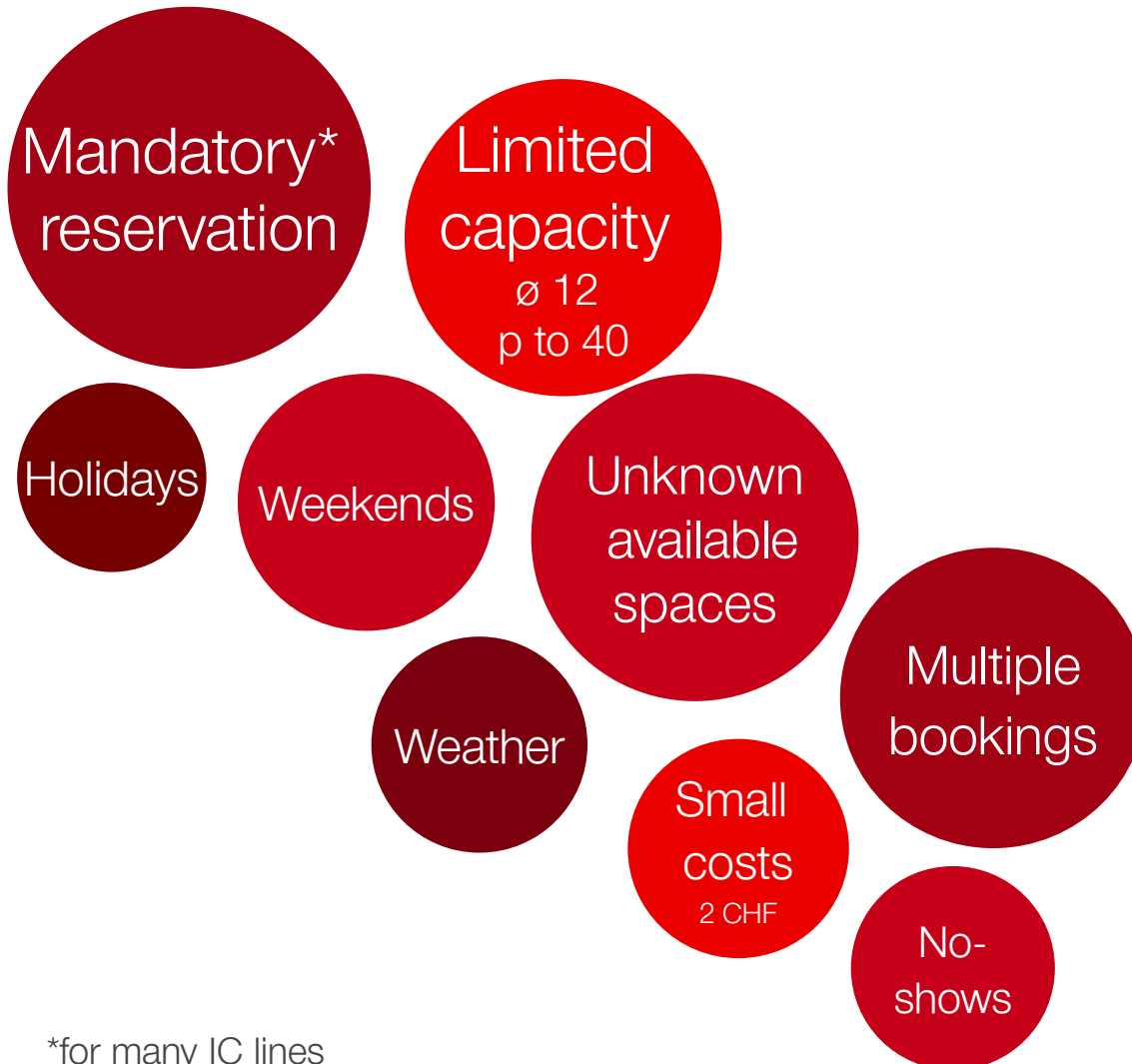# SBB Challenge
Forecast the latest chance to get your bike reservation.
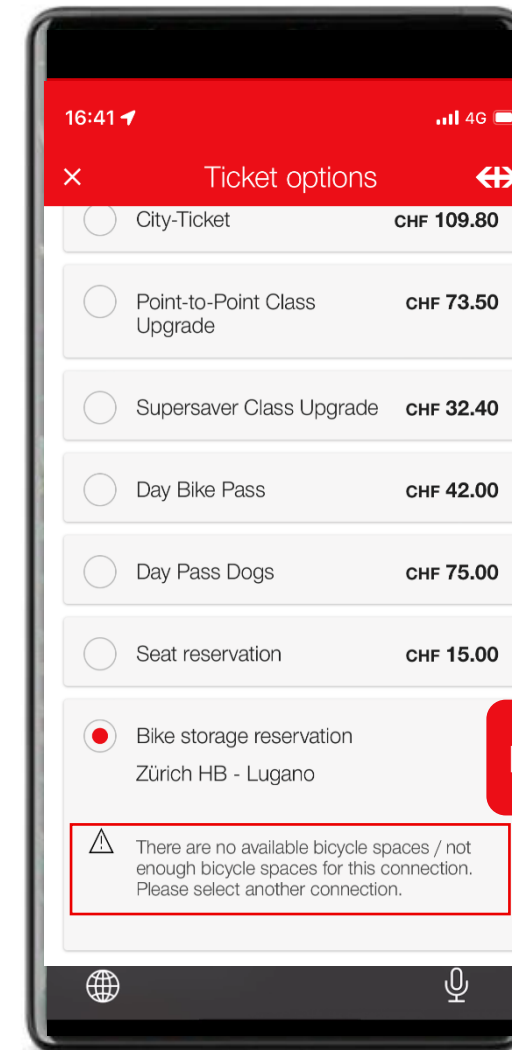
START Hack, 23-25 March 2022, St. Gallen,
Marc Guggenheimer and Christian Trachsel

