Display Social Network Model Via CSV Upload Web App – Docs

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Introduction

A collaboration with **SMU BIA X Orca Active**, this project aims to aid Orca Active in analyzing social networking models via 3 metrics: Degree of Centrality (# of connections for a node), Eigenvector Centrality (a more meaningful way to calculate centrality), Betweenness Centrality (to identify nodes that are strong connectors). On top of the interactive graphs and responsive views, data can be filtered and exported via the selection of nodes and edges on the graph, date filters, top N for centrality slider, and centrality buttons. Cumulative selections of nodes and edges on the graph itself can also be recorded and exported, via the 'Start' and 'Stop' button, providing an easy and interesting way for users to filter and view data.

Frameworks/ Language used:
Front-End – AnyChart, JavaScript, Django Templates
Back-End – Django, Python

Usage

Upload CSV with the exact columns and formatting type in excel as shown in the table below.

Note: "Completed At" column is similar to 'orders_export.csv' where **dates are in this format: "2020-01-01 20:46:10 +0800".** However, this web app only uses the first 10 characters, so as long as the dates are in the **"YYYY-MM-DD"** format, it is fine. The web application will convert the string parsed into a datetime object inside the database.

First and Last name belongs to the Referrer and Friend's first and last name belongs to the Receiver/ User of the referral code.

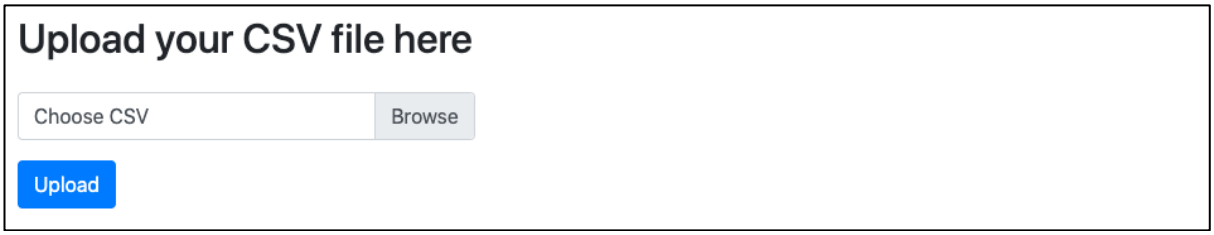
Columns	Example	Excel Formatting Type	Python Data Type	Blanks Allowed ?
First Name	A	General	String	Yes
Last Name	Wong	General	String	Yes
Email	awong@aw.com	General	String	Yes
Friend First Name	B	General	String	Yes
Last Name	Tan	General	String	Yes
Friend Email	btan@bt.com	General	String	Yes
Completed At	**2020-01-01 20:46:10 +0800**	General	String	Yes, but will be replaced with python datetime.now()
State	Completed	General	String	Yes
Total Amount Spent	88	General	String	Yes, but will be replaced with "0.00"

Screenshot of sample CSV data and formats:

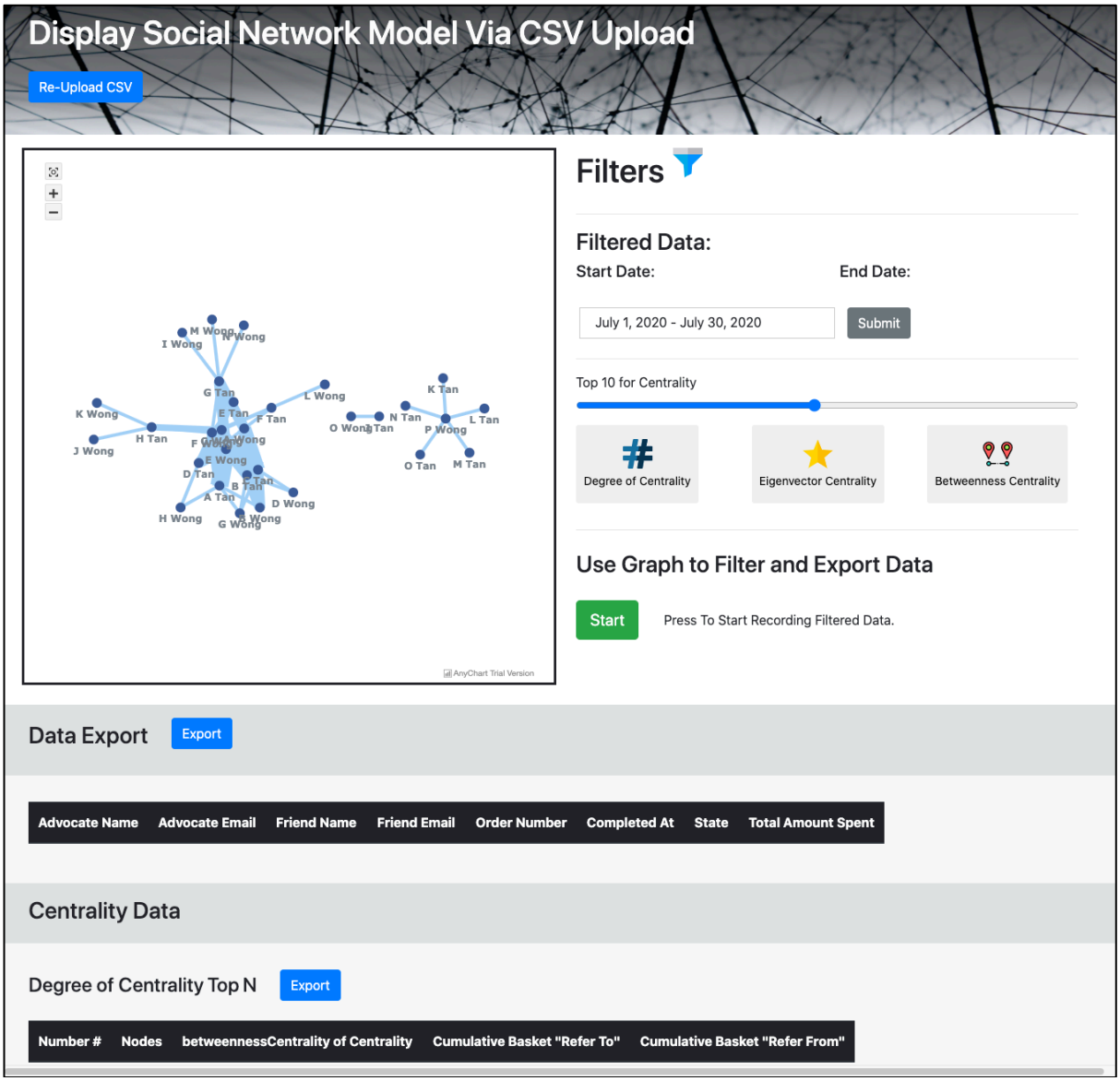
first name	last name	email	friend first name	friend last name	friend email	order number	completed at	state	total amount spent
A	Wong	awong@awong.com	B	Tan	btan@btan.com	10001	2020-01-01 20:46:10 +0800		88
A	Wong	awong@awong.com	C	Tan	ctan@ctan.com	10002	2020-01-30 03:07:40 +0800		352
A	Wong	awong@awong.com	D	Tan	dtan@dtan.com	10003	2020-01-01 20:46:10 +0800		88
A	Wong	awong@awong.com	E	Tan	etan@etan.com	10004	2020-01-30 03:07:40 +0800		110
A	Wong	awong@awong.com	F	Tan	ftan@ftan.com	10005	2020-01-01 20:46:10 +0800		88
A	Wong	awong@awong.com	G	Tan	gtan@gtan.com	10006	2020-01-30 03:07:40 +0800		264
A	Wong	awong@awong.com	B	Tan	btan@btan.com	10007	2020-01-01 20:46:10 +0800		264
A	Wong	awong@awong.com	B	Tan	btan@btan.com	10008	2020-01-30 03:07:40 +0800		440
A	Wong	awong@awong.com	B	Tan	btan@btan.com	10009	2020-01-01 20:46:10 +0800		220
A	Wong	awong@awong.com	B	Tan	btan@btan.com	10010	2020-01-30 03:07:40 +0800		165
A	Wong	awong@awong.com	B	Tan	btan@btan.com	10011	2020-01-01 20:46:10 +0800		352
A	Wong	awong@awong.com	C	Tan	ctan@ctan.com	10012	2020-01-30 03:07:40 +0800		220
A	Wong	awong@awong.com	C	Tan	ctan@ctan.com	10013	2020-01-01 20:46:10 +0800		88
A	Wong	awong@awong.com	C	Tan	ctan@ctan.com	10014	2020-01-30 03:07:40 +0800		352
A	Wong	awong@awong.com	D	Tan	dtan@dtan.com	10015	2020-01-01 20:46:10 +0800		88
A	Wong	awong@awong.com	G	Tan	gtan@gtan.com	10016	2020-01-30 03:07:40 +0800		110

Upload CSV

Upload a CSV file by selecting the ‘Browse’ input and the ‘Upload’ button:



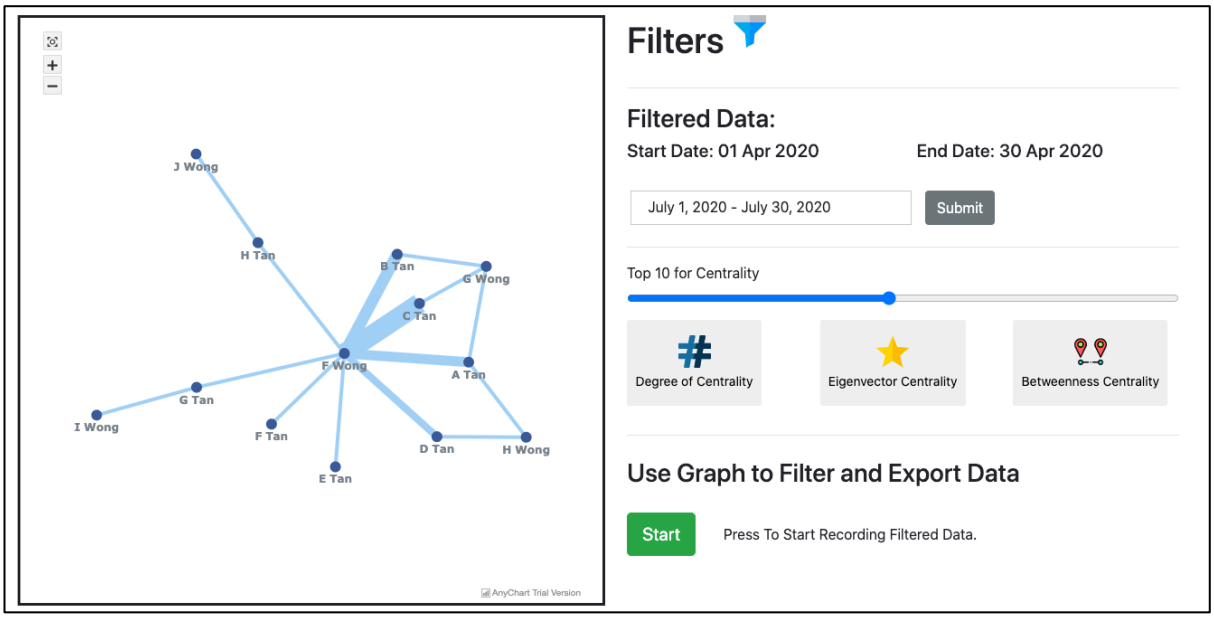
Upon successful CSV upload the following screen will be shown:



In the following examples, data from '**example.csv**' will be used for illustrative purposes. This dataset can be found via the homepage by clicking on the '**Sample CSV Dataset in Correct Upload Format**' button.

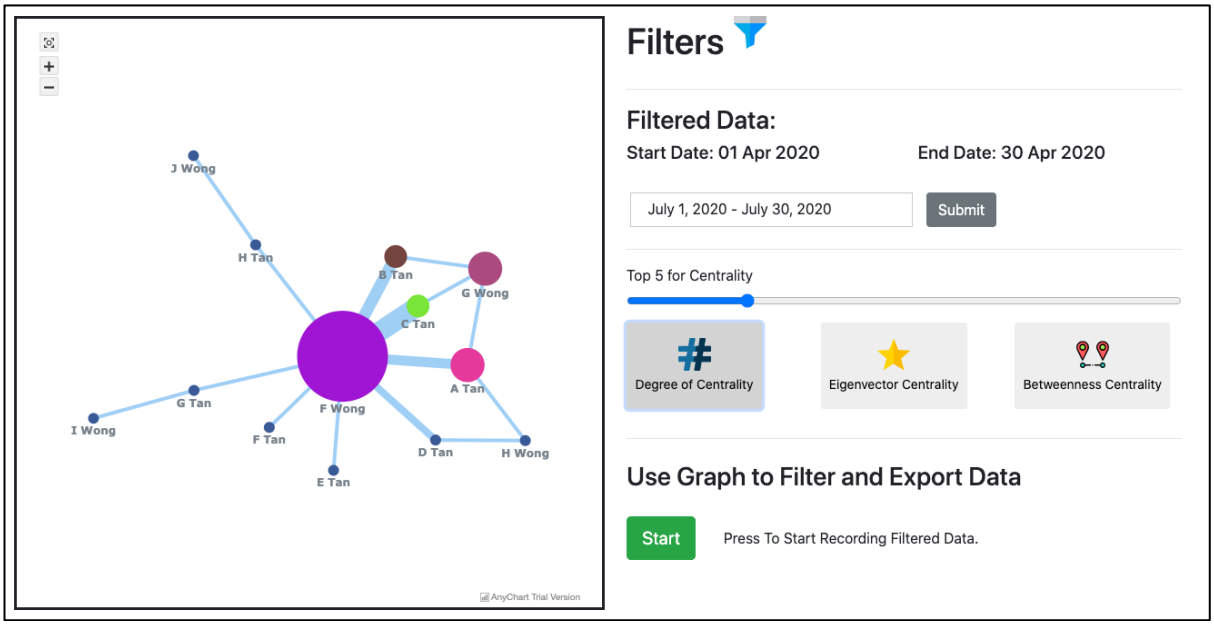
Filters by Date and Centrality

Filter data via dates and press submit. The graph will show the filtered data. For e.g selecting the month of April will show the following:



Start dates and end dates for the filtered data will be as shown in the labels below the 'Filtered Data:' title. Unfortunately, there is a little bug where the date filters itself is unable to reflect the dates that were previously selected. Hence, just take note of the actual dates that were selected previously within those labels as previously mentioned.

