



MODELING THE EFFICACY OF US FOREIGN AID

GENEVIEVE MCGUIRE



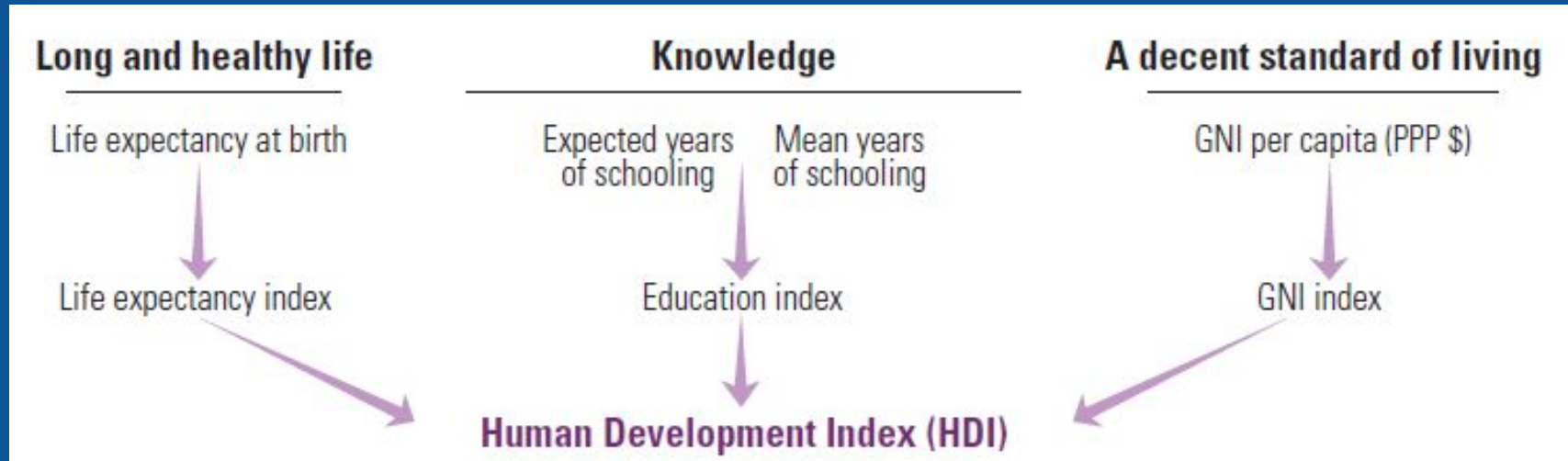
**Foreign aid makes up about
1% of the United States'
budget.**

**Yet domestically, it's incredibly unpopular...
and misunderstood.**

Is there a **simpler** metric for measuring the effectiveness of foreign aid?



UN Human Development Index (HDI)



