

TELIA CROWD INSIGHTS

MILJØPAKKEN TRØNDELAG

Tom Henriksen

Global Partner Acceleration
Lead, Data Insight Division X

2023-03-21

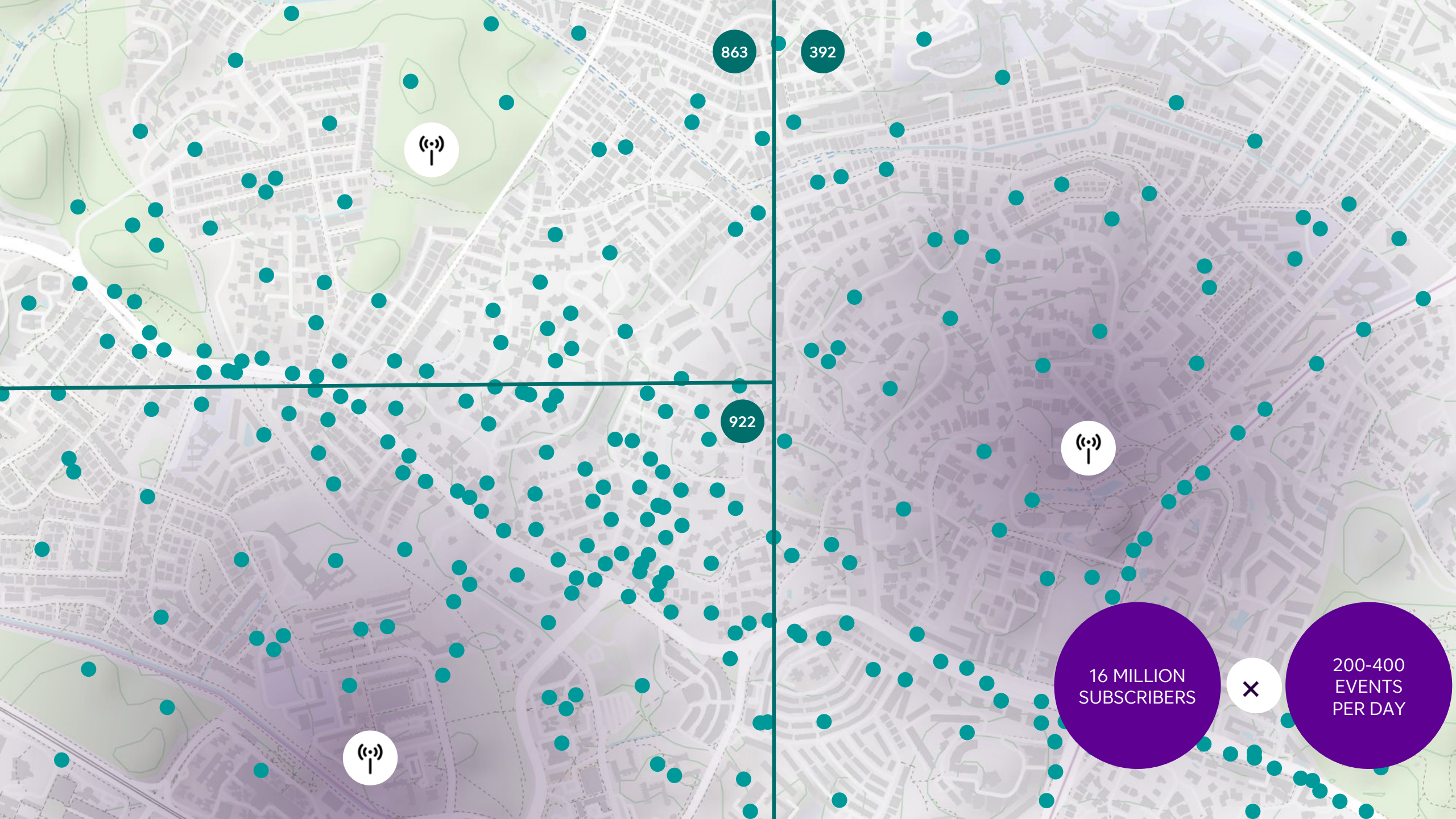
External





↙
Design





863

392

922

16 MILLION
SUBSCRIBERS

X

200-400
EVENTS
PER DAY

Privacy by design

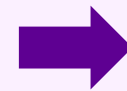
Anonymized

484646735



Aggregated

1843548464673548927
5892456234652783465
7487695862137754856
3876758913678457823
4784642685348765856
7856838045108757585



Irreversible

1843548464673548927
5892456234652783465
7487695862137754856
3876758913678457823
4784642685348765856
7856838045108757585



Insights today – actions tomorrow



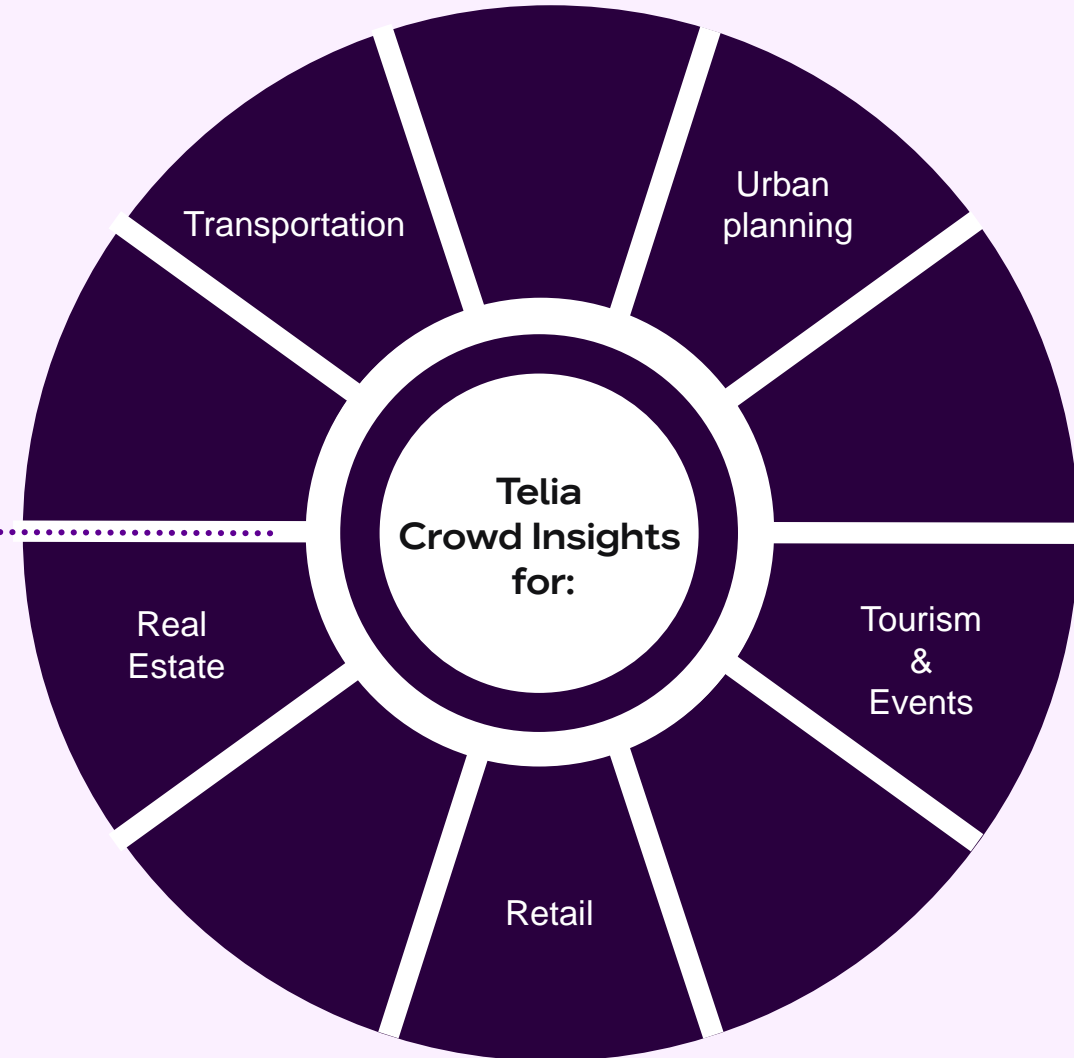
Insights on mobility: Telia Crowd Insights

Use case areas

Mobile network data

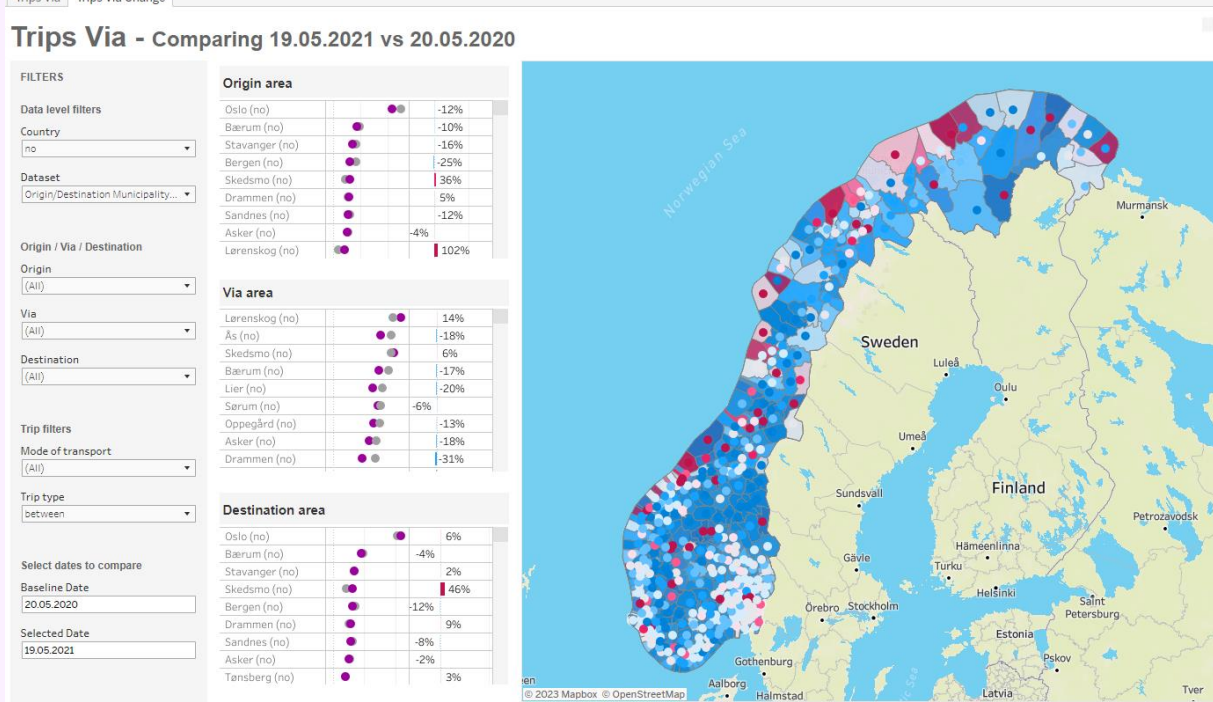
Wifi probe data

IoT data





Visualization of Crowd Insight data



TRAVEL EMISSION INSIGHTS

www.cero.nu

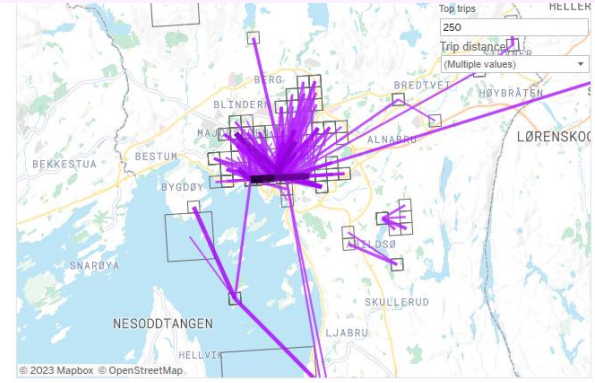
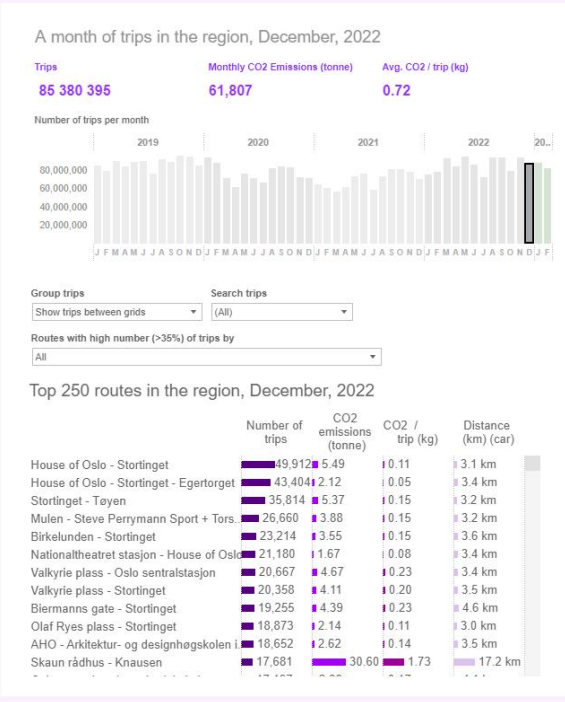
Overview

All routes

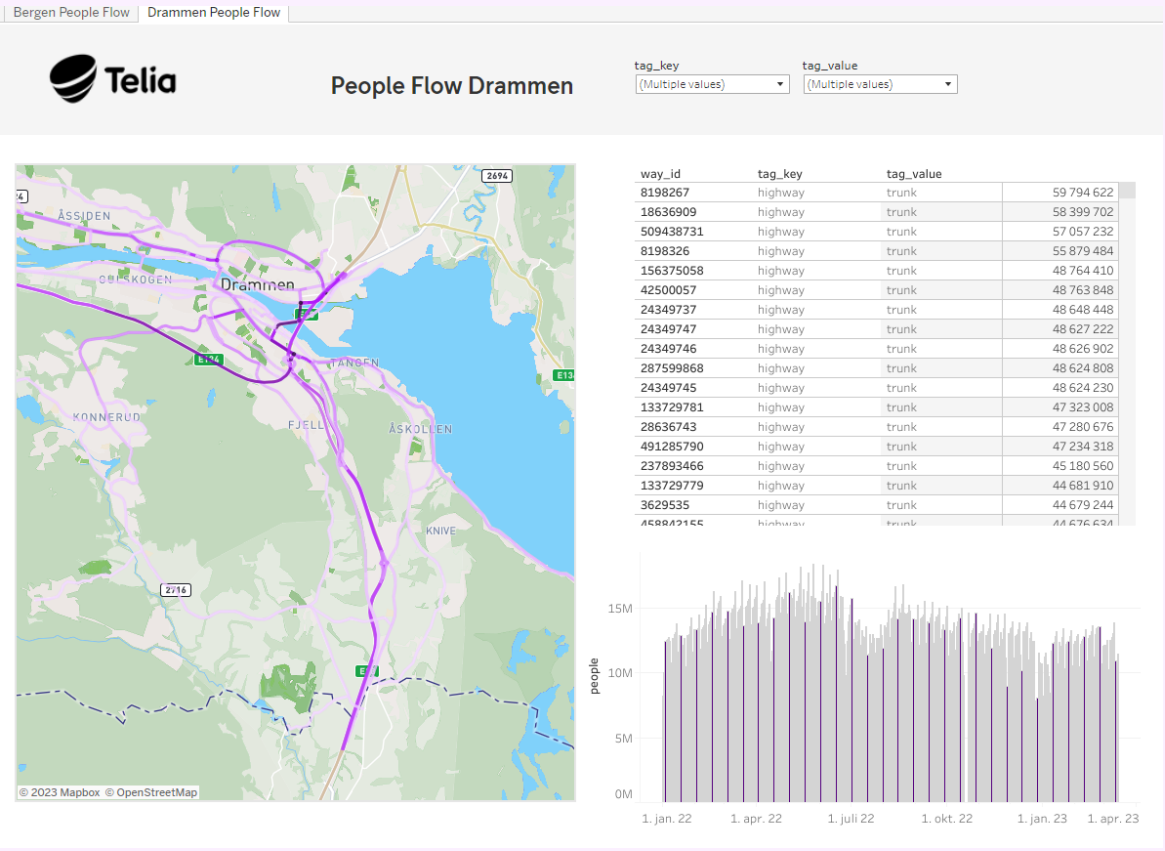
Actions

Municipality:

[Feedback](#)



Visualization of Crowd Insight data



Sweden roaming visitors

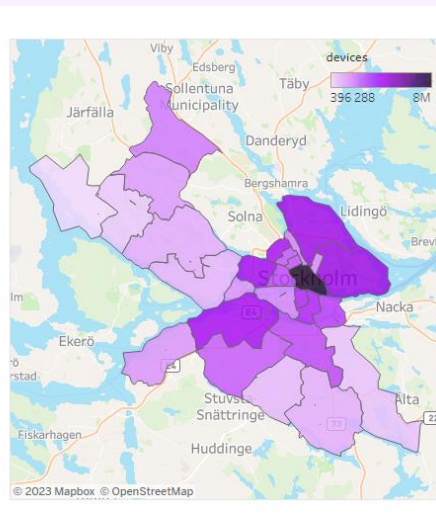
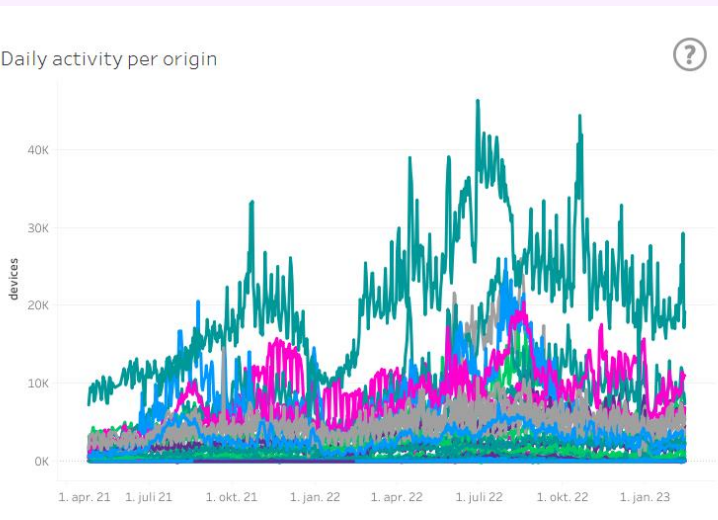
Region:

Municipality:

City:

Country:

Date:



Country Distribution

Table can be used as filter

	% of Total devic..	devices
Finland	19%	13 392 192
Norway	9%	6 136 970
France	7%	5 345 880
Germany	7%	4 765 265
Poland	7%	4 669 349
United Kingdom of Great Britain..	6%	4 080 409
United States of America	5%	3 337 553
Denmark	5%	3 250 189
Netherlands	4%	3 005 233
Estonia	4%	2 878 986

Regional Distribution

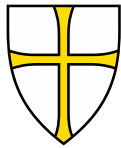
Table can be used as filter

region	sub_region	devices
Europe	Northern Europe	33 263 399
	Western Europe	15 774 641
	Eastern Europe	8 380 767
	Southern Europe	6 180 147
Asia	Southern Asia	2 304 315
	Eastern Asia	1 143 724
	South-eastern Asia	538 436
	Western Asia	387 489
	Central Asia	3 584
Americas	Northern America	3 482 594

Total Devices
71 608 647

Average Daily Devices
110 507





Teledata - potensielle bruksområder

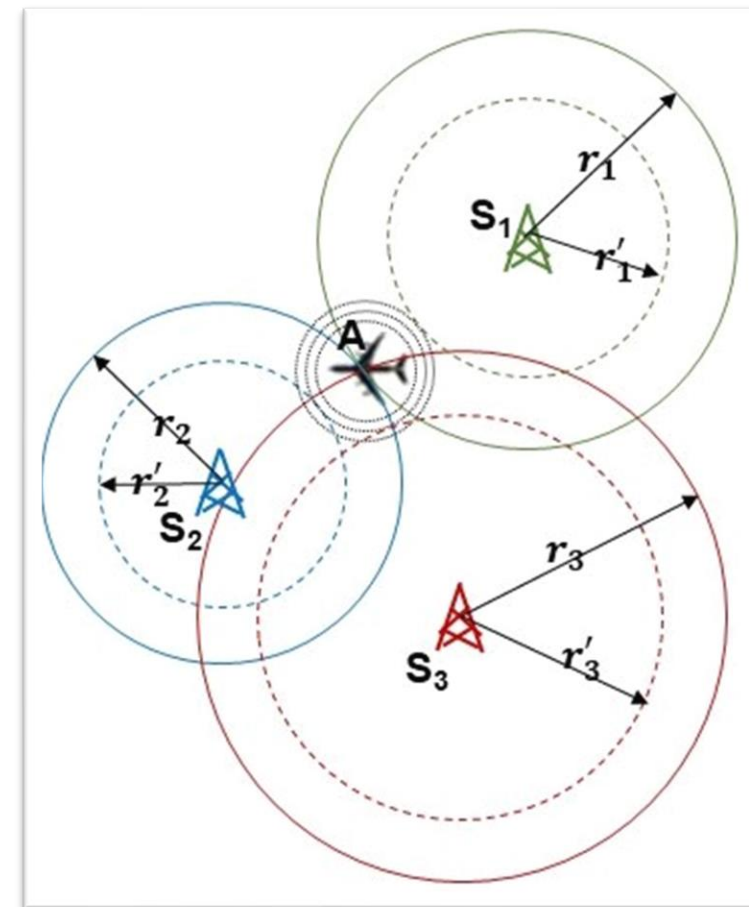
Bruksområde-testing: Andreas Øyehaug



Kort om teknologien.



- Baserer seg på
 - Telefonsignaler som sendes ut 3 ganger i minuttet.
 - Trianguleres og settes i grid.
 - Telia sin markedsandel – aggregert opp for befolkningen.



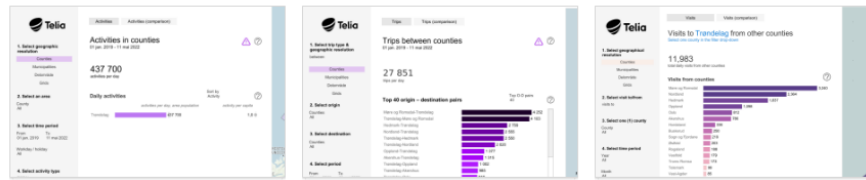
Tilgangen



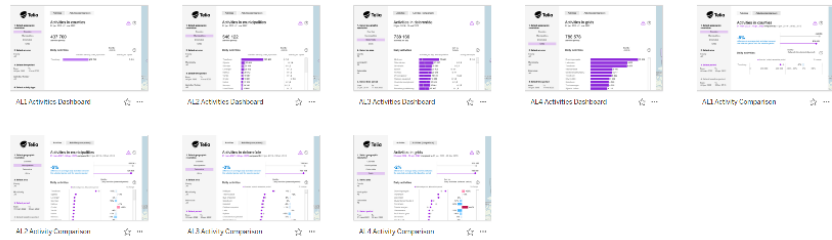
Telia Crowd Insights (Custom) ☆ ⓘ ...
Owner: Hidden User

New ▾ Select All

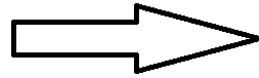
Content Type: All ▾ Sort By: Type ▾



Telia Crowd Insights - Activity_no... ☆ ...
Telia Crowd Insights - Trips_no... ☆ ...
Telia Crowd Insights - Visits_no... ☆ ...



A1.7 Activity Comparison ☆ ...
A1.8 Activity Comparison ☆ ...
A1.9 Activity Comparison ☆ ...



Telia

- Select geographic resolution**
 - Counties
 - Municipalities
 - Delområde
 - Grids**
- Select an area**
 - County: Trøndelag
 - Municipality: (All)
 - Delområde: (All)
- Select time period**
 - From: 01 jan. 2019 To: 11 mai 2022
 - Workday / holiday: (All)
- Select activity type**
 - TOTAL

Activities Activities (comparison)

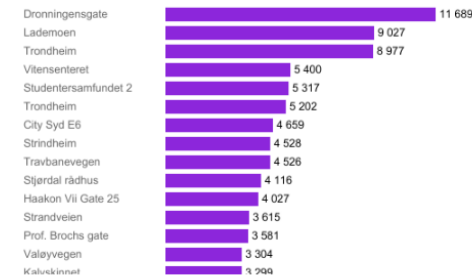
Activities in grids

01 jan. 2019 - 11 mai 2022

786 578
activities per day

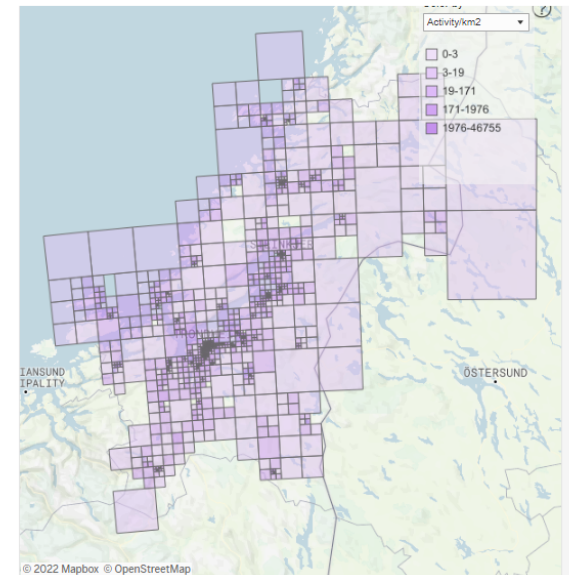
Daily activities

Sort by: Activity ▾



Daily activities

Date type: day ▾



Activity type select an area on the map
Activity duration (aggregated per month) select an area on the map

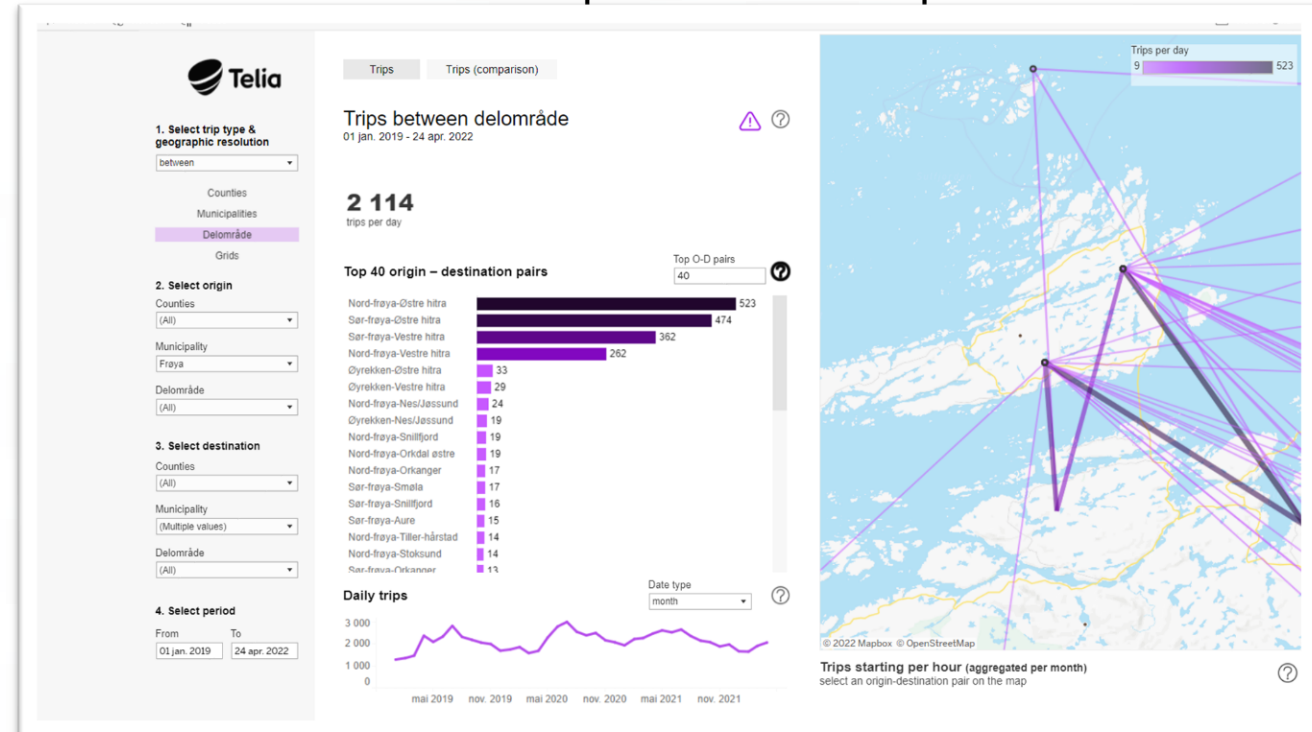
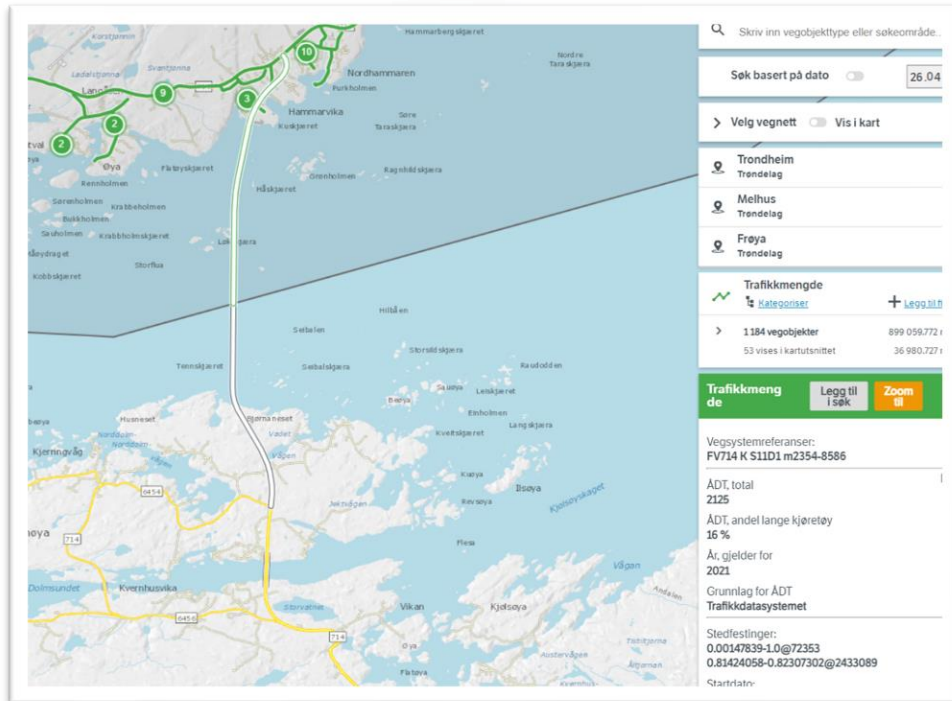
Activity per hour (aggregated per month) select an area on the map



Kan det brukes til å estimere ÅDT? Avsjekk mot Frøytunellen.

