UITP

June 2020

Using Big Data to optimize Metro Service and client satisfaction

Susana Palomino | Marketing Director

metro bilbao

Metro Bilbao started operation in November

1995

These are the current figures, as from end 2019.

Passengers
91.570.001

41
stations
(2 lines)

Client satisfaction:
8,35
(out of 10)

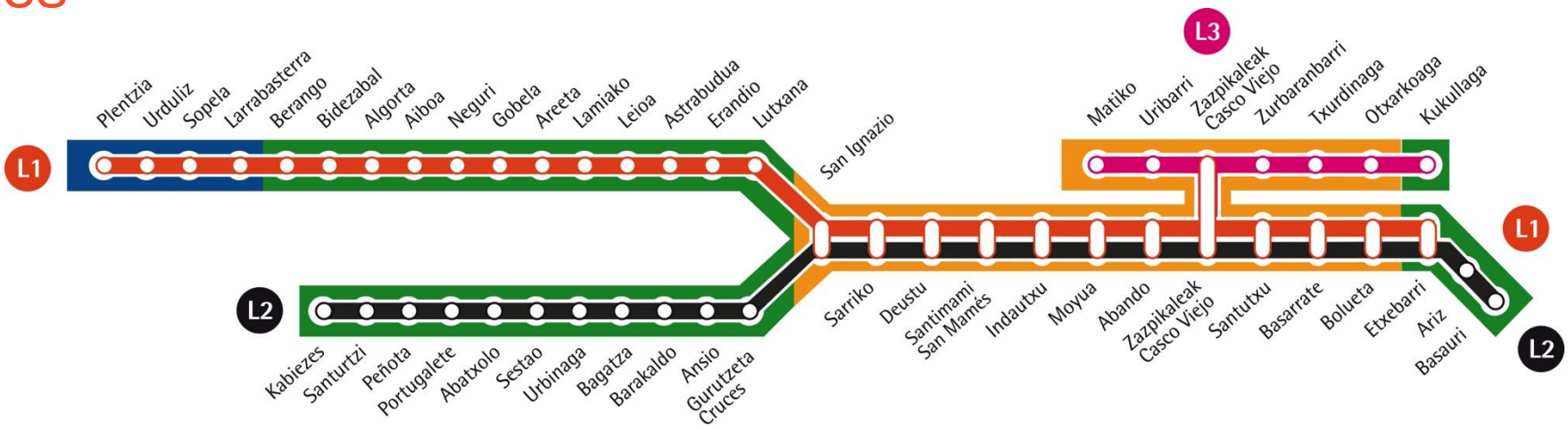
Income
(ticket selling)
65.025.017€

Coverage index
87,16%

Basic service

Sunday	Monday to Thursday	Friday	Saturday
06:00 > 23:00	06:00 > 23:00 2’5 · 5 · 10 · 20 / 3 · 6 · 18	06:00 > 02:00	Non stop 24 hours

Lines



Zone 3 **Zone 2** **Zone 1** **Zone 2**

Who and how do we settle the service we provide?

Marketing department

Analysing more than 1.000.000 data every day

Since Metro Bilbao started operation (and even before) the Marketing department has been in charge of:

1. Setting the quality standards for the service.
2. Setting the fares.
3. Getting the right interface for ticket selling machines.
4. Getting the right interaction at validating gates.
5. And also getting the best frequencies for the clients, maximising the company resources.

PROCESS MAP

metro bilbao

Skateholder Groups

Strategic Processes

Enviromental management

- Policy and strategy
- External communication
- Financial planning
- Human resource policy definition
- Social corporate responsibility management
- Sales management

Sizing and personnel incorporation | Professional development | Promotion of health and preventive action | Recognition system | Labour relations management | Internal communication

Operational Processes

Defining the service → Planning the service → Annual allocation of the service → Producing the service

Customer service

Support Processes

- Incident management
- Continuous improvement
- Facility management
- Unit management
- Trip Safety
- Legal advice
- Quality management
- Civil Protection and Public Safety
- Purchasing and contracting management
- Ticketing management
- Knowledge management
- Building management
- IT applications and architecture management

Skateholder Groups

Average number of cancelations per hour

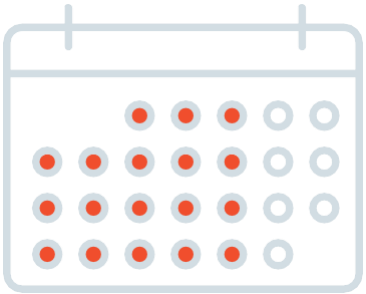
Monday to friday in winter

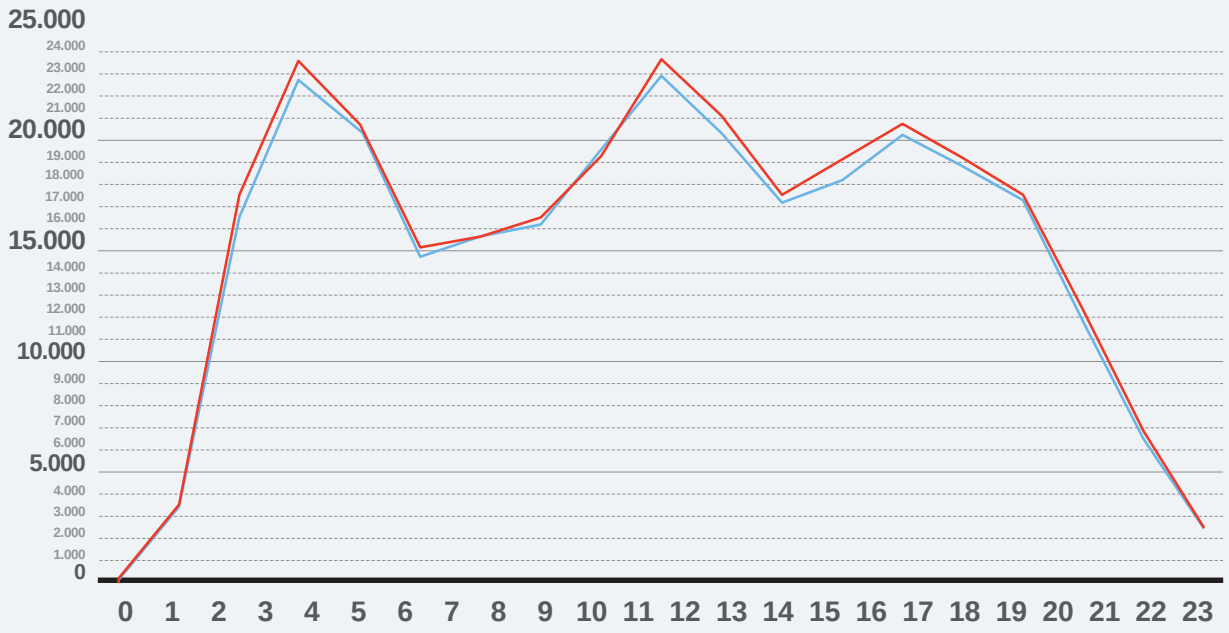
Saturday in winter

Sunday in winter

Average number of cancelations

Monday to friday
in winter



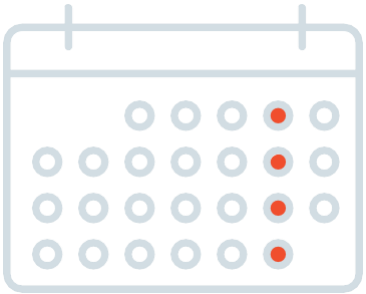


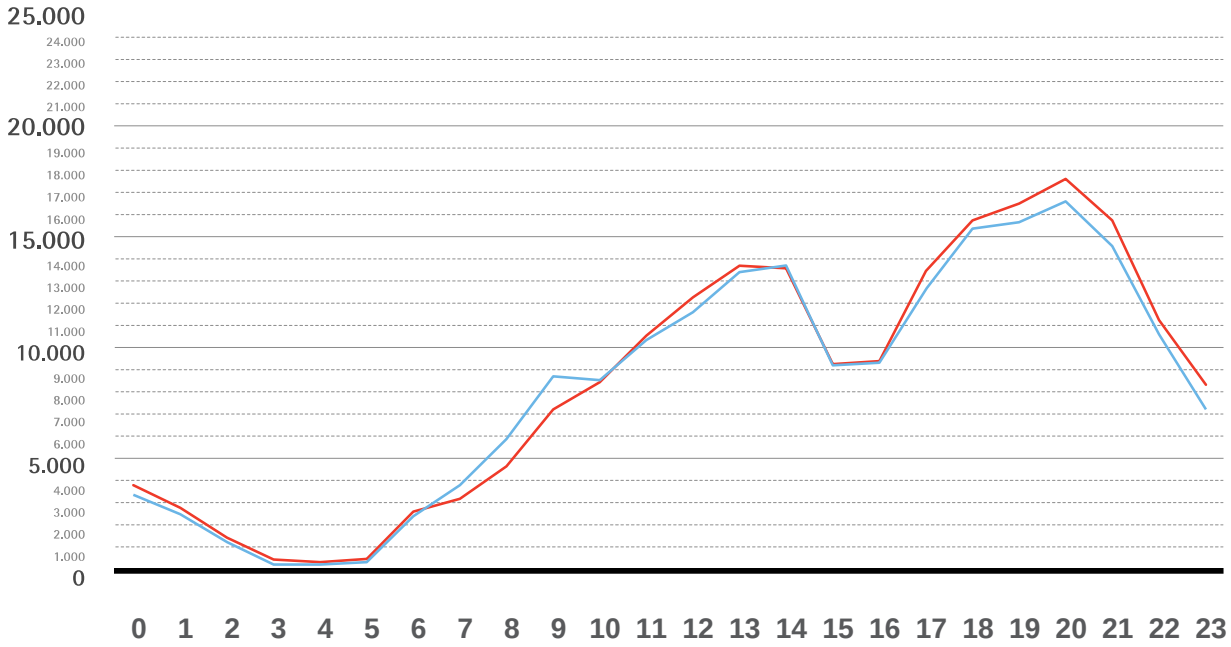
Time of day	2017	2016
0	107	64
1	33	20
2	8	13
3	5	6
4	16	17
5	87	78
6	3.388	3.308
7	17.412	16.574
8	23.679	22.876
9	20.736	20.343
10	15.125	14.836
11	15.512	15.193

