



Livable City Year Program

LYNNWOOD PARKS, RECREATION & CULTURAL ARTS
Park & Trail Usage Analysis

3/3/2021

UW Student Team



Gauri Patil
Project Manager



Kevin McInerny
System Engineer



Monib Sabet
Assistant Project
Manager



Trishali Ranjan
Data Analyst



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Project Phases



- **Business Understanding**
- **Data Understanding**
- **Data Cleaning**

- **Detailed Data Analysis**
- **Data Visualization Reports**
- **Data Model Prototype**

- **Refine Data Model**
- **Implement Data Visualization Dashboard**
- **Report & Maintenance Documentation**



Project Overview

Problem

New Level of service metric required

- **Acres of parkland per 1,000 residents**
- **Standard - 5 acres per 1,000 residents**
- **Reduced from 10 acres to 3.5 acres in 2016**

Solution

- **Park Usage Data analysis using StreetLight Data.**

Goal

- **Analysis of park utilization, demand, and capacity.**



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Project Scope

Project Scope



- Analyze location-based park usage data to identify patterns/trends that will help suggest a new LOS

Focus Areas



- Number of park/Trail users (segmented)
- Seasonal patterns/trends
- Pre/Post COVID use patterns
- Demographics of park/Trail users
- Key amenity usage





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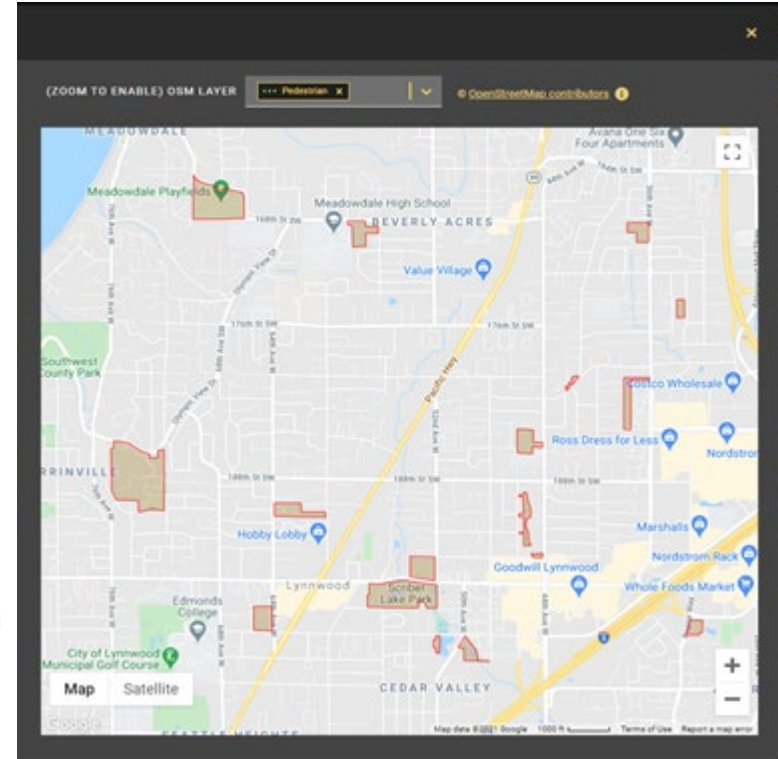
Data Source

Ways for Data Collection

- Parking Lot Capacity
- Counters on entry points
- Manual Methods
- Camera/Video Counters
- Limitations

StreetLight Data

- Big Data for Mobility
- Collected via Geospatial points and GPS data
- StreetLight processes ~40 billion pings/month
- Collects data on virtually every road, trail, & park in the US & Canada
- Geo zones for Parks and Trails





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Big Data Collection

- Analyses using different options
- Streetlight Index - Average Daily Traffic
- Average Daily Trips for each month, weekend/weekday and time of the day
- 3 years of data available
- Ability to distinguish between modes (bikes v. pedestrians)
- Demographic info data collected using census data
- Calibration using Counters
- Limitations

Mode of Travel: Pedestrian

▶ Data Periods: Dec'19

▶ Day Types: All Days, Weekday, Weekend Day

▶ Day Parts: All Day, Early AM, Peak AM, Mid-Day, Peak PM, Late PM

▼ Trip Attributes

Trip Metrics Selected

▶ Trip Duration (minutes)	0 to 5, 5 to 10, 10 to 15, 15 to 20, 20 to 25, 25 to 30, 30 to 35, 35 to 40, 40 to 45, 45 to 50, 50 ...
▶ Trip Length (miles)	0 to 1, 1 to 2, 2 to 3, 3 to 4, 4 to 5, 5+
▶ Trip Speed (mph)	0 to 1, 1 to 2, 2 to 3, 3 to 4, 4 to 5, 5+
▶ Trip Circuity (ratio)	1 to 2, 2 to 3, 3 to 4, 4 to 5, 5 to 6, 6+

▼ Traveler Attributes

Traveler Metrics Selected

▶ Trip Purpose (Home/Work)	Home-based work, Home-based other, Non-home-based
▶ Household Income	Less than 20K, 20K to 35K, 35K to 50K, 50K to 75K, 75K to 100K, 100K to 125K, 125K to 150...
▶ Education	No High School Diploma, High School Diploma, Some College, Bachelors Degree, Graduate ...
▶ Race	White, Black, Indian, Asian, Islander, Other Race, Multiple Races, Hispanic
▶ Family Status	With Kids, With No Kids, With Kids under 6 years, With Kids between 6-17 years



