

# Analysis of traffic intensity and car park usage in Basel since 2019

---

Michelle Bösiger, Erind Shima, Reto Krummenacher

Seminar CSAI4SG, Fall 2021

December 15, 2021

# Goal of the Analysis

---

- Find a connection between the traffic intensity and the usage of public car parks.
- Match counting points to car parks.
- Visualize the connection with a GIF.

# Content

---

- About the Data
- Analysis for Aggregated Data
- Visualization
- Conclusion

## About the Data

---

We used two different data sets to collect two groups of results:

- **Traffic counts for motorized private transport.**
- **Occupancy of public car parks.**

# Traffic counts for motorized private transport

---

- › **Source:** Open Data BS

[https:](https://data.bs.ch/explore/dataset/100006/information/?sort=datetimefrom)

[//data.bs.ch/explore/dataset/100006/information/?sort=datetimefrom](https://data.bs.ch/explore/dataset/100006/information/?sort=datetimefrom)

- › **Attributes:** Number of vehicles (cars, buses, trucks) passing one of 32 counting points in an hour.

## Traffic counts for motorized private transport

---

Important attributes can be derived from this data set, such as the **counting site**, the **time period** and the **direction** of a vehicle.

	ZST_NR	SiteCode	SiteName	DateTimeFrom	↕	DateTimeTo	↕	DirectionName	LaneCode	↕
1	235	00000235	235 A3-A35, Grenze CH-F	11. Dezember 2021 23:00		11. Dezember 2021 00:00		von Frankreich	1	
2	235	00000235	235 A3-A35, Grenze CH-F	11. Dezember 2021 23:00		11. Dezember 2021 00:00		nach Frankreich	2	
3	350	00000350	350 Dreirosenbrücke lokal	11. Dezember 2021 23:00		11. Dezember 2021 00:00		nach Kleinbasel	2	
4	350	00000350	350 Dreirosenbrücke lokal	11. Dezember 2021 23:00		11. Dezember 2021 00:00		nach Kleinbasel	1	
5	350	00000350	350 Dreirosenbrücke lokal	11. Dezember 2021 23:00		11. Dezember 2021 00:00		von Kleinbasel	4	
6	350	00000350	350 Dreirosenbrücke lokal	11. Dezember 2021 23:00		11. Dezember 2021 00:00		von Kleinbasel	5	
7	350	00000350	350 Dreirosenbrücke lokal	11. Dezember 2021 23:00		11. Dezember 2021 00:00		von Kleinbasel	6	
8	354	00000354	354 Wettsteinbrücke	11. Dezember 2021 23:00		11. Dezember 2021 00:00		1 nach Kleinbasel	1	
9	354	00000354	354 Wettsteinbrücke	11. Dezember 2021 23:00		11. Dezember 2021 00:00		2 von Kleinbasel	2	

## Traffic counts for motorized private transport

But also the weekday, the day of the year and the coordinates of each site.

Year	Month	Day	Weekday	HourF...	Date	TimeF...	TimeTo	DayOfYear	Zst_id	Geo Point
2021	12	11	5	23	11.12.2021	23:00	00:00	345	235	47.5751385212, 7.56315796773
2021	12	11	5	23	11.12.2021	23:00	00:00	345	235	47.5751385212, 7.56315796773
2021	12	11	5	23	11.12.2021	23:00	00:00	345	350	47.5707346457, 7.58226721123
2021	12	11	5	23	11.12.2021	23:00	00:00	345	350	47.5707346457, 7.58226721123
2021	12	11	5	23	11.12.2021	23:00	00:00	345	350	47.5707346457, 7.58226721123
2021	12	11	5	23	11.12.2021	23:00	00:00	345	350	47.5707346457, 7.58226721123
2021	12	11	5	23	11.12.2021	23:00	00:00	345	350	47.5707346457, 7.58226721123
2021	12	11	5	23	11.12.2021	23:00	00:00	345	354	47.5582014188, 7.59753472493
2021	12	11	5	23	11.12.2021	23:00	00:00	345	354	47.5582014188, 7.59753472493

# Occupancy of public car parks

---

- › **Source:** Open Data BS.

[https:](https://data.bs.ch/explore/dataset/100014/information/?sort=published)

[//data.bs.ch/explore/dataset/100014/information/?sort=published](https://data.bs.ch/explore/dataset/100014/information/?sort=published)

- › **Attributes:** Number of free parking spaces and total number of spaces at the full hour.
  - › **Spatial:** WGS84 coordinates of each car park.
  - › **Temporal dimension:** Hourly data since 2019.



## Occupancy of public car parks

---

From this data set we can derive information like the number of **free car parks** per hour, for each parking lot (marked by its name).

