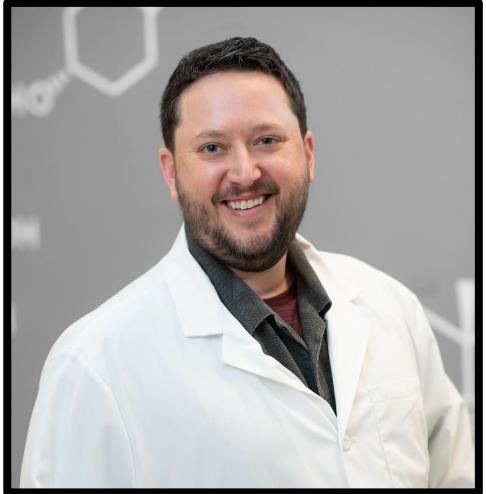


ON SHAKY GROUND

Earthquake Preparedness

By: Ted Brandon

Ted Brandon



<https://www.linkedin.com/in/theodorebrandon/>



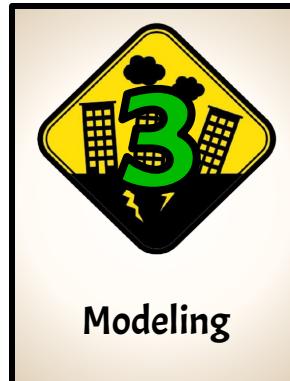
<https://github.com/theobigdog>



tedbrandon@gmail.com



Agenda





Business
Understanding



Earthquake Disaster Assistance Team (EDAT)

