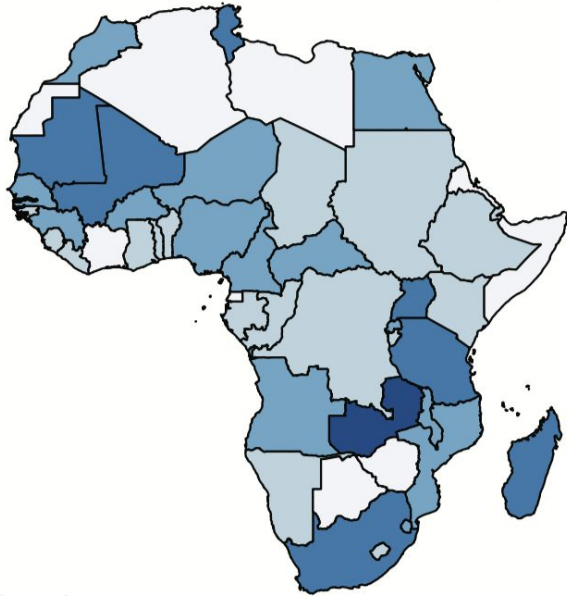# Combining satellite imagery and machine learning to predict poverty

Neal Jean, Marshall Burke, Michael Xie, W. Matthew Davis, David B. Lobell, Stefano Ermon