Time of day	2017	2016
12	16.445	16.137
13	19.619	19.255
14	23.735	22.979
15	21.059	20.254
16	17.575	17.103
17	19.023	18.380
18	20.769	20.142
19	19.169	18.812
20	17.463	17.163
21	12.171	11.810
22	6.915	6.688
23	2.407	2.414

Average number of cancelations

Saturday in winter



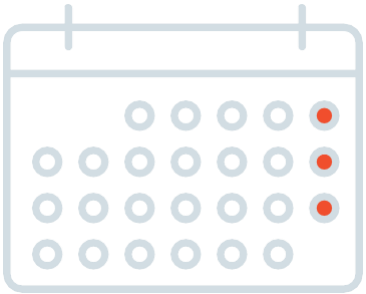


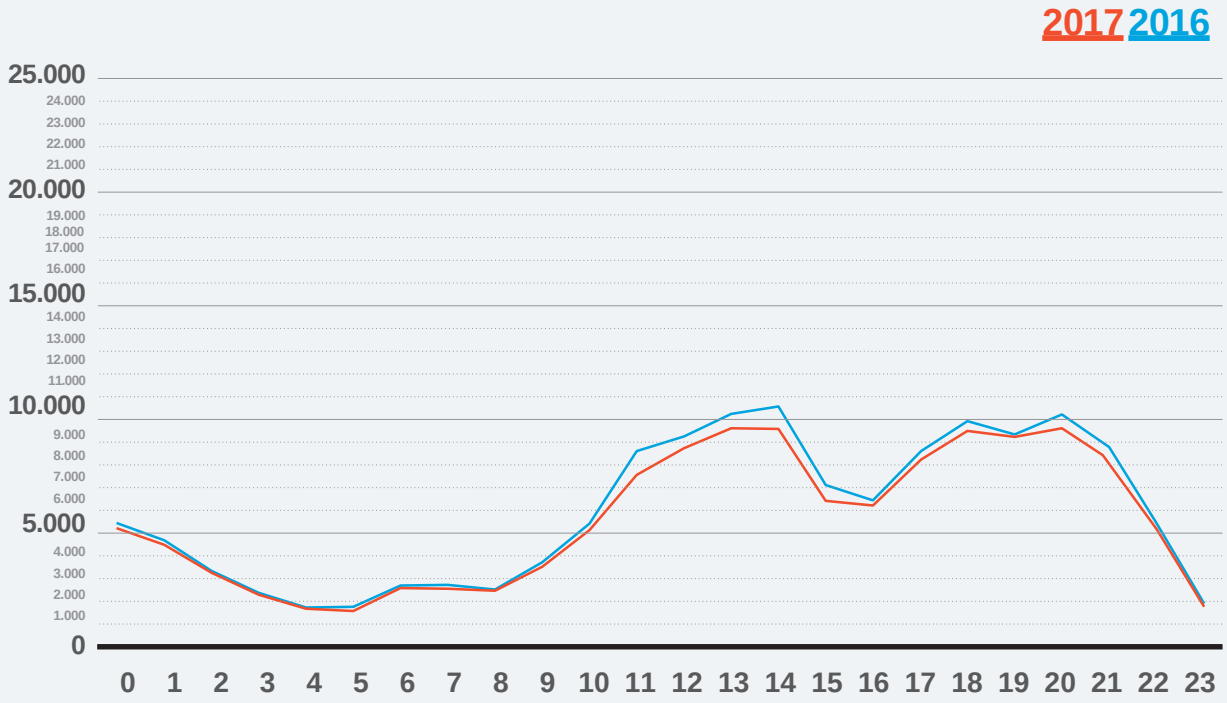
Time of day	2017	2016
0	3.941	3.381
1	2.897	2.531
2	1.414	1.250
3	305	289
4	247	232
5	323	289
6	2.624	2.504
7	3.072	3.914
8	4.876	5.987
9	7.195	7.812
10	8.472	8.525
11	10.592	10.438

Time of day	2017	2016
12	12.272	11.767
13	13.799	13.467
14	13.583	13.748
15	9.264	9.093
16	9.464	9.363
17	13.299	12.881
18	15.704	15.215
19	16.536	15.772
20	17.664	16.678
21	15.897	14.750
22	11.135	10.397
23	8.212	7.199

Average number of cancelations

Sunday in winter





Time of day	2017	2016
0	5.072	5.307
1	4.572	4.793
2	3.171	3.250
3	2.232	2.346
4	1.722	1.793
5	1.588	1.780
6	2.621	2.861
7	2.600	2.666
8	2.502	2.538
9	3.483	3.704
10	5.044	5.366
11	7.495	8.428

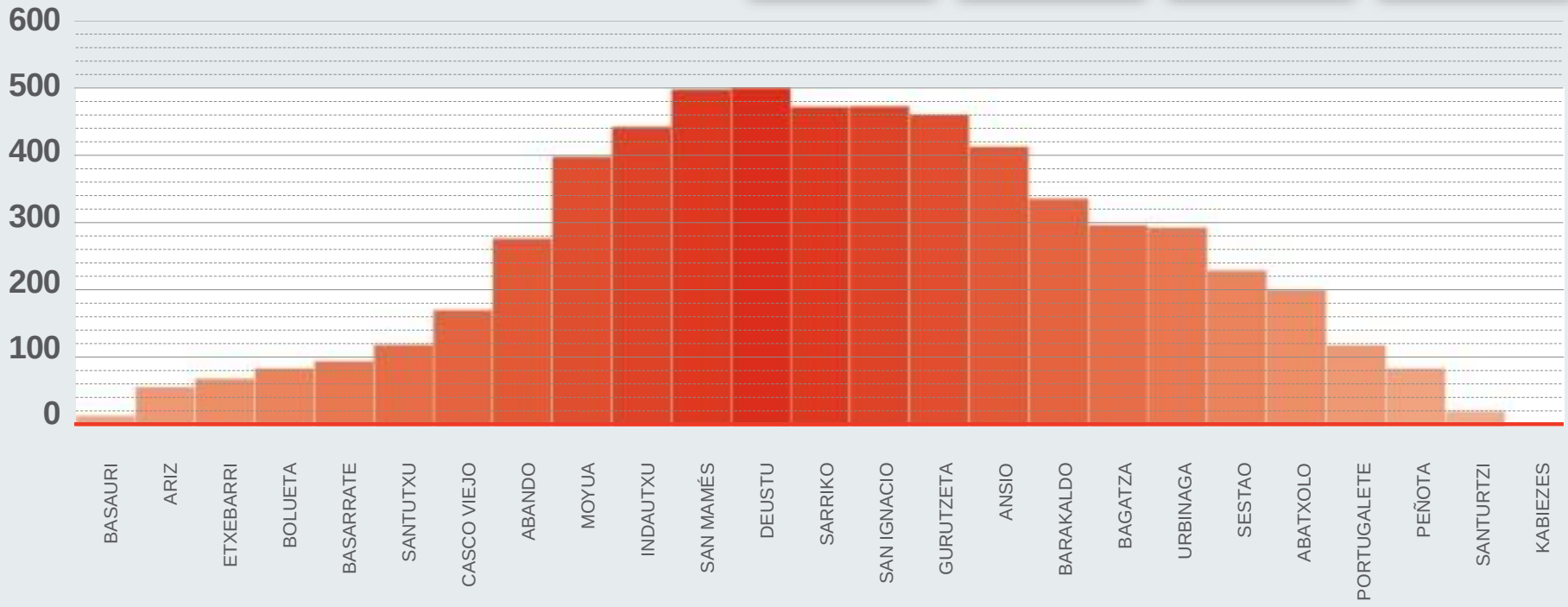
Time of day	2017	2016
12	8.717	9.078
13	9.666	10.065
14	9.650	10.502
15	6.315	7.009
16	6.075	6.390
17	8.126	8.565
18	9.453	9.902
19	9.132	9.235
20	9.619	10.049
21	8.261	8.729
22	5.170	5.377
23	1.835	1.902

For the marketing department this is how a train looks like

Train load report per circulation

Circulation: 02659 (Circulation start time 15:36)

