitative data
- Gender
- Age
- Dollars spent in the region
- Origin and destination

Methods include
- Intercept surveys
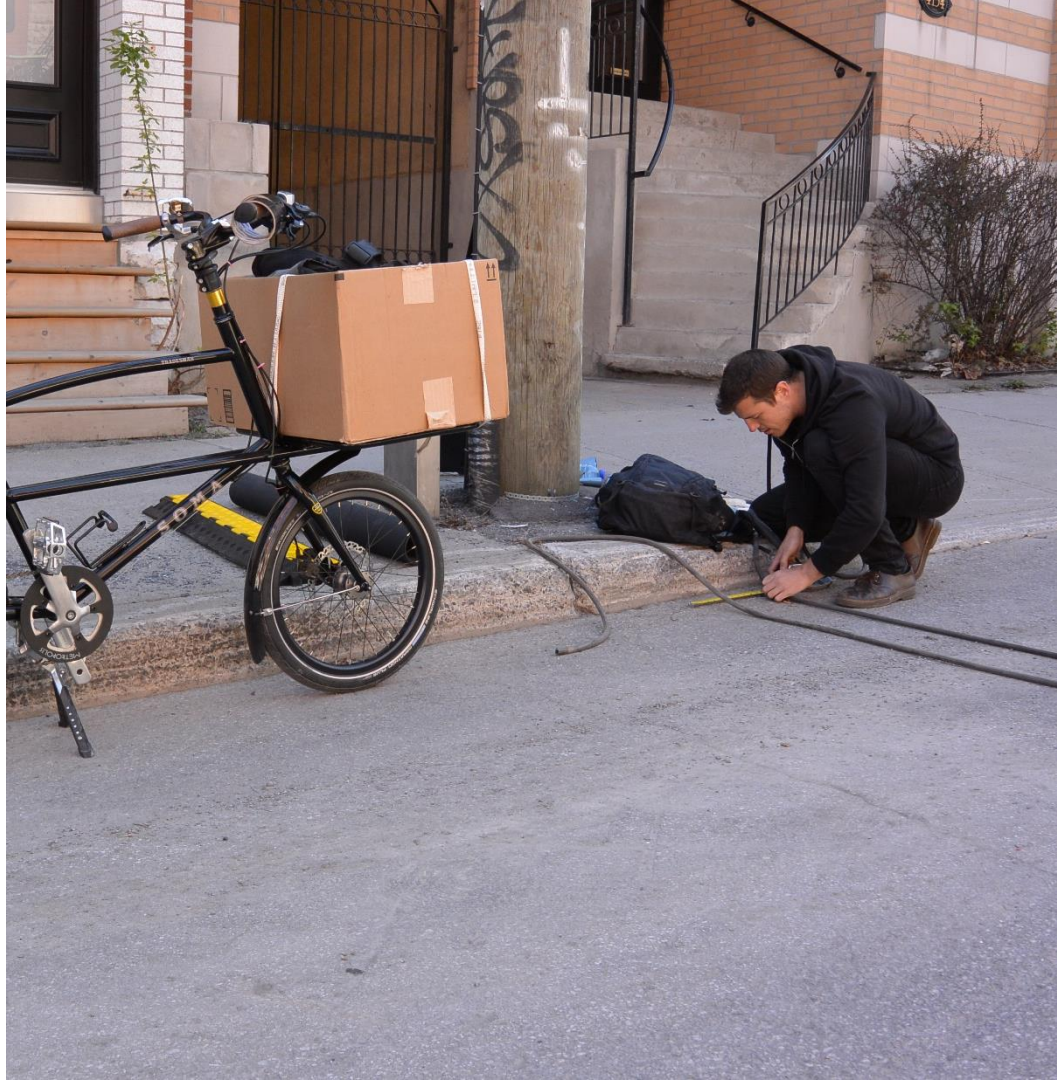- Online surveys
- Manual observation

Share

Share your counting expertise!

- Documenting your process and sharing with others helps to establish best practices
- Transparency and credibility

Share your findings!

- Engages community
- Demonstrates the value of active transportation facilities
- Justifies investments

Recap: how to get the most out of count data

Make a plan for what you want to study, create a schedule

Keep records of count sites and track events

Combine with other data sources (ticket data, survey data)

Regularly report on data

Keep an eye on your data

Engage key local partners (tourism agencies, universities etc.)

Tell stories with even the smallest data points

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Thank you

Andrea Shillolo
Client Consultant
ash@eco-counter.com