Frøya er ideelt å se på pga få andre reiseveier enn via tunnelen

SVV sine systemer viser ÅDT på 2125 i 2021. Telia sine viser ÅDT på 2114.
Men også variasjonen over 2019-2022
ÅDT varierer mellom [1272 – 2990]



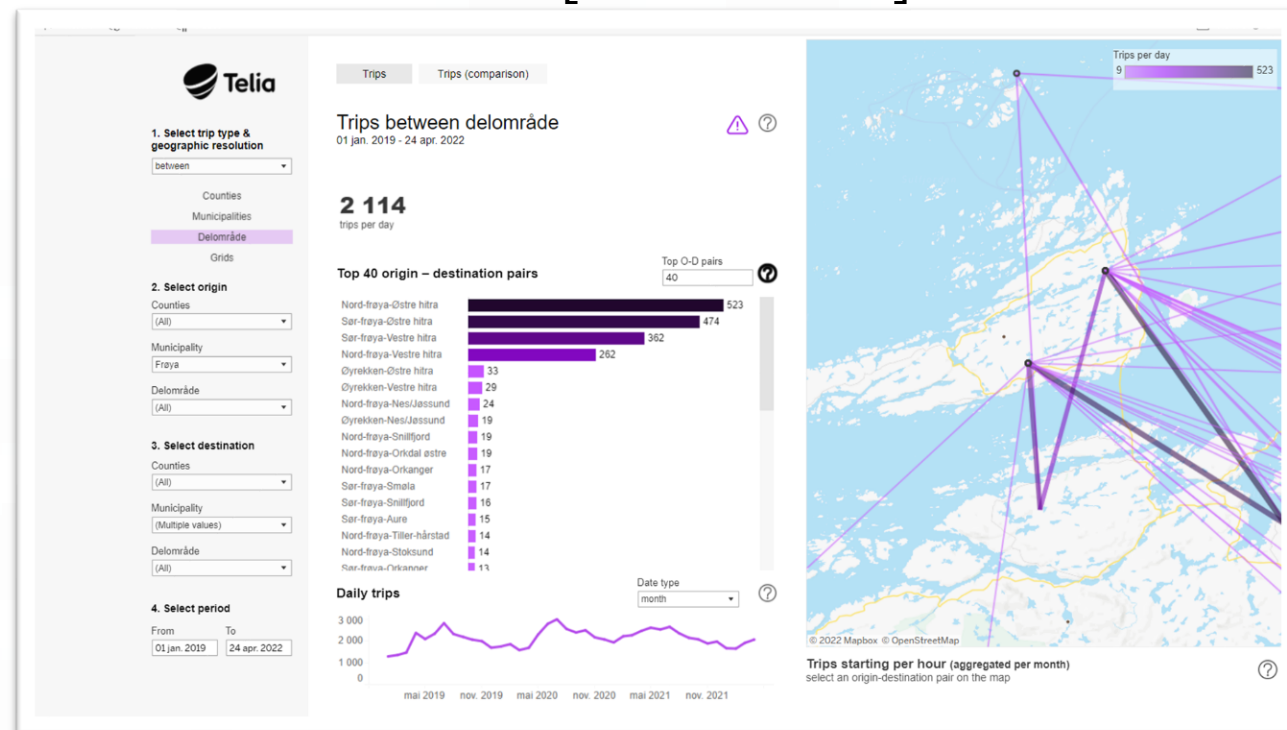
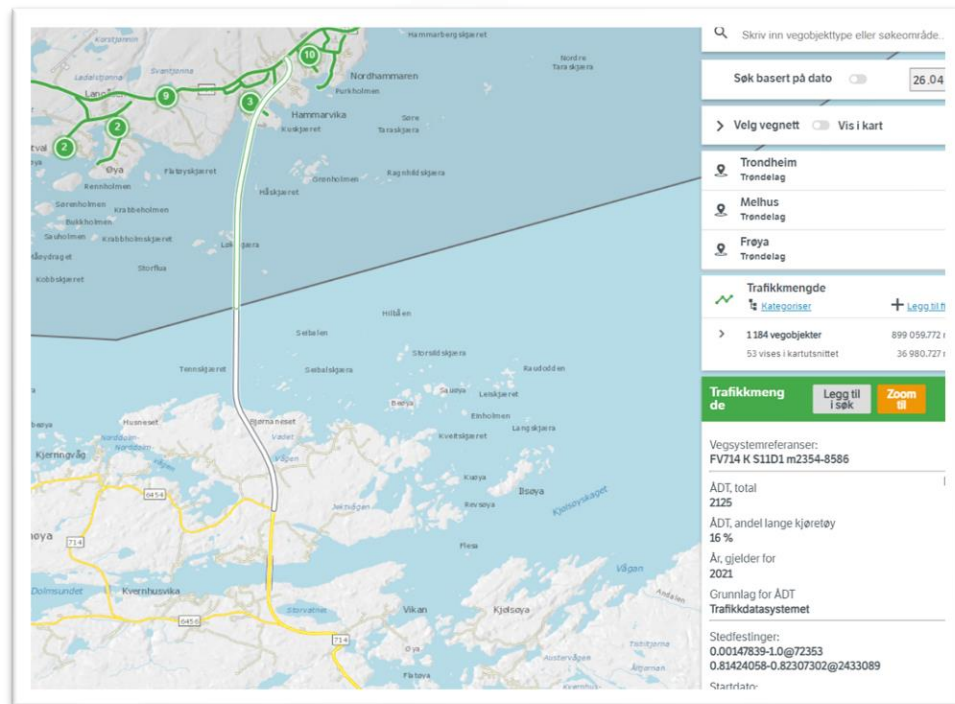
Hvor mye fergekapasitet trenger vi når vi stenger tunnelen.



Frøya er ideelt å se på pga få andre reiseveier enn via tunnelen

SVV sine systemer viser ÅDT på 2125 i 2021.

Telia sine viser ÅDT på 2114.
Men også variasjonen over 2019-2022
ÅDT varierer mellom [1272 – 2990]



Rushtidsinformasjon om ankomst og avreise i grids

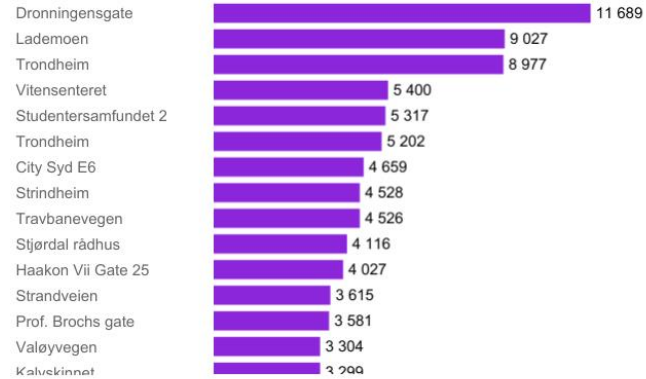
Activities in grids

01 jan. 2019 - 11 mai 2022

786 578

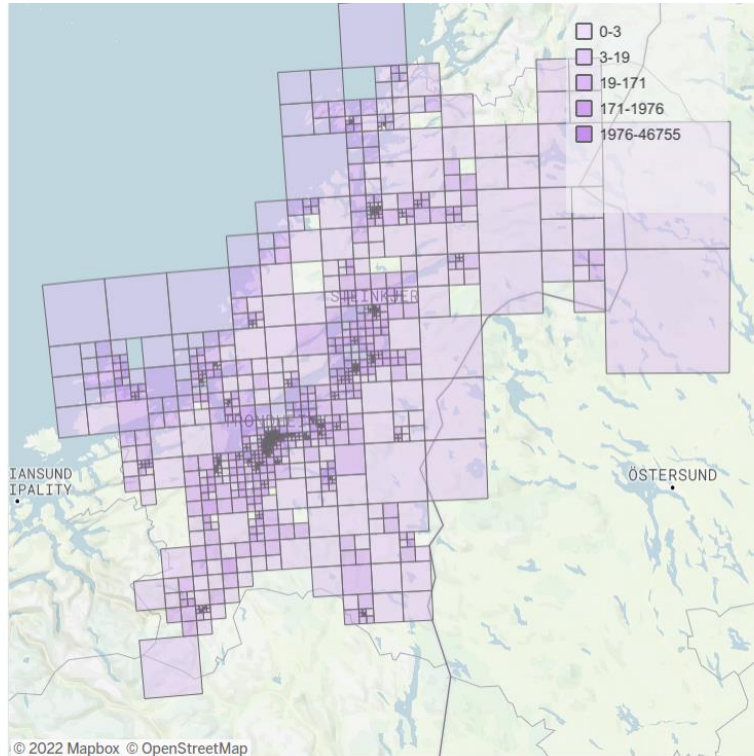
activities per day

Daily activities



Daily activities

1000K



Activity type

select an area on the map

Activity duration (aggregated per month)

select an area on the map



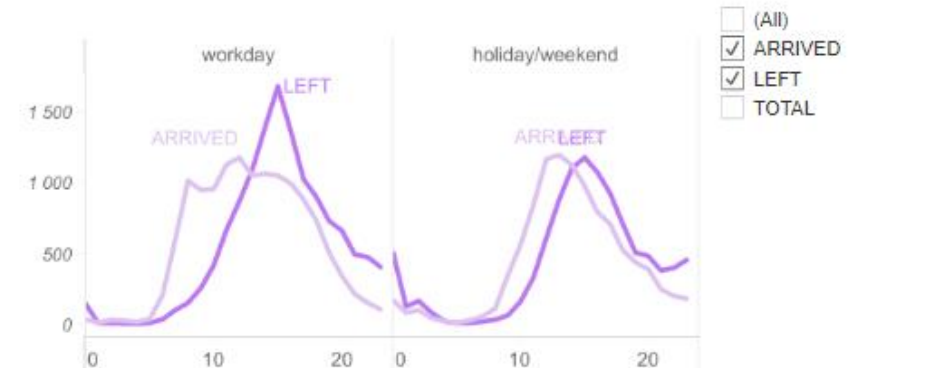
Activity type

select an area on the map



Activity per hour (aggregated per month)

select an area on the map



Reiser til Trøndelag fra andre fylker.



1. Select geographical resolution

Counties

Municipalities

Delområde

Grids

2. Select visit to/from

visits to

3. Select one (1) county

County

Trøndelag

4. Select time period

Year

(All)

Month

(All)

Workday / holiday

(All)

Visits

Visits (comparison)