SBB CFF FFS

Summary April–October 2021.

+70% reservations on IC5/51 and IC2/21.

+24% sold Day Passes Bike compared to 2019

66% book on day of departure

188'000 total amount of bike reservations on domestic IC trains

87% reserve their bicycle space with SBB's mobile application

626 customer complaints about self-service loading of bicycles in 2021

2'537 reservations on Sunday, 18 July (day with highest demand)

2'101 total amount of reservations on train with highest demand

+7% Annual Bike Passes (compared to 2020)

408'000 sold Day Passes Bike compared to 2020 (+7%)

Current situation.

Mandatory* reservation

Limited capacity
ø 12
p to 40

Holidays

Weekends

Unknown available spaces

Weather

Small costs
2 CHF

Multiple bookings

No-shows

*for many IC lines

16:41

Ticket options

✕

City-Ticket   CHF **109.80**

Point-to-Point Class Upgrade   CHF **73.50**

Supersaver Class Upgrade   CHF **32.40**

Day Bike Pass   CHF **42.00**

Day Pass Dogs   CHF **75.00**

Seat reservation   CHF **15.00**

⦿ Bike storage reservation
Zürich HB - Lugano

⚠ There are no available bicycle spaces / not enough bicycle spaces for this connection. Please select another connection.

Process stops

The best solution is going to be published on a seperate website, where customers can see the last possible moment to make a reservation.

Solution

Analytics based independet solution

*SBB reservation backend system is going to be replaced

Publishing channel

Carriage of bikes on the train.

Take your bike on your travels: with a Point-to-Point Ticket, a Day Pass Bike, or an annual bike pass, you can load your own bicycles on many public transport routes in Switzerland.

Compulsory bicycle space reservation.