- Predicts EQ Mags > 5.5
- Asia:
 - **5.88 ± 0.14**
- Japan:
 - **5.90 ± 0.19**



Business



Data



Model



Suggest



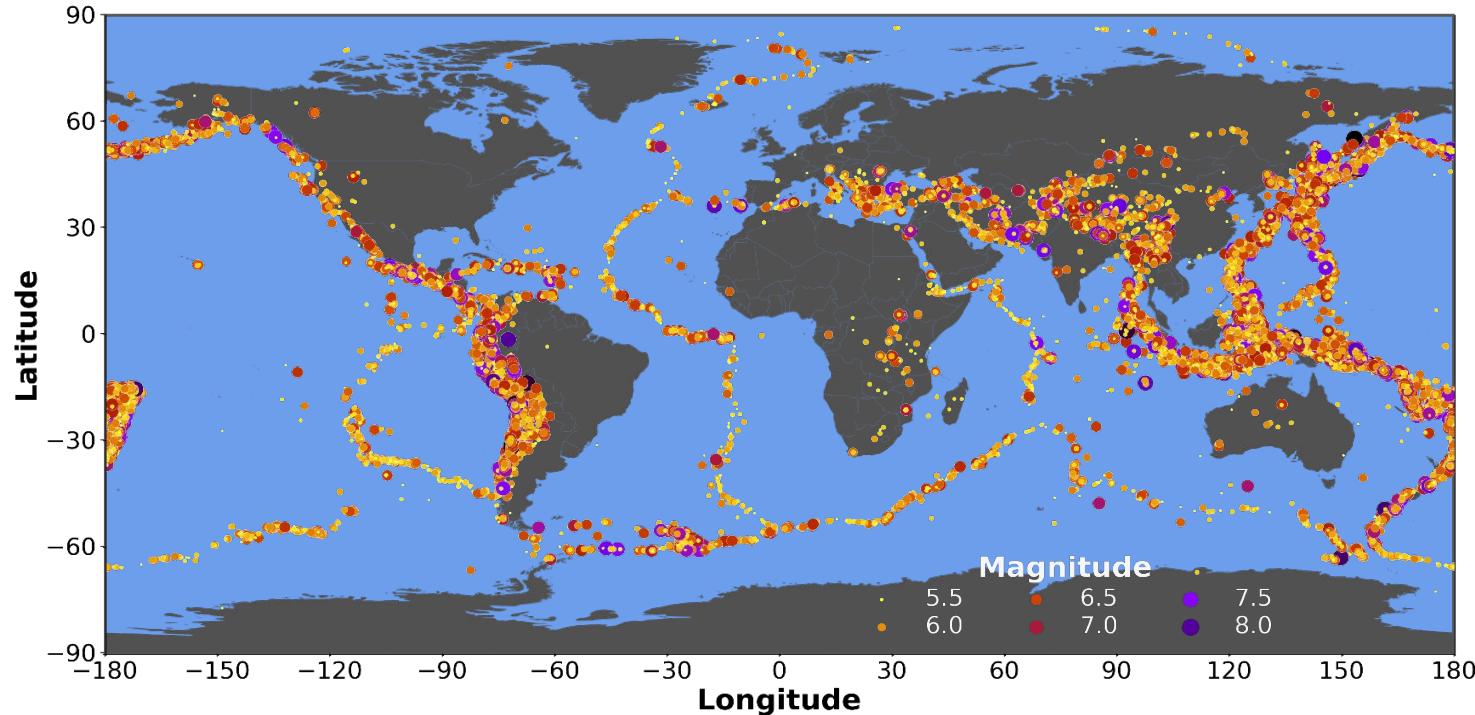
Future



Data Overview



Earthquakes: 1965-2016 (Color/Size based on magnitude)



Business



Data



Model



Suggest



Future

Data Source/Info

- Kaggle: 1965 - 2016
- >23,000 “Earthquakes”
- Magnitude = 5.5+



Business



Data



Model



Suggest



Future

Earthquakes in Asia

- 39% occur in Asia
- 30% of world land-mass
- Pop 4.5B (60% world total)