Drag/ skip the slider forwards and backwards to select a number between 1-20, to select Top N for Centrality. Then, click on any of the 3 centrality options. For e.g selecting top 5 and degree of centrality will show the following:



Data is displayed and can be exported at the bottom of the web page.

Centrality Data

Degree of Centrality Top 5

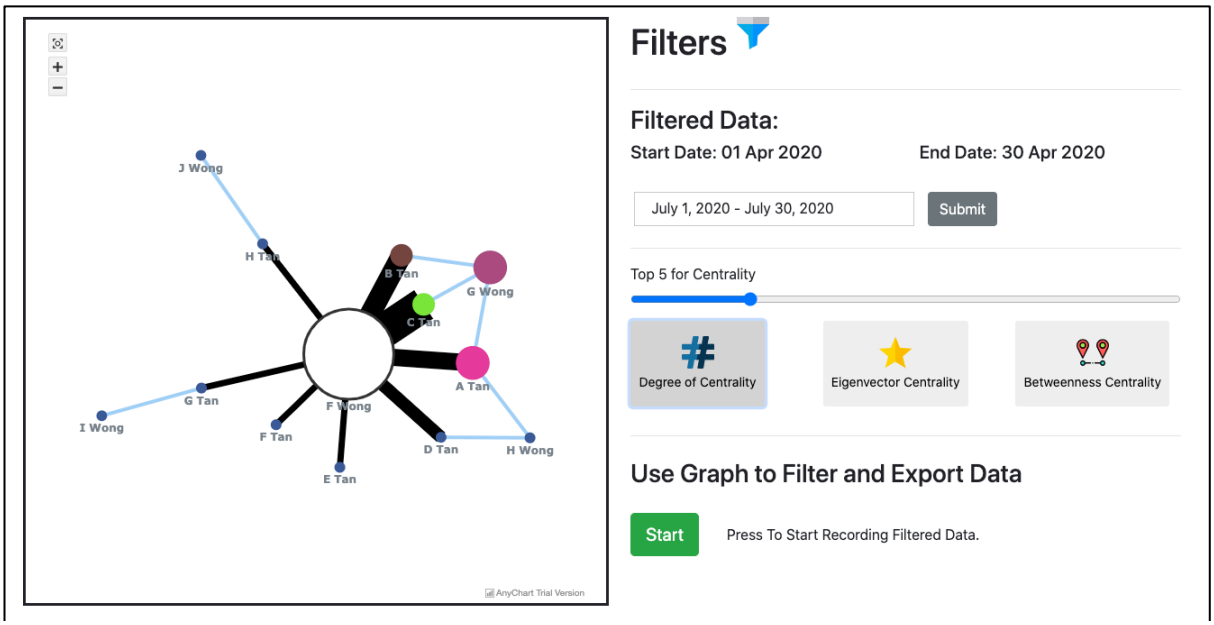
Export

Number #	Nodes	Degree of Centrality	Cumulative Basket "Refer To"	Cumulative Basket "Refer From"
1	F Wong	0.6666666666666666	2101	0
2	A Tan	0.25	0	572
3	G Wong	0.25	264	0
4	B Tan	0.16666666666666666	0	352
5	C Tan	0.16666666666666666	0	528

Basket amount for each node will be cumulatively added.

Filters by Nodes and Edges

Selecting the ‘F Wong’ Node will give the following:



Data Export Export

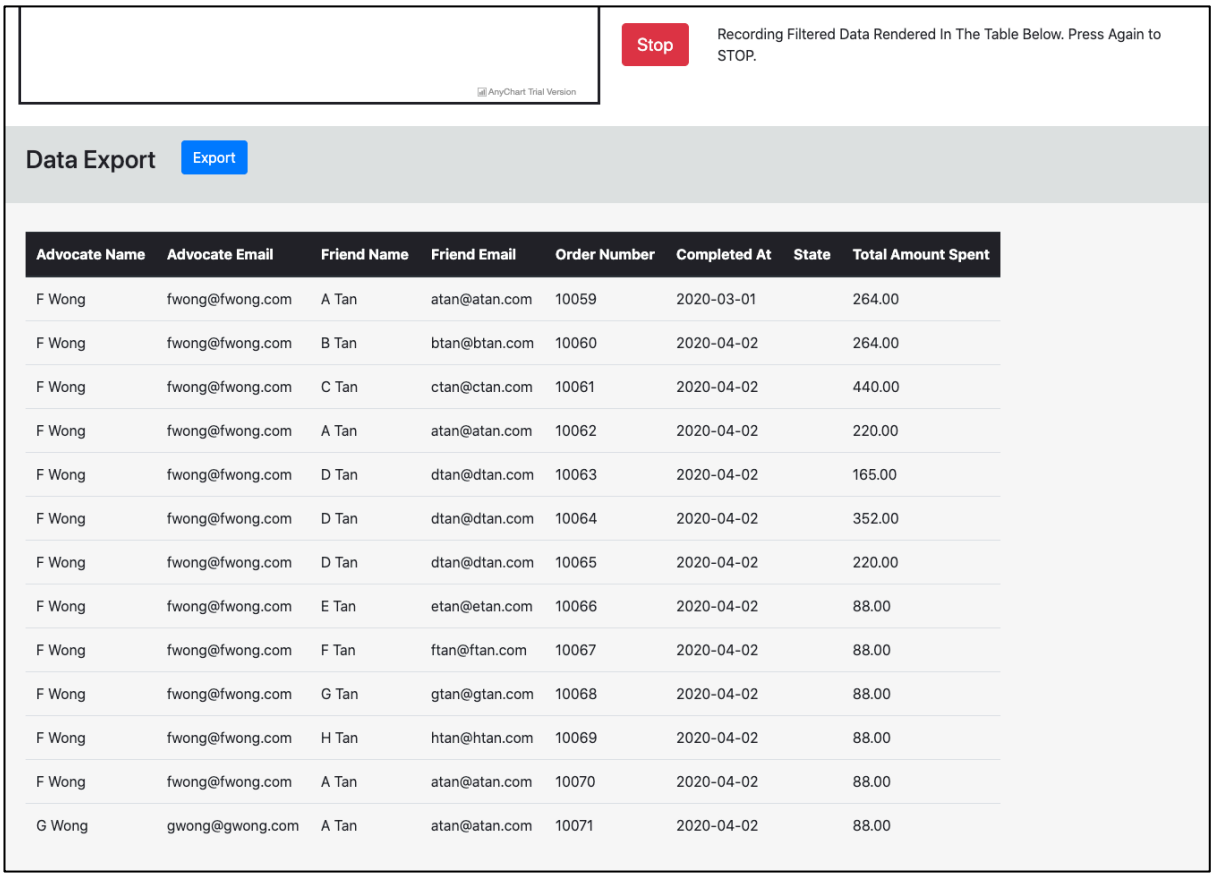
Advocate Name	Advocate Email	Friend Name	Friend Email	Order Number	Completed At	State	Total Amount Spent
F Wong	fwong@fwong.com	A Tan	atan@atan.com	10059	2020-03-01		264.00
F Wong	fwong@fwong.com	B Tan	btan@btan.com	10060	2020-04-02		264.00
F Wong	fwong@fwong.com	C Tan	ctan@ctan.com	10061	2020-04-02		440.00
F Wong	fwong@fwong.com	A Tan	atan@atan.com	10062	2020-04-02		220.00
F Wong	fwong@fwong.com	D Tan	dtan@dtan.com	10063	2020-04-02		165.00
F Wong	fwong@fwong.com	D Tan	dtan@dtan.com	10064	2020-04-02		352.00
F Wong	fwong@fwong.com	D Tan	dtan@dtan.com	10065	2020-04-02		220.00
F Wong	fwong@fwong.com	E Tan	etan@etan.com	10066	2020-04-02		88.00
F Wong	fwong@fwong.com	F Tan	ftan@ftan.com	10067	2020-04-02		88.00
F Wong	fwong@fwong.com	G Tan	gtan@gtan.com	10068	2020-04-02		88.00
F Wong	fwong@fwong.com	H Tan	htan@htan.com	10069	2020-04-02		88.00
F Wong	fwong@fwong.com	A Tan	atan@atan.com	10070	2020-04-02		88.00

Similar to Centrality Data, Data here can be exported.

Start and Stop Recording Data Exports

Clicking on the ‘Start’ button will start ‘recording’ data that is selected on the graph, and it will be shown within the ‘Data Export’ table. The ‘Start’ button turning into a ‘Stop’ button shows that the recording of graph selection has started. Once the selection of nodes and edges are done, just click on the ‘Export’ button and the data will be exported in a CSV format.