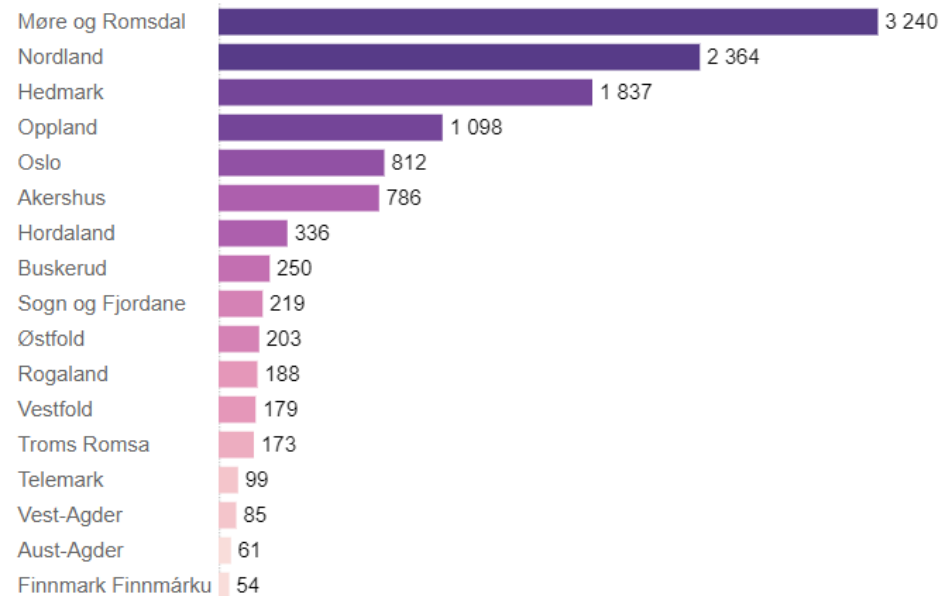
Visits to Trøndelag from other counties

Select one county in the filter drop-down

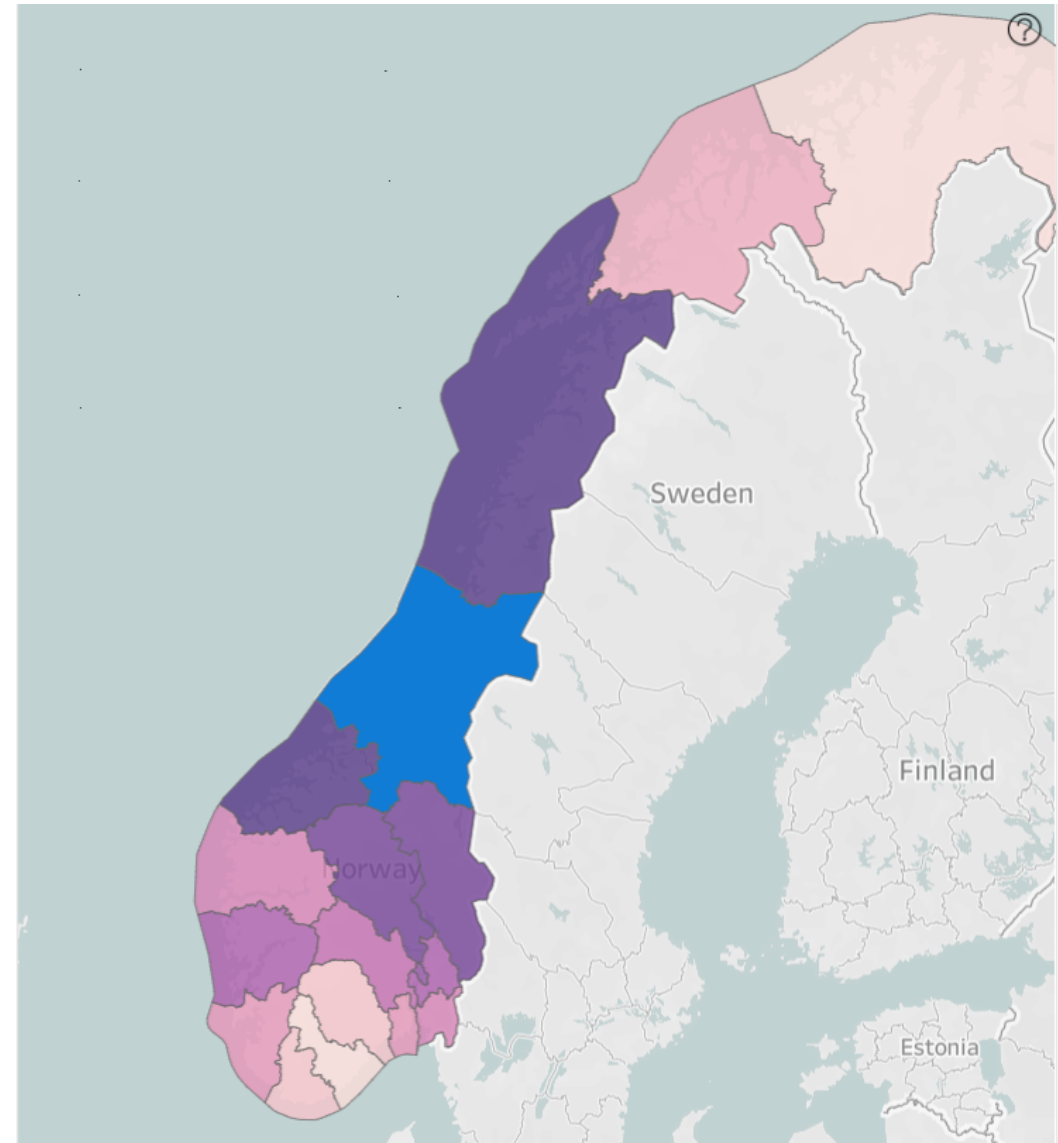
11 983

total daily visits from other counties

Visits from counties



Daily visits



Busstrute/vegtrasé-planlegging.

Hvor skal folk som reiser fra ...?



Pause



1. Select trip type & geographic resolution

between

Counties

Municipalities

Delområde

Grids

2. Select origin

Counties

Trøndelag

Municipality

(All)

Delområde

Byåsen

3. Select destination

Counties

(All)

Municipality

(All)

Delområde

(All)

4. Select period

From 01 jan. 2019 To 11 mai 2022

Trips

Trips (comparison)

Trips between delområde

01 jan. 2019 - 11 mai 2022

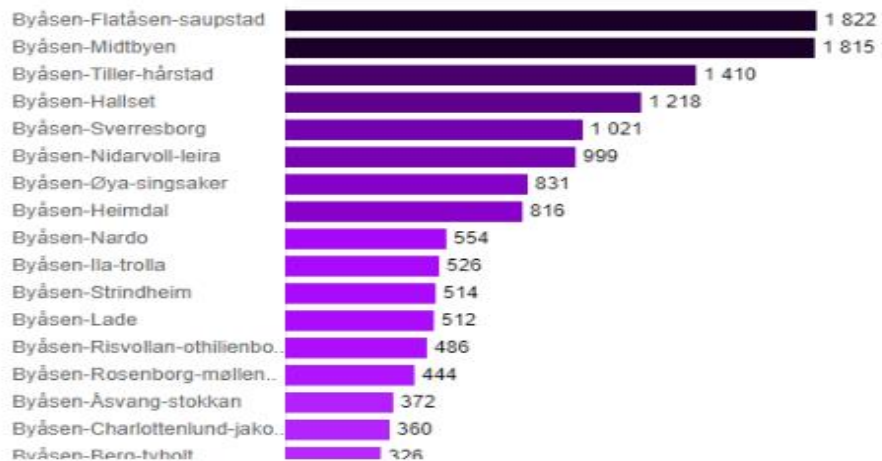
16 526

trips per day

Top 40 origin – destination pairs

Top O-D pairs

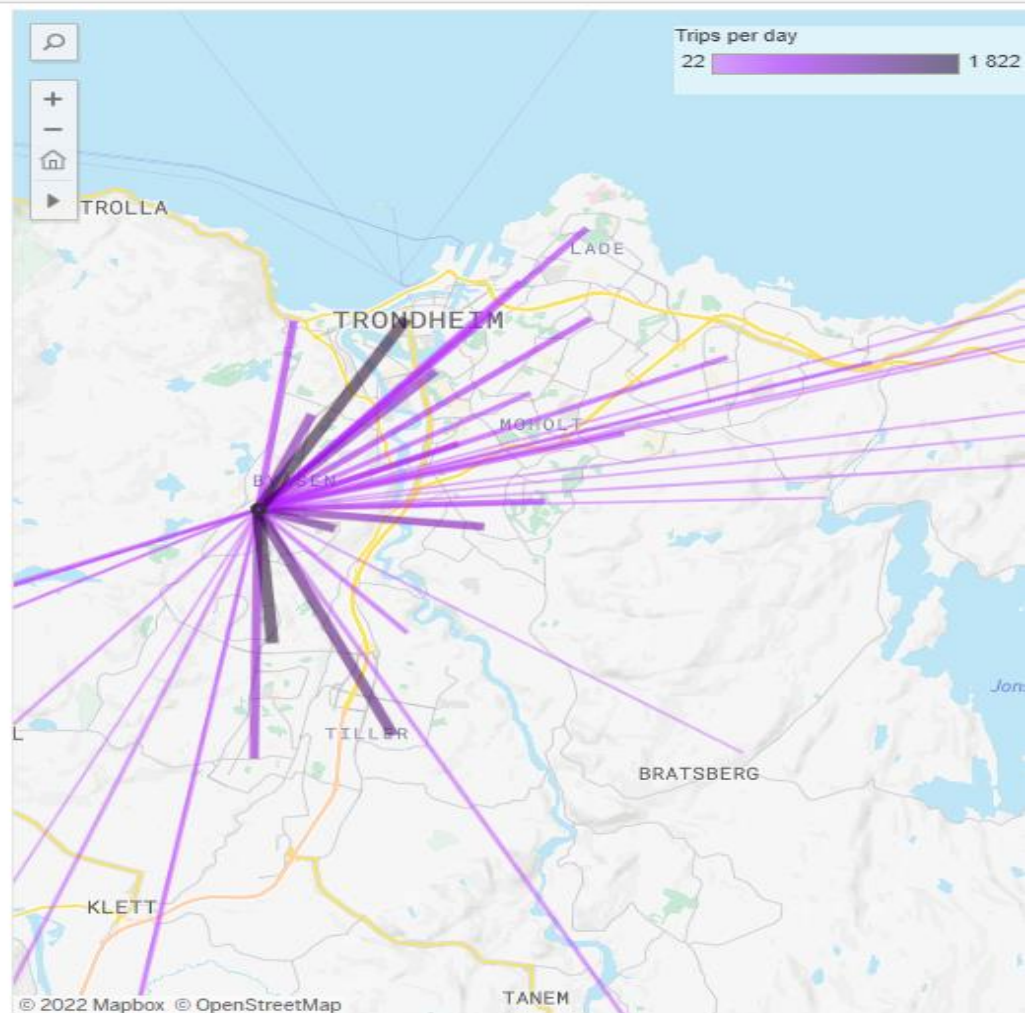
40



Daily trips

Date type

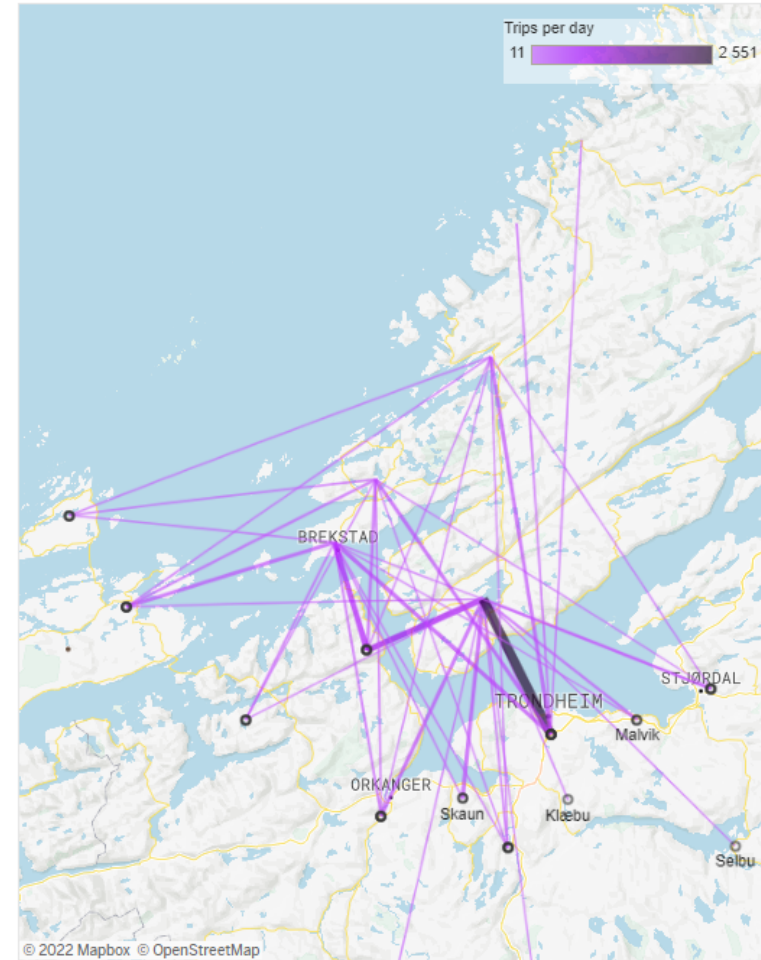
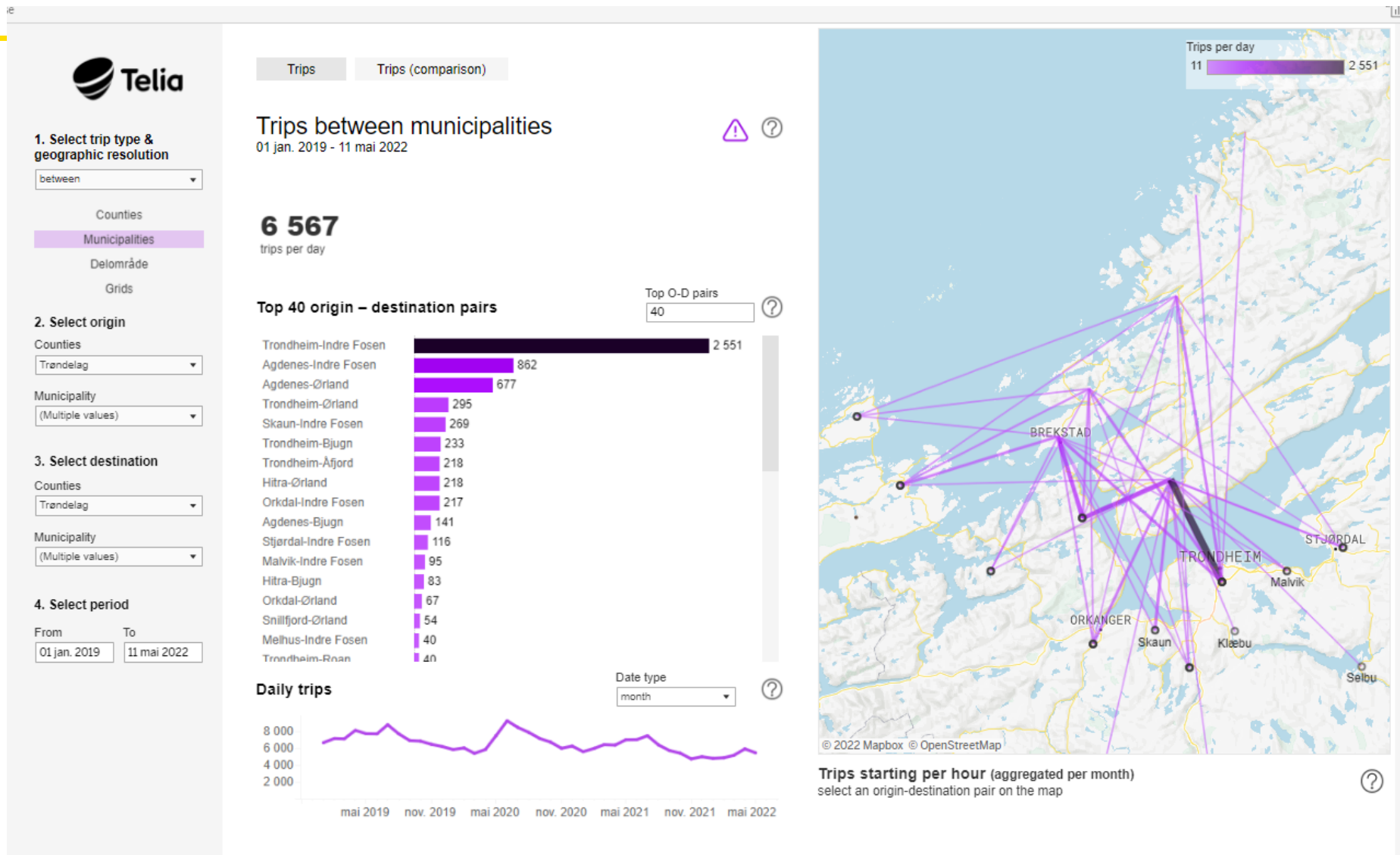
month



Trips starting per hour (aggregated per month)
select an origin-destination pair on the map