How We Are Using the Data

StreetLight Data

1) Average Daily Traffic

i) Pedestrian

ii) Bicycle

Note to consider - including more location in an analysis will smooth the numbers as it is calculating the average

2) Total Annualized Usage (Total Trips)

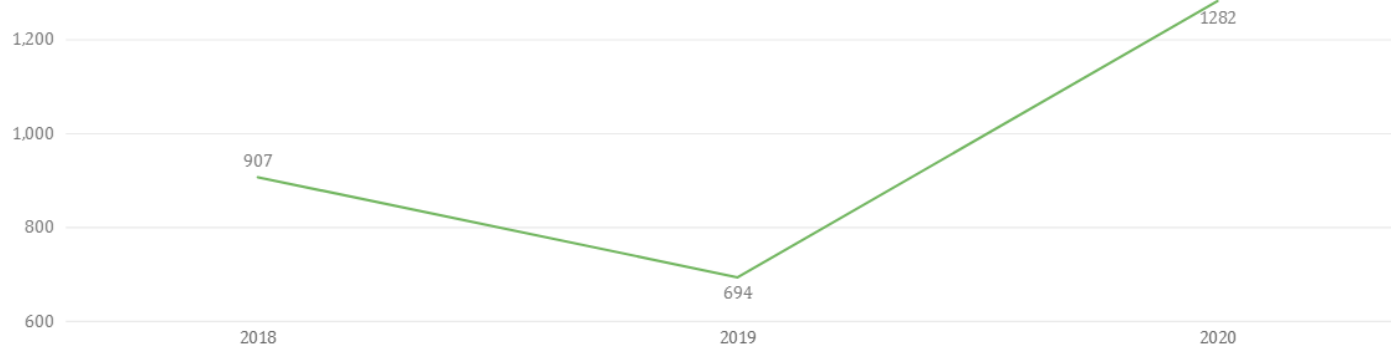
- **All Days: $(365/12) * \text{Avg Daily Traffic}$**
- **Weekday: $(261/12) * \text{Avg Daily Traffic}$**
- **Weekend: $(104/12) * \text{Avg Daily Traffic}$**



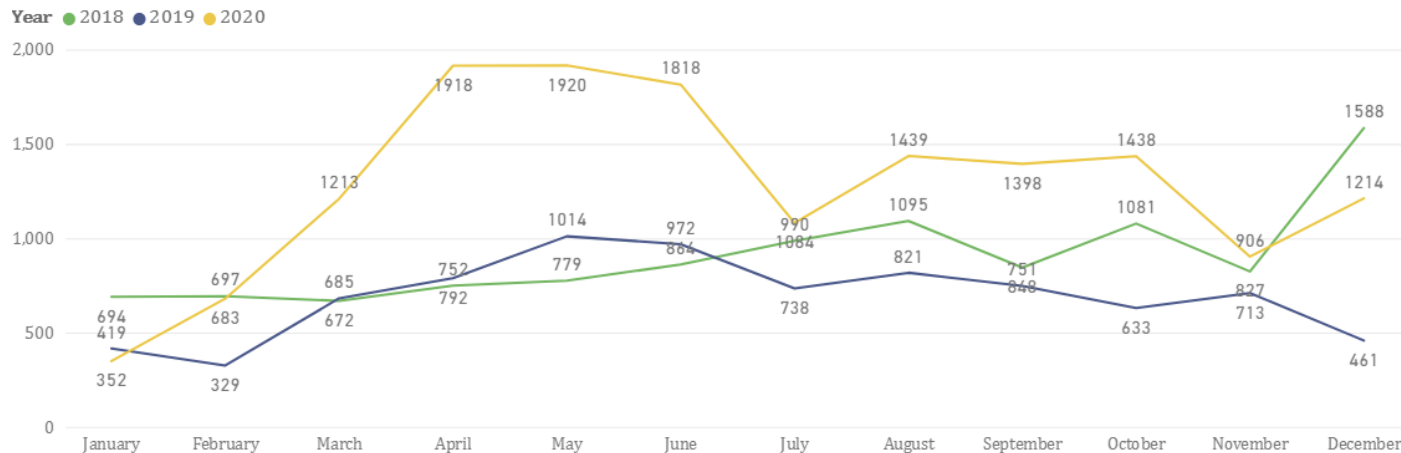
Data Visualizations

Trails - Pedestrian

Trails Avg Daily Pedestrian Traffic by Year



Trails Avg Daily Pedestrian Traffic by Month (Comparison)



