

# SOLAR Interactive Dashboard Activity

This document provides guidance on a method for developing an interactive dashboard that fulfils the criteria for the SOLAR assessment question on mapping bike routes using historical Just Eat bikes data.

It is provided as an example of how students could meet the criteria.

There are two steps:

1. prepare the data to make it suitable for visualising
2. visualise the data

## Data Preparation

The following two datasets are required for the visualisation, both of which are created from the original `bikes.csv` dataset:

- `stations.csv`: a dataset containing 1 row per station, and including descriptive and location data for each station
- `bike_routes.csv`: a dataset that summarises each combination of start and end station with a count of the number of journeys from the start to the end station. (Note that these are *combinations* so A B is a different journey than B A).

An example of how to prepare each of these datasets is available in the GitHub repository <https://github.com/Effini/eduni-npa-solar-dashboard/blob/main/README.md>. The code is written in R but the same steps could be implemented in another language/tool. The code is short, straightforward and well-documented so should be understandable even if you are not familiar with R.

## Data Visualisation

<https://flourish.studio/> was used to create an interactive arc map, using the two datasets created above. A published example is available at <https://public.flourish.studio/visualisation/12931562/>.

Flourish is a browser-based data visualisation tool which has a free tier. A flourish account is required.

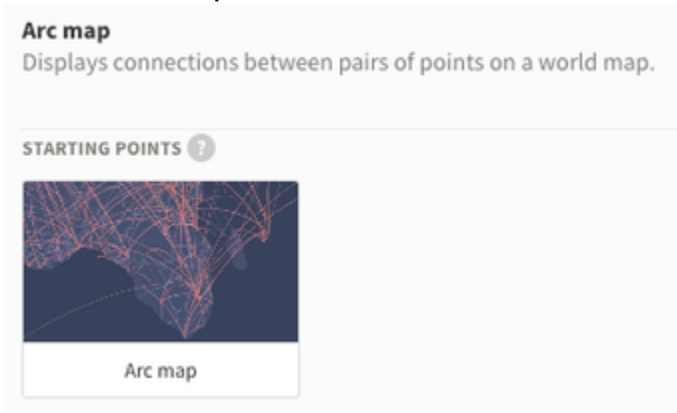
To create an arc map like the one above, follow these steps.

### Create a new arc map

1. click

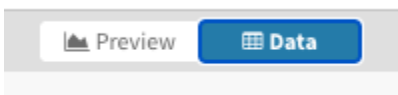


2. Choose **arc map**



### Import your data

1. At the top of the page click **Data**



2. Flourish automatically imports an example dataset to demonstrate how to create a visualisation of this type. You don't need this. Delete the data in the **Data** tab by selecting all the rows (Ctrl + A in Windows)

	A	B	C	D	E	F	G	H	I
1	source_id	1524	3364	1804	3322	273	3645	3391	3462
2	target_id	1613	813	3830	6281	275	4011	3368	3533
3	source_airport	MXP	PEK	GDL	CNS	LOS	DTW	SHA	PHX
4	target_airport	VIE	JNB	ORD	KWM	PHC	MHT	TSN	FLL
5	airline	OS	CA	AM	Q6	LH	DL	MU	WN
6	airline_id	491	751	321	753	3320	2009	1758	4547
7	codeshare	Y	Y				Y		
8	stops	0	0	0	0	0	0	0	0
9	equipment	320 319 100	343	737	DH1	333	ERJ CRJ	737 320	73W
10									

and delete the rows by hitting the delete button on your keyboard or right-clicking and clicking 'Remove rows'

	A	B	C	D
1	source_id	1524	3364	1804
2	target_id	1613	813	3830
3	source_airport	MXP	PEK	GDL
4				ORD
5				AM
6				321
7				
8				0
9				737
10				

- Insert row above
- Insert row below
- Insert column left
- Insert column right
- Remove rows**
- Remove columns
- Sort by column (A→Z)
- Sort by column (Z→A)
- Combine columns ("unpivot")
- Upload file

Now delete the data in the **Locations** tab in exactly the same way.

	A	B	C	D	
1	airport_id	name	latitude	longitude	country
2	1	Goroka Airport	-6.081689835	145.3919983	Papua New Gui
3	2	Madang Airport	-5.207079887	145.7890015	Papua New Gui
4	3	Mount Hagen Kagamuga Airport	-5.826789856	144.2960052	Papua New Gui
5	4	Nadzab Airport	-6.569803	146.725977	Papua New Gui
6	5	Port Moresby Jacksons International Airport	-9.443380356	147.2200012	Papua New Gui
7	6	Wewak International Airport	-3.583830118	143.6690063	Papua New Gui
8	7	Narsarsuaq Airport	61.16049957	-45.42599869	Greenland
9	8	Godthaab / Nuuk Airport	64.19090271	-51.67810059	Greenland

3. To import the `bike_routes.csv` dataset, click back to the **Data** tab and then click



Select the file `bike_routes.csv`.

