DO vitamins keep the doctor away?

 $\bullet \bullet \bullet$

Victoria M. Ng

What?

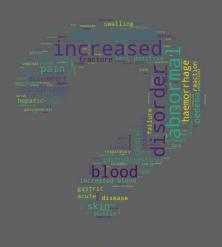
Predict the outcome of feeling ill after consuming a food, drug, or cosmetic product

How?

Datasets

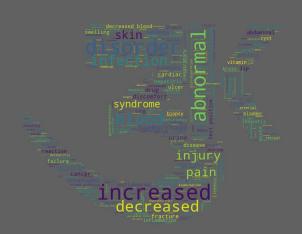
- FDA Adverse Events dataset
- Wikipedia medical symptoms pages

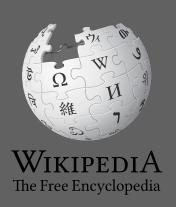
Why?

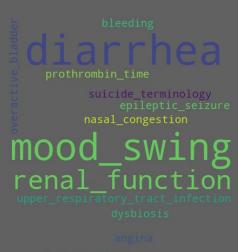




Symptoms Feature Engineering with KNN N=1







angina brug averdosi Amphi atoxicity

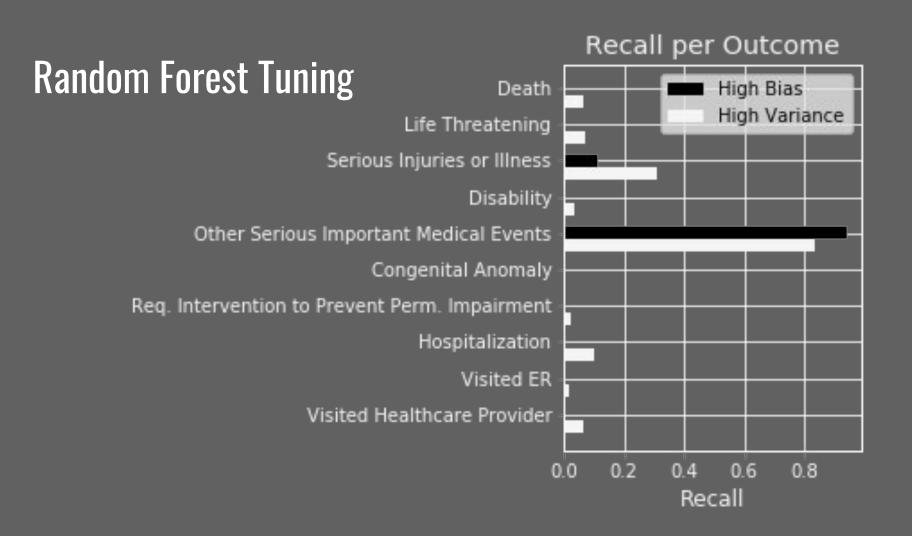
Ensemble Methodology



Most features categorical

Random data subsets

Random feature selection



Parameters

- Max Depth/tree: 17
- Max Features : Sqrt
- # Trees (n_estimators)250



Features

- 14 SymptomCategories
- Victim Age
- Victim Gender
- Product IndustryCode

Recall and Accuracy

42% Accuracy

17% > dummy model

Prevent Perm. Impairment Other Serious Imp. Events Serious Injuries or Illness Congenital Anomaly Life Threatening isited ER Disability Death Life Threatening Serious Injuries or Illness Disability Other Serious Imp. Events Congenital Anomaly Prevent Perm. Impairment Hospitalization Visited ER Visited Provider Predicted

Visited Provider

Demo

Takeaways

- Age and product industry are most impactful
- Overwhelmingly find more actual serious import medical events than any other outcome

Looking Forward...

- Layered ensemble method
- Class weighting
- Grouped outcomes
- User friendly

Stay safe!