

# IMD0905 - Data Science I

## Lesson #18 - Visualization [End]

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# Update the repository

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```
git clone https://github.com/ivanovitchm/IMD0905_datascience_one.git
```

Or ....

```
git pull
```

# Agenda

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- Case Study #1 - John Snow Map

# Dr. John Snow

**NOTICE.**  
**PREVENTIVES OF**  
**CHOLERA!**

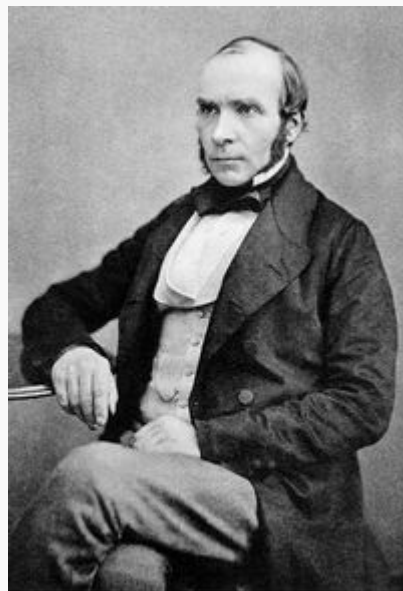
Published by order of the Sanitary Committee, under the sanction of the Medical Council.

**BE TEMPERATE IN EATING & DRINKING!**  
*Avoid Raw Vegetables and Unripe Fruit.*  
 Abstain from **COLD WATER**, when heated, and above all from *Ardent Spirits*, and if habit have rendered them indispensable, take much less than usual.

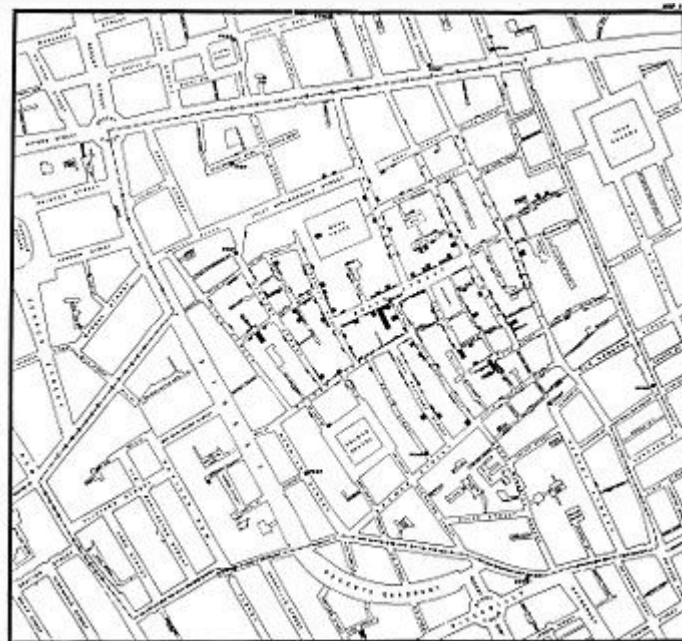
**SLEEP AND CLOTHE WARM!**  
 DO NOT SLEEP OR SIT IN A DRAUGHT OF AIR.  
 Avoid getting Wet!  
 Attend immediately to all disorders of the Bowels.

**TAKE NO MEDICINE WITHOUT ADVICE.**  
 Medicine and Medical Advice can be had by the poor, at all hours of the day and night, by applying at the Station House in each Ward.

CALEB A. WOODHILL, Mayor.  
 JAMES KELLY, Chairman of Sanitary Committee.



*John Snow*



# Cholera Attacks

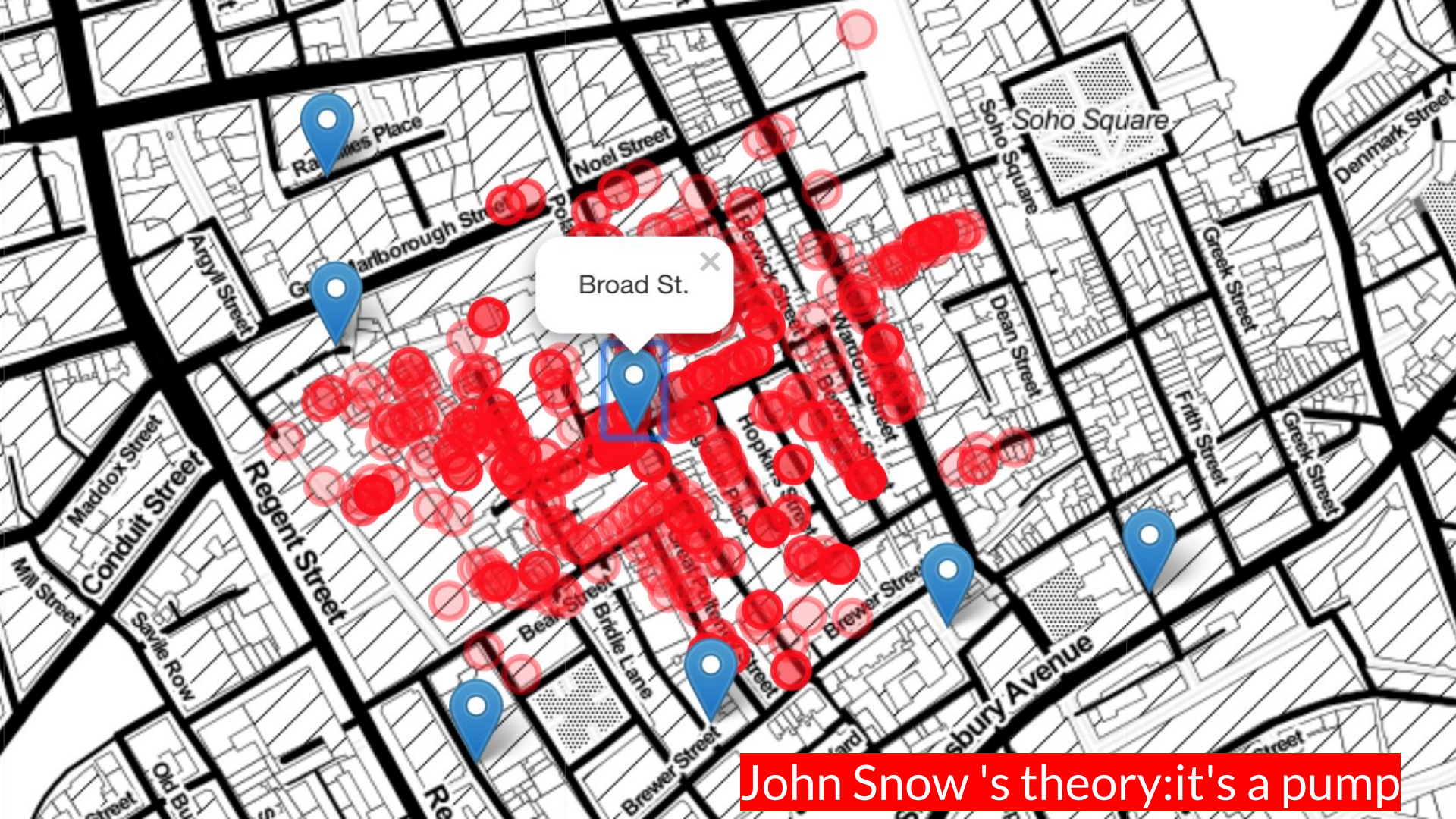
	Death	X coordinate	Y coordinate		death_count	x_latitude	y_longitude