Zone Name

Golf Course Trail
Interurban
Scriber Creek Trail

Data Visualizations

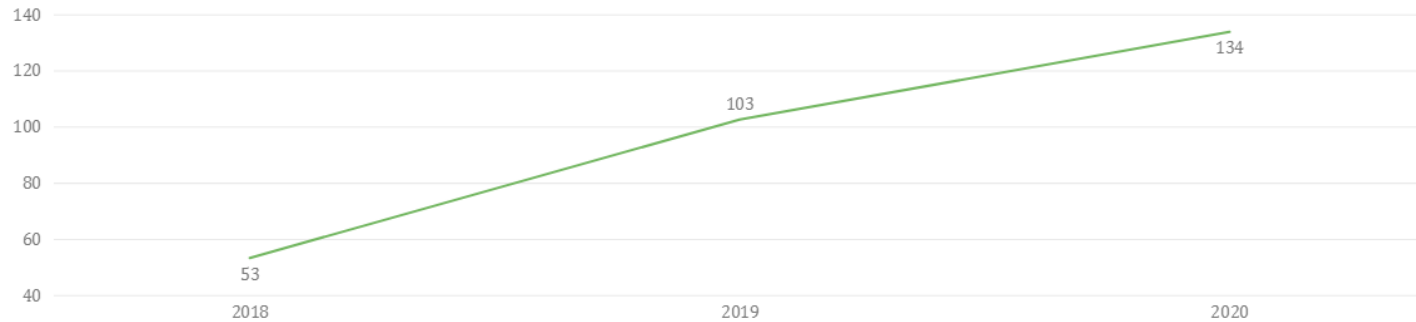
Trails - Bicycle



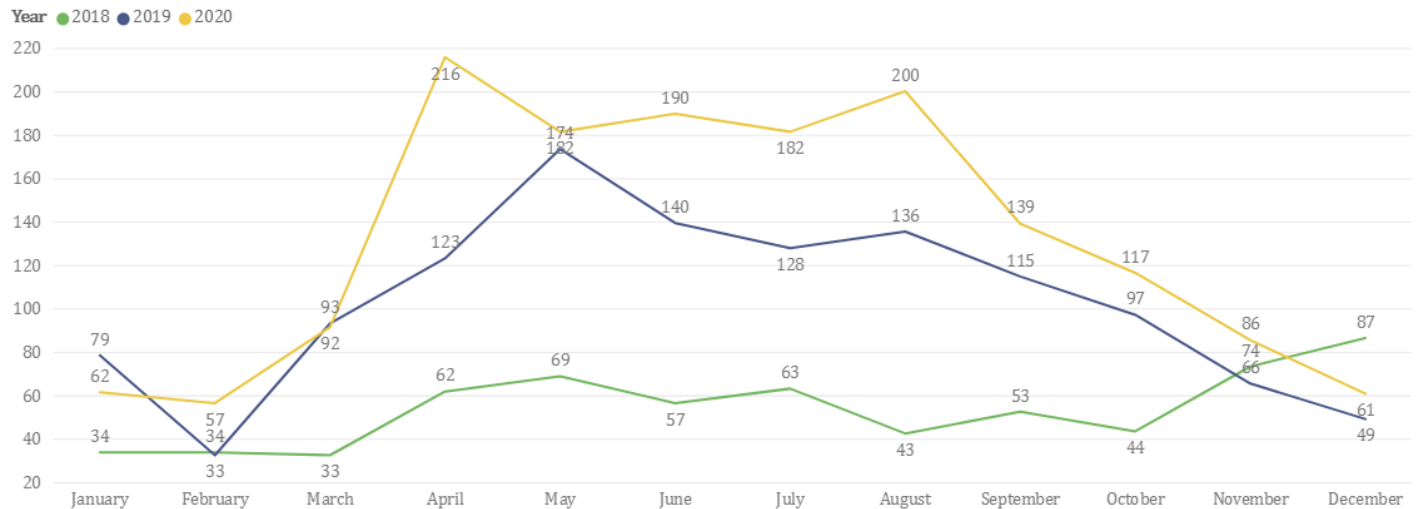
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Trails Avg Daily Bicycle Traffic by Year



Trails Avg Daily Bicycle Traffic by Month (Comparison)