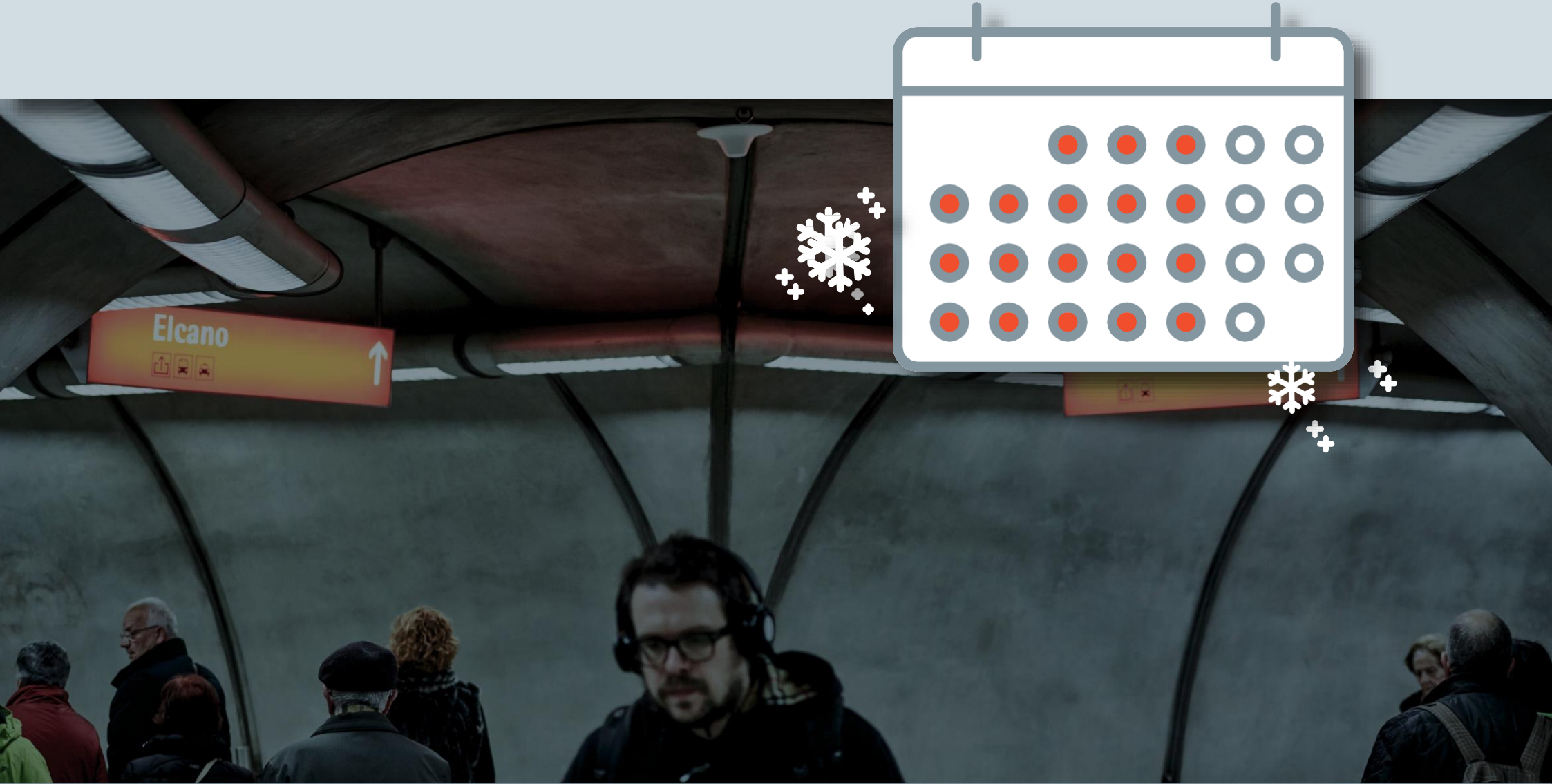
Total entrances	Total exits	Maximum load	Number of carriages
842	842	510	5



	BSR	ARZ	ETX	BOL	BAS	SAN	CAV	ABA	MOY	IND	SAM	DEU	SAR	SIN	GUR	ANS	BAR	BAG	URB	SES	ABT	POR	PEN	STZ	KAB
ENTRANCES	16	44	18	17	18	30	62	140	146	76	98	36	4	40	38	4	21	14	0	9	4	4	2	1	0
EXITS	0	1	5	2	7	5	10	32	23	31	42	33	33	39	51	52	99	54	4	73	34	87	37	65	23
MAXIMUM LOAD	**16**	**59**	**72**	**87**	**98**	**123**	**175**	**283**	**406**	**451**	**507**	**510**	**481**	**482**	**469**	**421**	**343**	**303**	**299**	**235**	**205**	**122**	**87**	**23**	**0**

MAXIMUM LOADS

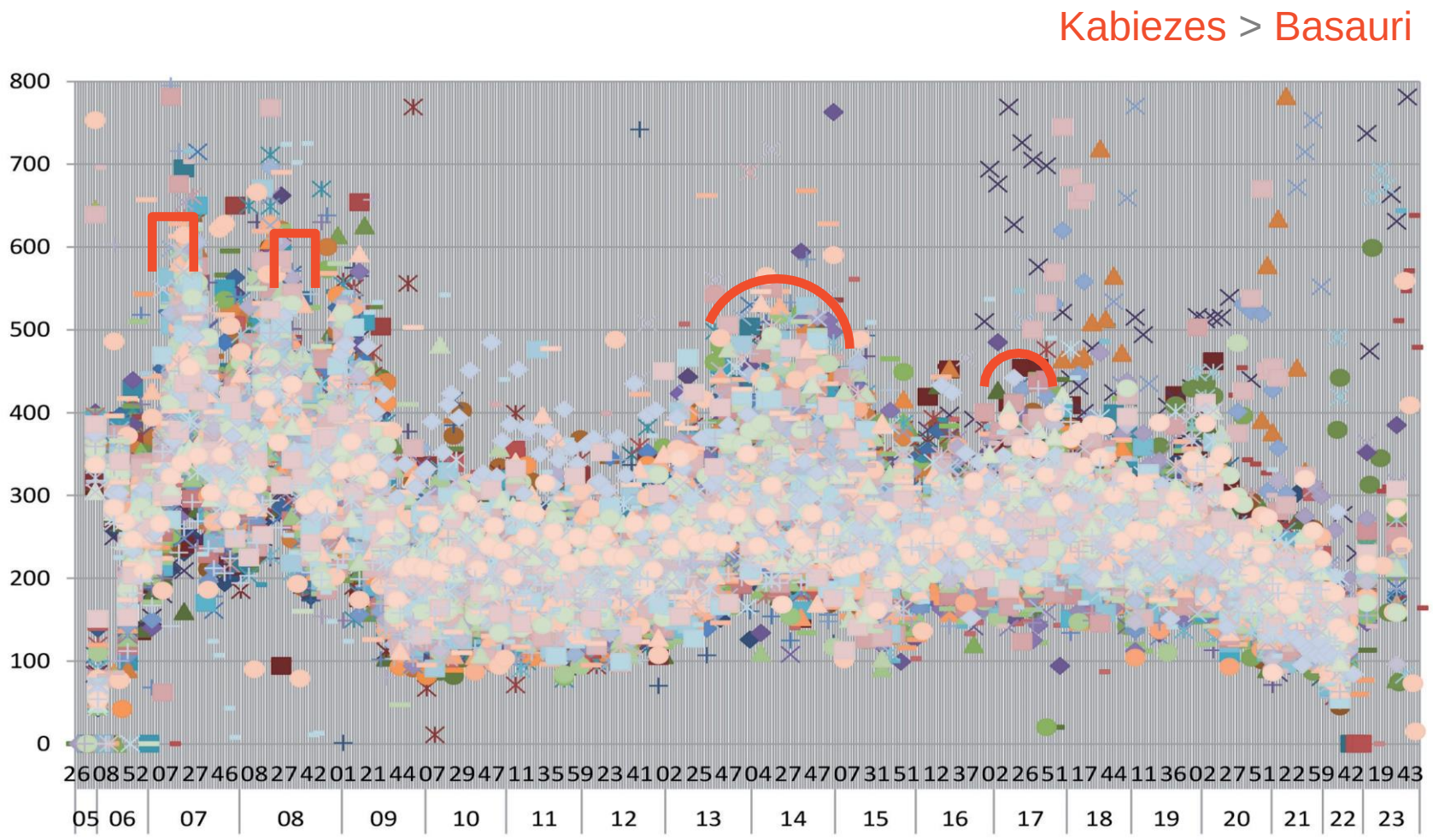
Monday to Friday in winter | 2019 |



MAXIMUM LOAD

Monday to Friday in winter · 2019

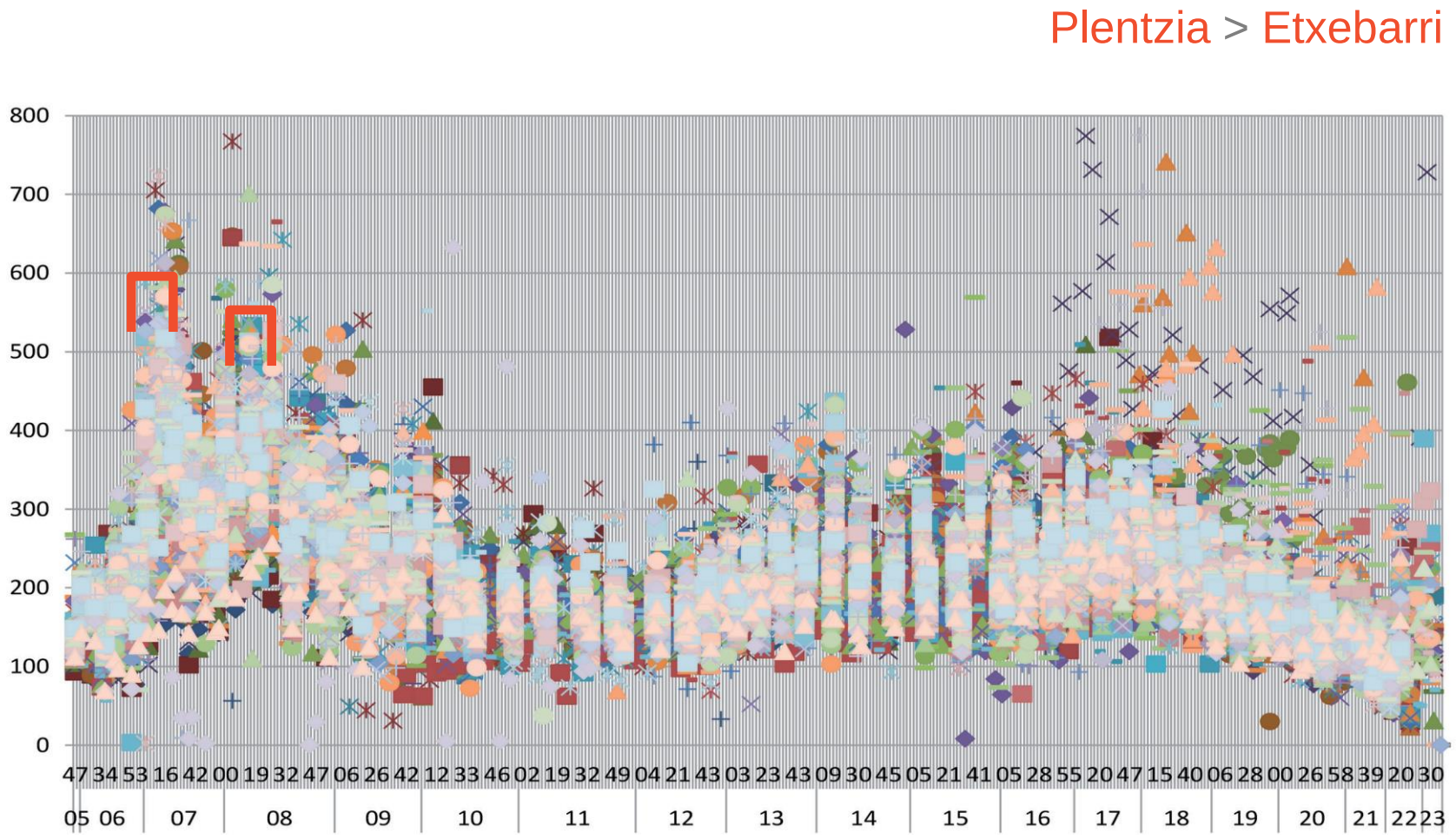
The busiest slot is 13:45-13:55 (journey start time) on KAB-BAS (KABIEZES-BASAURI) of about 650 people.