Day Pass Bike.	
Price	CHF 14
Buy →	
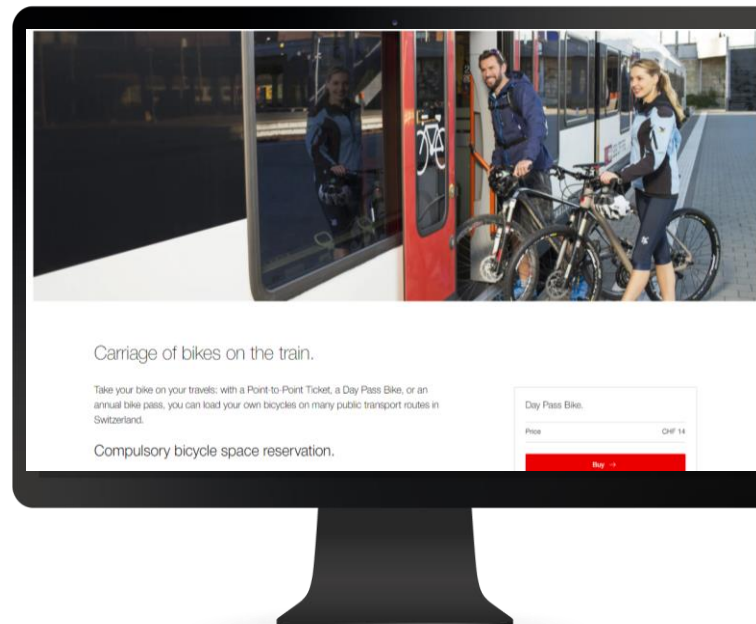
www.sbb.ch/en/biketransport