PROJECT DEVELOPMENT



DATA ACQUISITION

UNdata:
HDI Dataset

USAID:
Foreign Aid
Explorer Dataset



EXPLORATION

Disconnect:
Program
Expenditures vs.
Program Results



FEATURE ENGINEERING

Encoding
Categorical &
Ordinal Data

Standard Scaler



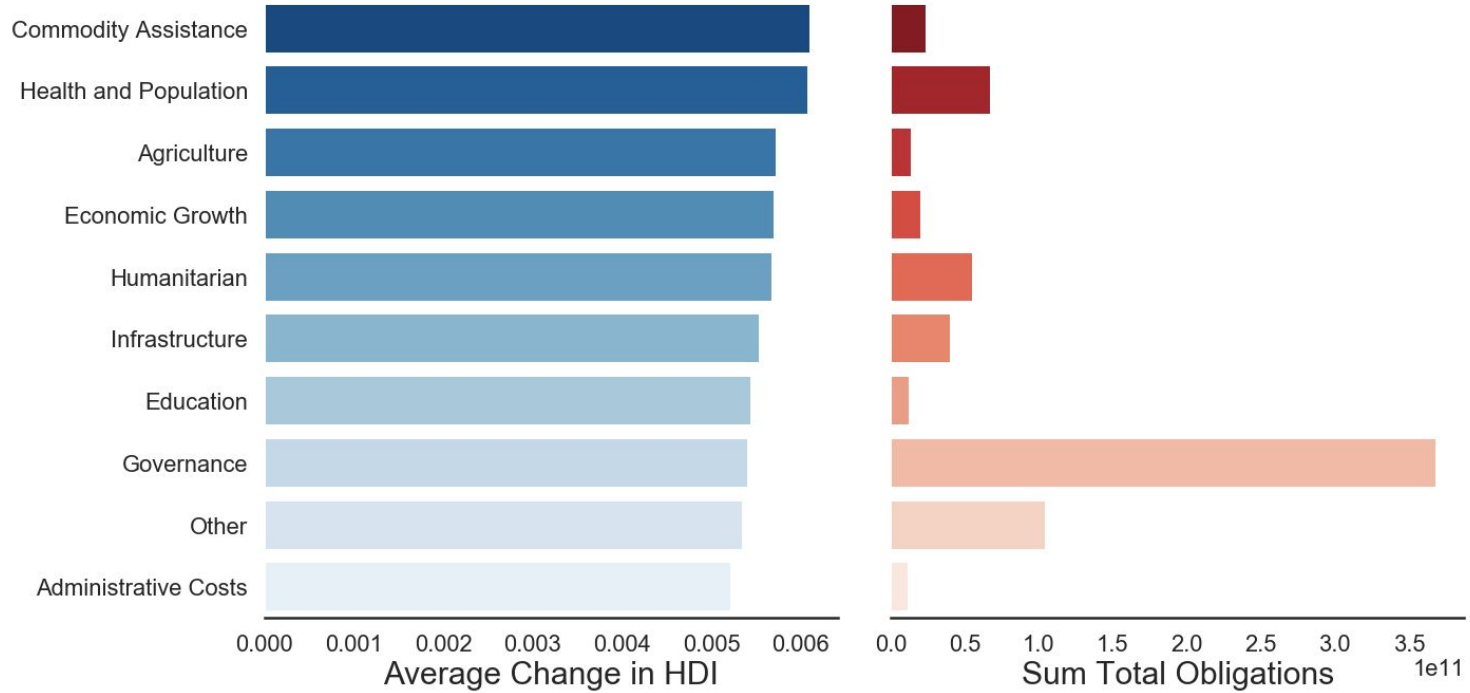
XGBoost

MODELING

Feature
Reduction

GridSearchCV

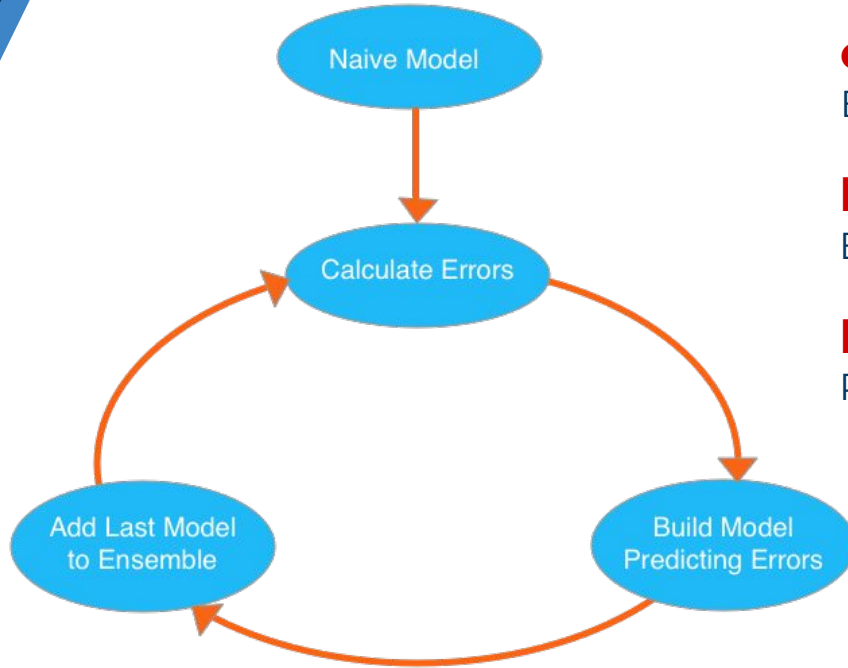
Effects & Expense of Program Categories



Regressions Used to Predict HDI

	RMSE
LASSOCV	0.00611
RIDGECV	0.00615
XGBOOST	0.00578

Advantages of **XGBoost**...



eXTREME GRADIENT BOOSTING

Builds model in stages

DECISION TREE ENSEMBLES

Each new set improves on the last

LOSS FUNCTION OPTIMIZATION

RMSE

AGRICULTURE & EDUCATION

are the most crucial sectors for investment

LIBYA

is the heaviest-weighted variable

TREASURY DEPARTMENT

is the most important agency in determining HDI

FUTURE WORK

1. Build application for use by policymakers
2. Delve deeper into regional features, as well as specific programs

Thanks!