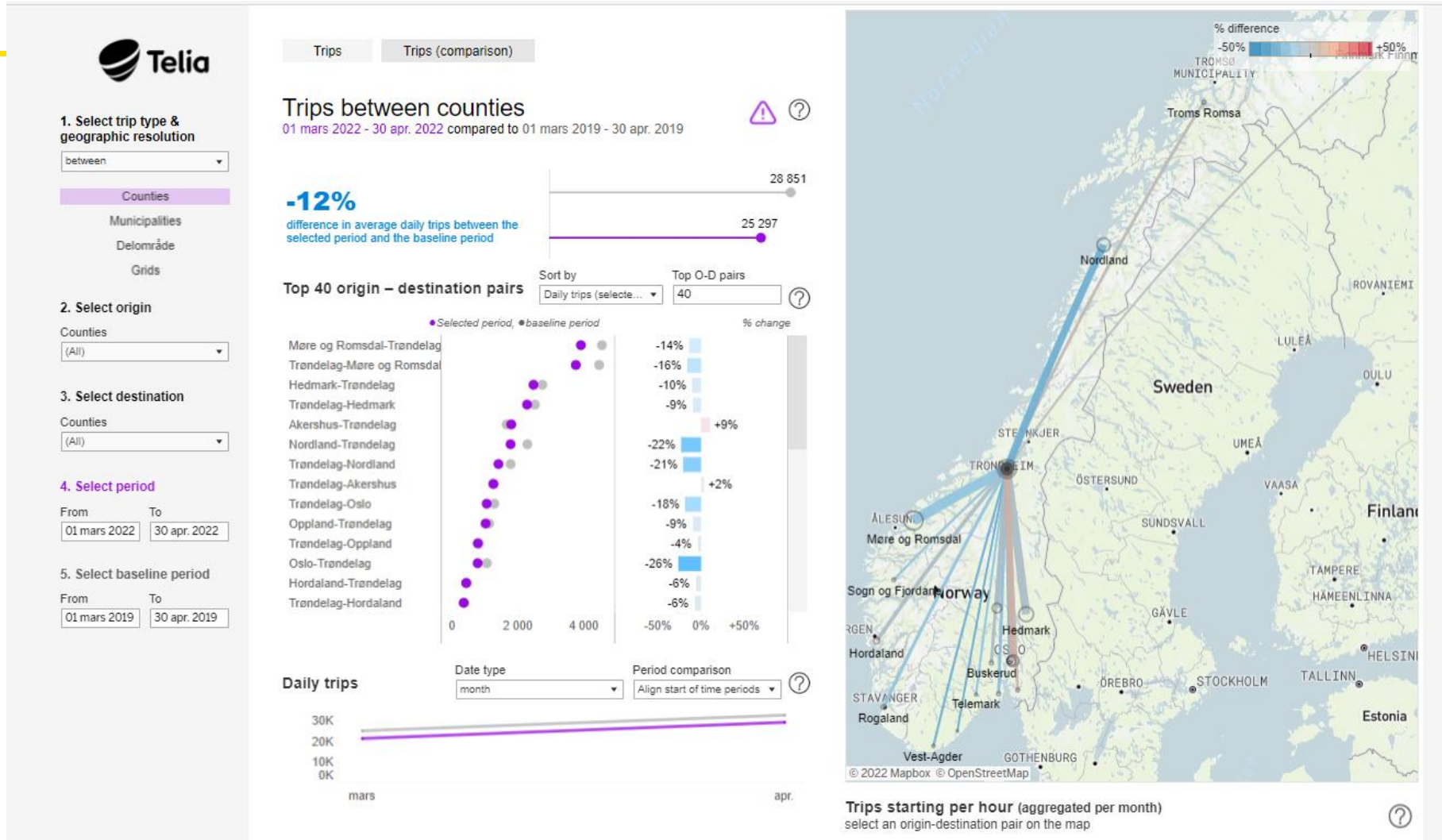
Ferjeplanlegging.

Hvor mange kryssninger av Trondheimsfjorden hver dag. - og hvor skal de til og fra.



Trips starting per hour (aggregated per month)
select an origin-destination pair on the map

Endringer i trafikk tall på fylkes -



... Og kommunalt nivå



Telia

1. Select trip type & geographic resolution

between

Counties
Municipalities
Delområde
Grids

2. Select origin

Counties
Trendelag

Municipality
Trondheim

3. Select destination

Counties
(All)

Municipality
(All)

4. Select period

From To
01 mars 2022 30 apr. 2022

5. Select baseline period

From To
01 mars 2019 30 apr. 2019

Trips Trips (comparison)

Trips between municipalities

01 mars 2022 - 30 apr. 2022 compared to 01 mars 2019 - 30 apr. 2019

-3%

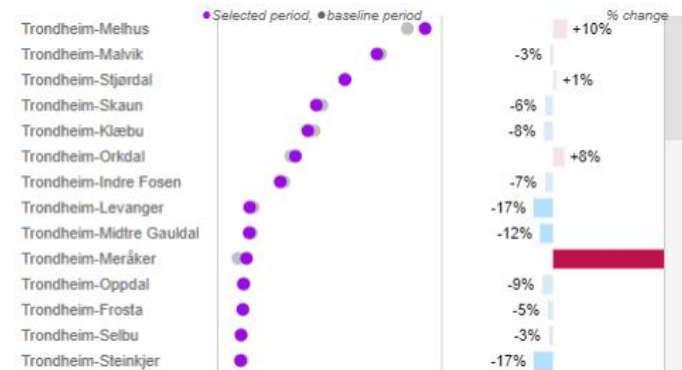
difference in average daily trips between the selected period and the baseline period



Top 40 origin – destination pairs

Sort by
Daily trips (selecte...)

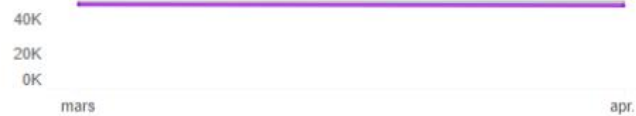
Top O-D pairs
40



Daily trips

Date type
month

Period comparison
Align start of time periods




Trips starting per hour (aggregated per month)
select an origin-destination pair on the map



Helt ned på grids.





1. Select geographic resolution

- Counties
- Municipalities
- Delområde
- Grids

2. Select area

County: Trøndelag

Municipality: Trondheim

Delområde: (All)

3. Select period

From: 01 mars 2022 To: 30 apr. 2022

4. Select baseline period

From: 01 jan. 2019 To: 28 feb. 2019

Workday / holiday: (All)

5. Select activity type

TOTAL


Activities Activities (comparison)

Activities in grids

01 mars 2022 - 30 apr. 2022 compared to 01 jan. 2019 - 28 feb. 2019

-9%

difference in average daily activities between the selected period and the baseline period



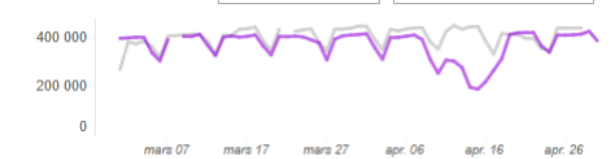
Daily activities

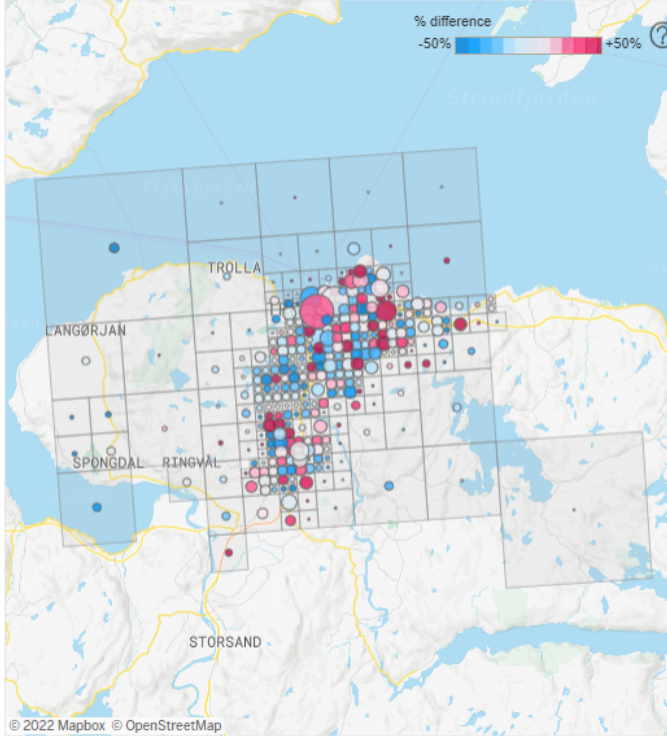
Sort by: Daily activities (selected period)

Location	% change
Dronningensgate	+20%
Trondheim	+3%
Lademoen	-3%
Studentersamfundet 2	-17%
Trondheim	-30%
Travbanevegen	+44%
Vitensenteret	-29%
Prof. Brochs gate	-16%
Strindheim	-8%
City Syd E6	-2%
Strandveien	-8%
Haakon VII Gate 25	+7%

Date type: day

Period comparison: Align start of time periods





© 2022 Mapbox © OpenStreetMap


Activity type
select an area on the map

Activity duration (aggregated per month)
select an area on the map

Activity per hour (aggregated per month)
select an area on the map

Eventplanlegging? Hvor var folk 17. mai?





1. Select geographic resolution

- Counties
- Municipalities
- Delområde
- Grids**

2. Select area

County: Trøndelag

Municipality: Trondheim

Delområde: (All)

3. Select period

From: 01 mars 2022 To: 30 apr. 2022

4. Select baseline period

From: 17 mai 2019 To: 17 mai 2019

Workday / holiday: (All)

5. Select activity type

TOTAL

Activities | **Activities (comparison)**

Activities in grids

01 mars 2022 - 30 apr. 2022 compared to 17 mai 2019 - 17 mai 2019

-16%
difference in average daily activities between the selected period and the baseline period

436 343
367 680

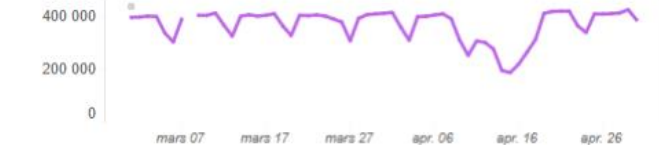
Sort by: Daily activities (selected period)

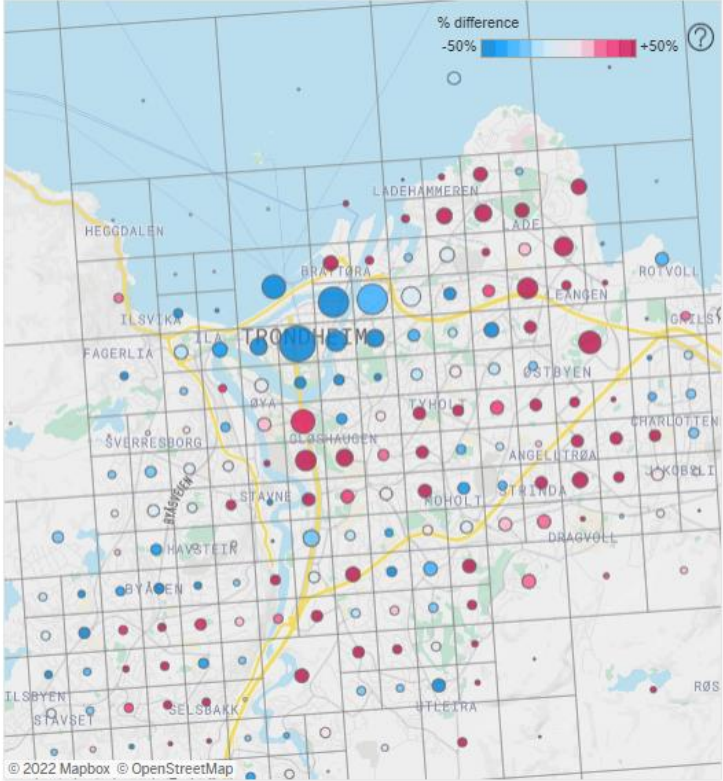
Daily activities

Area	% change
Dronningensgate	-70%
Trondheim	-46%
Lademoen	-34%
Studentersamfundet 2	+35%
Trondheim	-55%
Travbanevegen	+536%
Vitensenteret	-77%
Prof. Brochs gate	+100%
Strindheim	+111%
City Syd E6	+558%
Strandveien	-7%
Haakon VII Gale 25	+148%

Daily activities

Date type: day | Period comparison: Align start of time periods





Activity type
select an area on the map

Activity duration (aggregated per month)
select an area on the map

Activity per hour (aggregated per month)
select an area on the map

Dette er foreløpige avdekkede bruksområder.



- Ikke avdekket alle bruksområder ennå.
- Innspill til hva som kan undersøkes om det kan brukes til tas godt imot.
 - - Tingene eg har skjekket ut er begrenset til hva fantasien min anntar at det kan brukes til. kom gjerne med innspill på hva annet eg kan forsøke å finne ut av.

**Følgende plansjer er laget på
ønske/innspill.**



Trafikk fra godsknutepunkt



1. Select trip type & geographic resolution

between

- Counties
- Municipalities
- Delområde

Grids

2. Select origin

Counties

(All)

Municipality

(All)

Delområde

(All) Torgard

Grid

Torgard

3. Select destination

Counties

(All)

Municipality

(All)

Delområde

(All)

Grid

(All)

4. Select period

From

01 jan. 2019

To

11 mai 2022

Trips

Trips (comparison)

Trips between grids

(aggregated on a monthly level)