Year

2018
2019
2020

Zone Name

Golf Course Trail
Interurban
Scriber Creek Trail

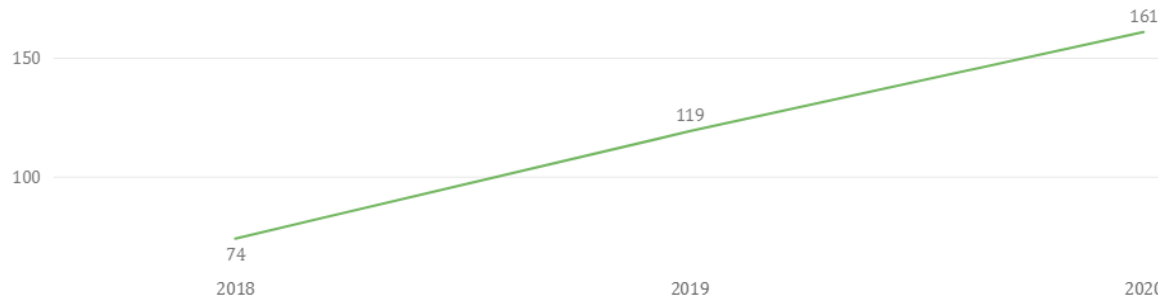




Data Visualizations

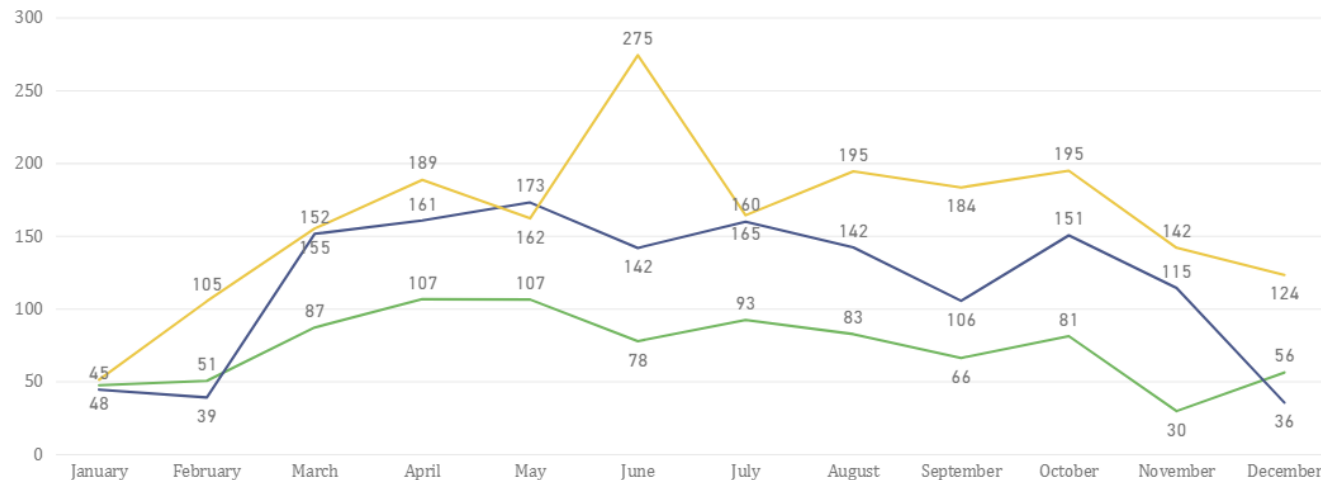
Park Usage by Month/Year

Avg Daily Park Traffic by Year



Avg Daily Park Traffic by Month

Year ● 2018 ● 2019 ● 2020



Zone Name

Daleway Park
Gold Park
Heritage Park
Lynndale Park
Maple Mini Park
Meadowdale Park
Meadowdale Playfields
Mesika Trail
Mini Park at Sprague's Pond
North Lynnwood Park
Pioneer Park
Scriber Creek Park
Scriber Lake Park
South Lynnwood Park
Spruce Park
Stadler Ridge Park
Veterans' Park
Wilcox Park

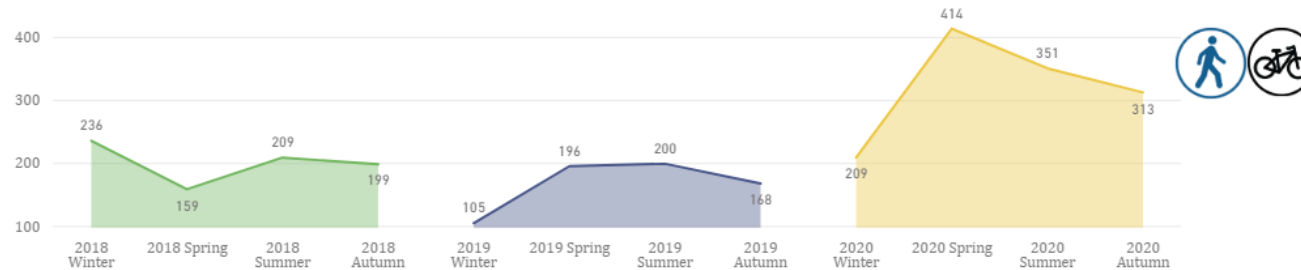


Data Visualizations

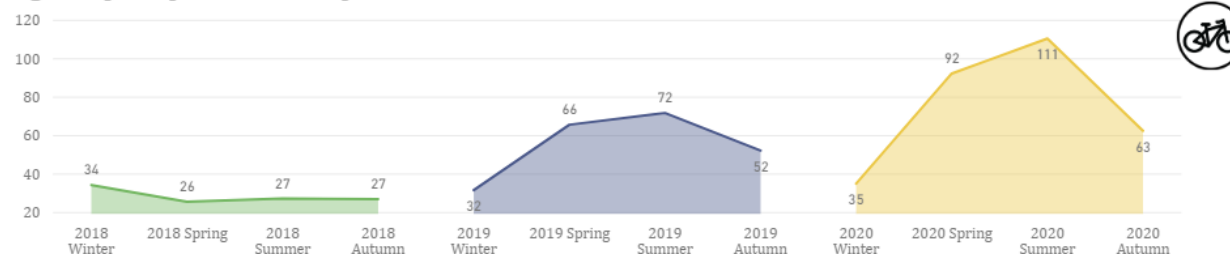
Trails Seasonal Use Pattern

Bicycles and Pedestrian

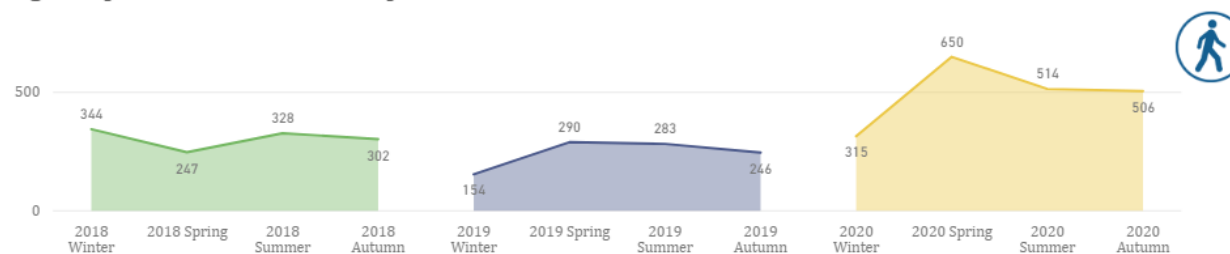
Avg Daily Traffic (Bicycles & Pedestrians) by Season