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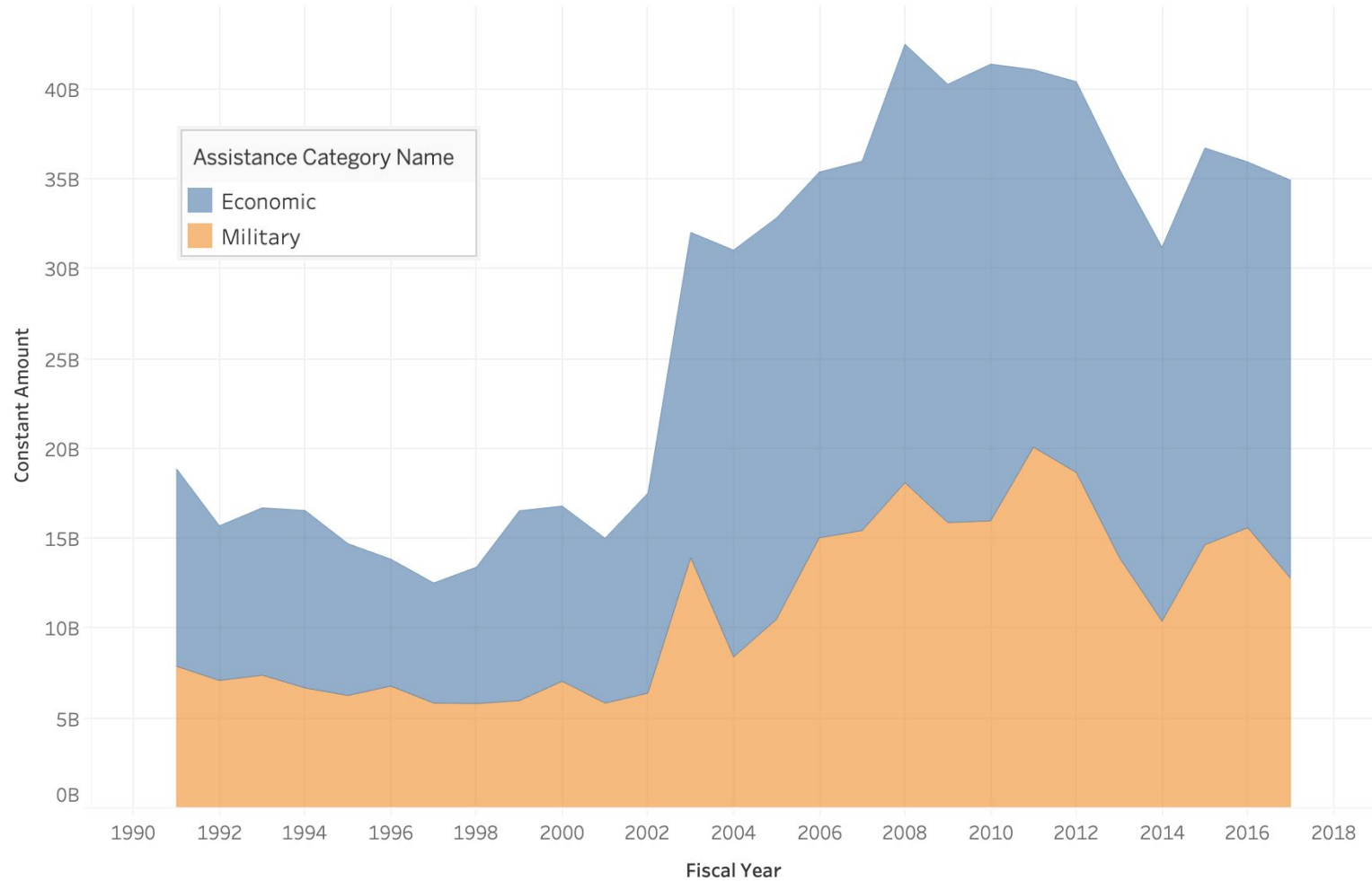


