Maize Yield and Crop Area Allocation among Tanzanian Farmers
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RESEARCH OVERVIEW
This exploratory data analysis is part of a long-term project examining the pathways between staple crop yield (a proxy for agricultural productivity) and poverty reduction in Sub-Saharan Africa.

METHODS & DATA
This poster explores relationships among the dependent variable, land area allocated to maize, and key explanatory and control variables to be used in upcoming regression analysis. Data are from the Tanzania National Panel Survey, part of the World Bank’s Living Standards Measurement Study - Integrated Surveys on Agriculture. HarvestChoice data was used to create the map.

CROP AREA ALLOCATION AS A PROPORTION OF TOTAL LAND AREA, 2008-2012

How do crop portfolios vary by agro-ecological zone? Tanzania has four primary agro-ecological zones, which vary in climate and growing conditions. Farmers in cool semi-arid zones grow more maize and less permanent crops than other farmers in the sample, while those in sub-humid zones grow more permanent crops.

KEY TERMS
Maize yield is a measure of land productivity, calculated by dividing the household’s total maize harvest weight (kg) by the total area planted with maize (ha).

Smallholder farmers are owners and renters who farm a relatively small land area, defined here as two ha or less.

Annual crops are planted and harvested every year, while permanent crops (including tree and fruit crops) have longer growing cycles.

Farmers can change crop allocation at the extensive margin by increasing their total land area, or at the intensive margin by switching area from other crops.

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DIFFERENCES & FUTURE RESEARCH
Most farmers in the sample whose maize yield increased between 2008 and 2010 chose to increase the area they allocated to maize in 2012. This may indicate that farmers do sacrifice more total maize output and their maize yield, a common assumption within international development. Yet many farmers whose yield declined also increased the area they allocated to maize, suggesting that other factors also influence crop mix. Within the sample, it appears that most changes in maize area are quite large in magnitude and often happen at the extensive rather than the intensive margin. Future analysis will examine the relationship between change in farm size and change in maize area separately for farmers who increased maize yield in the previous cycle. Crop portfolios within the sample seem to vary more by agro-ecological zone than by type of farmer. This indicates that crop portfolios may be determined more by climatic and growing conditions than by farm or farmer characteristics. The year-to-year variation in crop mix is an interesting departure for future research, particularly since the average proportion of area allocated to maize was lower in 2012 than in previous years. Here, crop area proportions are taken over the sum of all planted area, even though this is known to overestimate the area planted to permanent crops, because of a lack of suitable alternatives given how the data are reported.

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