Value

Reduce unused spaces

Internal optimi-zation

Flatten the curve of demand
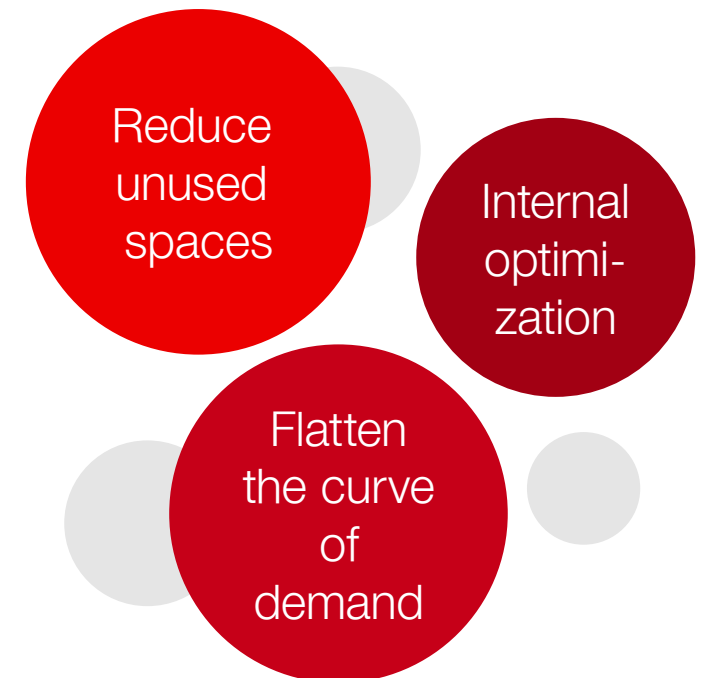
To build your forecast we offer several data sources.
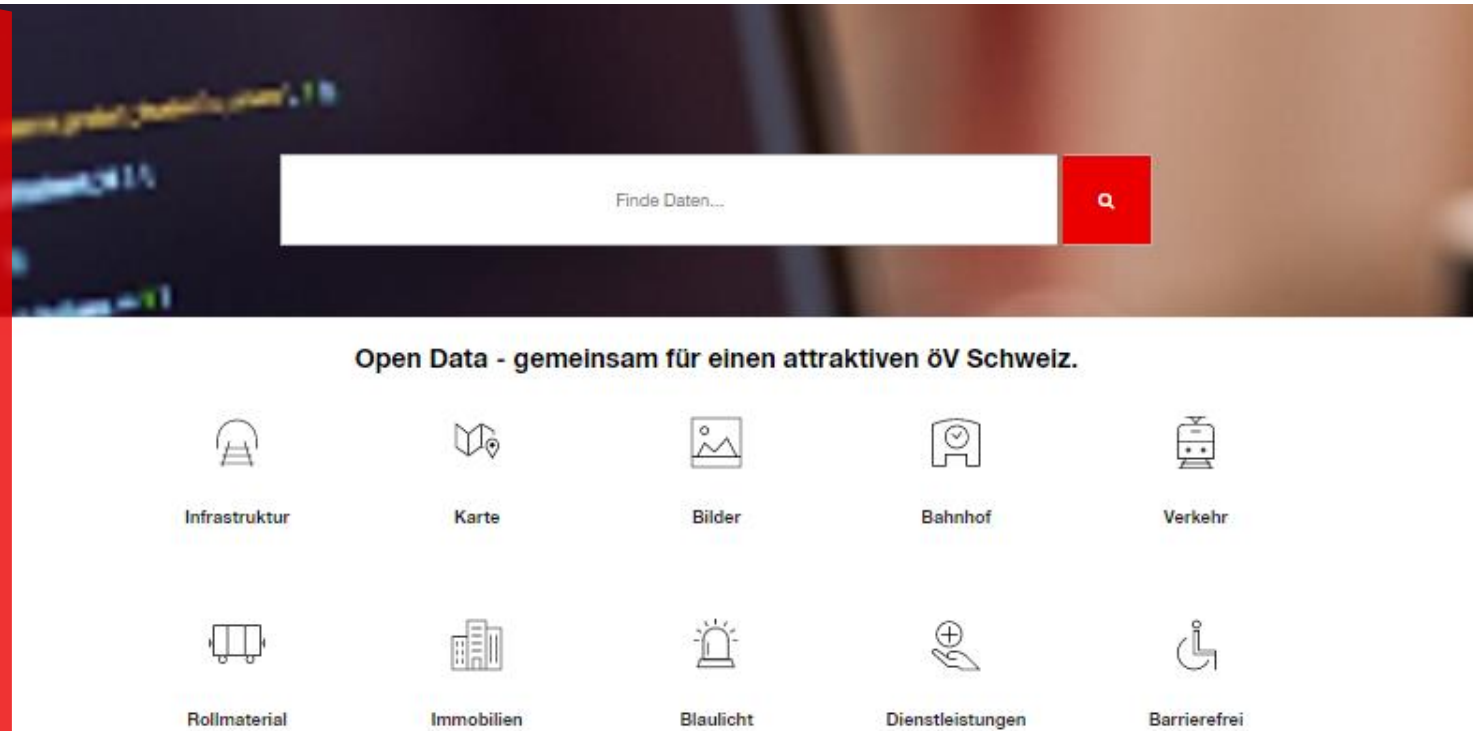
Some facts and figures.