Avg Daily Bicycle Traffic by Season



Avg Daily Pedestrian Traffic by Seasons



Year

2020
2019
2018

Zone Name

Scriber Creek Trail
Interurban
Golf Course Trail

Data Visualizations

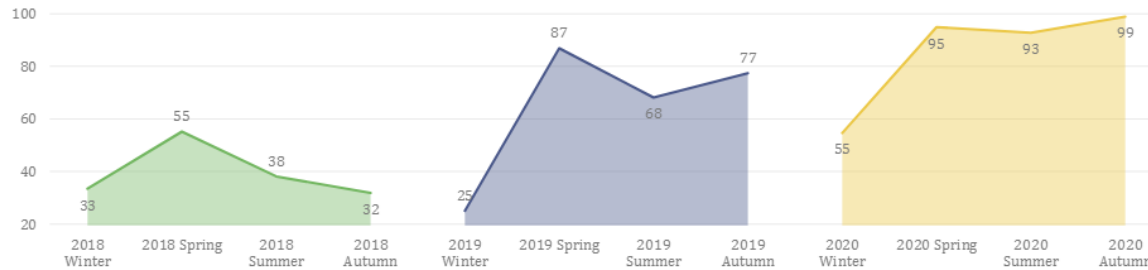
Parks Seasonal Use Pattern

Bicycles and Pedestrian

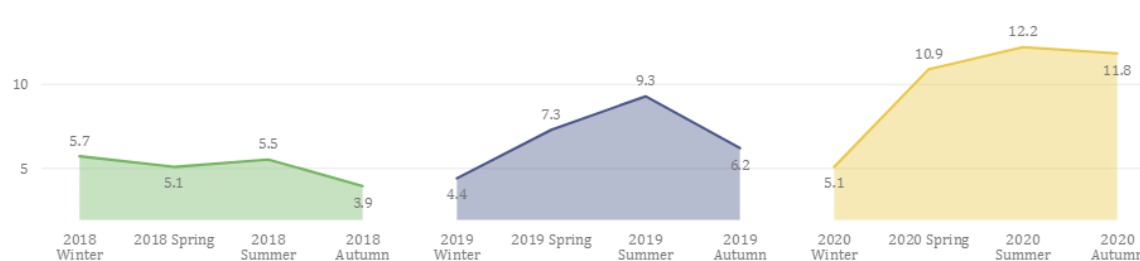


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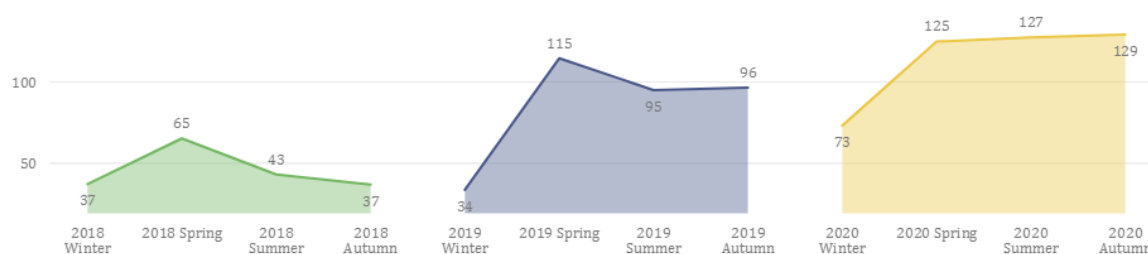
Avg Daily Traffic (Bicycles & Pedestrians) by Season



Avg Daily Bicycle Traffic by Season



Avg Daily Pedestrian Traffic by Seasons



Year

2020
2019
2018

Zone Name

Daleway Park
Gold Park
Heritage Park
Lynndale Park
Maple Mini Park
Meadowdale Park
Meadowdale Playfields
Mesika Trail
Mini Park at Sprague's Pond
North Lynnwood Park
Pioneer Park
Scriber Creek Park
Scriber Lake Park
South Lynnwood Park
Spruce Park
Stadler Ridge Park
Veterans' Park
Wilcox Park