Business



Data



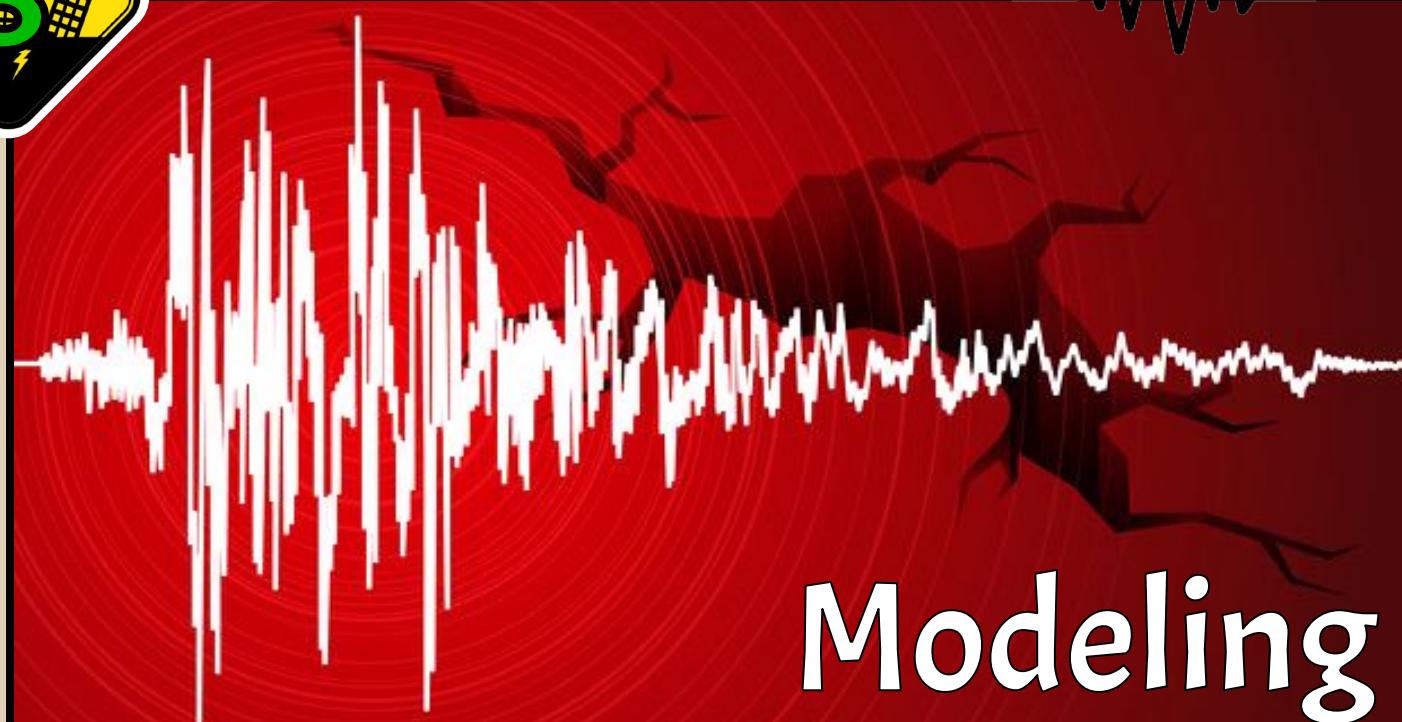
Model



Suggest



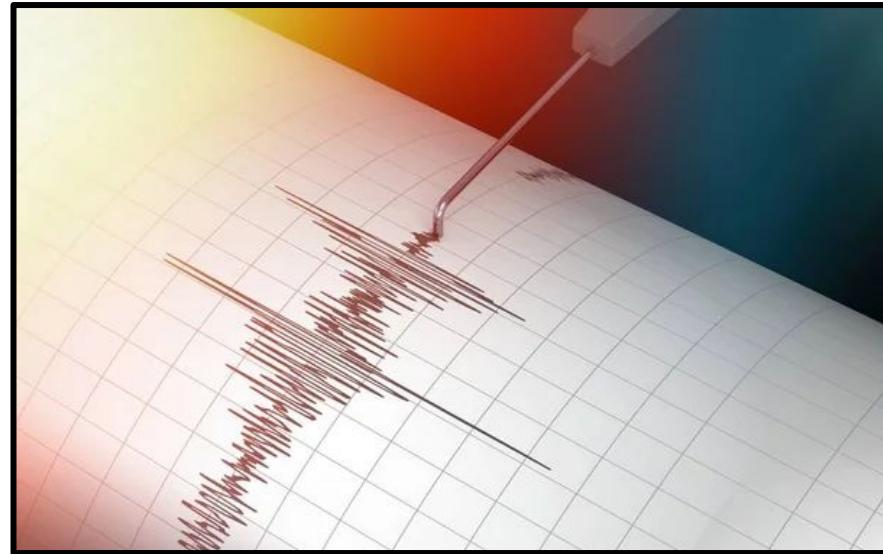
Future



Modeling

Metrics

- “Time Series”
- RMSE
- Magnitude \pm RMSE



Factors Investigated

- Magnitude
 - Latitude
 - Longitude
 - Depth