4. To import the `stations.csv` dataset, click to the **Locations** tab and then click



Select the file `stations.csv`.

Instruct flourish how you want it to use your data

1. Return to the **Data** tab.
2. You instruct flourish how you want it to use your data by specifying which columns in your dataset you want to use for the visualisation. Add the following columns to the boxes on the right side of the page, like this...

### Arcs

#### SELECT COLUMNS TO VISUALISE

Source location ? REQUIRED

A

Destination location ? REQUIRED

E

Value ?

I

Filter ?

B

Category ?

Metadata for popups

Your choices will now be reflected in the how the dataset is displayed, like this...

id	A	B	C	D	E	F	G	H	I
id	source_location	station_name	start_datetime	end_datetime	start_datetime	end_datetime	start_datetime	end_datetime	station_name
1	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
2	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
3	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
4	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
5	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
6	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
7	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
8	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
9	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
10	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
11	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
12	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
13	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
14	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
15	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
16	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
17	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
18	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
19	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings
20	1000	West Crossings	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	2019-01-01T00:00:00	West Crossings

Note that the **Filter** column (column B - **station\_name**) is used by flourish to create a drop-down list in the visualisation, allowing the user to interactively select which station to display journeys for.

3. Go to the **Locations** tab. Specify your columns like this...

## Locations

SELECT COLUMNS TO VISUALISE

Location code REQUIRED

A

Latitude REQUIRED

D

Longitude REQUIRED

E

Name

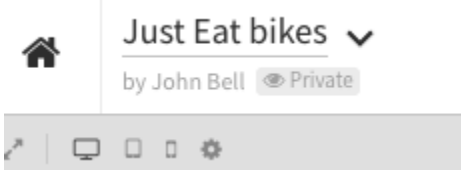
B

Category

Your dataset should now look like this...

	A	B	C	D	E
1	station_id	station_name	station_description	station_latitude	station_longitude
2	171	George Square	George Square, south side in front of University library	55.94308406	-3.188311073
3	183	Waverley Bridge	near the top of the South ramp	55.95198076	-3.191890333
4	189	City Chambers	City Chambers Quadrangle	55.95010933	-3.19025777
5	225	Waverley Court	On Waverley Court forecourt	55.9517345	-3.184178535
6	246	Royal Commonwealth Pool	Royal Commonwealth Pool Entrance	55.93900025	-3.173923554
7	247	Charlotte Square	North Corner of Charlotte Square	55.95233546	-3.2071011719999998