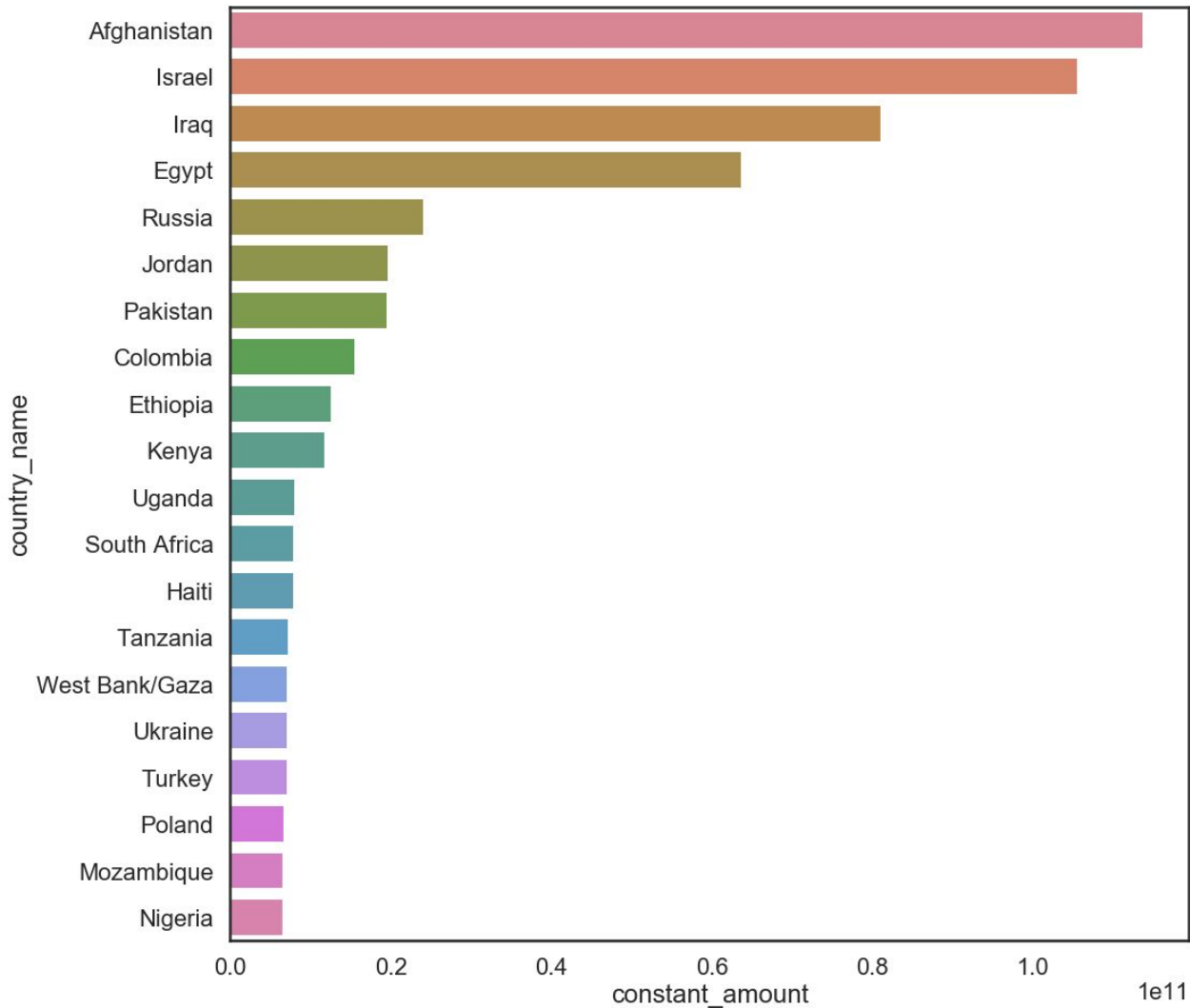
“Foreign aid is neither a failure nor a panacea. It is, instead, an important tool of American policy that can serve the interests of the United States and the world if wisely administered.”

— Lee H. Hamilton



Foreign Aid by Year





**Top 20
countries the
US provided
aid to from
1991-2017**