RESERVATIONS ACCORDING TO LINES

Div; 263
IC 6; 6'194
IC 51; 7'840
IC 61; 14'706
IC 5; 60'667
IC 3; 20'030
IC 1; 22'416
IC 8; 28'687
IC 2/21; 27'242
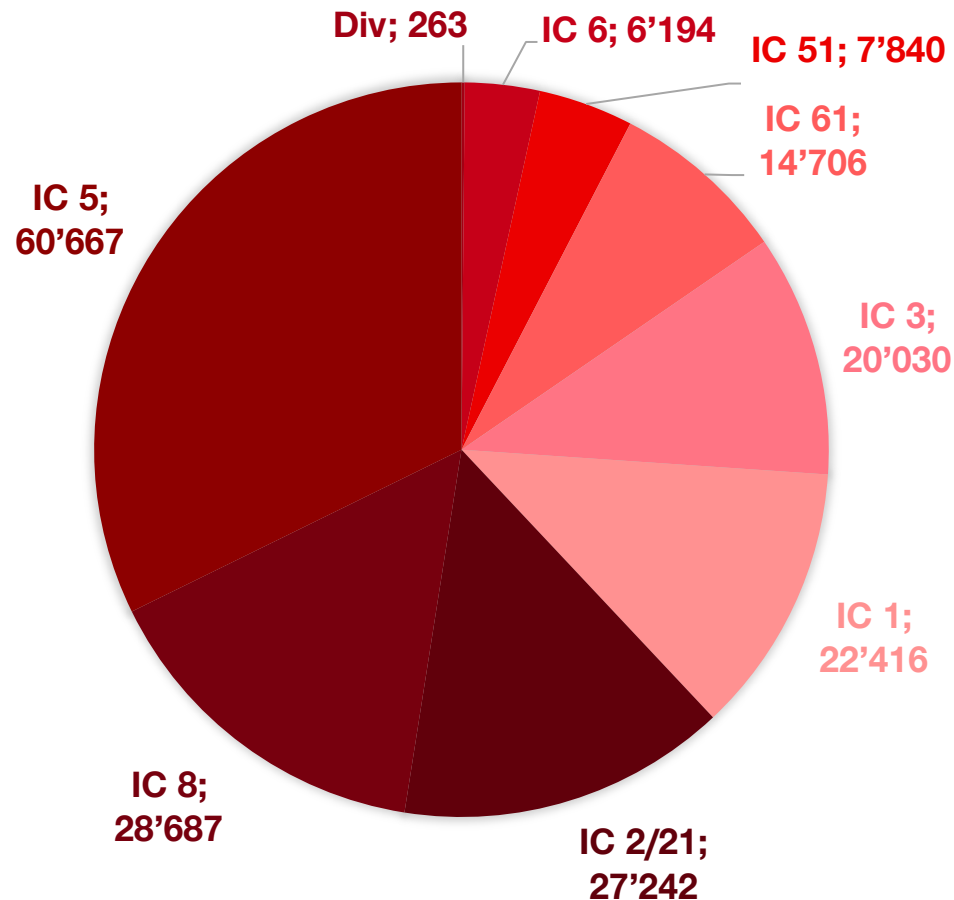
TOP 10 RESERVATIONS (TRAINS)

Train No.	Departure place/time	Volume
IC21 684	Lugano ab 16.02	2'101
IC2 886	Lugano ab 17.02	2'014
IC5 514	Zürich HB ab 9.04	1'892
IC5 529	Biel/Bienne ab 16.46	1'877
IC2 865	Zürich HB ab 9.05	1'766
IC8 829	Brig ab 16.48	1'691
IC8 806	Bern ab 08.07	1'677
IC21 663	Basel SBB ab 7.03	1'535
IC2 882	Lugano ab 15.02	1'533
IC8 808	Bern ab 09.07	1'488

Trains IC2/21 and IC5 require a bike reservation every day from 21 March until 31 October. Trains IC8 only from Friday to Sunday.