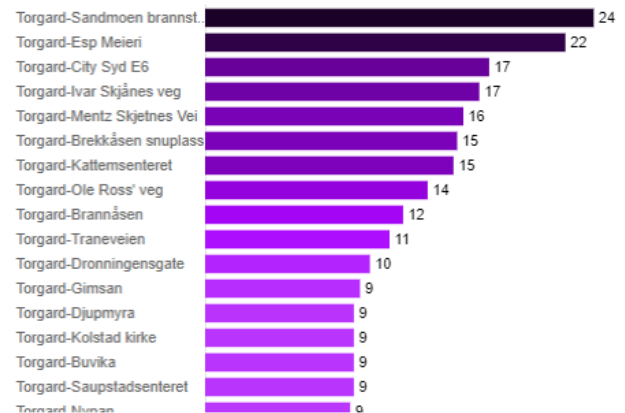
379

trips per day

Top 40 origin – destination pairs

Top O-D pairs

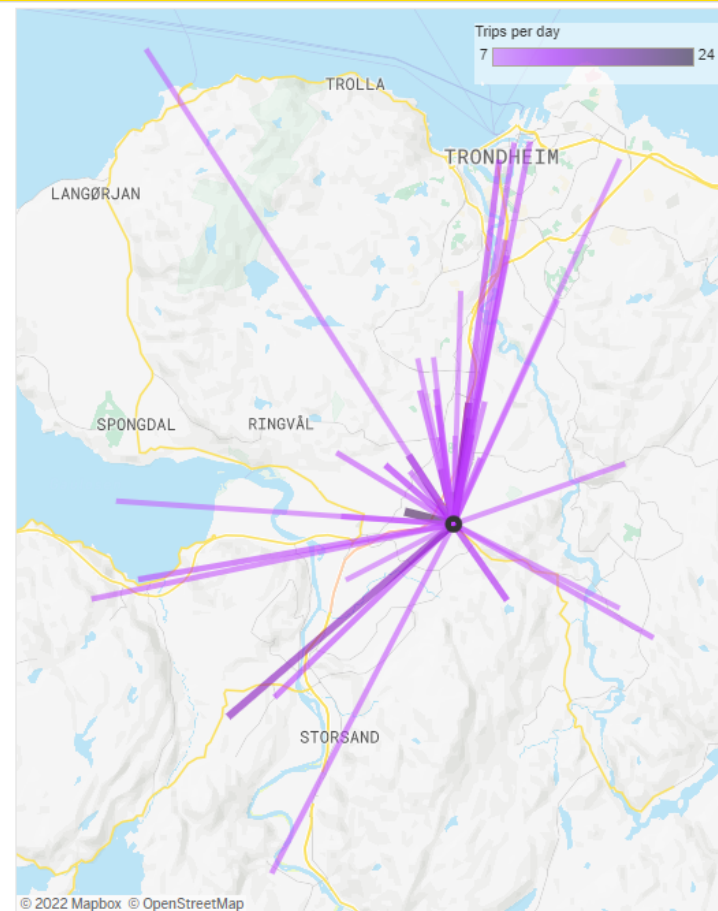
40



Daily trips

Date type

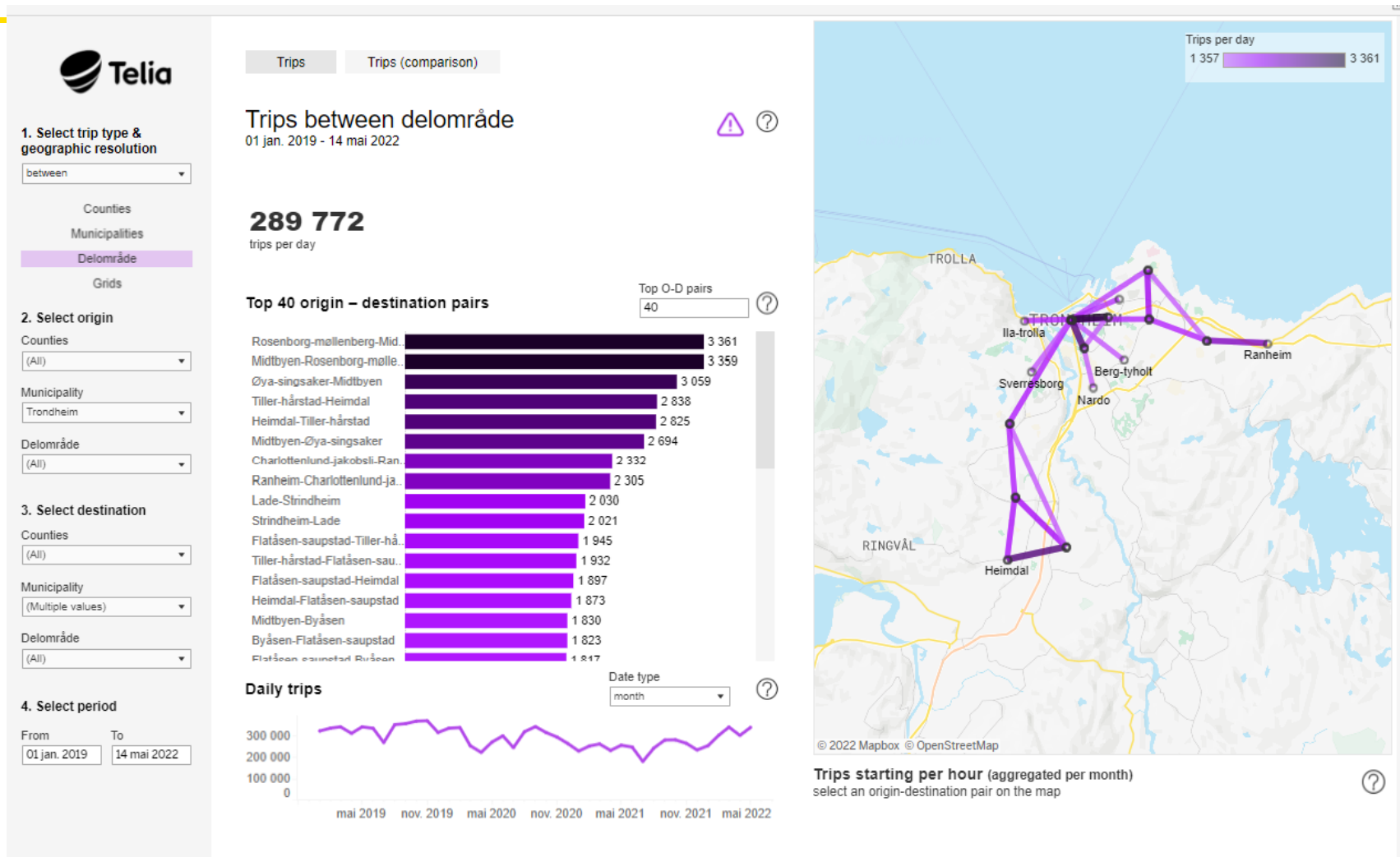
month



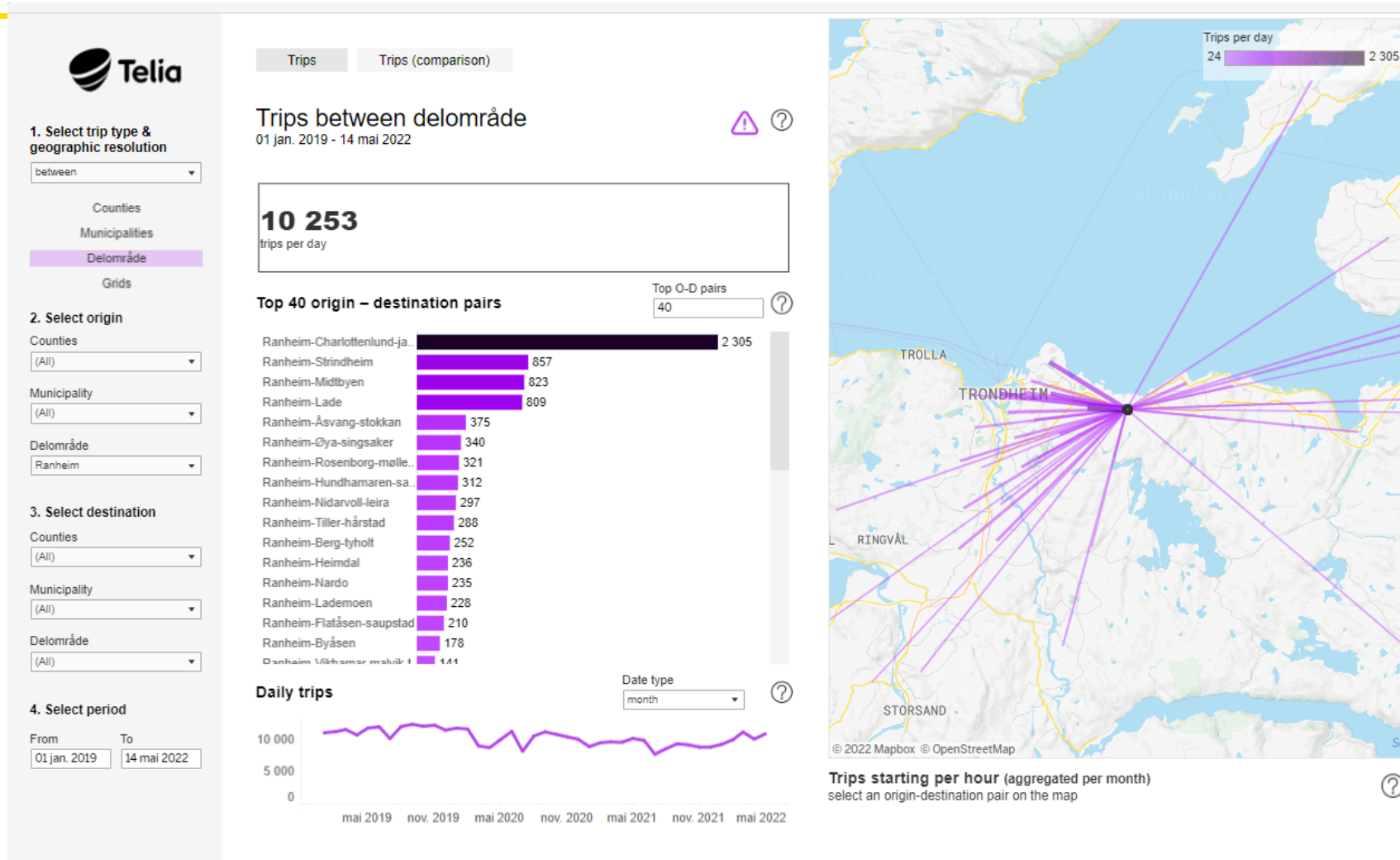
Trips starting per hour (aggregated per month)
select an origin-destination pair on the map



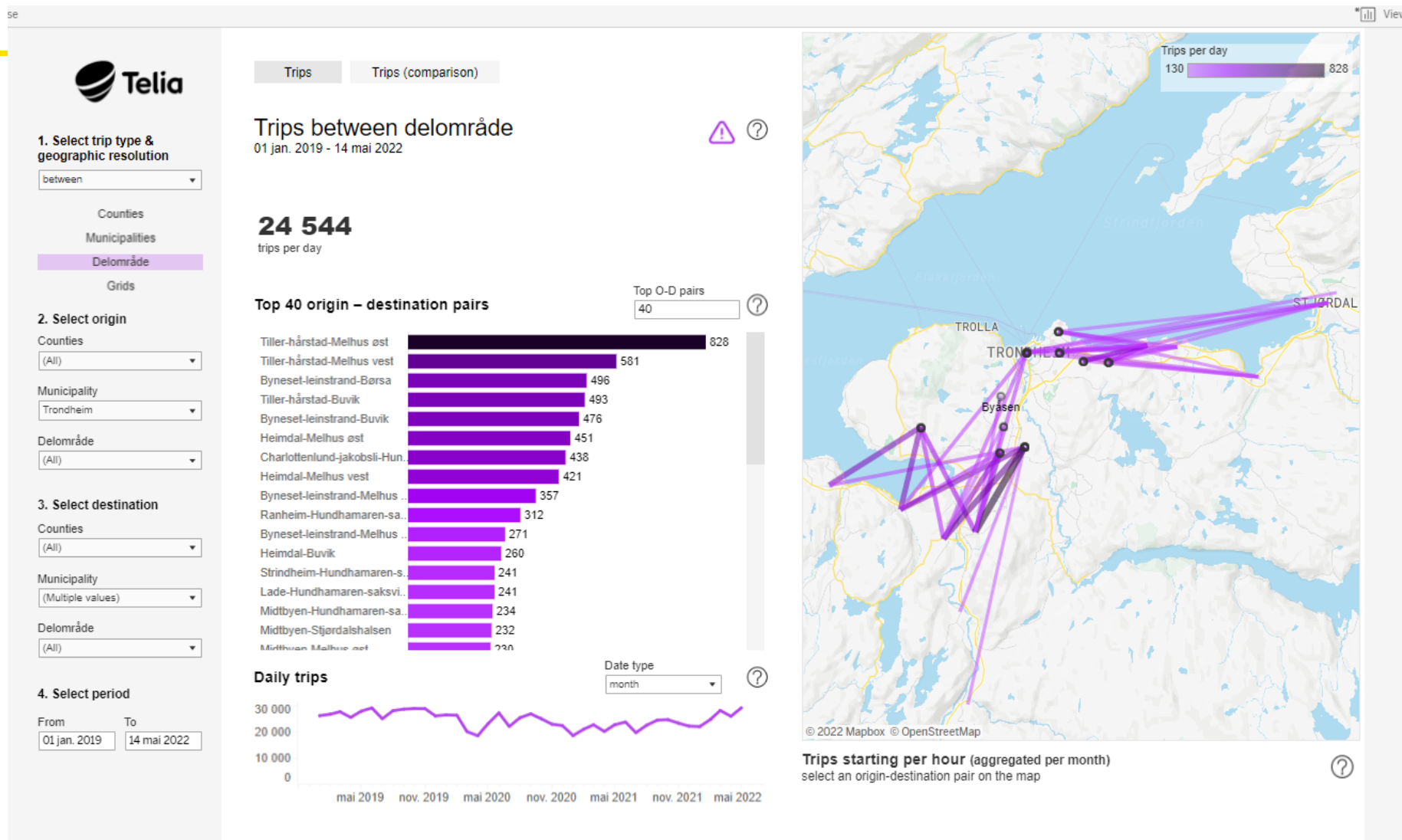
Viktigeste bydels-lenkene i byen



Hvor skal folk fra Ranheim?



Viktigeste MP- lenker hvor destinasjon ikke er i Trondheim.



Hvor starter reiser som ender opp i ... Selbu?