MAXIMUM LOAD

Monday to Friday in winter · 2019

The busiest slot is 6:30 to 8:00 (journey start time) on PLE-ETXE (Plentzia - Etxebarri) of about 600 people.



Monday to Friday

FREQUENCY CALCULATION

KABIEZES > BASAURI

	MORNING PEAK	
	4 carriages	5 carriages
Peak passengers	1920	
Peak slot (min.)	15	
Theoretical number of trains	3,37	2,67
Theoretical frequency (minutes)	4,45	5,61

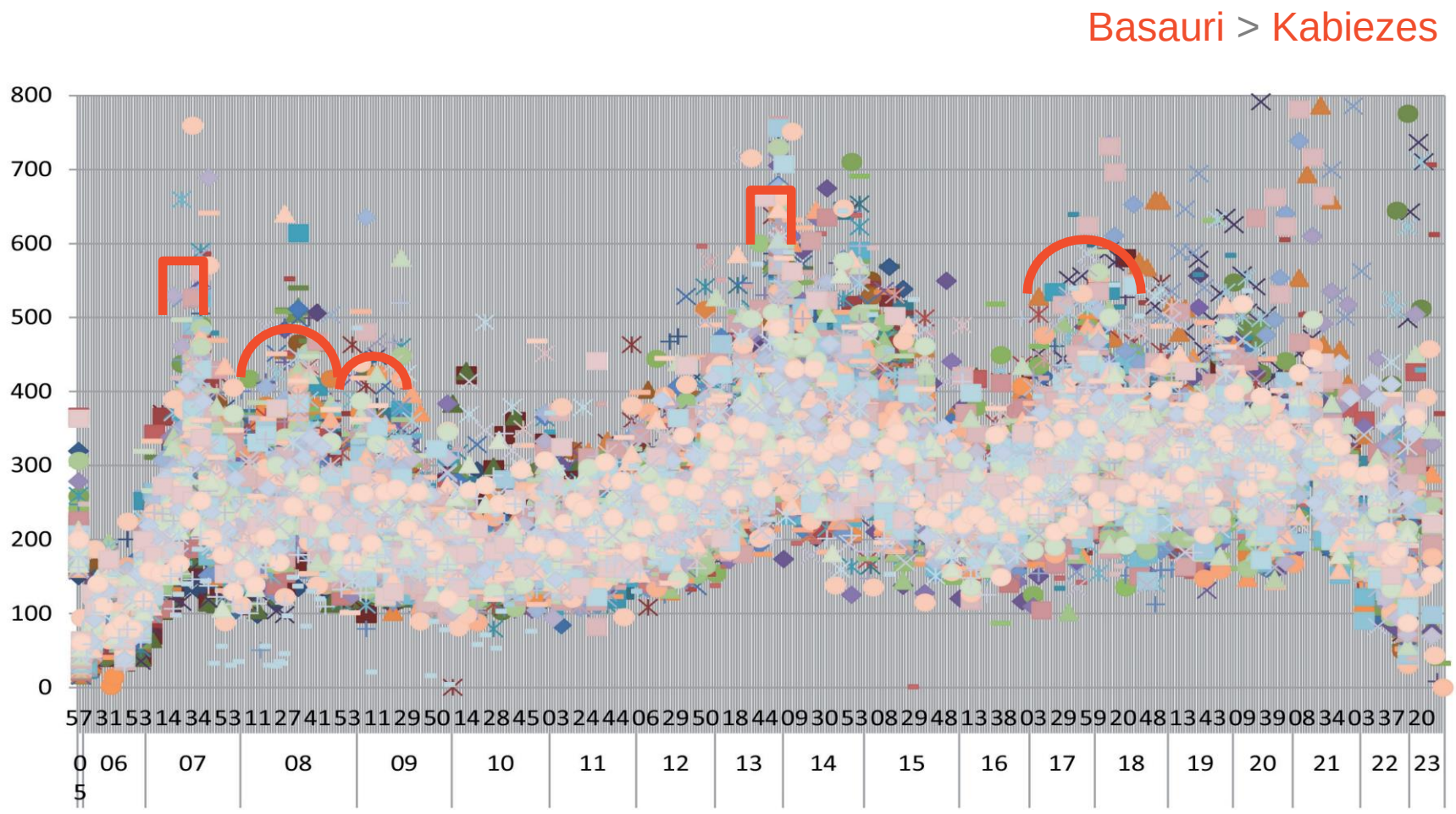
PLENTZIA > ETXEBARRI

	MORNING PEAK	
	4 carriages	5 carriages
Peak passengers	1710	
Peak slot (min.)	15	
Theoretical number of trains	3,00	2,38
Theoretical frequency (minutes)	5,00	6,30

MAXIMUM LOAD

Monday to Friday in winter · 2019

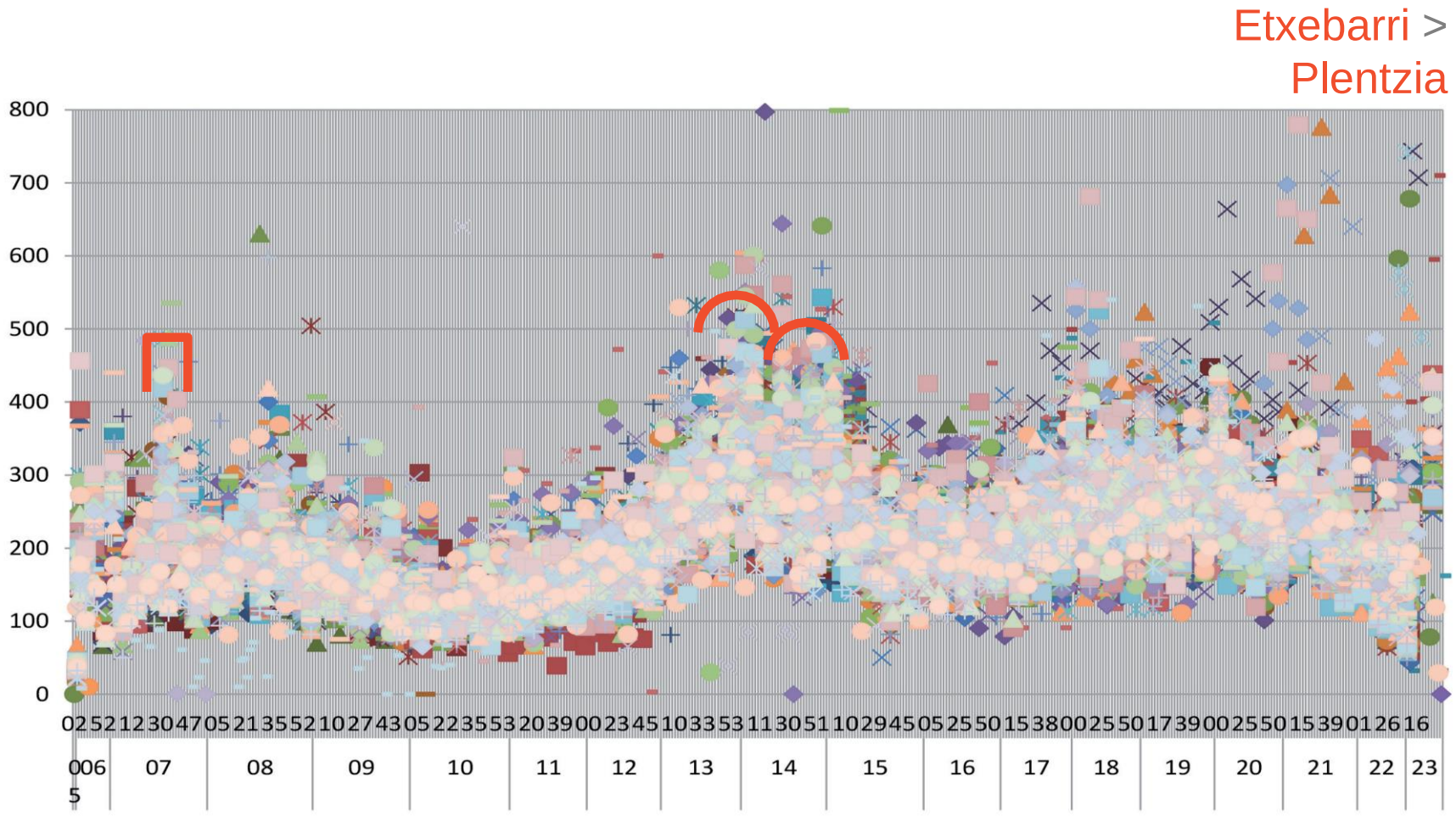
The busiest slot is 7:00-8:30 (journey start time) on BSR-KAB (BASAURI-KABIEZES) of about 550 people.