4. Save the project. Give the project a name in the top-left of the page. Flourish will automatically save the project.

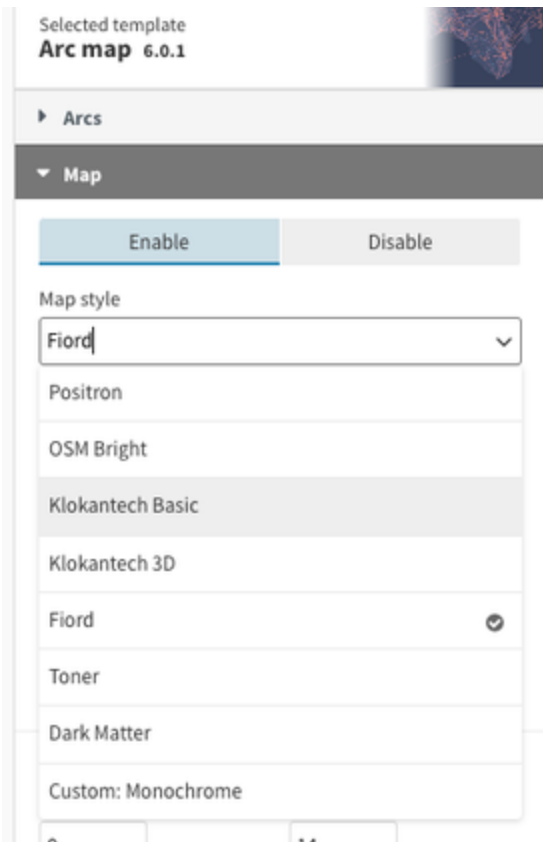


## Configure the Visualisation

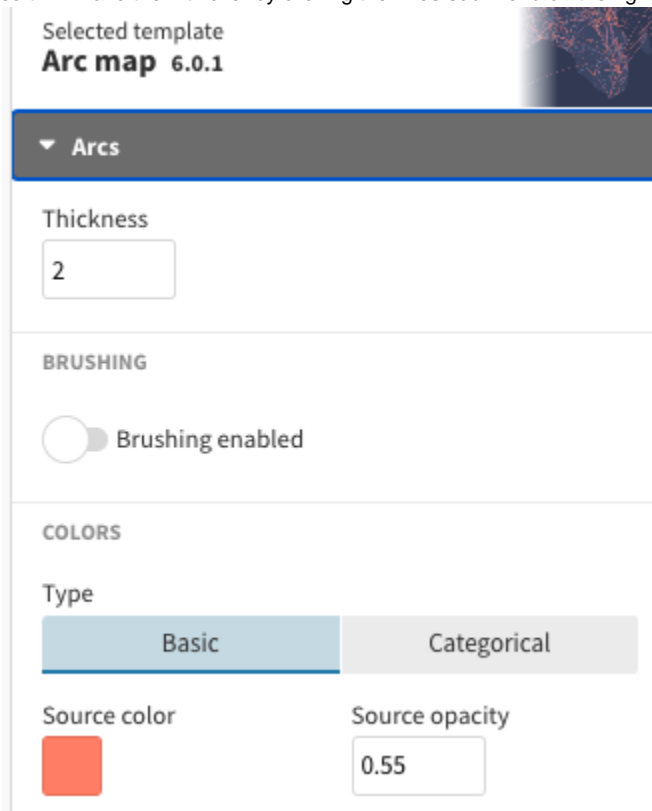
1. Preview the map using



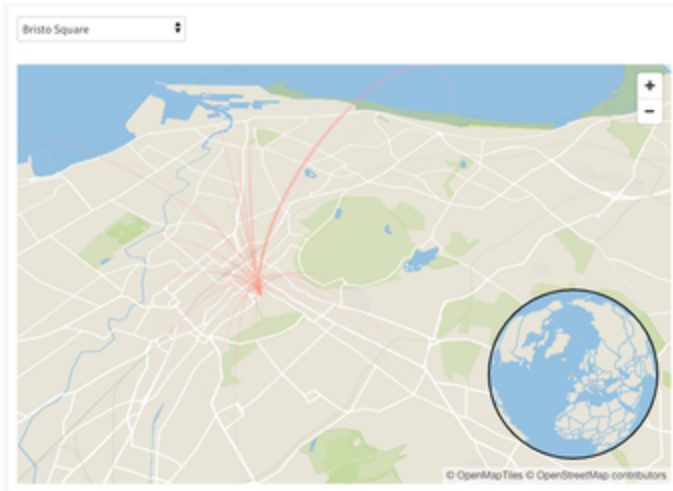
The default map is dark and hard to see. Change it by clicking the **Map** sub-menu on the right and choosing a different map style (the example given at the top of this document uses the Klokantech Basic map style).



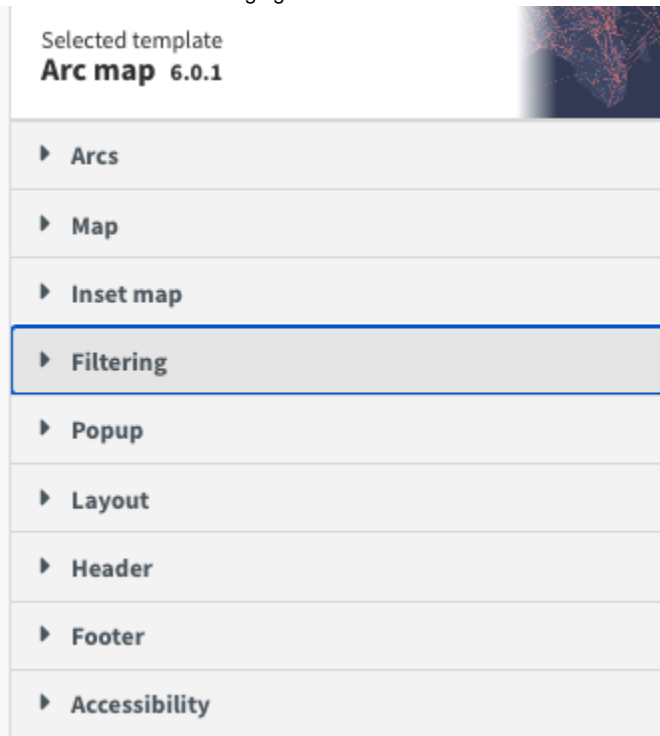
You should be able to see the map but the bike journeys are not visible. This is because the lines joining the start station and the end stations is so thin. Make them thicker by clicking the **Arcs** sub-menu on the right...



...and changing the **Thickness** from 2 to 50.



The lines should now be visible. Other improvements can be made to the visualisation via the other sub-menu items on the right of the page. Ones to consider are changing the colour of the start and end stations (see the **Arcs** sub-menu) and removing the inset map (see **Inset map**).

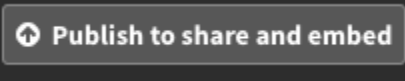


### Publish the Visualisation

To publish the visualisation, click




and then



The following pop-up is displayed. If you wish for your project and data to be able to be duplicated, click the second check-box. Click **Publish**.

### **Publish this visualisation?**

This project will be published to its own page where you and others can see, share and embed it

- Require password to open 
- Allow anyone to duplicate this project and data

**Cancel** **Publish**

A shareable URL and link for downloading the HTML is displayed.