1. Select trip type & geographic resolution

between

Counties

Municipalities

Delområde

Grids

2. Select origin

Counties

(All)

Municipality

(All)

3. Select destination

Counties

Trøndelag

Municipality

Selbu

4. Select period

From To

Trips Trips (comparison)

Trips between municipalities

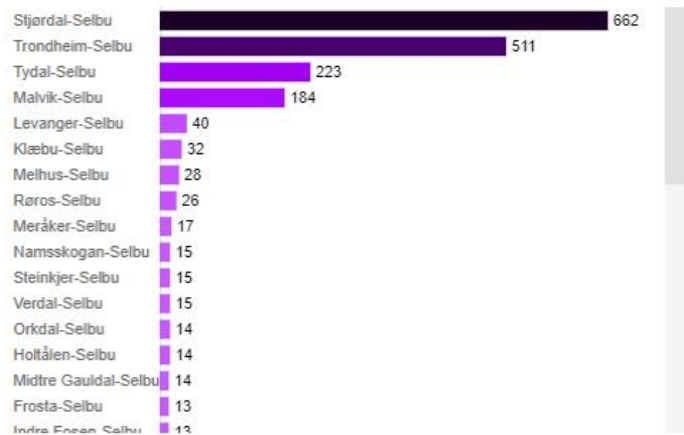
01 jan. 2019 - 14 mai 2022

1 850

trips per day

Top 40 origin - destination pairs

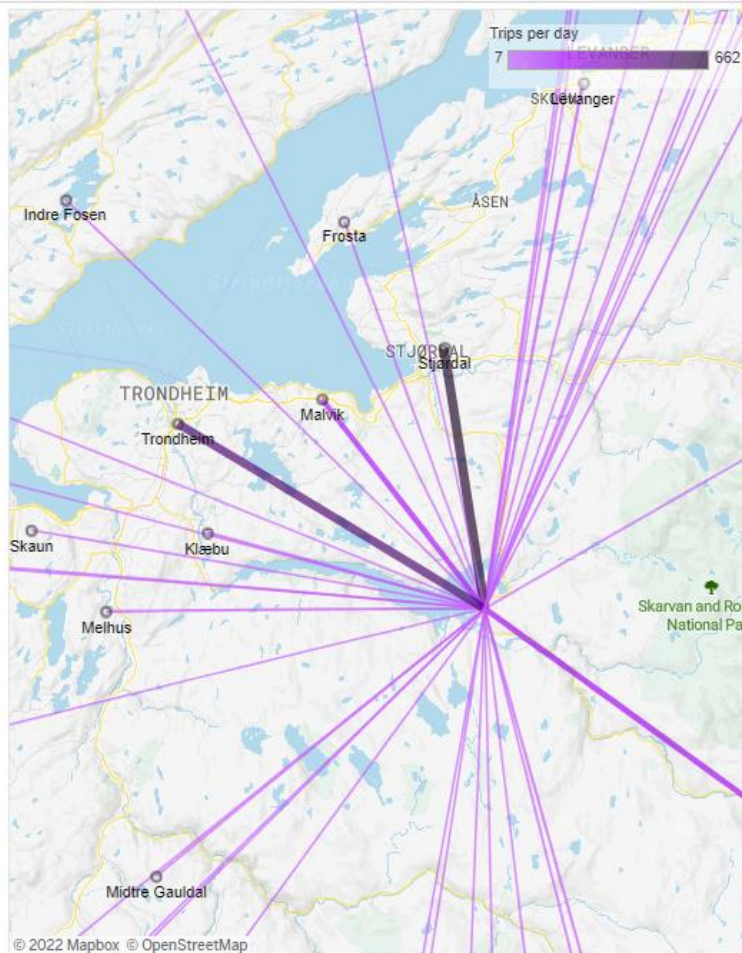
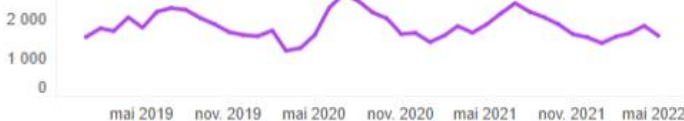
Top O-D pairs



Daily trips

Date type

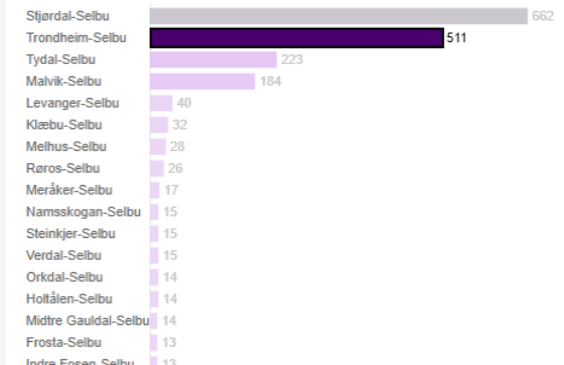
month



Trips starting per hour (aggregated per month)
select an origin-destination pair on the map

Top 40 origin - destination pairs

Top O-D pairs



Daily trips

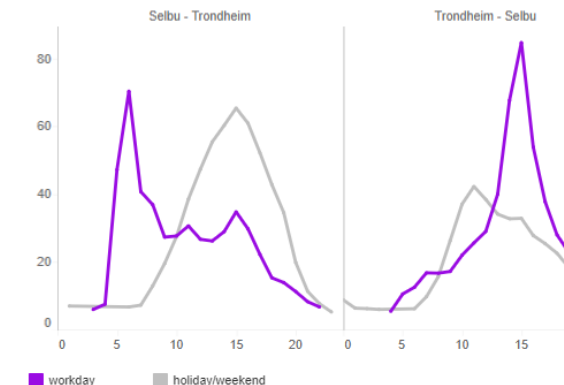
Date type

month



Trips starting per hour (aggregated per month)

select an origin-destination pair on the map





Autonom ferge til Ytterøya? (3 pgs)



1. Select trip type & geographic resolution

between

Counties
Municipalities
Delområde
Grids

2. Select origin

Counties
(All)

Municipality
Levanger

Delområde
Ytterøy

3. Select destination

Counties
(All)

Municipality
(All)

Delområde
(All)

4. Select period

From To
01 jan. 2019 21 mai 2022

Trips between delområde

01 jan. 2019 - 21 mai 2022

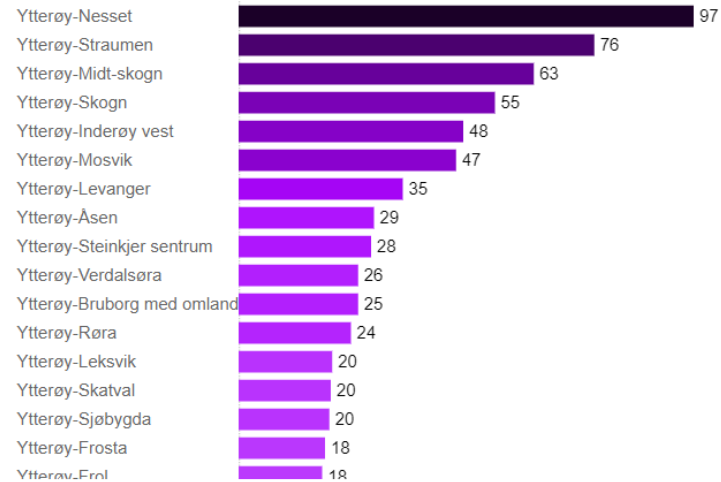
729

trips per day

Top 40 origin – destination pairs

Top O-D pairs

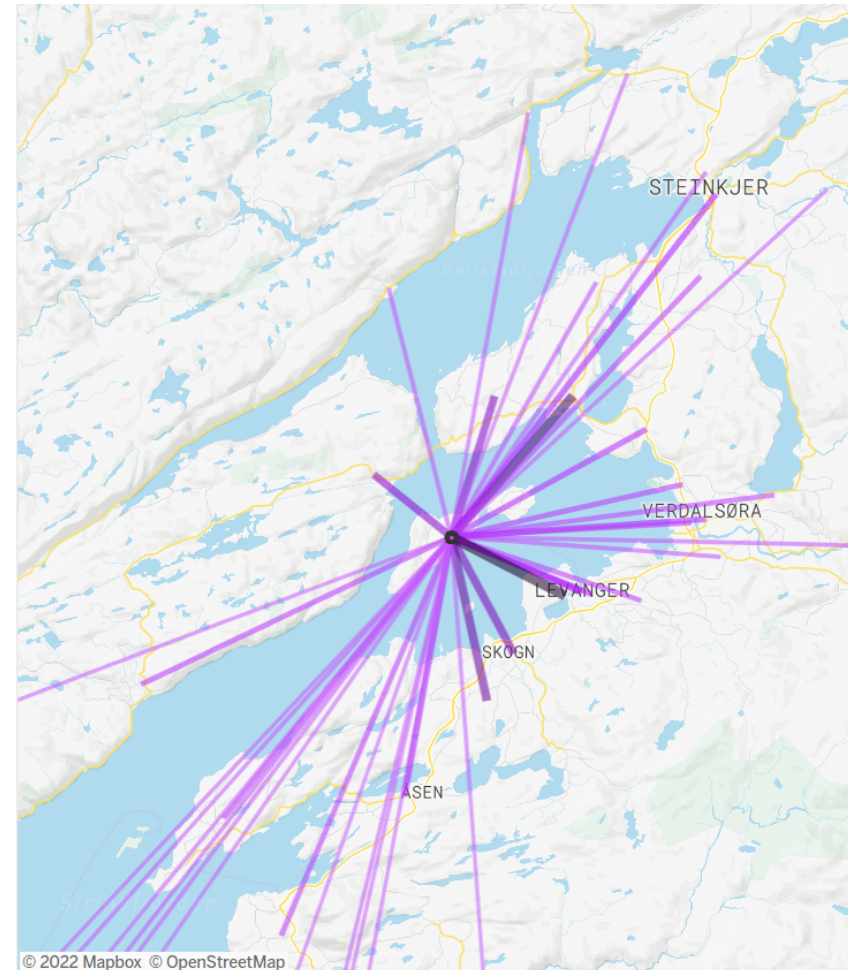
40



Daily trips

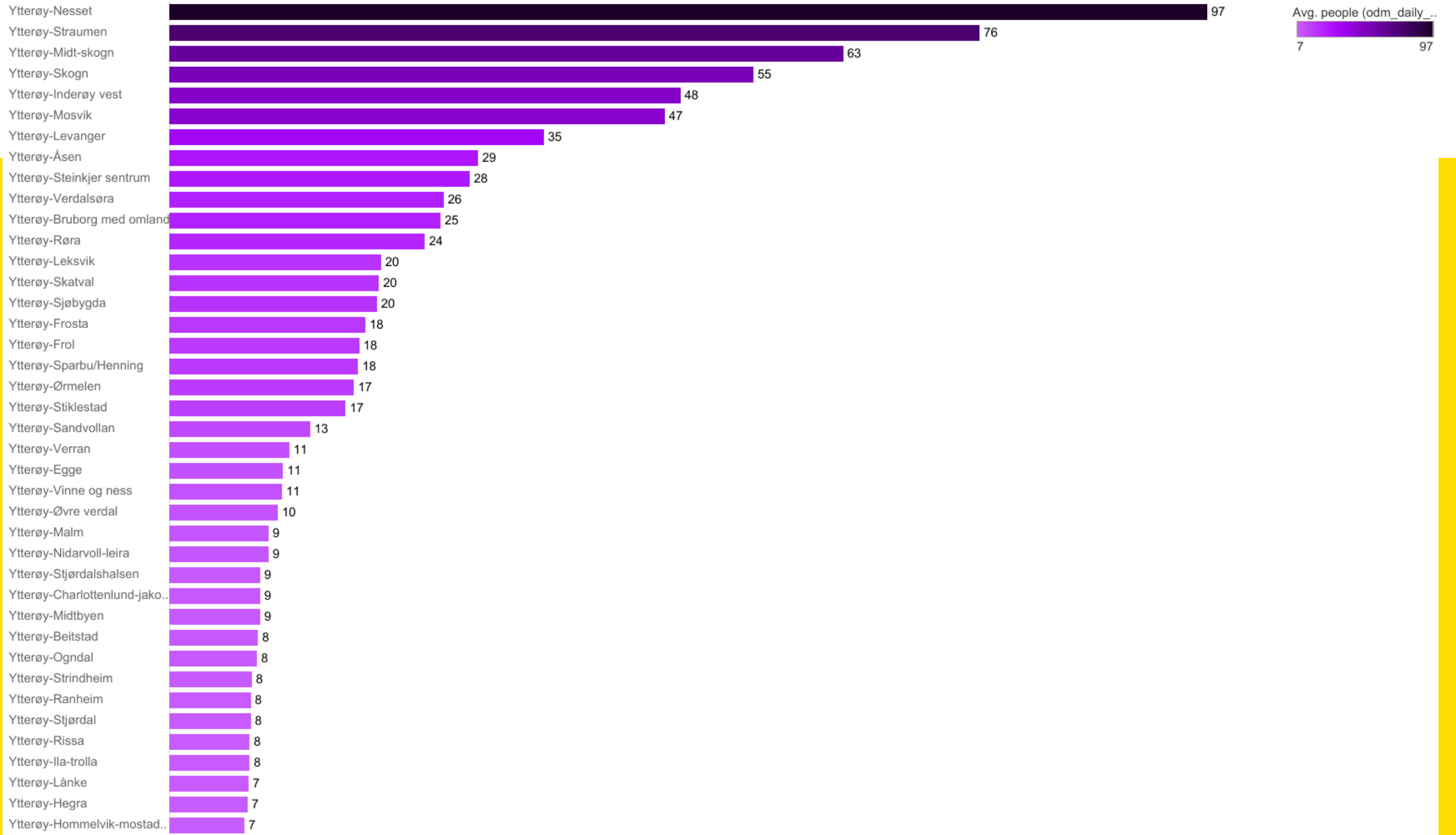
Date type

month

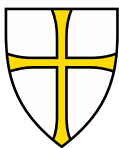


© 2022 Mapbox © OpenStreetMap

a13



Daily trips



Bundling av reiseveier fra Byåsen.