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Data Visualizations

Weekday/Weekend Trails/Parks

Bicycles and Pedestrian



Trail Name

Golf Course Trail
Interurban
Scriber Creek Trail

Mode

Bicycle
Pedestrian

Year

2018
2019
2020

Park Name

Daleway Park
Gold Park
Heritage Park
Lynndale Park
Maple Mini Park
Meadowdale Park
Meadowdale Playfields
Mesika Trail
Mini Park at Sprague's Pond
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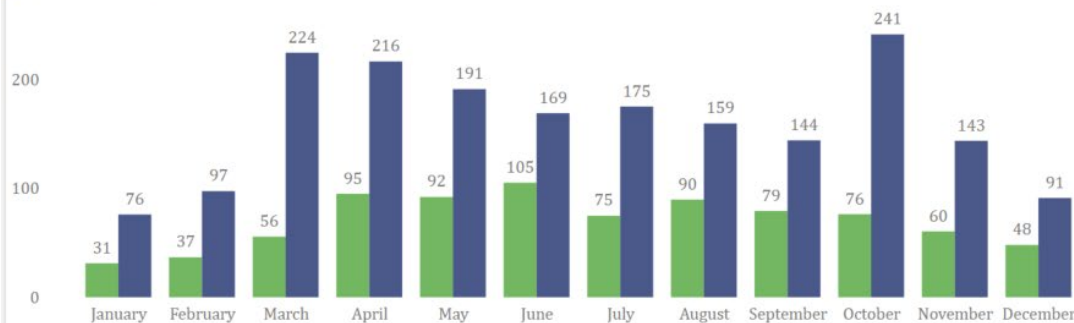
Trails- Weekday vs. Weekend Comparison (All Years - Bicycles & Pedestrians)

1: Weekday (M-F) 2: Weekend Day (Sa-Su)



Parks- Weekday vs. Weekend Comparison (All Years - Bicycles & Pedestrians)

1: Weekday (M-F) 2: Weekend Day (Sa-Su)



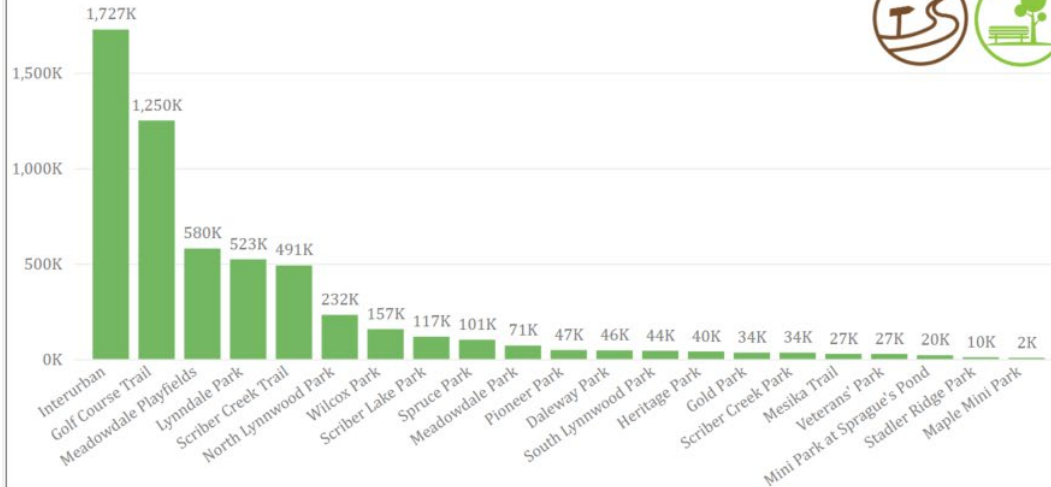


Data Visualizations

Total Annualized Trips

2018, 2019 & 2020

Trips by All Parks and Trails



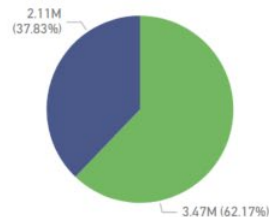
5,577,652

Total Trips

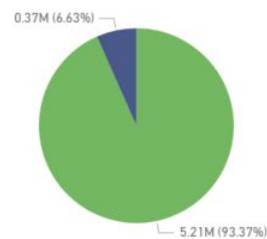
Total Trips

Zone Name	Bicycle	Pedestrian	Total
Interurban	278,251	1,448,414	1,726,665
Golf Course Trail	14,267	1,235,708	1,249,975
Meadowdale Playfields	5,718	573,811	579,529
Lynndale Park	17,825	504,886	522,711
Scriber Creek Trail	17,730	473,012	490,742
North Lynnwood Park	5,537	226,180	231,717
Wilcox Park	5,596	151,233	156,829
Scriber Lake Park	5,200	112,084	117,284
Spruce Park	3,587	97,817	101,404
Meadowdale Park	2,221	68,682	70,903
Pioneer Park	1,187	46,200	47,387
Daleway Park	2,008	43,619	45,627
South Lynnwood Park	2,464	41,092	43,556
Heritage Park	2,918	37,136	40,054
Gold Park	1,066	32,819	33,885
Scriber Creek Park	1,552	32,243	33,795
Mesika Trail	578	26,796	27,374
Veterans' Park	731	26,371	27,102
Mini Park at Sprague's Pond	791	19,222	20,013
Stadler Ridge Park	304	9,215	9,519
Maple Mini Park	121	1,460	1,581
Total	369,652	5,208,000	5,577,652

Trips by Zone (Bicycles & Pedestrians)



Trips by Mode (Parks & Trails)