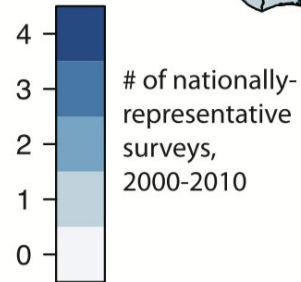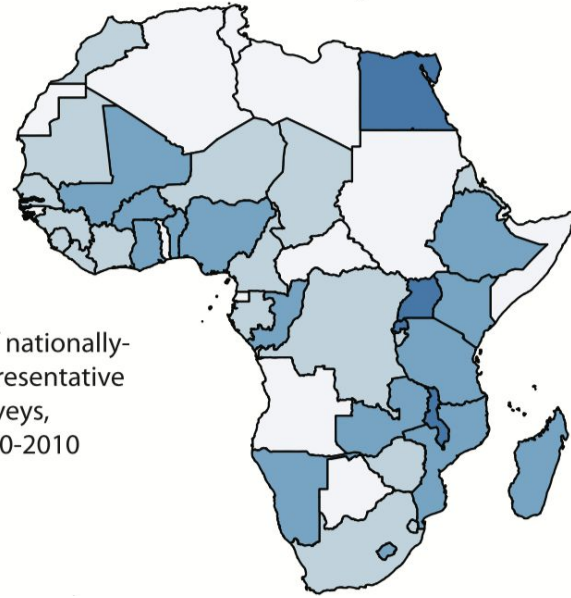
Presented by: Srujay Korlakunta
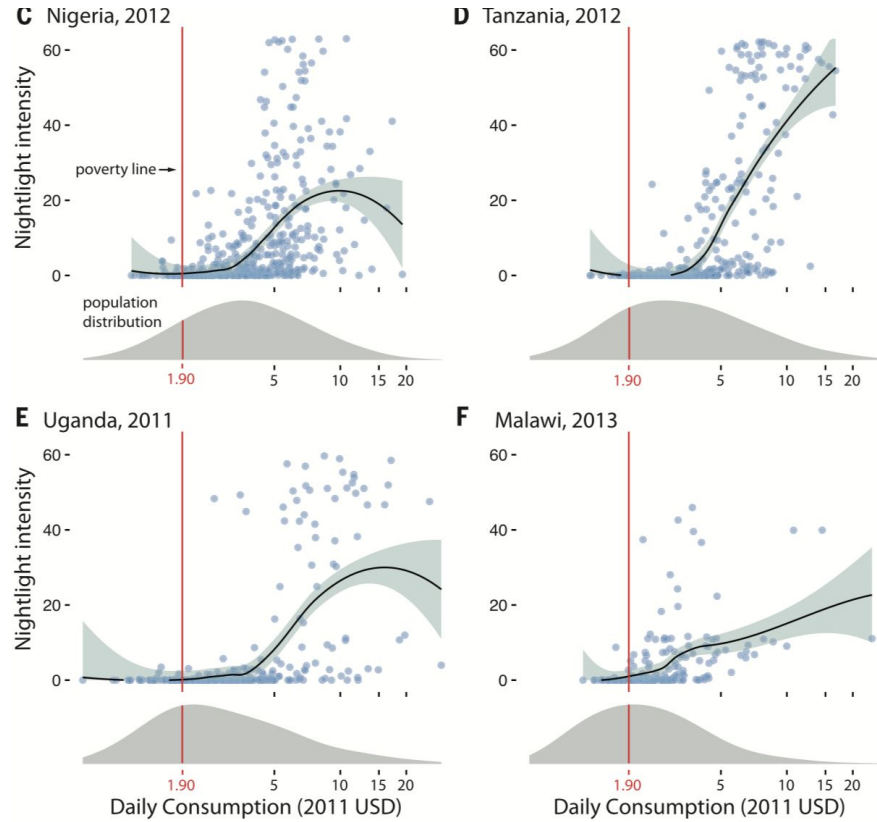