	Publikationszeit	↕	Anzahl frei	↕	id	↕	id2	↕	Titel
1	13. Dezember 2021 22:00		302		baselparkhausbadbahnhof		badbahnhof		Parkhaus Bad. Bahnhof
2	13. Dezember 2021 22:00		77		baselparkhauseurope		europe		Parkhaus Europe
3	13. Dezember 2021 22:00		125		baselparkhausclaramatte		claramatte		Parkhaus Claramatte
4	13. Dezember 2021 22:00		27		baselparkhausclarahuus		clarahuus		Parkhaus Clarahuus
5	13. Dezember 2021 22:00		722		baselparkhauselisabethen		elisabethen		Parkhaus Elisabethen
6	13. Dezember 2021 22:00		71		baselparkhauspostbasel		postbasel		Parkhaus Post Basel
7	13. Dezember 2021 22:00		67		baselparkhausbahnhofsued		bahnhofsued		Parkhaus Bahnhof Süd
8	13. Dezember 2021 22:00		350		baselparkhauskunstmuseum		kunstmuseum		
9	13. Dezember 2021 22:00		680		baselparkhausmesse		messe		Parkhaus Messe
10	13. Dezember 2021 22:00		218		baselparkhauscentralbahnparking		centralbahnparking		Parkhaus Centralbahnparking

## Occupancy of public car parks

As well as the **name**, the **address**, the **coordinates** and a clear and short **description of the status** of each parking lot.

Name	Adresse	Total Plätze	link	geo_point_2d	Beschreibung
Bad. Bahnhof	Schwarzwaldstrasse 160	300	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5651794, 7.6089067	Anzahl freie Parkplätze: 302
Europe	Hammerstrasse 68	120	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5630411, 7.5967098	Anzahl freie Parkplätze: 77
Claramatte	Klingentalstrasse 25	100	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5639644, 7.5946604	Anzahl freie Parkplätze: 125
Clarahuus	Webergasse 34	52	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5622725, 7.5917937	Anzahl freie Parkplätze: 27
Elisabethen	Steinentorberg 5	840	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5506254, 7.5874932	Anzahl freie Parkplätze: 722
Post Basel	Gartenstrasse 143	72	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5468617, 7.5929374	Anzahl freie Parkplätze: 71
Bahnhof Süd	Güterstrasse 115	100	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.5458851, 7.5884556	Anzahl freie Parkplätze: 67
					Anzahl freie Parkplätze: 350
Messe	Riehenstrasse 101	752	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.563241, 7.602175	Anzahl freie Parkplätze: 680
Centralbahnparking	Gartenstrasse 150	286	<a href="https://www.parkleitsystem-basel.ch/...">https://www.parkleitsystem-basel.ch/...</a>	47.547299, 7.5922975	Anzahl freie Parkplätze: 218

# Data Quality

---

- › The data for car park is missing roughly 250 hours
- › A problem with 'Total Plätze' in certain parking lots
- › Including some obvious incorrect entries for 'Anzahl frei'

# Data Quality

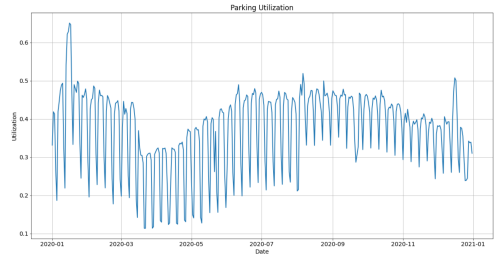
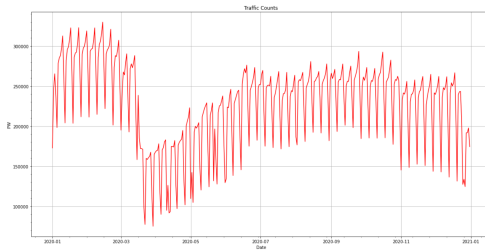
---

- › The data for car park is missing roughly 250 hours
- › A problem with 'Total Plätze' in certain parking lots
- › Including some obvious incorrect entries for 'Anzahl frei'

Aeschen	95	97
Anfos	168	162
Bad. Bahnhof	960	300
Bahnhof Süd	160	100
Centralbahnparking	391	286
City	1114	1114
Clarahuus	100	52
Claramatte	125	100
Elisabethen	840	840
Europe	8976	120
Messe	830	752
Post Basel	77	72
Rebgasse	250	250
Steinen	516	526
Storchen	142	142