MAXIMUM LOAD

Monday to Friday in winter · 2019

The busiest slot is 13:00-13:55 (journey start time) on ETXE-PLE (ETXEBARRI-PLENTZIA) of about 500 people.



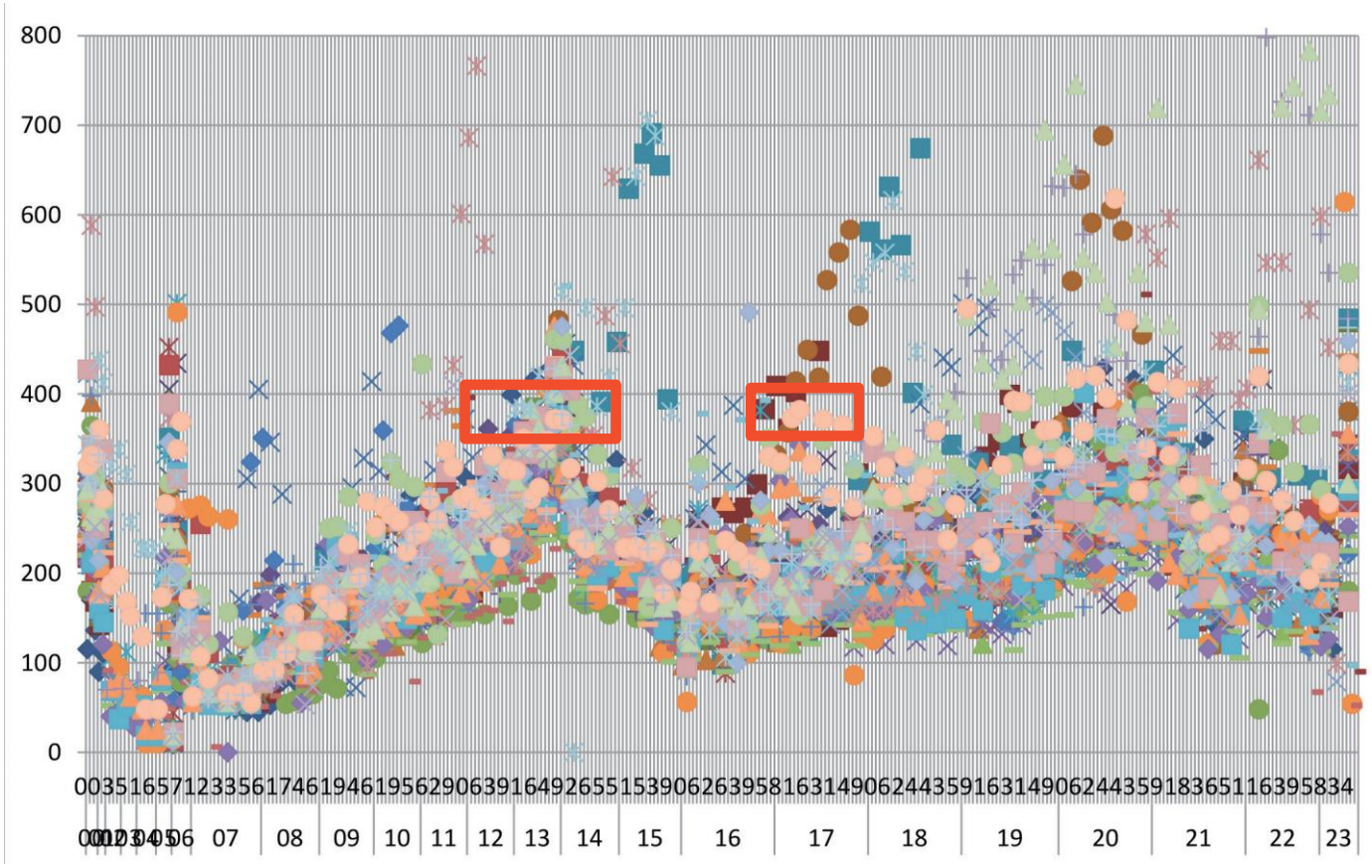
MAXIMUM LOADS

Saturday in winter | 2019 |

MAXIMUM LOADS

Saturday in winter · 2019

Frequency 3’20’’ from 16:30 to 22:00.
Peak starting time set at 16:30 (journey start time) with loads of around 400 people.



Basauri >
Kabiezes

MAXIMUM LOADS

Saturday in winter · 2019

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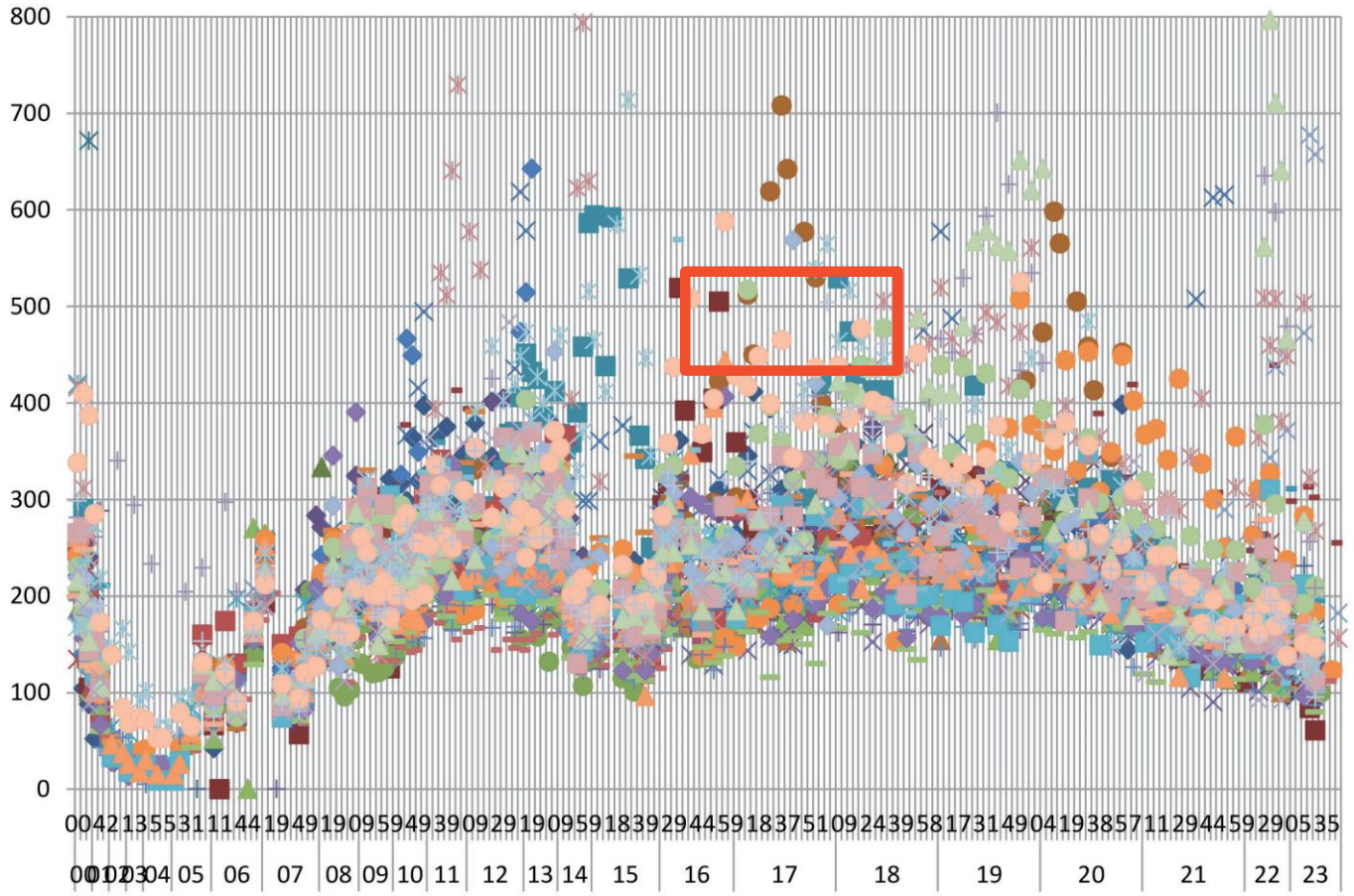