Business



Data



Model

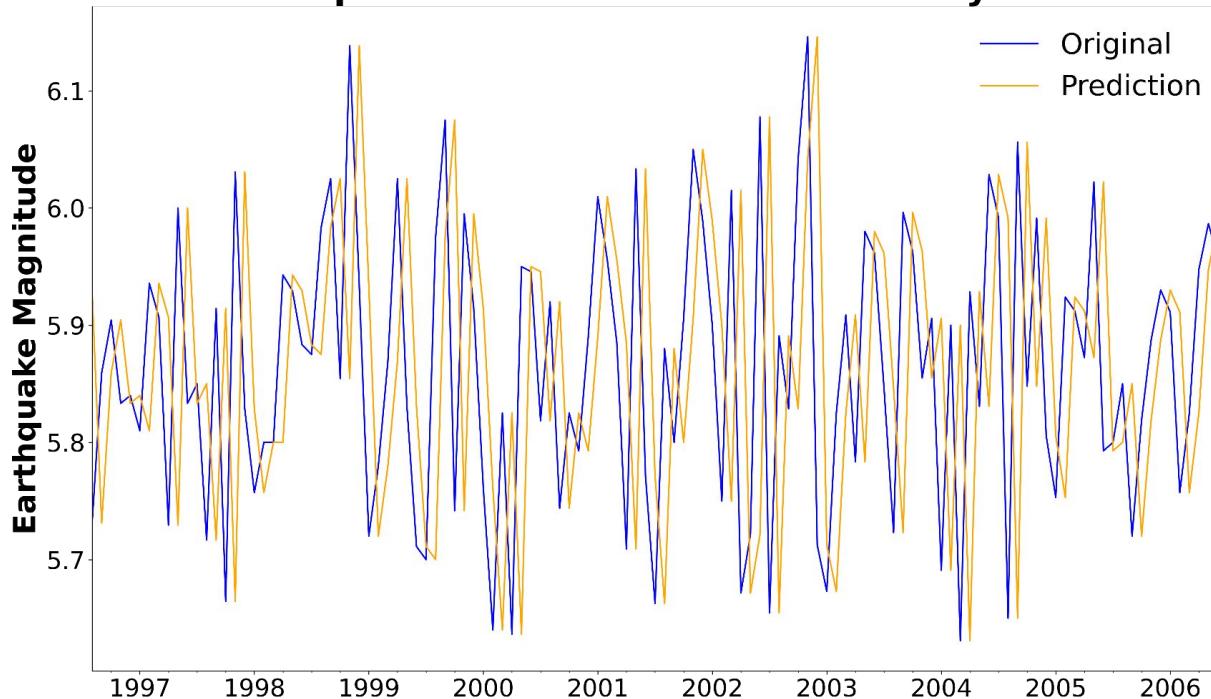


Suggest



Future

Earthquake "Prediction" on a Monthly Basis



Business



Data



Model



Suggest



Future

Results

- SARIMAX
- Asia
 - 5.88 ± 0.14
- Japan
 - 5.90 ± 0.19



Business



Data



