

Visualize OD data with Flowmap.blue

Praktikum XII - Visualisasi Data & Informasi

Flowmap.blue

- [Flowmap.blue](#) is an open-source tool that helps visualize the movements between 2 geographic locations.

Origin-Destination (OD) data

- [OD data](#), or “flow data,” serves the function of **representing geographic movement**. It comes either in “long” form or as a matrix. In the first case, each row will have the OD pair (origin and destination) and the **number of trips between the origin and destination**.

| Origin | Destination | # of Trips |
|--------|-------------|------------|
| France | Italy | 567 |
| Italy | France | 1234 |
| UK | Italy | 890 |

“Long” form data

| | | Destination | | |
|--------|--------|-------------|-------|-----|
| | | France | Italy | UK |
| Origin | France | N/A | 567 | N/A |
| | Italy | 1234 | N/A | N/A |
| | UK | N/A | 890 | N/A |

OD matrix

- Flowmap.blue has a [matrix converter](#) that allows you to convert a matrix into a long form and copy/paste the tabular output in a spreadsheet.
- In Flowmap.blue, you'll need to use long form data.

The screenshot displays a web interface for converting a matrix into a long form. It features two text input areas and a central button.

Input OD-matrix TSV (tab-separated values)

| | France | Italy | UK |
|--------|--------|-------|-----|
| France | N/A | 567 | N/A |
| Italy | 1234 | N/A | N/A |
| UK | N/A | 890 | N/A |

→ Convert →

Output TSV

| origin | dest | count |
|--------|--------|-------|
| France | Italy | 567 |
| Italy | France | 1234 |
| UK | Italy | 890 |

Why should I care about OD analysis?

- helpful for a myriad of reasons:
- urban planning,
- transportation networks design,
- real estate investments,
- supply-chain logistics,
- human migration policies, etc
- Mobility data is important to understand what inefficiencies exist in the modern geographic spaces to help develop a better response
- OD analysis helps identify today's geographic gaps for better resource allocation tomorrow.

Data

- San Francisco Bay Area's [BART ridership data](#) for 2021
- <https://www.bart.gov/about/reports/ridership>
- Template
- <https://docs.google.com/spreadsheets/u/1/d/1aEgwtGUGc0TdnsO0jIm50hshCZ-m4DHms3P0Qq9IYdA/edit#gid=1438429083>
- <https://flowmap.blue/>

“properties”, “locations”, & “flows”

- **Properties (metadata of the visual created)**
- chart title, a description, the data source and your own info.

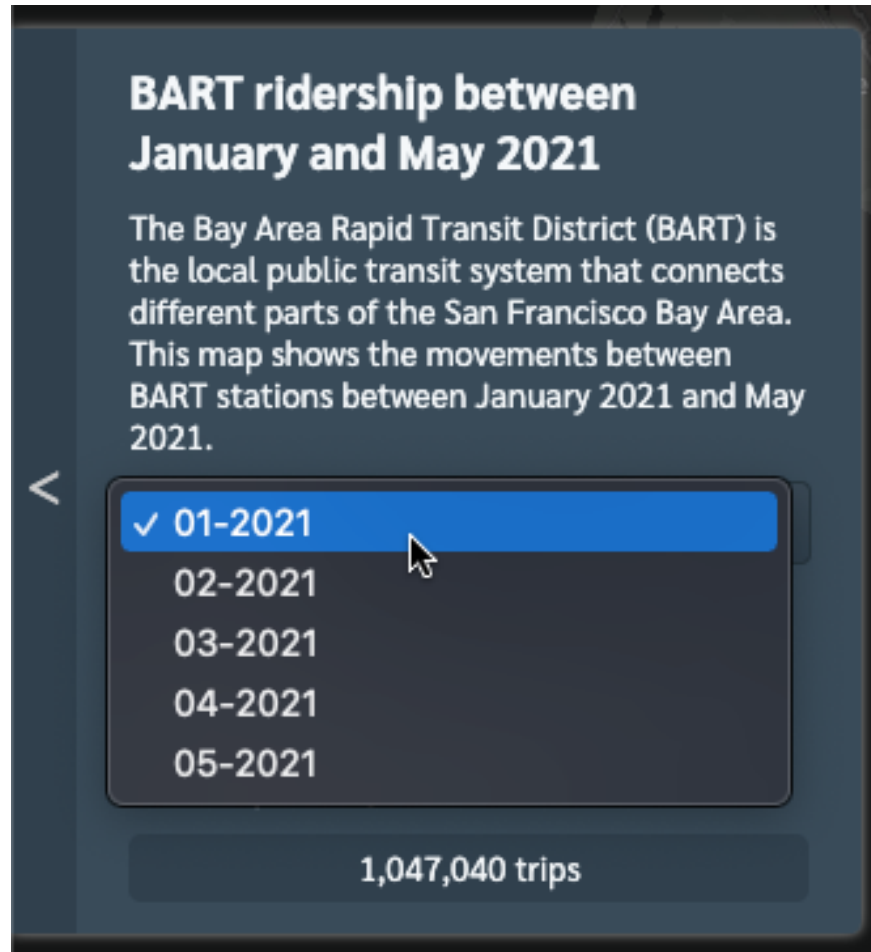
| property | value |
|-----------------|--|
| title | BART ridership between January and May 2021 |
| description | The Bay Area Rapid Transit District (BART) is the local public transit system that connects different parts of the San Francisco Bay Area. This map shows the movements between BART stations between January 2021 and May 2021. |
| source.name | BART ridership data |
| source.url | https://www.bart.gov/about/reports/ridership |
| createdBy.name | Chloe |
| createdBy.email | |
| createdBy.url | |