Mode
● Pedestrian
● Bicycle



Year

2020
2019
2018

Mode

Pedestrian
Bicycle



Data Visualizations

Scriber Creek Trail

Scriber Creek Trail Avg Daily Traffic (Bicycle & Pedestrian) by Year

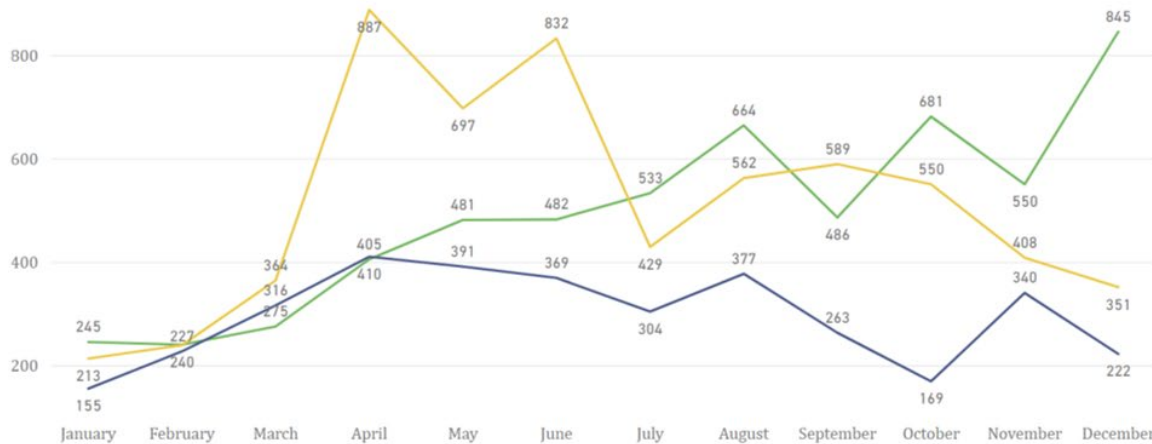


Scriber Creek Trail

Location

Scriber Creek Trail Avg Daily Traffic (Bicycle & Pedestrian) by Month

Year ● 2018 ● 2019 ● 2020



473,012

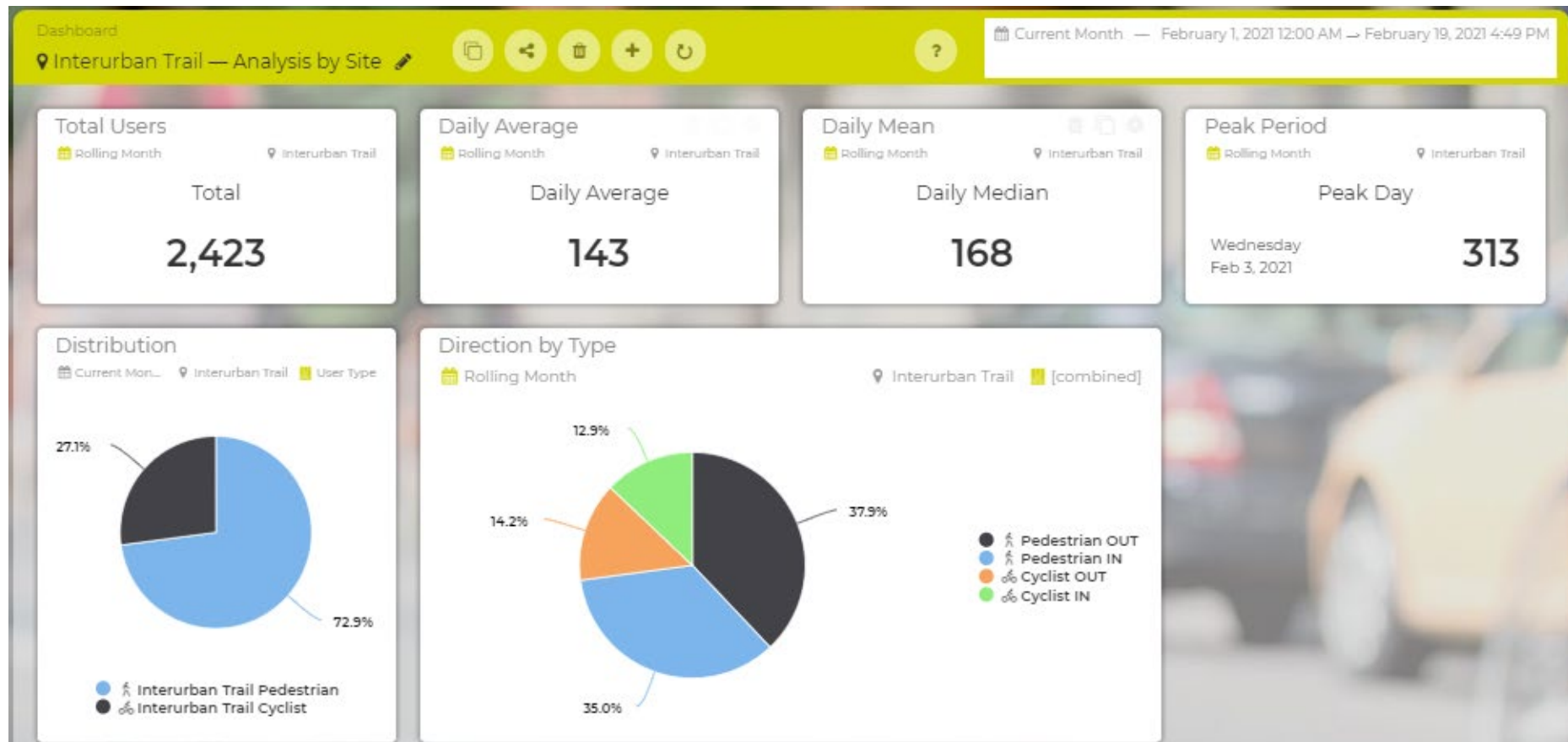
Total Trips (2018-2020)