Bike reservations per calendar week in 2021.
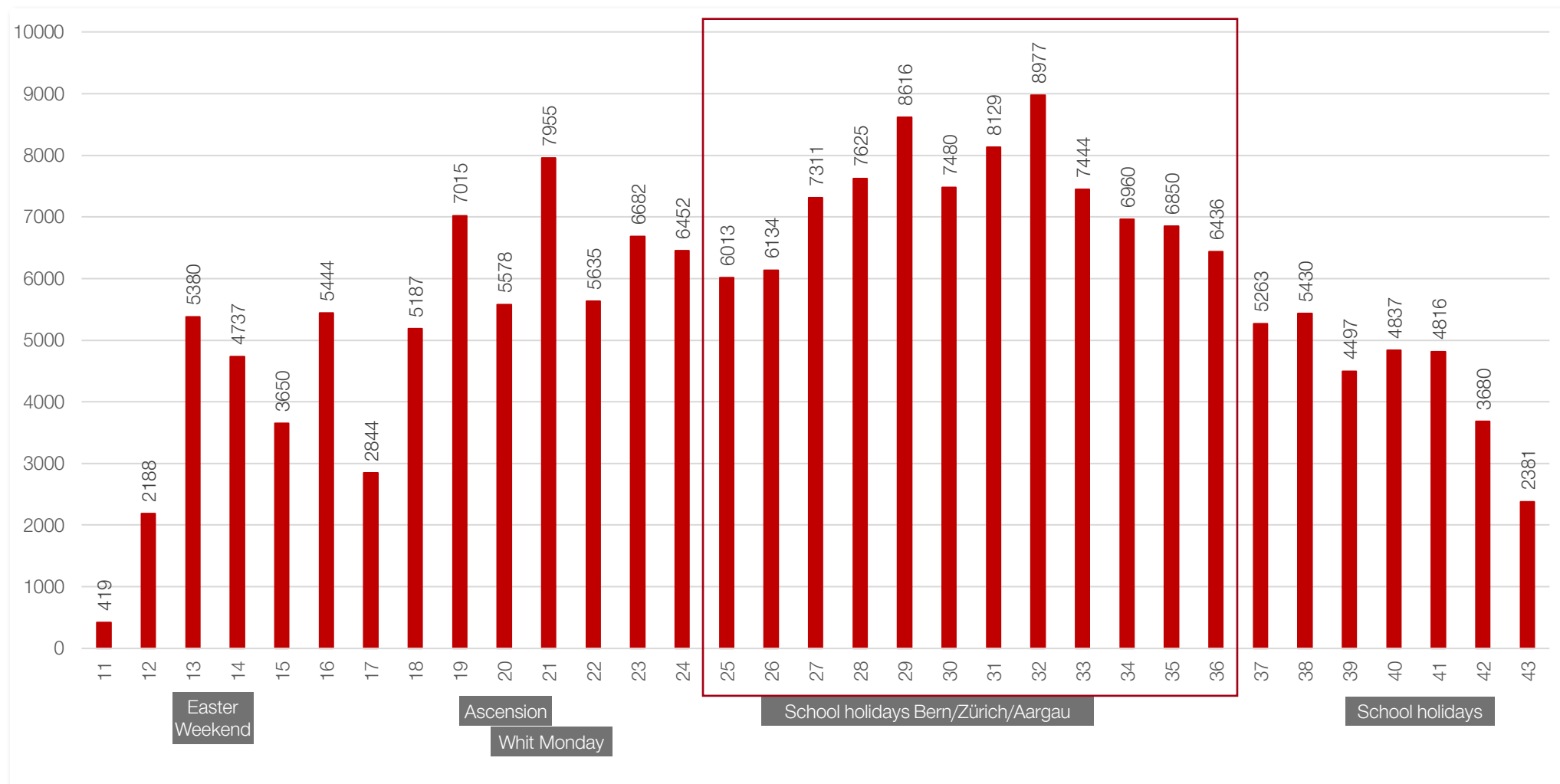
Historical bicycle reservation data.

Historical reservations.

- CSV-files includes booking time, routes, number of spaces etc.
- Beginning of periode all data: 2020
- Data from 2019* is only available for IC2/21 (Gotthard) and IC5/51 (Jurasüdfuss)

Capacity

- Contains additionally actual capacity data («Ist-Kapazität»)
- Attention: Data is pervated by errors (probably periodical transmissons errors)

Annual Formation.

https://data.sbb.ch/explore/dataset/jahresformation/table/?refine.beginnfahrplanperiode=Fpl-2022

In the annual formation Information you can find the amount of bikehooks.