For e.g the ‘F Wong’ node and ‘G Wong’ to ‘A Tan’ edge will be selected. Relevant data belonging to these nodes and edges are as shown below:



Advocate Name	Advocate Email	Friend Name	Friend Email	Order Number	Completed At	State	Total Amount Spent
F Wong	fwong@fwong.com	A Tan	atan@atan.com	10059	2020-03-01		264.00
F Wong	fwong@fwong.com	B Tan	btan@btan.com	10060	2020-04-02		264.00
F Wong	fwong@fwong.com	C Tan	ctan@ctan.com	10061	2020-04-02		440.00
F Wong	fwong@fwong.com	A Tan	atan@atan.com	10062	2020-04-02		220.00
F Wong	fwong@fwong.com	D Tan	dtan@dtan.com	10063	2020-04-02		165.00
F Wong	fwong@fwong.com	D Tan	dtan@dtan.com	10064	2020-04-02		352.00
F Wong	fwong@fwong.com	D Tan	dtan@dtan.com	10065	2020-04-02		220.00
F Wong	fwong@fwong.com	E Tan	etan@etan.com	10066	2020-04-02		88.00
F Wong	fwong@fwong.com	F Tan	ftan@ftan.com	10067	2020-04-02		88.00
F Wong	fwong@fwong.com	G Tan	gtan@gtan.com	10068	2020-04-02		88.00
F Wong	fwong@fwong.com	H Tan	htan@htan.com	10069	2020-04-02		88.00
F Wong	fwong@fwong.com	A Tan	atan@atan.com	10070	2020-04-02		88.00
G Wong	gwong@gwong.com	A Tan	atan@atan.com	10071	2020-04-02		88.00

Selecting a node: all data ‘from’ and ‘to’ will show within the table. Hence, regardless of whether a node is purely a referrer or a customer that purely uses referral codes, all of the data belonging to the selected node will be rendered. To prevent duplications of each transaction, the **Order Numbers** are used to ensure uniqueness (Refer to **Edge Cases** section for troubleshooting of empty **Order Numbers**).

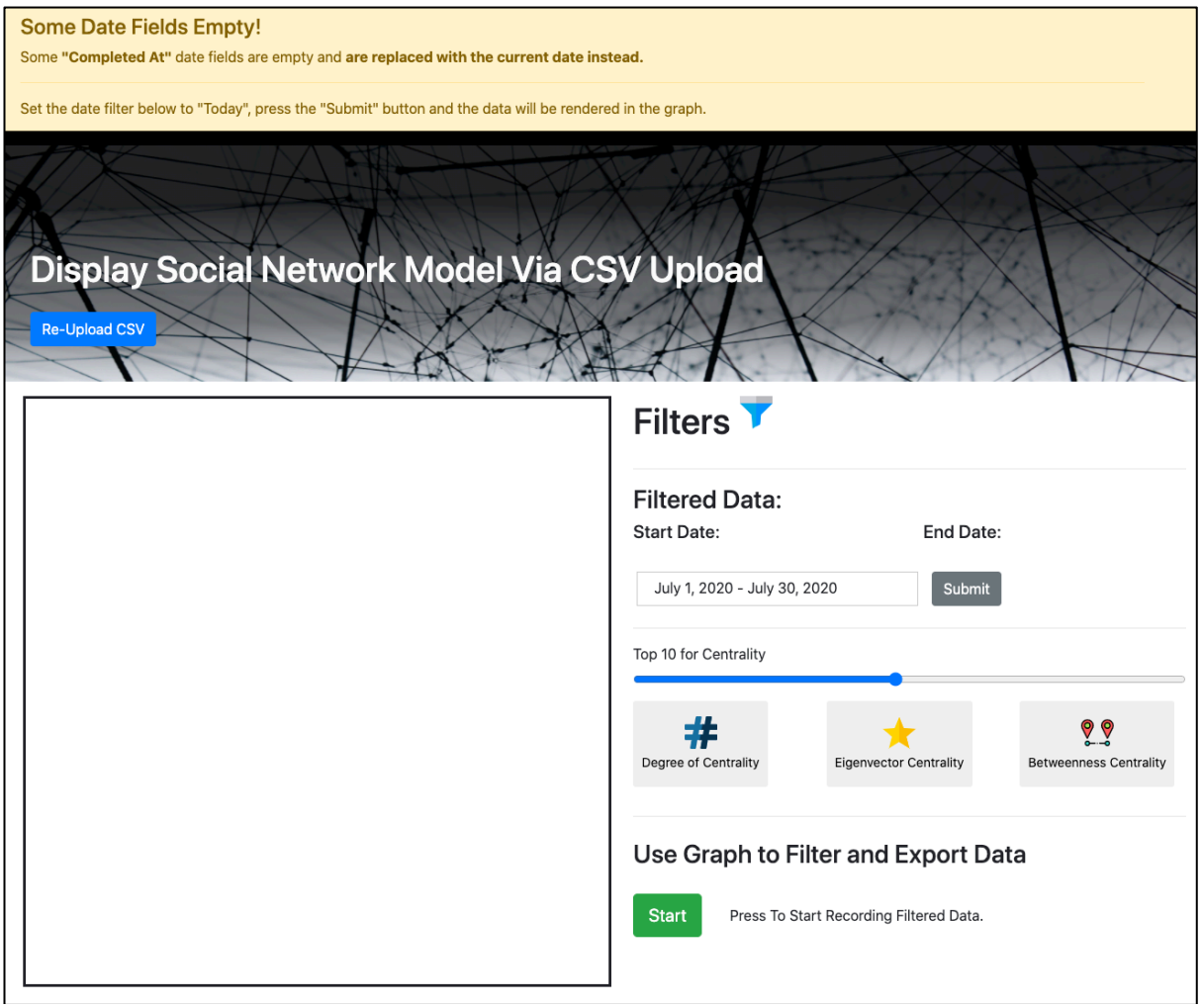
Selecting an edge: all data for that edge will be shown.