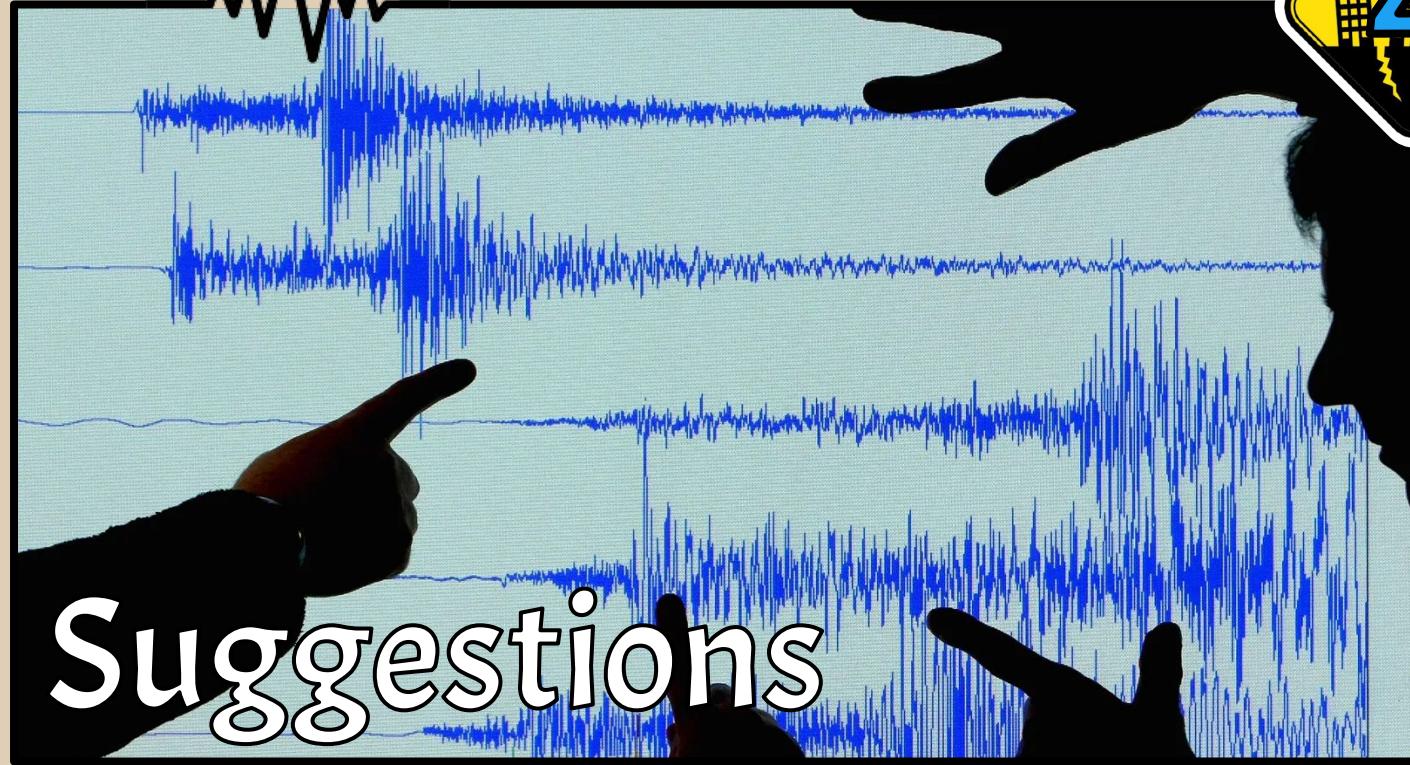
Model



Suggest



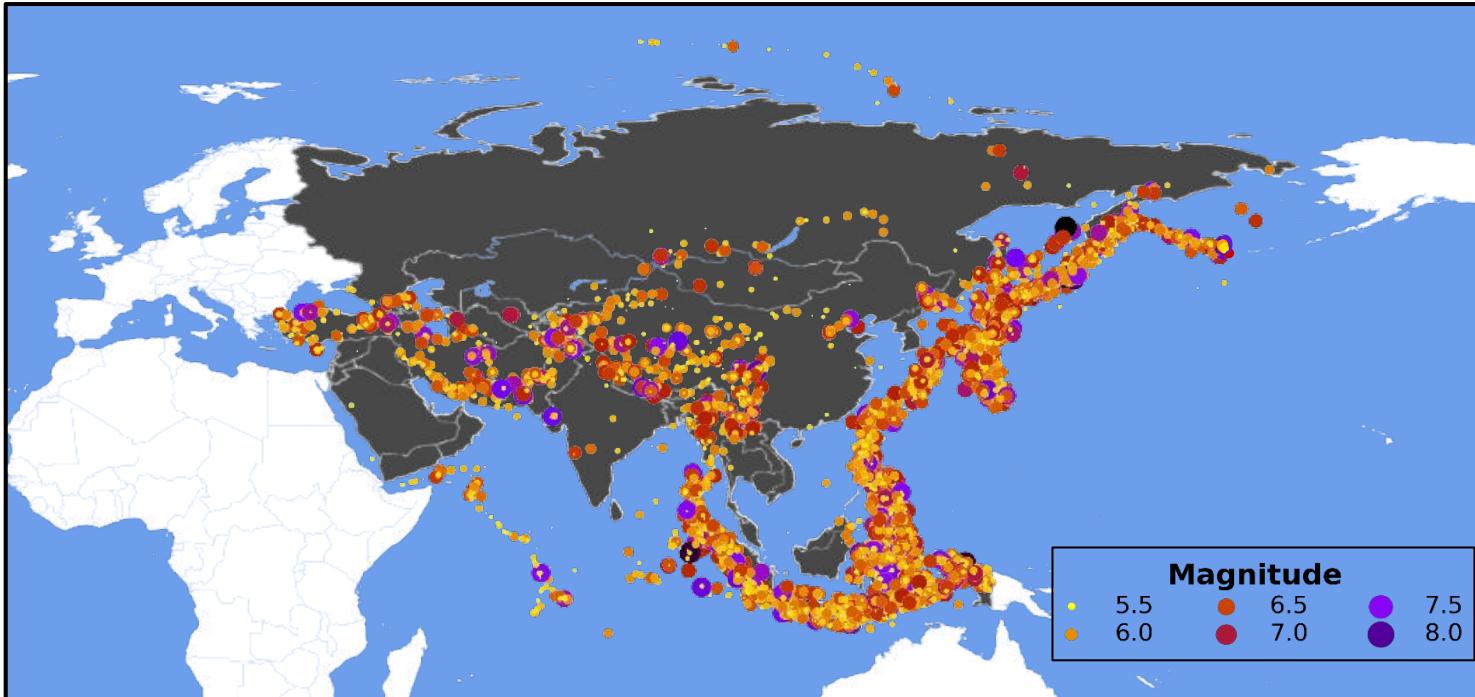
Future



Suggestions

Asian Earthquakes: 1965-2016

(Color/Size based on magnitude)



Business



Data



Model



Suggest



Future

Preparation

Be Prepared!