Total Trips (Scriber Creek Trail)

Year	Pedestrian	Total
2018	179,063	179,063
2019	107,768	107,768
2020	186,181	186,181
Total	473,012	473,012



Counter Data Interurban Trail





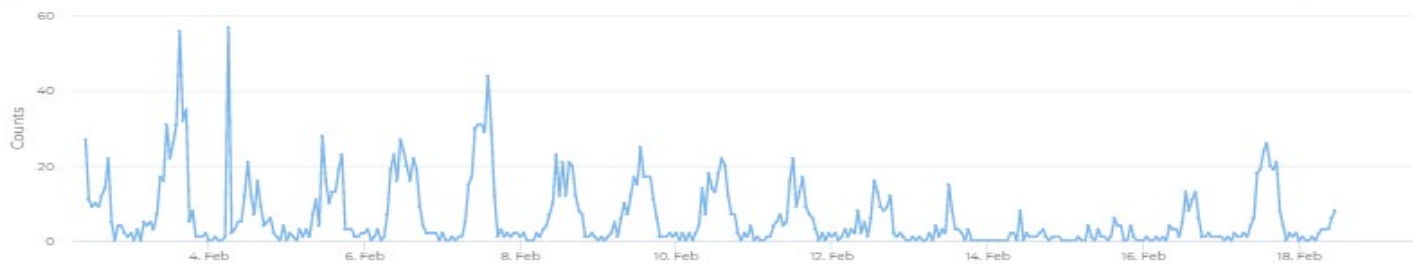
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Counter Data Interurban Trail

Time Series

Current Month

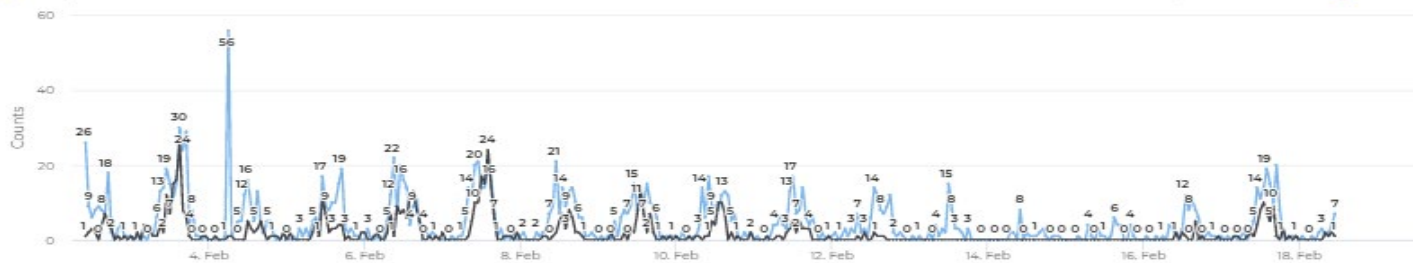
Interurban Trail



Usage by Type

Rolling Month

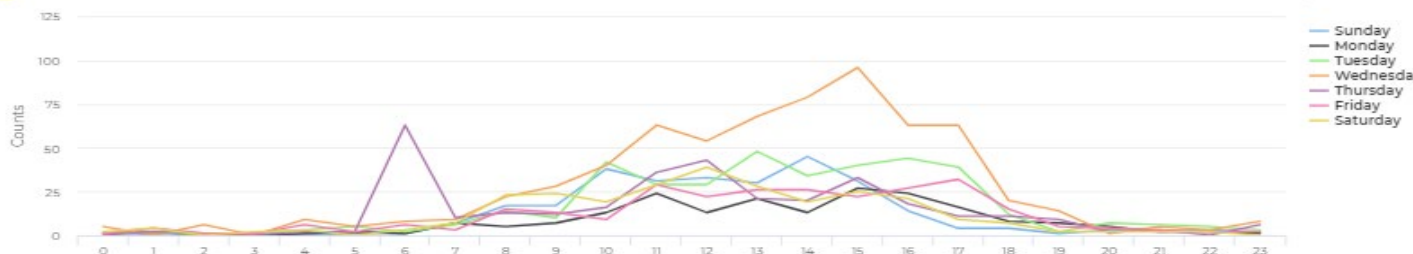
Interurban Trail [combined]



Daily Trend

Current Month

Interurban Trail





Next Steps

Interurban Trail - Counter Data

Key Figures Summary

📅 Current Month

📍 Interurban Trail

🟡 Total User Type

Site	Total	Average	Median	Peak Count	Peak Period
Interurban Trail	2,423	143	168	313	Wed Feb 3, 2021
Interurban Trail Pedestrian	1,766	104	121	199	Wed Feb 3, 2021
Interurban Trail Cyclist	657	39	30	114	Wed Feb 3, 2021

Moving forward...

- Calibration using data from the counter at Interurban Trail
- Prototype Predictive Model for Lynndale park to forecast future traffic
- Analysis of the Amenities to observe their contribution to park traffic
- Demographic Analysis of the park traffic

Thank You



Questions ?