A Consumption/income surveys   **B** Asset surveys
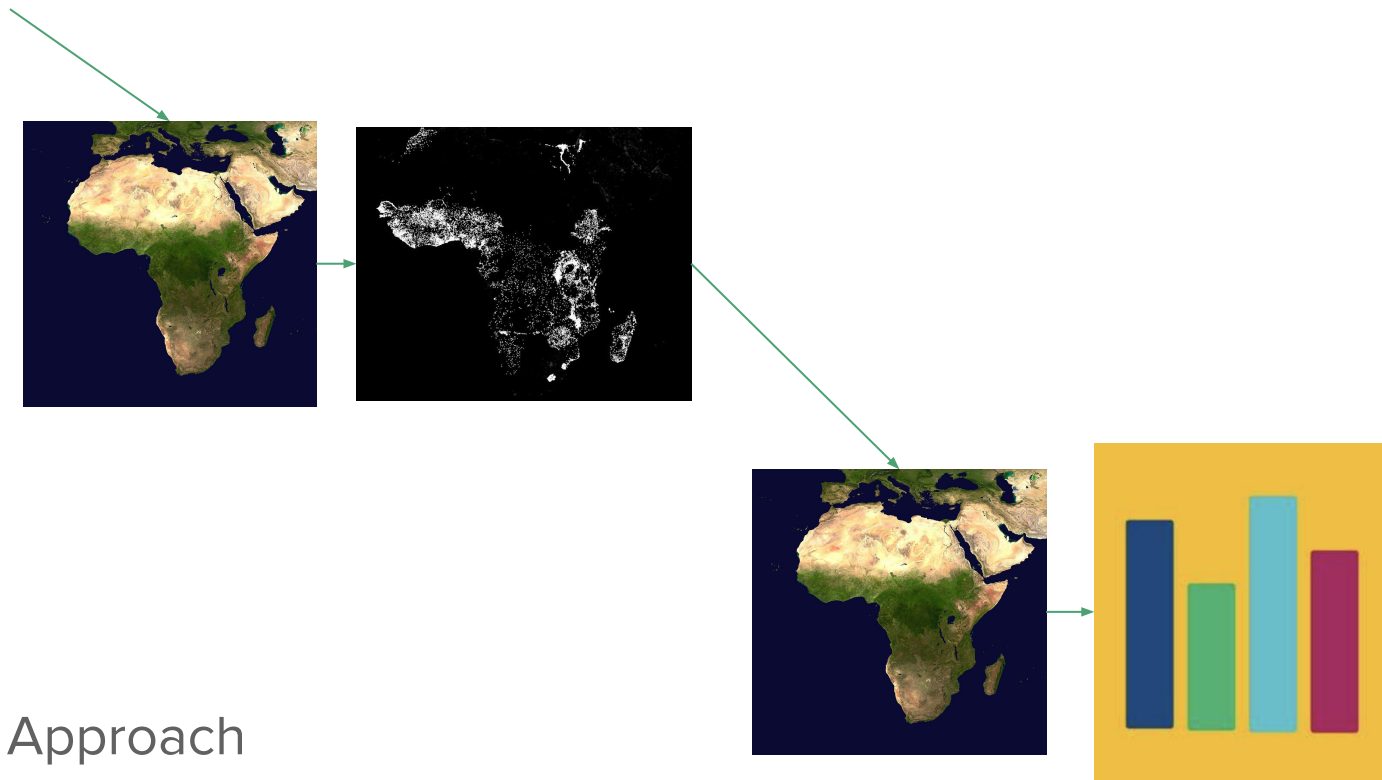
# of nationally-representative surveys, 2000-2010
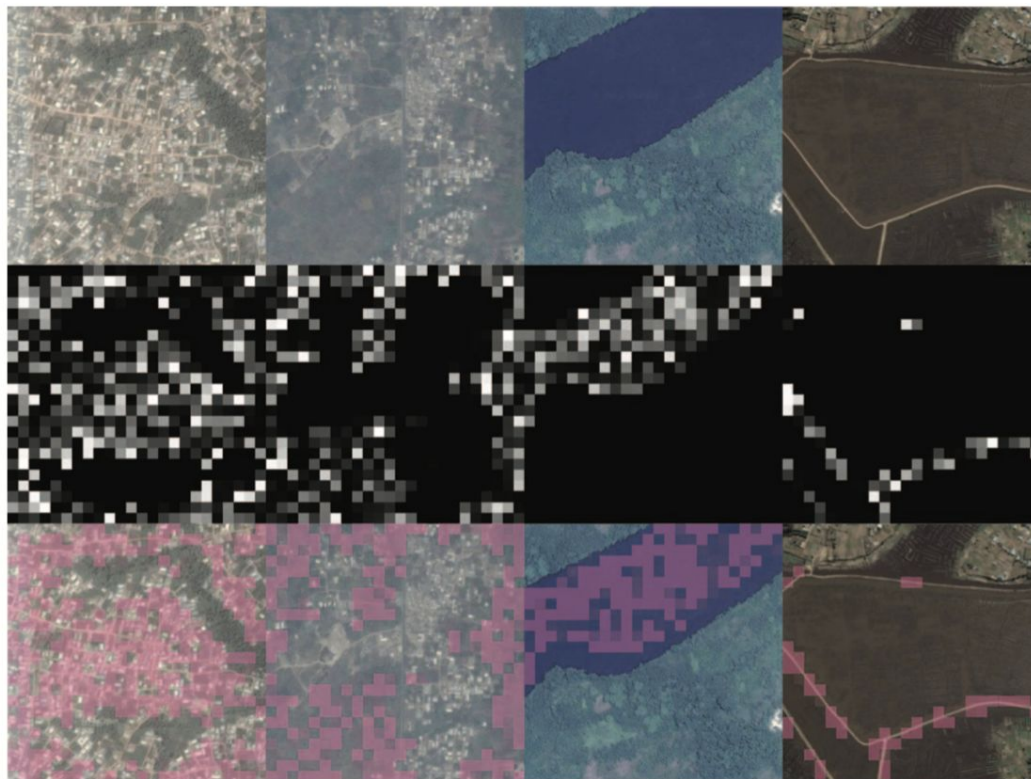
4
3
2
1
0