Target hotspots

- Japan
- Pacific Ring of Fire



Business



Data



Model



Suggest



Future

Investment

Asia:

- Poverty < 10%
- Trade/GDP = 57%

Japan:

- Poverty = 15.7%
- Trade/GDP = 35%



Business



Data



Model



Suggest



Future

Infrastructure

Country-Specific Assistance

- Japan
- 2,100 EQs
 - 9% Total
 - 24% Asia
- Fukushima



Business



Data



Model



Suggest



Future



Future
Research

Improve Model

- More Data per Country
- Targeted Analyses
- Michael Lee



Business



Data



Model



Suggest



Future



Thank you!

Ted Brandon:



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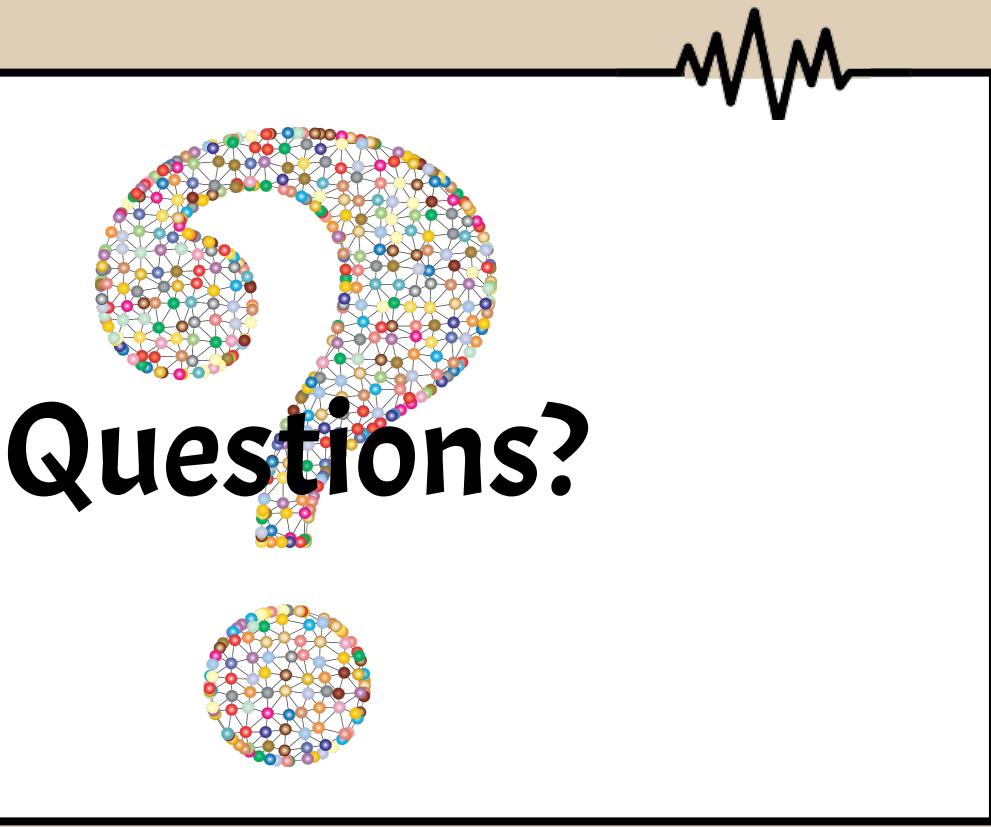


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Questions?



A P P E N D I X

The myth of earthquake seasonality:

- Is There Such a Thing As Earthquake Season?
- Can Climate Affect Earthquakes or Are the Connections Shaky?



Infrastructure Budget:



Japan: ¥12T (\$115B) 5yr proposal*

*Reuters