A Study of Meteorite Impacts

For completion of PSDS 4900

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Meteorite Impacts

Questions and Goals

- Do meteorites fall at random or are there patterns to their impact locations? Either as a whole, by class of meteorite, or some other parameter?
- Are the numbers of meteorite falls consistent over history or are they changing?
- Is there any connection to human population? - i.e. more falls recorded because more people to see it, more finds because people are in the area.
- Are there trends between meteorites that have been observed hitting the ground and ones that are found?
- Can predictions be made about future meteorite impacts by studying past impact events?

Meteorite Impacts

- Do meteorites fall at random or are there patterns to their impact locations?

- This is still in the analysis stage. So far, I am finding some basic correlations:

Variables where ANOVA indicates rejecting the null hypothesis:

All falls only:

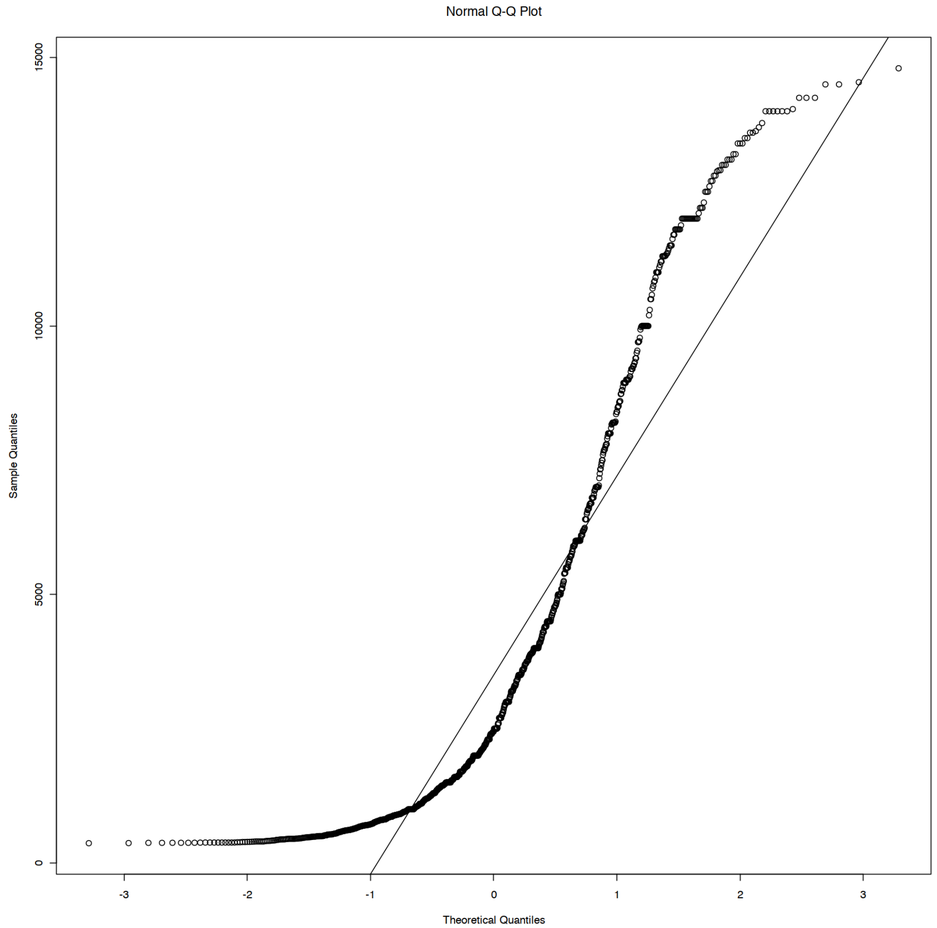
- **year ~ chondrite**
- **year ~ group**

All falls and finds:

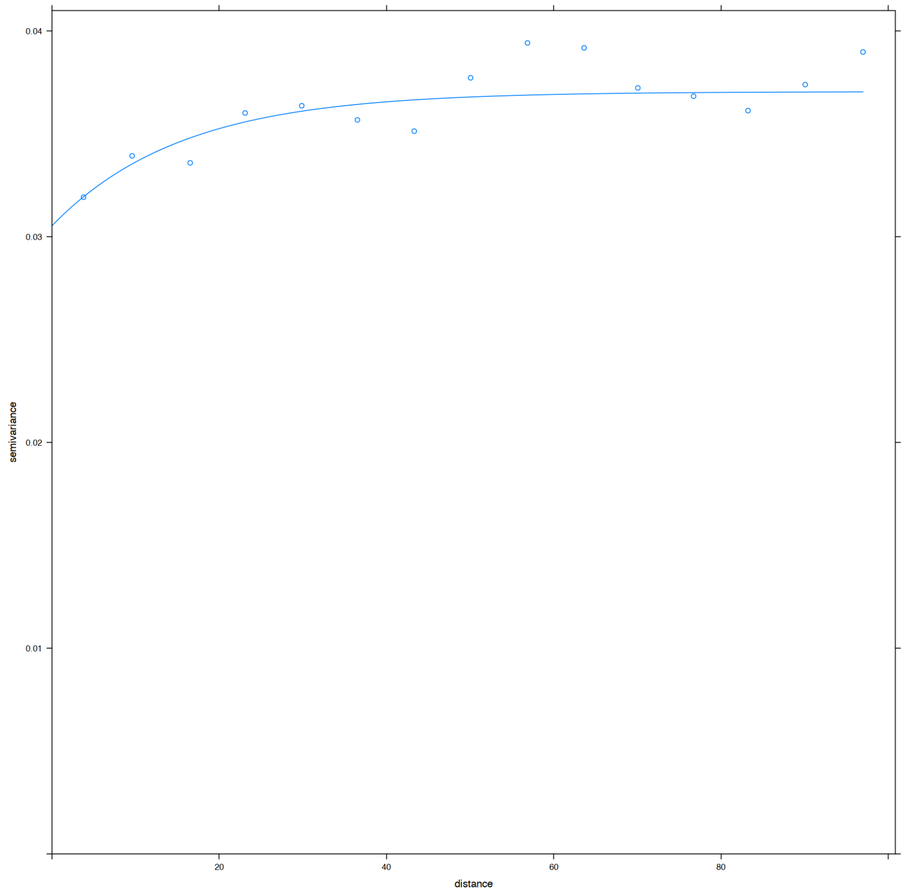
- **mass ~ year**
- **mass ~ chondrite**
- **mass ~ group**
- **mass ~ type**
- **mass ~ latitude*longitude**