Kabiezes >
Basauri

MAXIMUM LOADS

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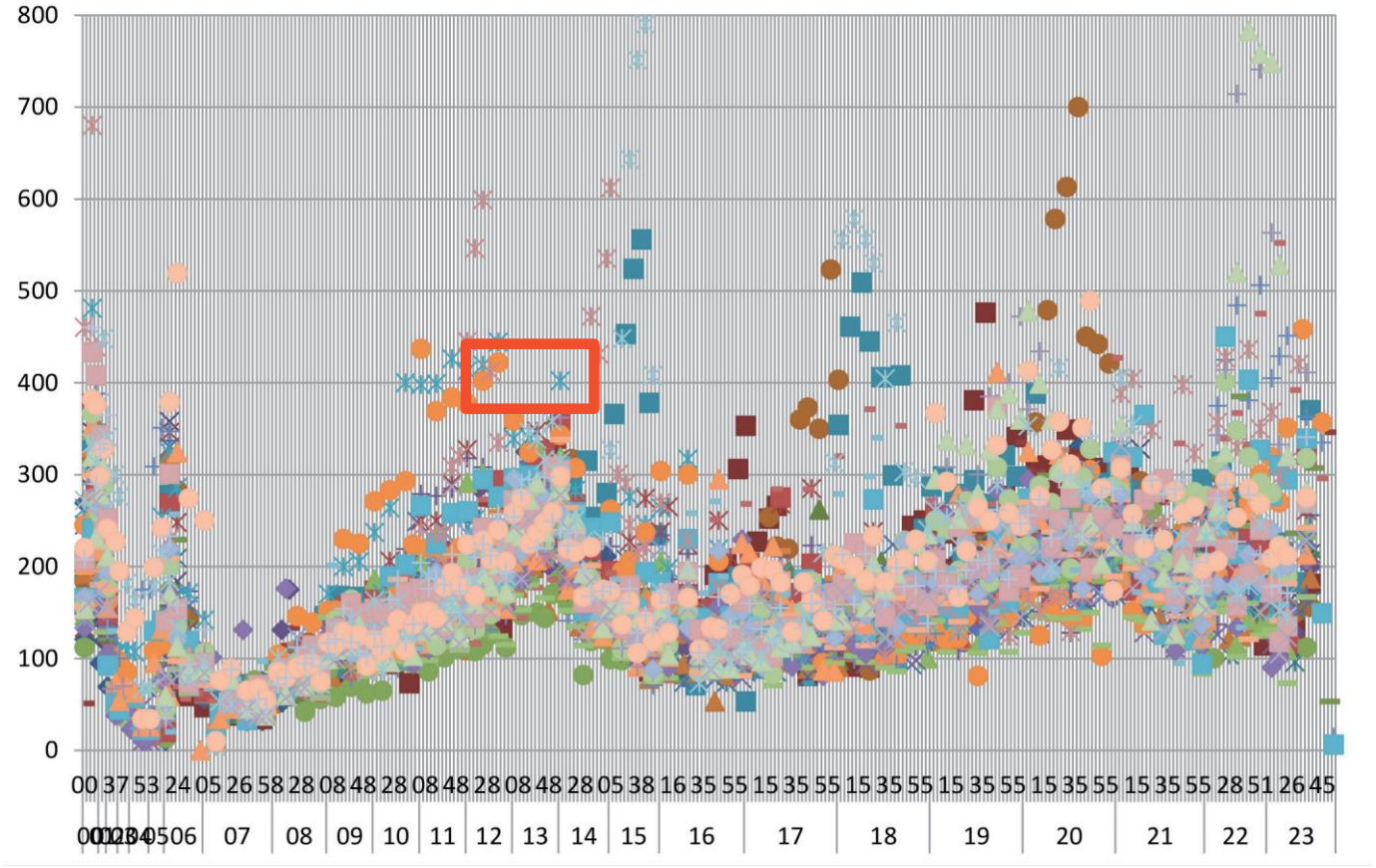

Etxebarri > Plentzia

MAXIMUM LOADS

Saturday in winter · 2019

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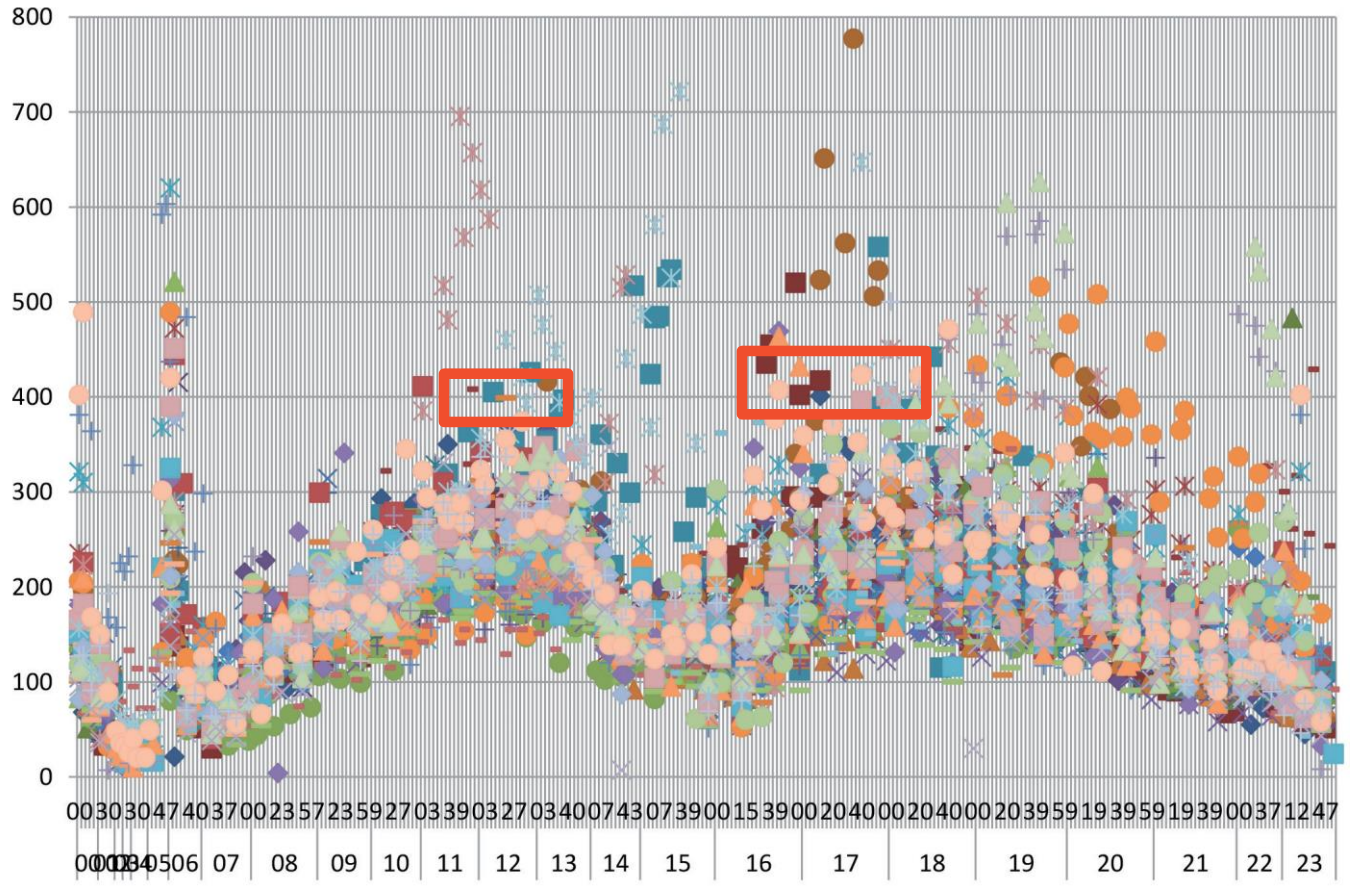
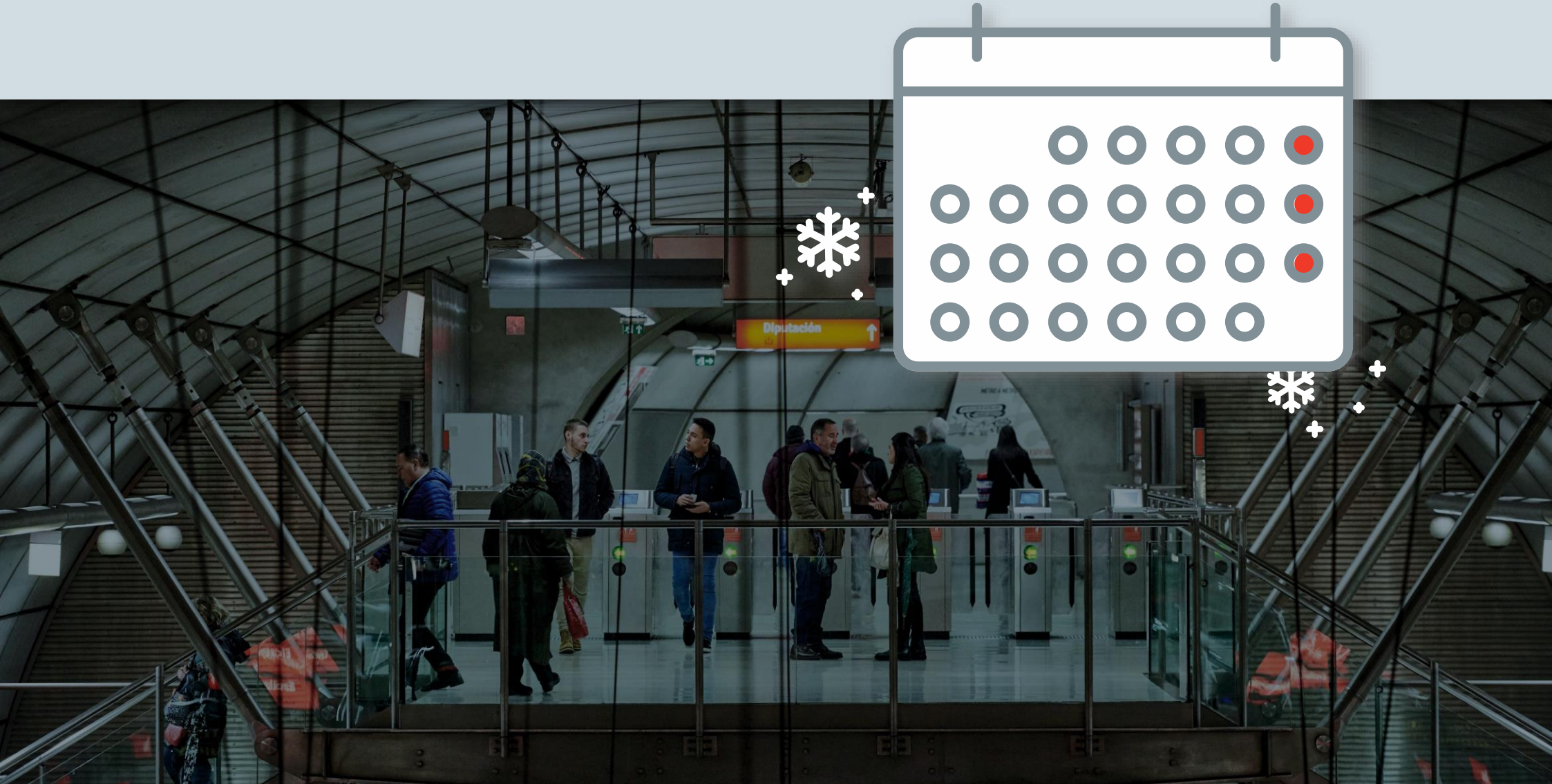