The key of the table is «zug». The Formation is "block_bezeichnung". In the field "bitmap" you can find for each day of the period a "x" where the formation is valid. Beginning of the period: 12.12.2021

DCAT-AP for Switzerland

Domain	schweizerische-bundesbahnen-sbb
Rights	NonCommercialAllowed-CommercialAllowed-ReferenceRequired

Dataset schema
Click to collapse

Train

Train number	Name (identifier)	zug
	Type	decimal
	Sample	18780

Weather Data.
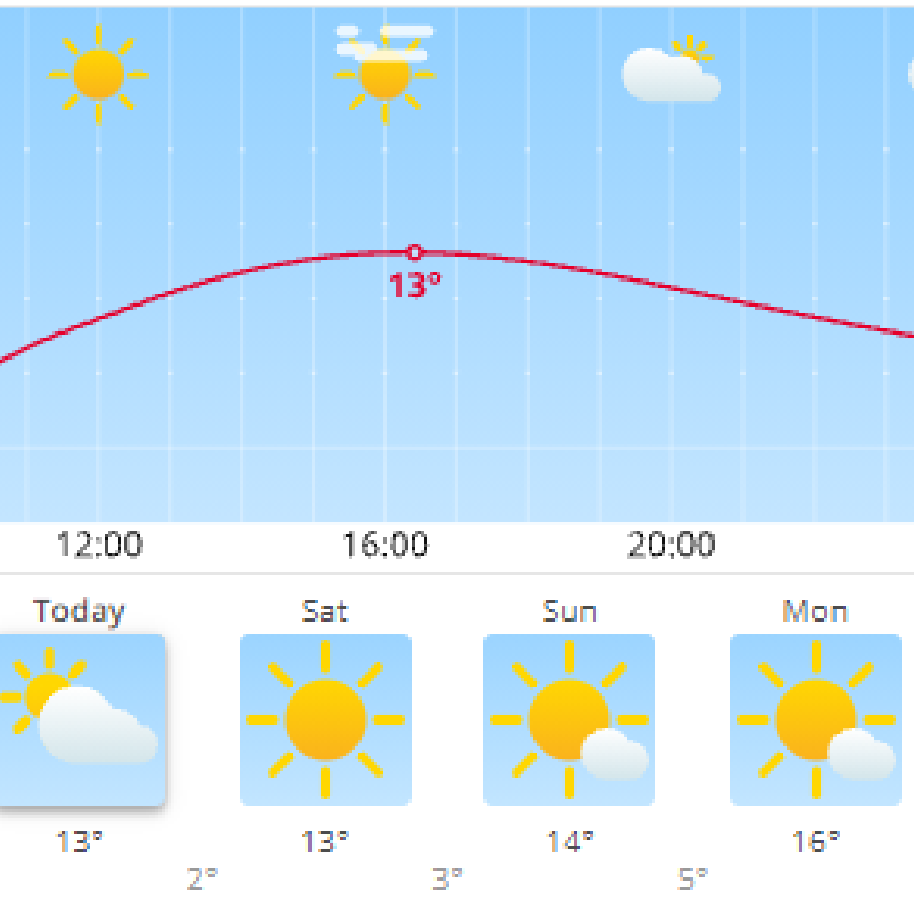
We provide historical weather data for a few points in switzerland

- IC 8 Romanshorn – Zürich – Bern – Brig: Brig/Visp, Saas-Fee, Oberwald, Torrent
- IC 3 Basel – Zürich – Chur: Davos, Samedan, Marguns, Laax
- IC 5 Rorschach – Zürich – Biel – Neuchatel – Lausanne/Genève: Biel, Neuchâtel, Yverdon
- IC 2/21 Basel/Zürich – Bellinzona – Lugano: Bellinzona und Lugano

leisure_biking:idx ➜ index 0 to 1 to indicate how well you can bike
snow_depth:cm ➜ deepth of snow at this point
t_2m:C, ➜actual temperature
precip_24h:mm ➜ amount of rain during the last 24 hours
weather_symbol_1h:idx ➜ summary of the weather in the last hour link
effective_cloud_cover:octas ➜ index of cloud coverage

Details on Available Parameters | Meteomatics

Holidays in Switzerland.

