STAT 390 Weekly Report 5

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##Progress/Accomplishments

- model building and tuning for all 6:
  - **arima** & **auto-arima**: 1) use arima_reg() to tune the model for stationary rep (U.S.) and non-stationary rep (Germany) but prediction is bad (a straight line); 2) pivot to use linear model first to model the trend and use arima to model the predicted error
  - **prophet single** & **multiple**: both works well! tune the model using U.S. data and apply the model to rest of 22 countries
  - **xgboost**: the model works well but just need to further improve the hyperparameters and maybe reduce the tree to reduce running time
  - **lstm**: have a rough outline but still exploring how the model works
- We'll be able to present at least 5 out of 6 models in the next Tuesday's presentation

##Challenges

##Next Steps

- continue working on hyperparameter tuning for xgboost and model building for lstm