Meteorite Impacts

- Do meteorites fall at random or are there patterns to their impact locations?
- Q-Q plot on training dataset (outliers removed):



- Variogram:



Meteorite Impacts

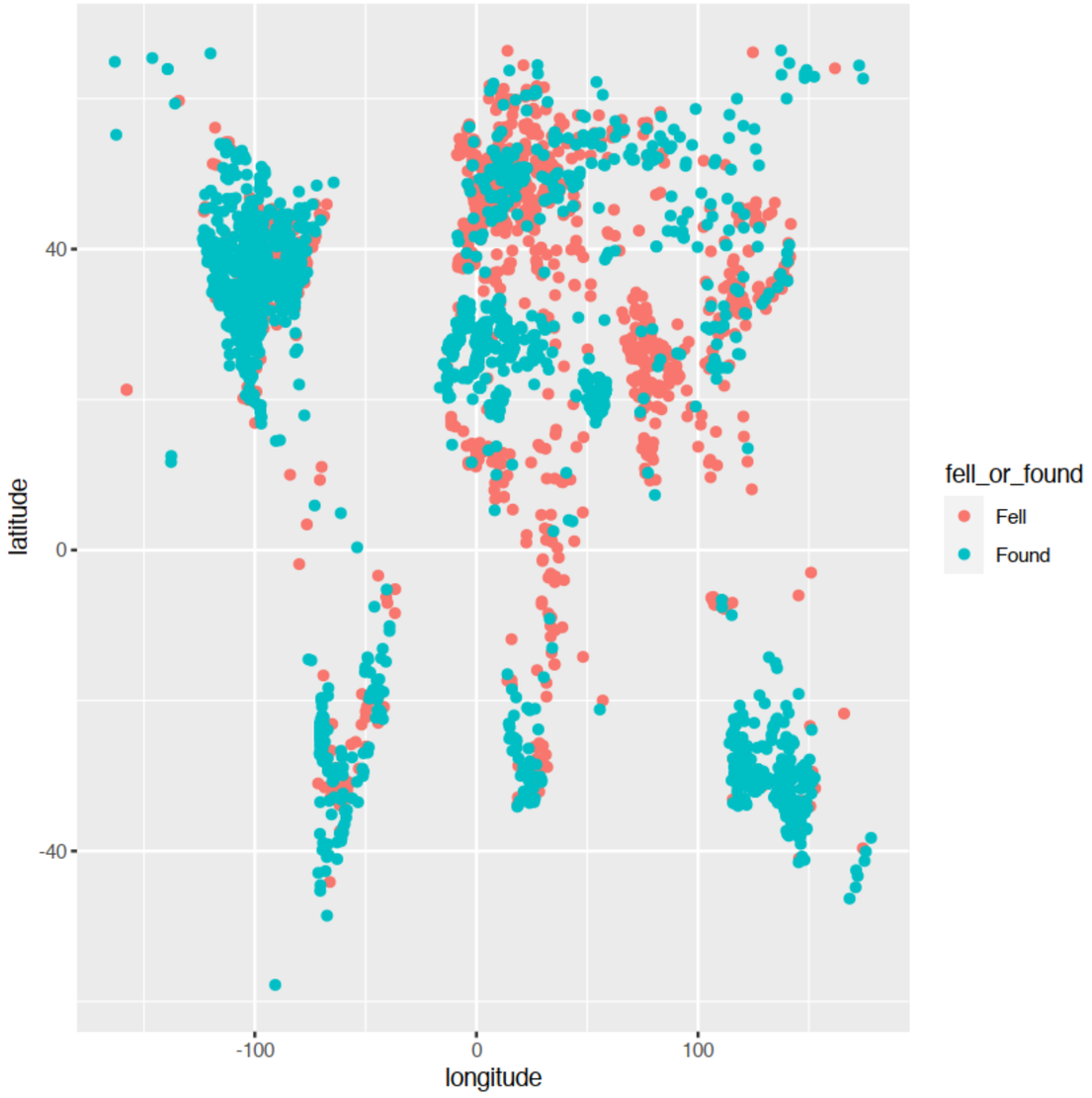
- Are the numbers of meteorite falls consistent over history or are they changing?

- I have not completed this analysis… this will be interesting to see.

Meteorite Impacts

- Is there any connection to human population?

- Absolutely. Large areas like the Amazon rain forest have no finds at all. More thorough analysis will be completed.



Meteorite Impacts

- Are there trends between meteorites that have been observed hitting the ground and ones that are found?

- This analysis is not yet complete

Meteorite Impacts

- Can predictions be made about future meteorite impacts by studying past impact events?

- This analysis is not yet complete

Github

- My repository

- My analysis can be viewed on my github repository:

- https://github.com/mwy912/capstone