Edge Cases / Errors / Troubleshooting

Some unexpected errors might happen due to incomplete data during the upload of CSV. The following examples will explain the problem and the troubleshooting procedures.

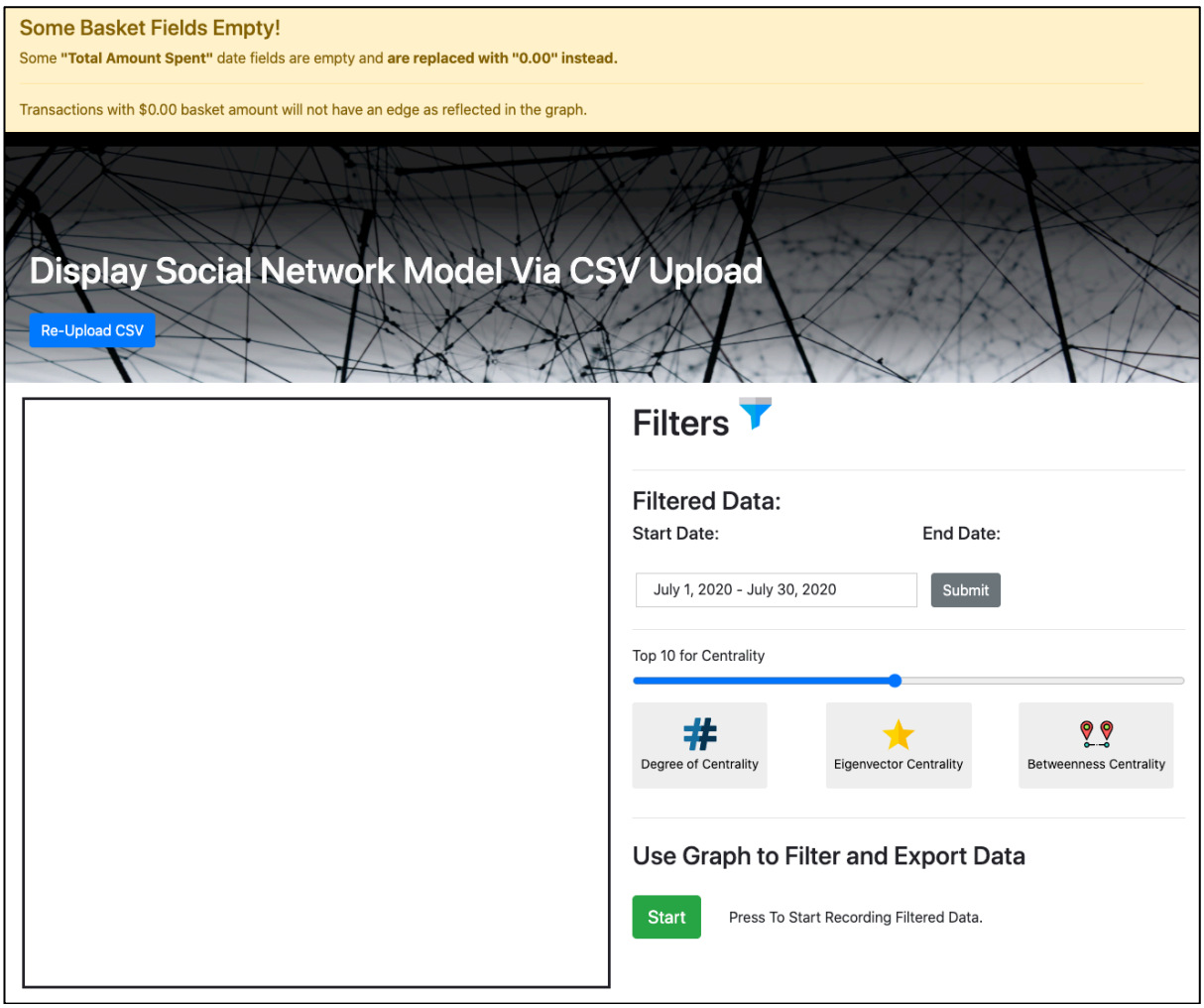
Date Fields Empty

Empty date fields will be replaced with python datetime.now(). Graph will not render the data straight away, but will render when the date is selected on the filter and the ‘Submit’ button is pressed. **Note:** to view entries with empty dates that were converted to the current date, select the “Today” option within the date filter.



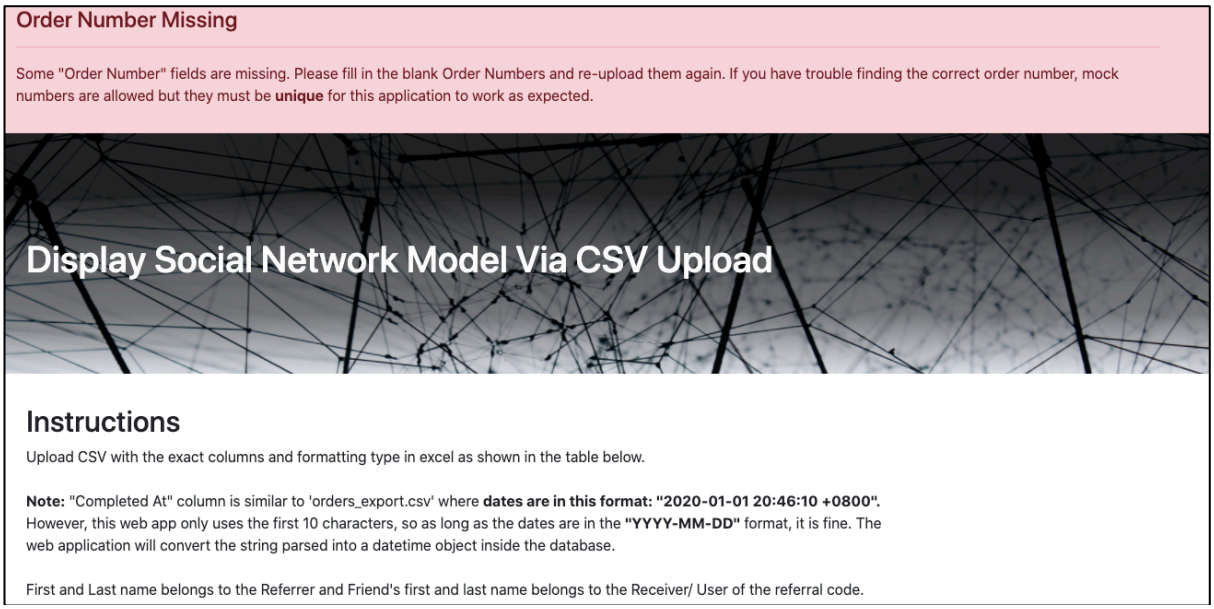
Basket Fields Empty

Empty basket fields will be replaced with a “0.00” string. Graph will not render the data straight away but will render when the date is selected on the filter and the ‘Submit’ button is pressed. **Note:** to view entries with empty dates that were converted to the current date, select the “Today” option within the date filter.



Order Number Fields Empty

Empty Order Number fields will not be parsed/ allowed. While the graph will still be able to render, it will affect the performance of the interactive filters of the graph, which will also affect the CSV exports. Mock Order Numbers may be used, and the graph will still render the data, but it is best to keep the mock numbers **unique** in order for the app to be working as intended.



Wrong Formatting

The 2 main possible problems are:
1. Date Fields ("Completed At") are in the wrong format.
2. Basket $$ Fields ("Total Amount Spent") are in the wrong format.
3. Number of columns / Order of columns does not match.

To fix:
1. Please ensure that all **DATE** fields are in the **"YYYY-MM-DD" format** and re-upload the CSV again. This is the same format as the other columns. Keep dates in the **"YYYY-MM-DD"** structure within each field. Format is the same as 'orders_export.csv' from shopify orders export.
2. Please ensure that all **BASKET** fields are **numbers and not alphabets** and are not empty and re-upload the CSV again. Numbers with a mix of alphabets or other characters are also not allowed.
3. Please ensure that the Number and Order of Columns are correct and re-upload the CSV again.