Each canton has different holidays.
We collected all of them in one list.

	A	B	C	D	E	F	G	H
1	Kanton	Sportferien		Frühlingsferien		Sommerferien		Herbstfer
2	Aargau			12.04.2022	23.04.2022	19.07.2022	19.07.2022	04.10.2022
3	Ausserrhoden			12.04.2022	23.04.2022	12.07.2022	13.08.2022	11.10.2022
4	Basel-Land	13.02.2022	28.02.2022	27.03.2022	11.04.2022	03.07.2022	15.08.2022	02.10.2022
5	Graubünden	01.03.2022	05.03.2022	19.04.2022	30.04.2022	01.07.2022	15.08.2022	11.10.2022
6	Uri	27.02.2022	07.03.2022	01.05.2022	16.05.2022	03.07.2022	15.08.2022	02.10.2022
7	Innerrhoden	12.02.2022	21.02.2022	10.04.2022	25.04.2022	03.07.2022	15.08.2022	09.10.2022
8	Basel-Land	13.02.2022	28.02.2022	27.03.2022	11.04.2022	10.07.2022	15.08.2022	02.10.2022
9	Basel-Stadt	13.02.2022	27.02.2022	27.03.2022	10.04.2022	03.07.2022	14.08.2022	02.10.2022
10	Bern			10.04.2022	25.04.2022	03.07.2022 Bern	15.08.2022	25.09.2022

Timetable information and annual formation gives you

Open Journey Planer– Service - timetable search.

- OJP allows you to look for trips
- After you find a trip, you can look for the specific formation (cars which are in the train). In this formation information
- Description of the service: <u>OJP – Open Journey Planner | Open-Data-Plattform Mobilität Schweiz (opentransportdata.swiss)</u>
- Endpoints to use: - Trip Request
- Credentials: find on the website

Opendata Transport Service - timetable search

- Opendata.& search.ch provide easy timetable search
- Limited usage (1000 times a day.)
- Description of the service: Transport API (opendata.ch)
- Endpoints to use: /connections
- No Credentials needed

Go to file | Add file ▾ | Code ▾

MahaliaStephan Update README.md   1a6ee89 18 hours ago ⟳ 7 commits

220207_Angebot_Veloplätze_Züge_2...	Add files via upload	15 days ago
README.md	Update README.md	18 hours ago
Reservationen_alle_inkl._int_Mrz_Okt_...	Add files via upload	15 days ago
Schulferien.xlsx	Add files via upload	6 days ago
weather.xlsx	Add files via upload	15 days ago

README.md   ✎

START Hack 2022 - SBB Case

Case Introduction

- Travelers more and more want to take their bicycle on the train to discover Switzerland. For self-service loading of bicycles SBB offers space on the train, which customer need to reserve upfront. On top of that at the weekend there is extra space available staffs helping travelers to load their bicycles in a separate wagon. But also with that extra capacity space can going to be scarce at days weather is supposed to become nice. Unfortunately customers can't see how many spaces are available. However, if the weather is rainy or cold there are not so many staffs needed and the reservation does not has take place so early.

Expected Final Product A prediction for the upcoming weekend at w time bicycle slots on the train are already fully booked. So customers can get the information of the latest timeslot they probably should book their reservation to get a free bicycle space depending on the train or trainline. Furthermore, internal staffing can be adjusted upfront depending on the predicted demand for bicycle transportation.

Who will help us to enable our customers to have a joyful ride at the weekend?

About

No description, website, or topics provided.

📖 Readme
☆ 0 stars
👁 2 watching
ᛘ 0 forks

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Contributors 3

timetable2014 Christian Trachsel
YvGra Yves
MahaliaStephan

Thank you.

Merci. Grazie & Dankeschön.