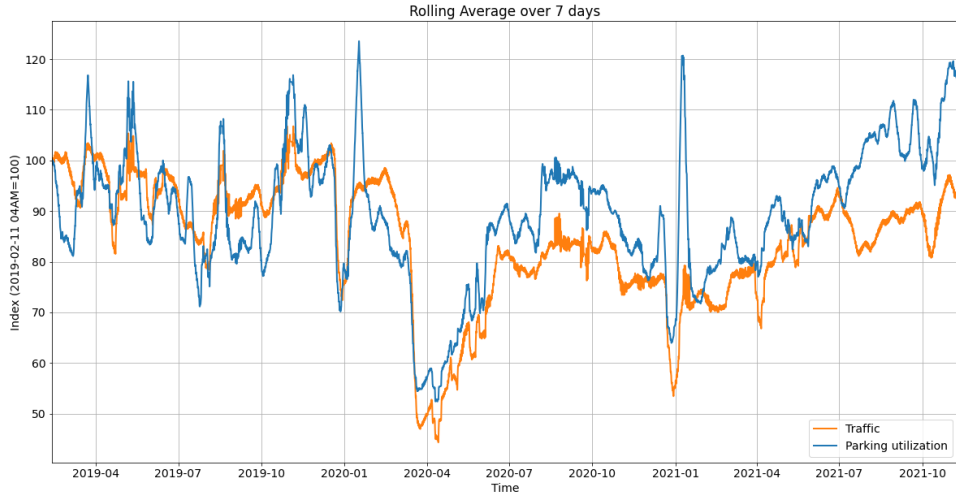
# Aggregated Data

---

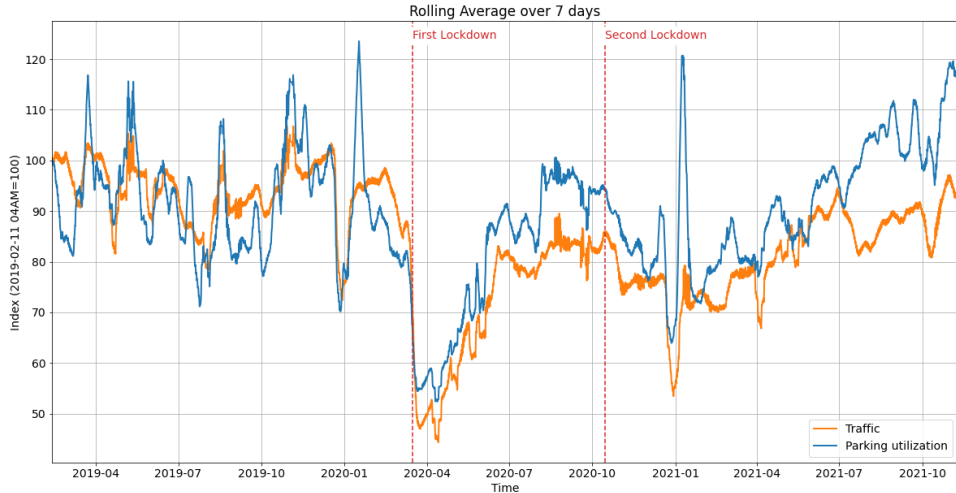


Traffic Counts and Parking Utilization

# Rolling Average

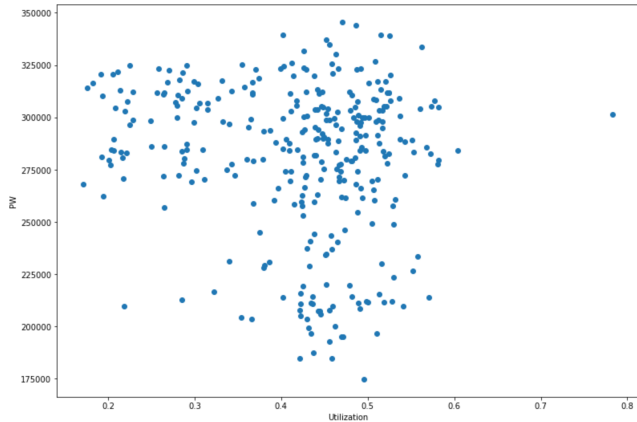


# Rolling Average



## Correlation for 2019

---



PW is daily sum



## Recap: Goal of the Analysis

---

- Match car parks to counting points
- [Overview](#)

## Recap: Goal of the Analysis

---

- Match car parks to counting points
- Overview
- Solution: work with clusters
- Clusters

# Visual Analysis

---

## > Visual Analysis

# GIF

---

- › Use the clusters and produce images for each hour.
- › GIF

# Conclucion

---

- No proof for correlation could be found.
- Plenty of Problems in the data to be addressed. Some are clear errors, others are inherent to the date.
- Visualization tools are good to get a first impression.
- Social Good?

# Conclucion

---

- No proof for correlation could be found.
- Plenty of Problems in the data to be addressed. Some are clear errors, others are inherent to the date.
- Visualization tools are good to get a first impression.
- Social Good?
- Yes: Identify type of traffic in Basel and take corresponding measures.

## Questions?

michellej.boesiger@stud.unibas.ch

erind.shima@stud.unibas.ch

reto.krummenacher@unibas.ch