format the map by selecting the colors, animation/cluster feature, and word choices for the toolbox

| property | value | comment |
|------------------------------|---|---|
| colors.scheme | SunsetDark | |
| colors.darkMode | yes | |
| animate.flows | yes | |
| clustering | yes | |
| flows.sheets | 01-2021,02-2021,03-2021,04-2021,05-2021 | ← Here you can list multiple comma-separated sheet names if you want to split your flows data into several subsets. There will be a drop-down menu in the UI with the subsets to select from. Here is an example: → |
| msg.locationTooltip.incoming | Inbound trips | ← Here you can customize some of the messages. |
| msg.locationTooltip.outgoing | Outbound trips | |
| msg.locationTooltip.internal | Internal & round trips | |
| msg.flowTooltip.numOfTrips | Number of trips | |
| msg.totalCount.allTrips | {0} trips | |
| msg.totalCount.countOfTrips | {0} of {1} trips | |

the flows.sheets “value” cell contains comma-separated values. Those will inform the month/year drop-down **you see** below. For each drop-down value, you’ll need to create a separate tab on the template.



Locations

- Populate locations, including the **GPS coordinates**. If you only have the location names without the GPS coordinates, you can use Flowmap.blue's [geocoding tool](#).
- Copy/paste the result on the “locations” tab of the spreadsheet.

Location names (one per line)

Limit search to as

→ Geocode →

```
1245 Broadway, Oakland, CA 94612
2000 Mission Street, San Francisco, CA 94110
1900 Broadway, Oakland, CA 94612
2800 Mission Street, San Francisco, CA 94110
3100 Adeline Street, Berkeley, CA 94703
401 Geneva Avenue, San Francisco, CA 94112
15242 Hesperian Blvd., San Leandro, CA 94578
3100 Adeline Street, Berkeley, CA 94703
3301 Norbridge Dr., Castro Valley, CA 94546
1150 Market Street, San Francisco, CA 94102
7200 San Leandro St., Oakland, CA 94621
365 D Street, Colma, CA 94014
1451 Oakland Avenue, Concord, CA 94520
500 John Daly Blvd., Daly City, CA 94014
5801 Owens Dr., Pleasanton, CA 94588
6400 Cutting Blvd., El Cerrito, CA 94530
6699 Fairmount Avenue, El Cerrito, CA 94530
298 Market Street, San Francisco, CA 94111
2000 BART Way, Fremont, CA 94536
```