Plentzia >
Etxebarri

MAXIMUM LOADS

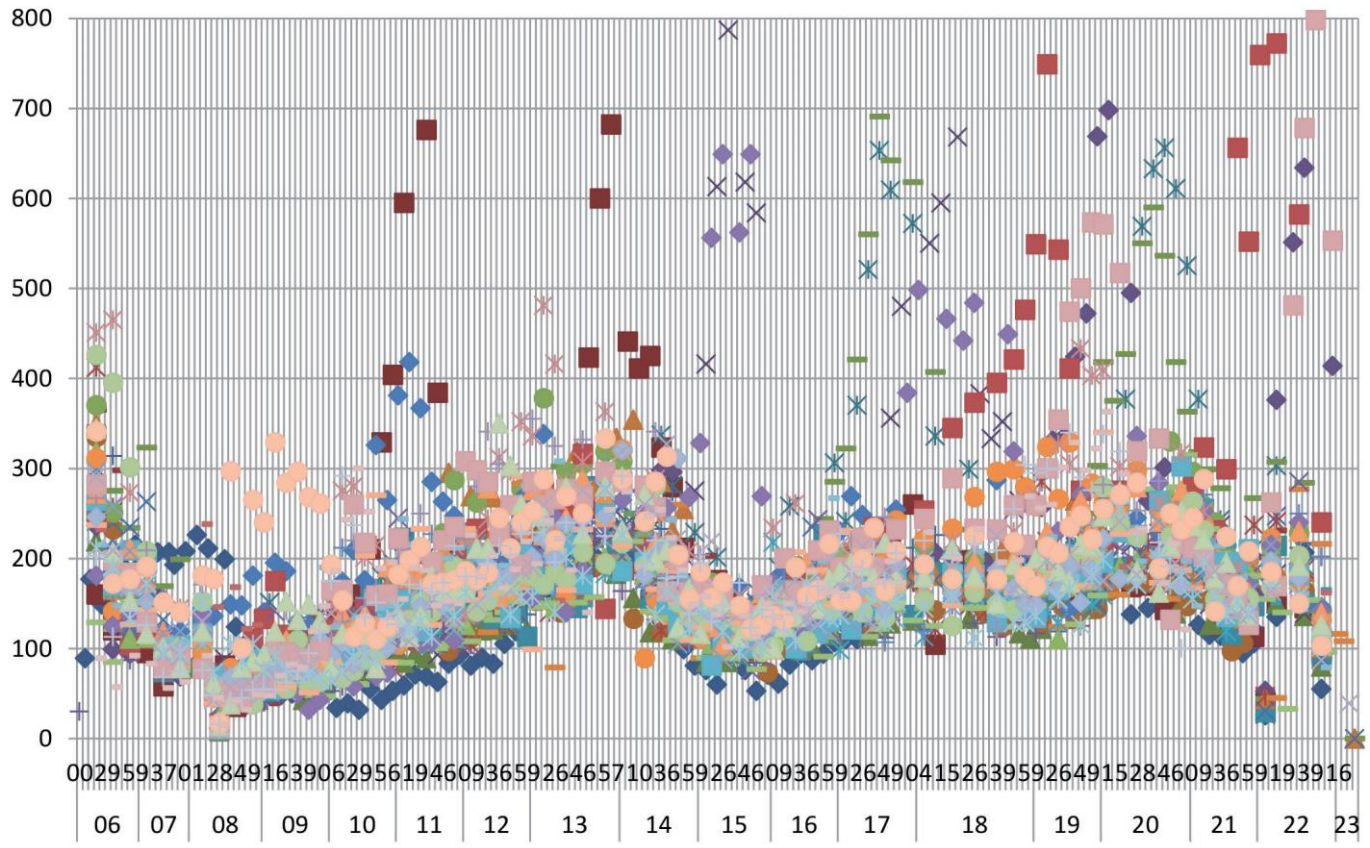
Sunday in winter | 2019 |



MAXIMUM LOADS

Sunday in winter · 2019

Maximum loads of around 300 people (except for special services).



Basauri >
Kabiezes

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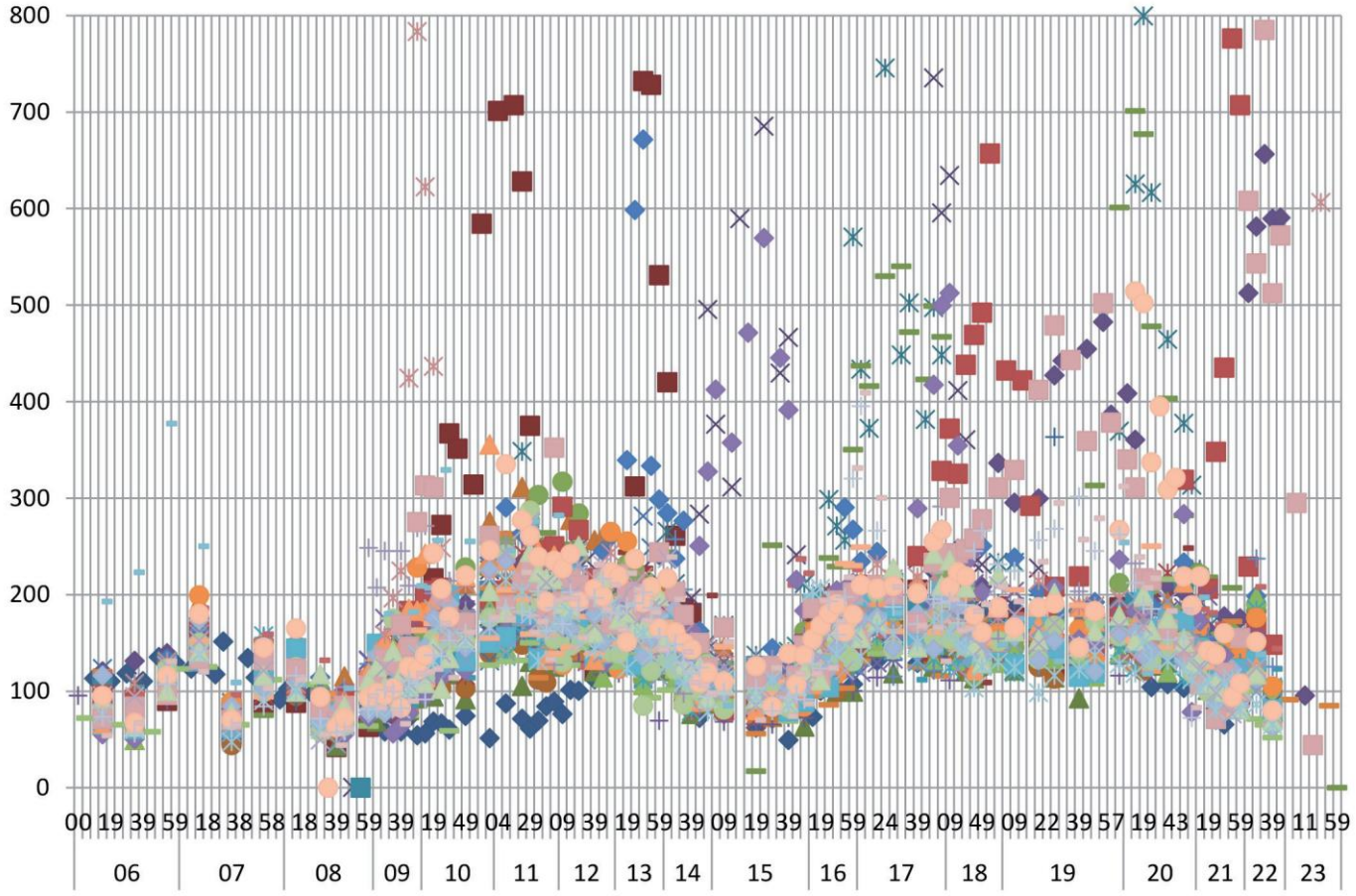