Topp 40 OD-matriser



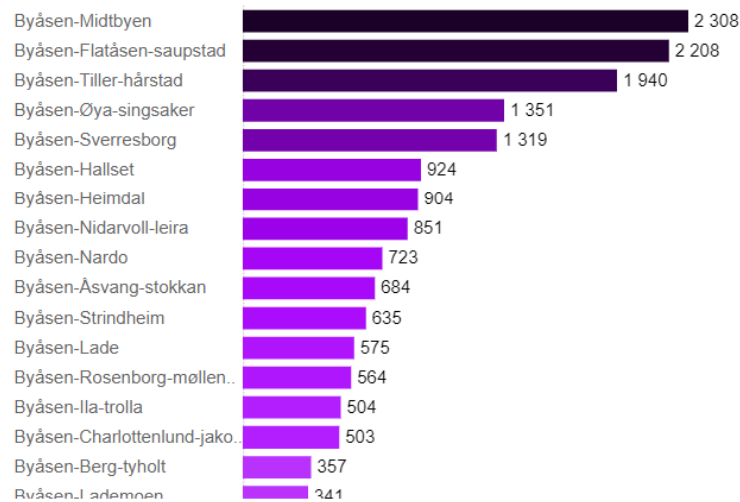
19 525

trips per day

Top 40 origin – destination pairs

Top O-D pairs

40



Daily trips

20 000
15 000
10 000
5 000

Date type

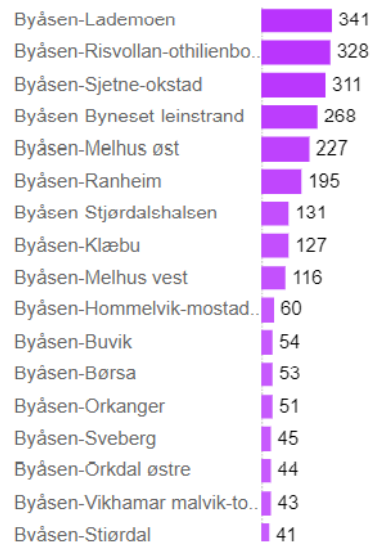
month



19 525

trips per day

Top 40 origin – destination pairs



Daily trips

20 000
15 000
10 000

Date type

month



Top O-D pairs

40



19 525

trips per day

Top 40 origin – destination pairs



Daily trips

20 000
15 000
10 000
5 000

Date type

month

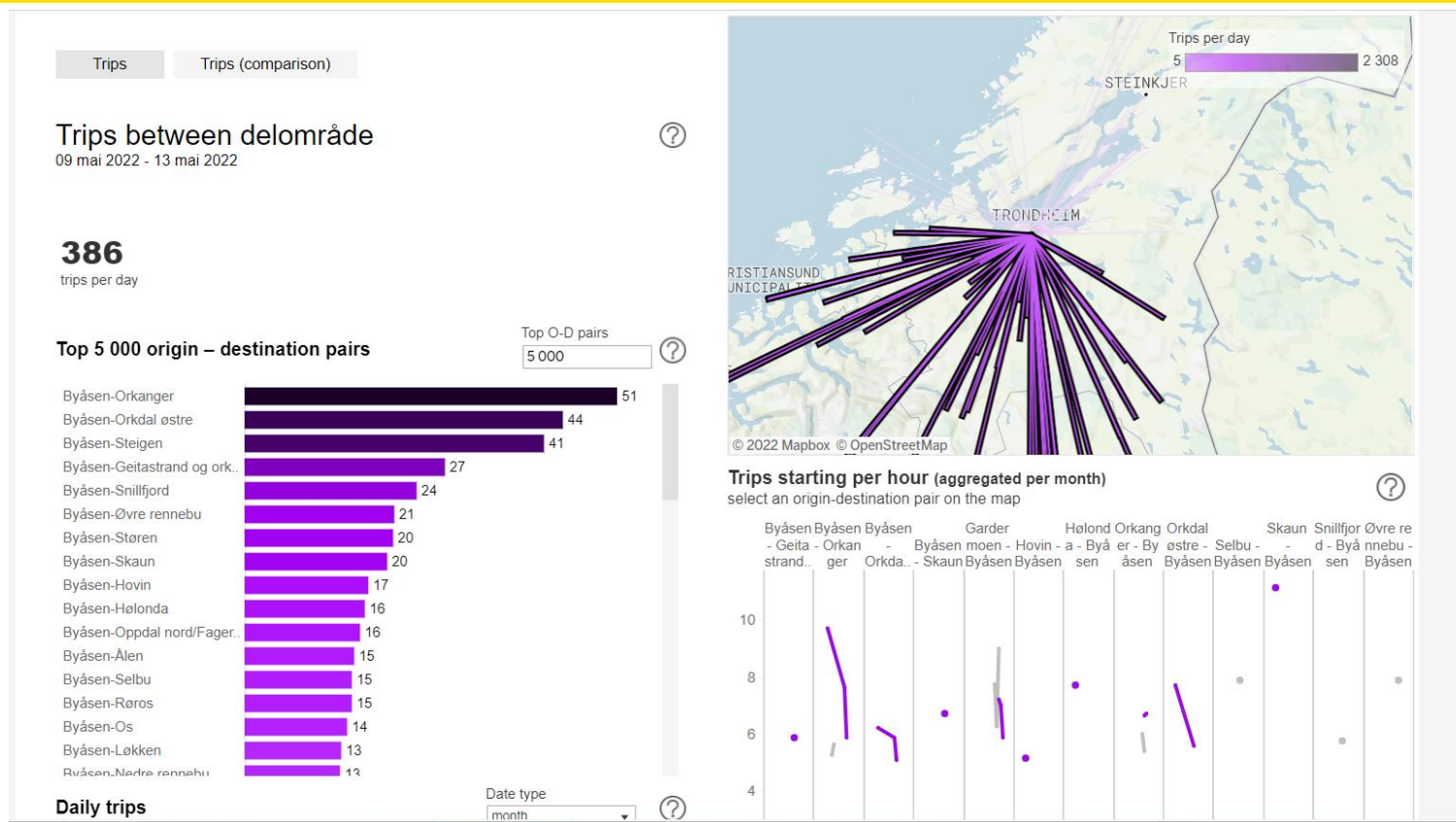


Top O-D pairs

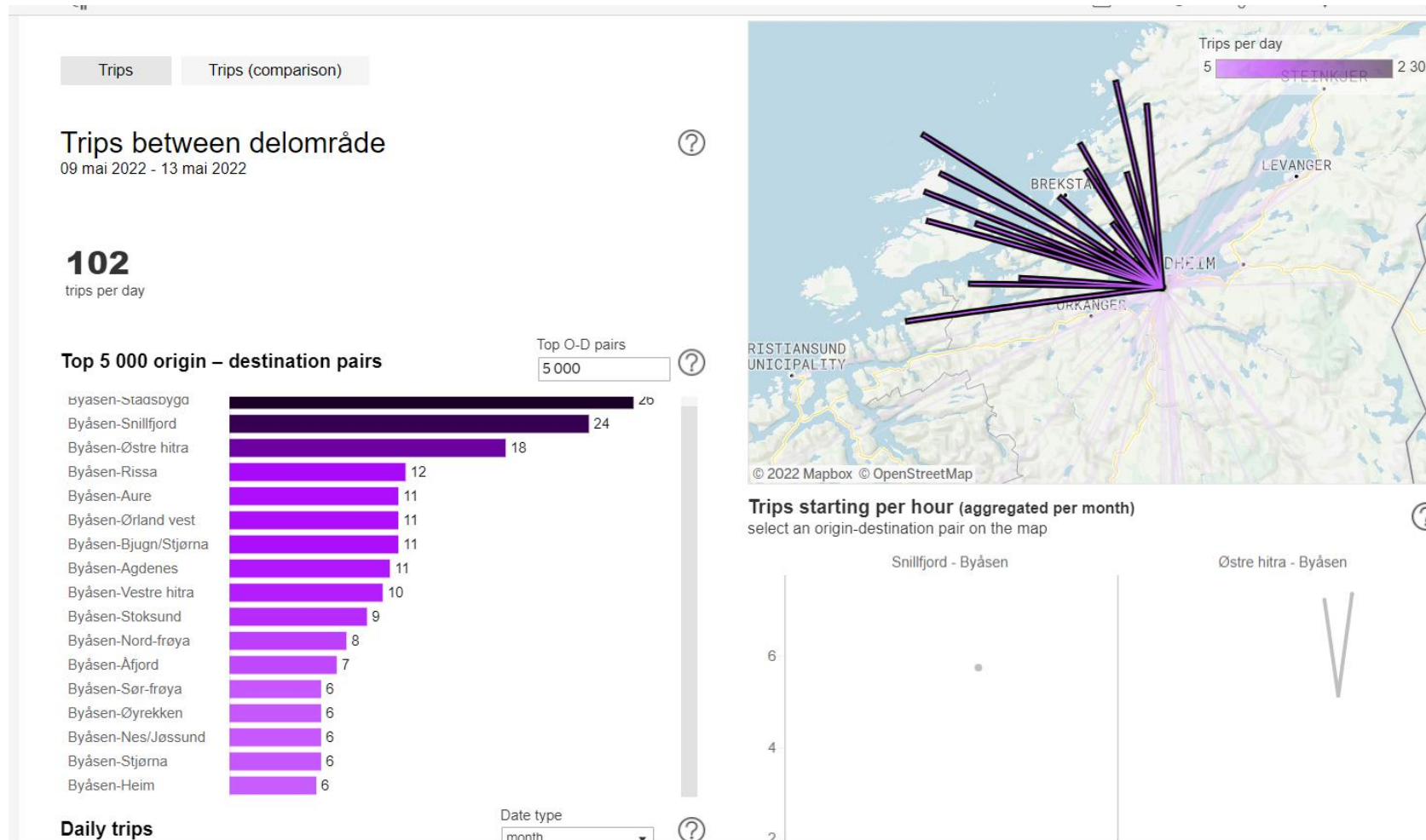
40



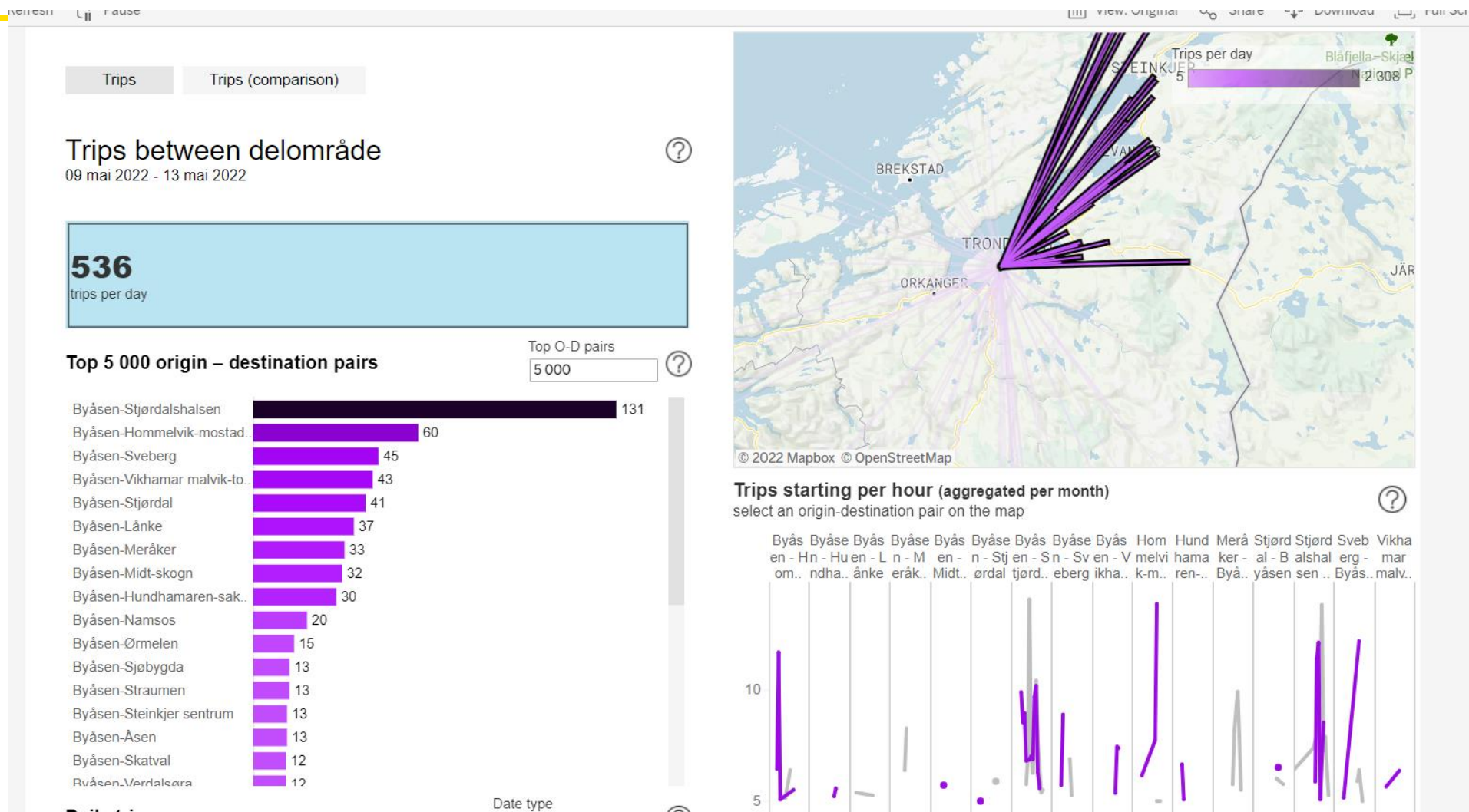
Sør/vest for Klett-krysset – 386 resiende



Nord-vestover 102 – her var det så få punkter at man får med alle.



Malvik, Stjørdal, og lenger øst/nord via E6. 536



Midtbyen / Trondheim: 9989 (inkl 536 som skal nord)



Trips Trips (comparison)

Trips between delområde

09 mai 2022 - 13 mai 2022

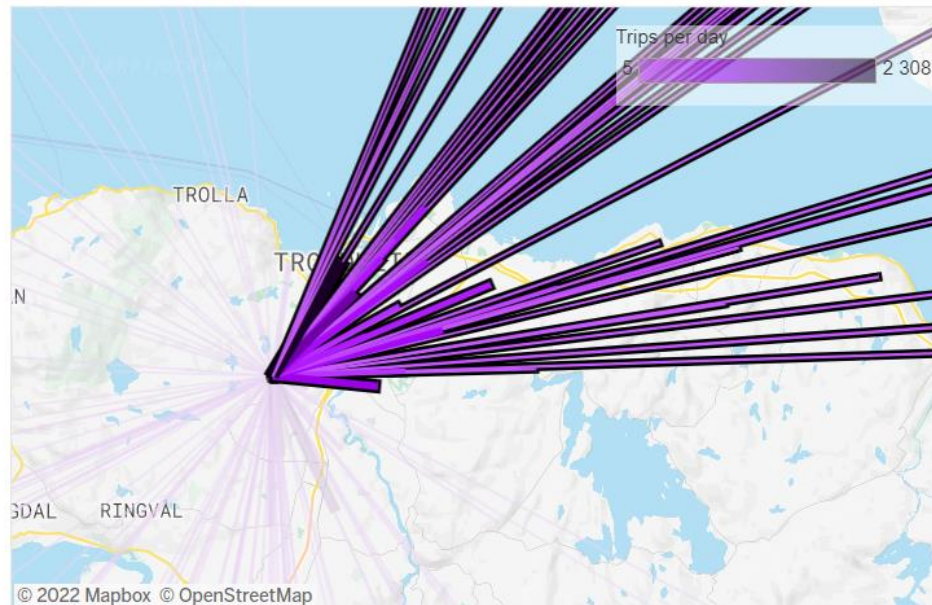
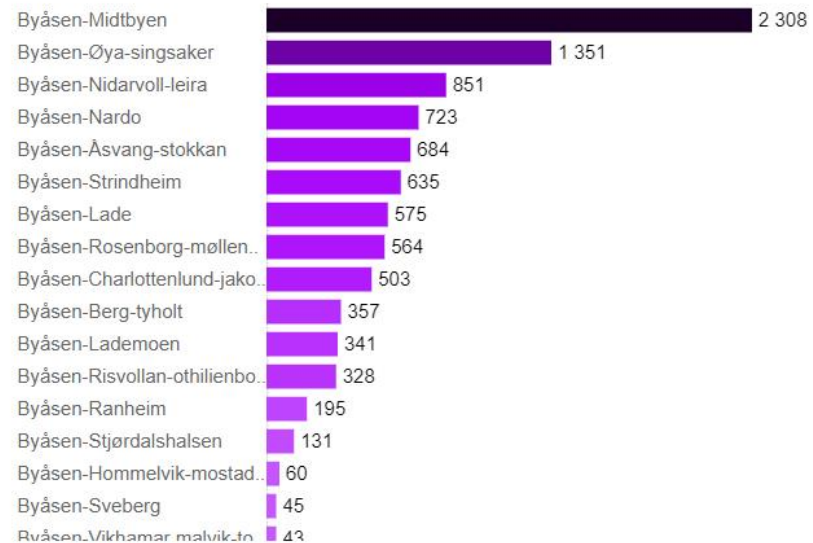
9 989

trips per day

Top 5 000 origin – destination pairs

Top O-D pairs

5 000



Trips starting per hour (aggregated per month)

select an origin-destination pair on the map



Ønskebruk



- Virtuell ÅDT teller for veg
- Fra delområde til Municipality uten å måtte manuelt aggregere.
- Tungtransport.