| id | name | lat | lon |
|--|---|-----------|-------------|
| 1245 Broadway, Oakland, CA 94612 | 1245 Broadway, Oakland, California 94612, United States | 37.803379 | |
| 2000 Mission Street, San Francisco, CA 94110 | 2000 Mission Street, San Francisco, California 94110, United States | 37.774929 | -122.421131 |
| 1900 Broadway, Oakland, CA 94612 | 1900 Broadway, Oakland, California 94612, United States | 37.807807 | |
| 2800 Mission Street, San Francisco, CA 94110 | 2800 Mission Street, San Francisco, California 94110, United States | 37.759521 | -122.420161 |
| 3100 Adeline Street, Berkeley, CA 94703 | 3100 Adeline Street, Berkeley, California 94703, United States | 37.852144 | -122.269869 |
| 401 Geneva Avenue, San Francisco, CA 94112 | 401 Geneva Ave, San Francisco, California 94112, United States | 37.788124 | -122.418750 |
| 15242 Hesperian Blvd., San Leandro, CA 94578 | Hesperian Blvd, San Leandro, California 94578, United States | 37.728333 | -122.157222 |
| 3100 Adeline Street, Berkeley, CA 94703 | Adeline Street, Berkeley, California 94703, United States | 37.852144 | -122.269869 |
| 3301 Norbridge Dr., Castro Valley, CA 94546 | 3301 Norbridge Avenue, Castro Valley, California 94546, United States | 37.693745 | -122.122444 |
| 1150 Market Street, San Francisco, CA 94102 | 1150 Market Street, San Francisco, California 94102, United States | 37.774929 | -122.421131 |
| 7200 San Leandro St., Oakland, CA 94621 | 7200 San Leandro Street, Oakland, California 94621, United States | 37.683745 | -122.421131 |
| 365 D Street, Colma, CA 94014 | D Street, Colma, California 94014, United States | 37.683745 | -122.421131 |
| 1451 Oakland Avenue, Concord, CA 94520 | 1451 Oakland Avenue, Concord, California 94518, United States | 37.974144 | -122.031131 |
| 500 John Daly Blvd., Daly City, CA 94014 | 500 John Daly Blvd, Daly City, California 94014, United States | 37.701144 | -122.469869 |
| 5801 Owens Dr., Pleasanton, CA 94588 | 5801 Owens Drive, Pleasanton, California 94588, United States | 37.701144 | -122.469869 |
| 6400 Cutting Blvd., El Cerrito, CA 94530 | 6400 Cutting Blvd, El Cerrito, California 94530, United States | 37.701144 | -122.469869 |
| 6699 Fairmount Avenue, El Cerrito, CA 94530 | 6699 Fairmount Avenue, El Cerrito, California 94530, United States | 37.701144 | -122.469869 |
| 298 Market Street, San Francisco, CA 94111 | 298 Market Street, San Francisco, California 94114, United States | 37.774929 | -122.421131 |

enter the data: id, name, latitude, and longitude.

| id | name | lat | lon |
|----|-----------------------------------|-----------|-------------|
| 12 | 12th Street / Oakland City Center | 37.803379 | -122.271843 |
| 16 | 16th Street Mission | 37.765009 | -122.419685 |
| 19 | 19th Street Oakland | 37.807807 | -122.268595 |
| 24 | 24th Street Mission | 37.751992 | -122.41872 |
| AN | Antioch | 37.996448 | -121.780665 |
| AS | Ashby | 37.852932 | -122.268903 |
| BE | Berryessa / North San Jose | 37.370635 | -121.874812 |
| BP | Balboa Park | 37.72124 | -122.4477 |
| BF | Bayfair | 37.696616 | -122.134042 |
| BK | Berkeley | 37.87023 | -122.26797 |
| CV | Castro Valley | 37.69135 | -122.07598 |
| CC | Civic Center | 37.779722 | -122.413611 |
| CL | Coliseum | 37.753603 | -122.196678 |

Flows

- the number of trips taken between the origin and the destination. If you're not interested in creating a filter, you can simply fill out the "flows" tab. However, if you want to create a drown-down, you'll need to create a new tab for each value you want added to the drop-down

01-2021 ▾ 02-2021 ▾ 03-2021 ▾ 04-2021 ▾ 05-2021 ▾

- On each tab, enter the origin, destination, and the aggregated number of trips.

| origin | dest | count |
|--------|------|-------|
| RM | RM | 147 |
| EN | RM | 637 |
| EP | RM | 580 |
| NB | RM | 451 |
| BK | RM | 1700 |
| AS | RM | 480 |
| MA | RM | 932 |
| 19 | RM | 509 |
| 12 | RM | 820 |
| LM | RM | 194 |
| FV | RM | 557 |
| CL | RM | 554 |
| SL | RM | 280 |
| BF | RM | 198 |

Share the template “Anyone with the link.”

- Copy/paste the link in the dedicated box on Flowmap.blue. Click “Open” to view the final result in Flowmap.blue.
- You can zoom in or out, filter on the month by using the drop-down menu, or toggle the settings (bottom left corner). While Flowmap.blue is a convenient, low-code and user-friendly tool