Kabiezes >
Basauri

MAXIMUM LOADS

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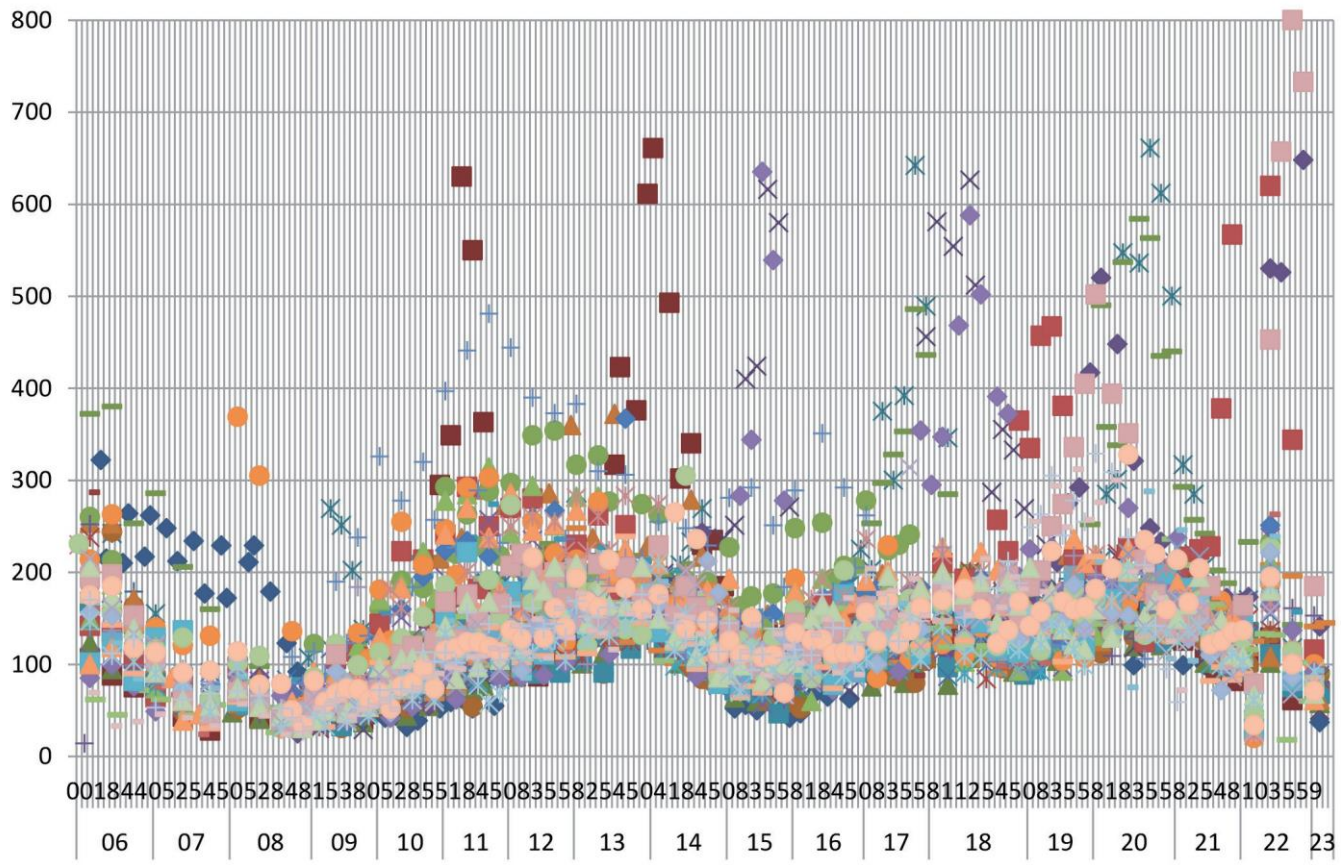

Etxebarri > Plentzia

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Sunday in winter · 2019

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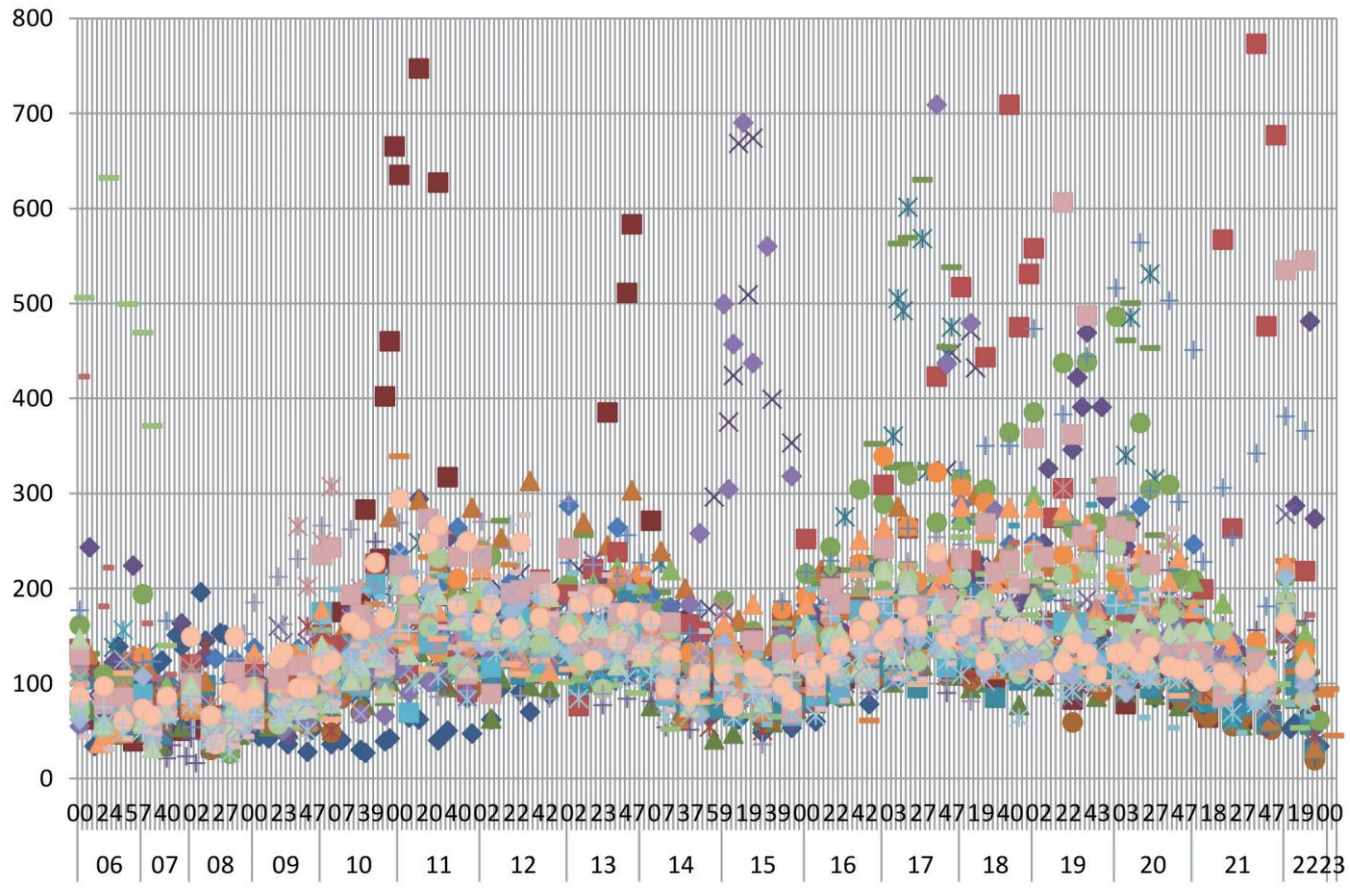

Plentzia >
Etxebarri

Once the service is defined, interaction among different areas starts:

1 Marketing

2 Service / Shifts assignment

3 Controll Centre

4 Rolling stock

And finally this is the result:

WINTER · 19 January > 30 June & 2 September > 31 December

MONDAY TO THURSDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00 -7:00	10	20	20	20	20
Peak 7:00-9:30	2,5	5	5	10	20
Off-peak 19:30-15:30	3	6	6	12	18
Off-peak 21 5:30-21:00	3,2	6,4	6,4	13,2	20
End 21:00-23:00	5	10	10	20	20

FRIDAY & EVE OF HOLIDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00 -7:00	10	20	20	20	20
Peak 7:00-9:30	2,5	5	5	10	20
Off-peak 1 9:30-15:30	3	6	6	12	18
Off-peak 2 15:30-21:00	3,2	6,4	6,4	13,2	20
End 21:00-23:00	5	10	10	20	20
Night 23:00-2:00	15	30	30	30	30

SATURDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-7:00	10	20	20	20	20
8:00-16:30	5	10	10	20	20
Peak 16:30-22:00	3,2	6,4	6,4	13,2	20
End 22:00-23:30	5	10	10	20	20
Night 23:30-06:00	15	30	30	30	30

SUNDAY & PUBLIC HOLIDAYS

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-9:00	10	20	20	20	20
9:00-22:00	5	10	10	20	20
22:00-23:30	10	20	20	20	20

SUMMER 1 · 1 > 31 July & 1 September

MONDAY TO THURSDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00 -7:00	10	20	20	20	20
Peak 7:00-16:00	3,2	6,4	6,4	13,2	20
16:00-23:00	5	10	10	10	20

FRIDAY & EVE OF HOLIDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-7:00	10	20	20	20	20
Peak 7:00-16:00	3,2	6,4	6,4	13,2	20
16:00-23:00	5	10	10	10	20
Night 23:00-6:00	15	30	30	30	30

SATURDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-8:00	10	20	20	20	20
8:00-23:30	5	10	10	20	20
Night 23:00-06:00	15	30	30	30	30

SUNDAY & PUBLIC HOLIDAYS

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-9:00	10	20	20	20	20
9:00-22:00	5	10	10	20	20
22:00-23:00	10	20	20	20	20

SUMMER 2 · 1 > 31 August

MONDAY TO THURSDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00 -7:00	10	20	20	20	20
7:00-23:00	5	10	10	10	20

FRIDAY & EVE OF HOLIDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-7:00	10	20	20	20	20
7:00-23:00	5	10	10	10	20
Night 23:00-6:00	15	30	30	30	30

SATURDAY

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-8:00	10	20	20	20	20
8:00-23:00	5	10	10	10	20
Night 23:00-6:00	15	30	30	30	30

SUNDAY & PUBLIC HOLIDAYS

	TRCO	KAB	IBB	LAR	PLE
Start 6:00-9:00	10	20	20	20	20
9:00-22:00	5	10	10	20	20
22:00-23:00	10	20	20	20	20

This has been the base service, the framework.
On top of that, we define more than 100 special services per year:

Football

Concerts

Sports

Trade fairs...

To provide the best mobility service.

Thank you for your attention

SUSANA PALOMINO BILBAO

Head of Marketing & Communication

Metro Bilbao S.A.

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