Density of Surveys in African Countries

Relationship between Daily Consumption and Nightlight Intensity

Transfer Learning Approach

Visualization of Feature Maps

A Nigeria, 2012
$r^2 = 0.42$

international poverty line

B Tanzania, 2012
$r^2 = 0.55$

C Uganda, 2011
$r^2 = 0.41$

D Malawi, 2013
$r^2 = 0.37$

Predicted consumption ($/cap/day)

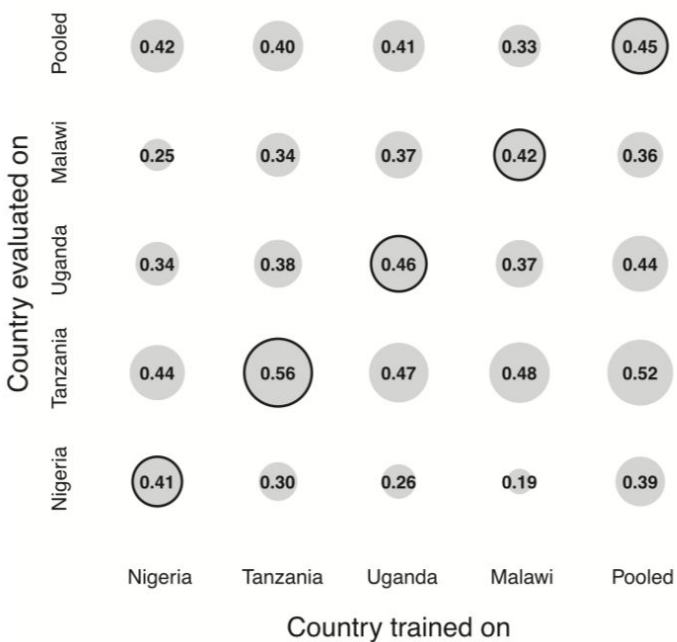Observed consumption ($/cap/day)
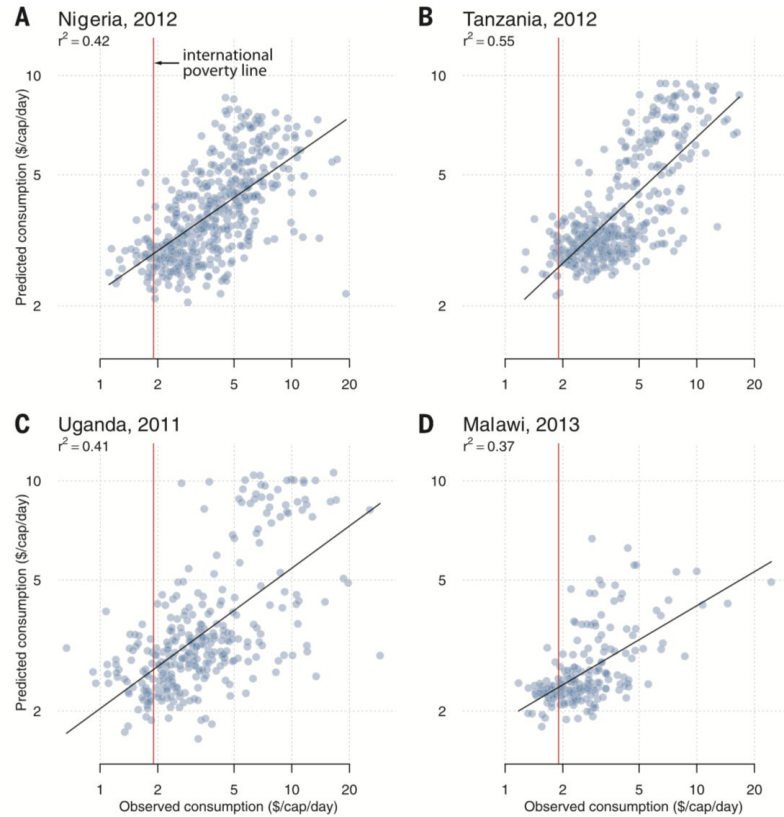
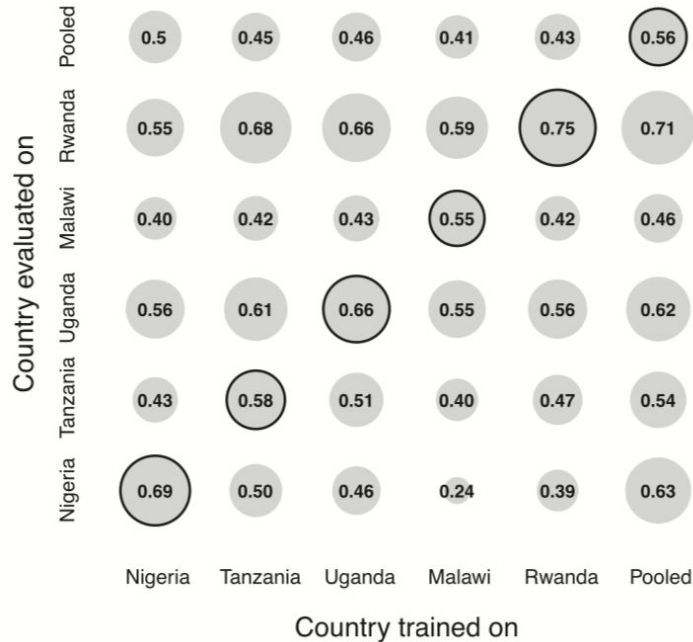Predicted Consumption vs. Observed Consumption
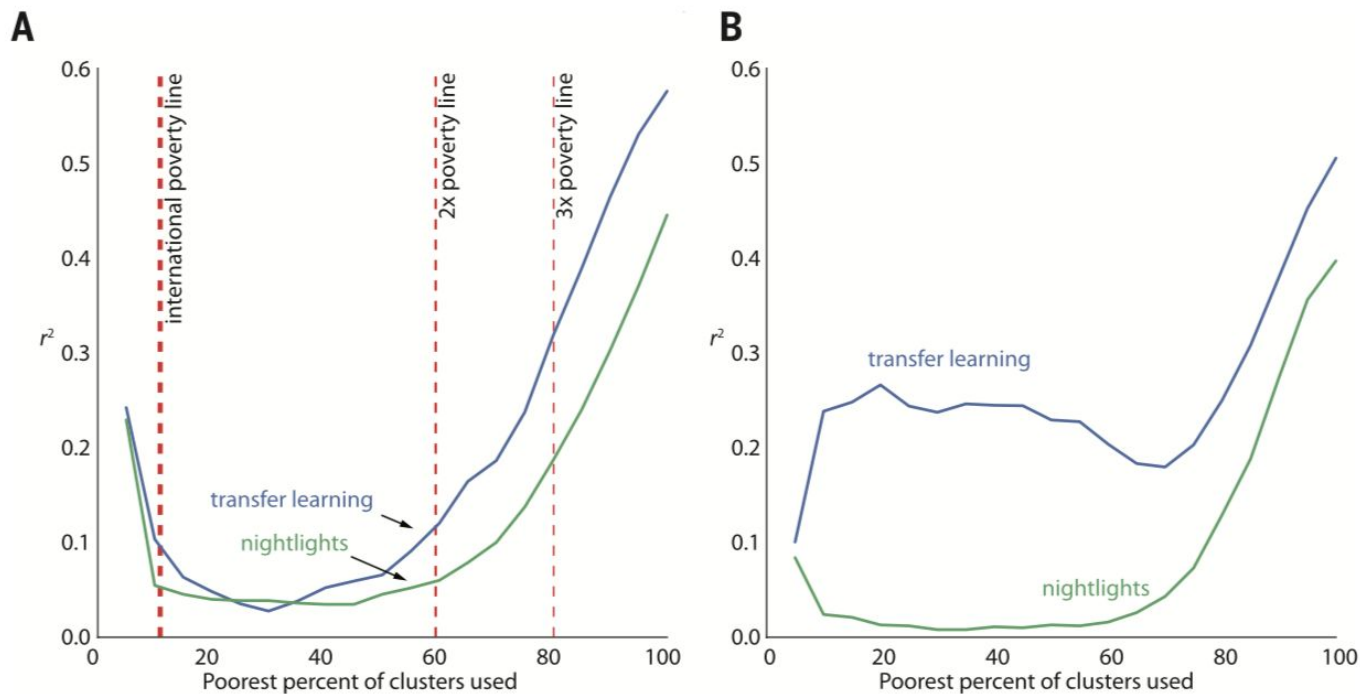
Evaluation of Performance

A Consumption expenditures

B Assets

Evaluating country-specific models on other countries