<b>0</b>	1	51.513418	-0.137930	<b>count</b>	489.0	489.000000	489.000000
<b>1</b>	1	51.513418	-0.137930	<b>mean</b>	1.0	51.513398	-0.136403
<b>2</b>	1	51.513418	-0.137930	<b>std</b>	0.0	0.000705	0.001503
<b>3</b>	1	51.513361	-0.137883	<b>min</b>	1.0	51.511856	-0.140074
<b>4</b>	1	51.513361	-0.137883	<b>25%</b>	1.0	51.512964	-0.137562
				<b>50%</b>	1.0	51.513359	-0.136226
				<b>75%</b>	1.0	51.513875	-0.135344
				<b>max</b>	1.0	51.515834	-0.132933



# The Ghost Map







Broad St.

John Snow 's theory:it's a pump



He was looking for anomalies now (we would now say "outliers in data") and found two in fact where there were no deaths.



**MISTAKING CAUSE FOR EFFECT.**



Boy. "I say, TOMMY, I'M BLOW'D IF THERE ISN'T A MAN A TURNING ON THE CHOLERA."



# Number of Cholera Deaths/Attacks before and after 8th of September 1854



# References

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1. <https://www.kaggle.com/daveianhickey/how-to-folium-for-maps-heatmaps-time-analysis>
2. <http://nbviewer.jupyter.org/github/python-visualization/folium/blob/master/examples/Plugins.ipynb>
3. <https://github.com/helmutd/datacamp/blob/master/Recreating%20John%20Snow's%20Ghost%20Map.ipynb>
4. <https://www.coursera.org/lecture/python-for-data-visualization/introduction-to-folium-CpjW0>
5. <https://pythonhow.com/web-mapping-with-python-and-folium/>