# Household participation in food markets and dietary diversity: Evidence from rural Malawi

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**Presentation to IFPRI Malawi**

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- Matita M, Chirwa EW, Johnston D, Mazalale J, Smith R, Walls H. Does household participation in food markets increase dietary diversity? Evidence from rural Malawi. *Global Food Security*. 2021;28:100486.

We dedicate this study to the memory of our colleague and co-author Professor Ephraim Wadonda Chirwa.

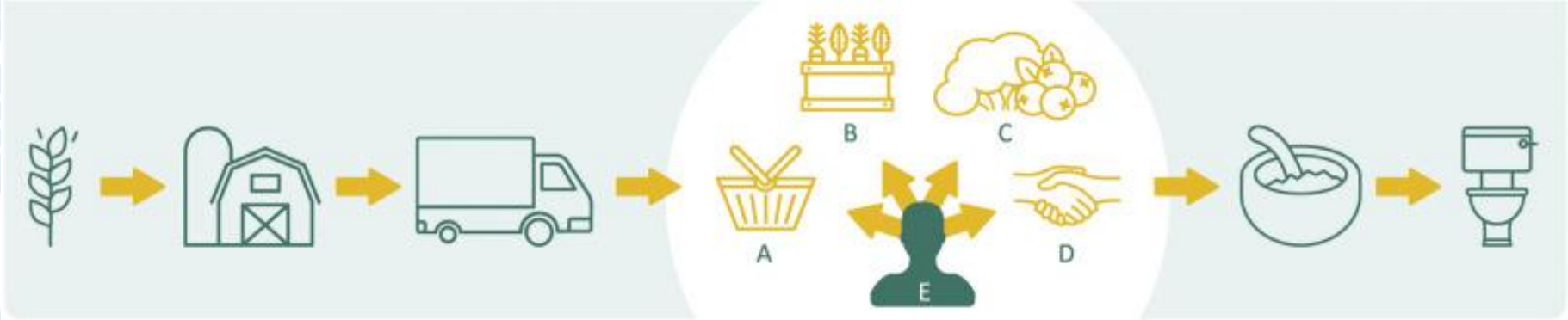
Source: Future Agricultures. In Memory of Professor Ephraim Wadonda Chirwa. https://www.future-agricultures.org/news/in-memory-of-professor-ephraim-wadonda-chirwa/. 2019.

# Introduction – dietary diversity, shaped by food environments

- Addressing malnutrition – increasing (healthy) dietary diversity + addressing hunger through increasing calories consumed.
- Household dietary diversity score (HDDS) an indicator of dietary diversity and nutritional quality.
- People's food choices, and diets shaped by their food environments (and factors shaping food environments).

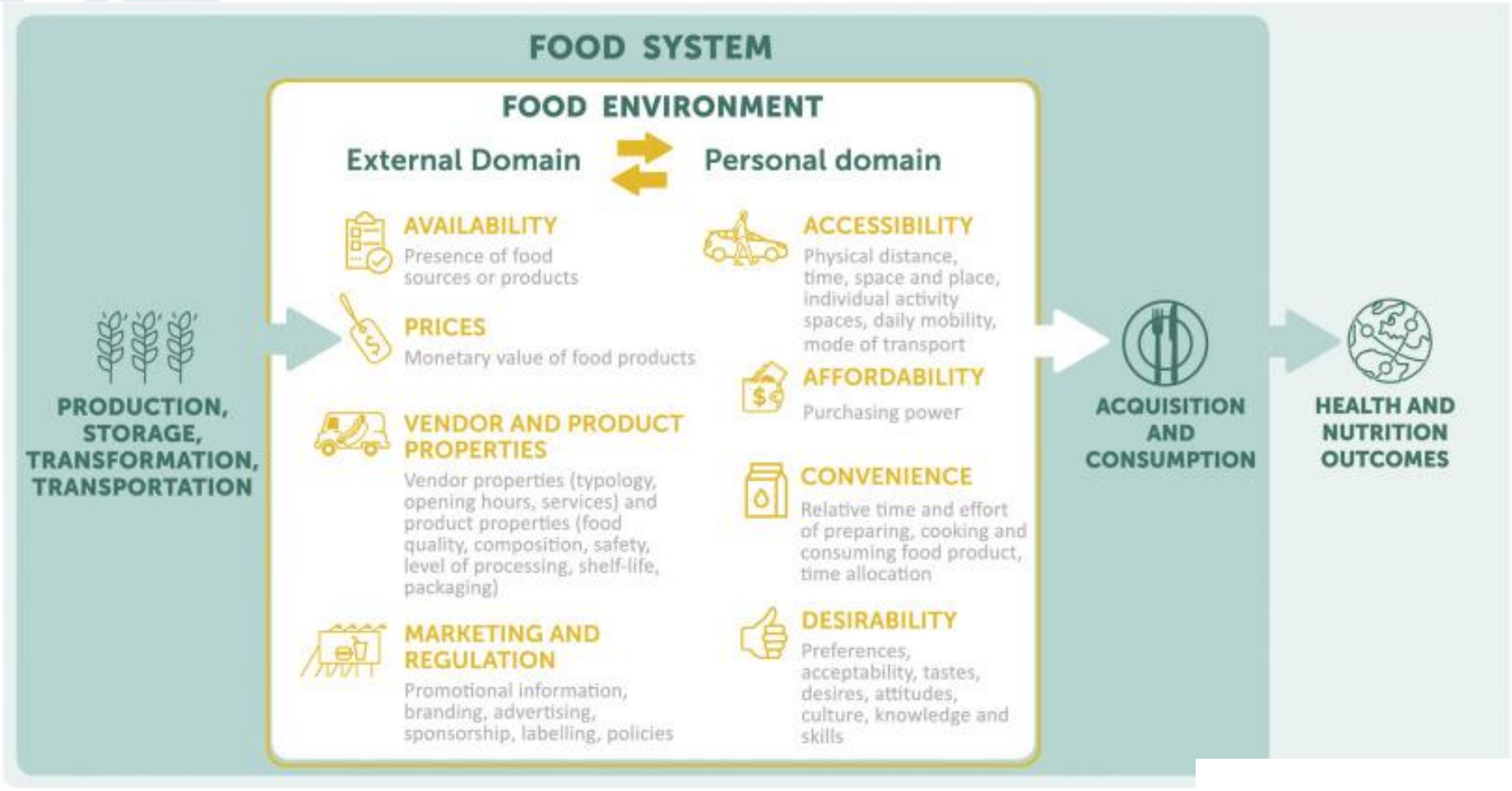
Source: Walls H. 2017.

# Introduction - food environments




Source: Turner C, Aggarwal A, Walls H et al. Concepts and critical perspective for food environment research: A global framework with implications for action in low- and middle-income countries. *Global Food Security*. 2018;18:93-101.

# Introduction - food environments

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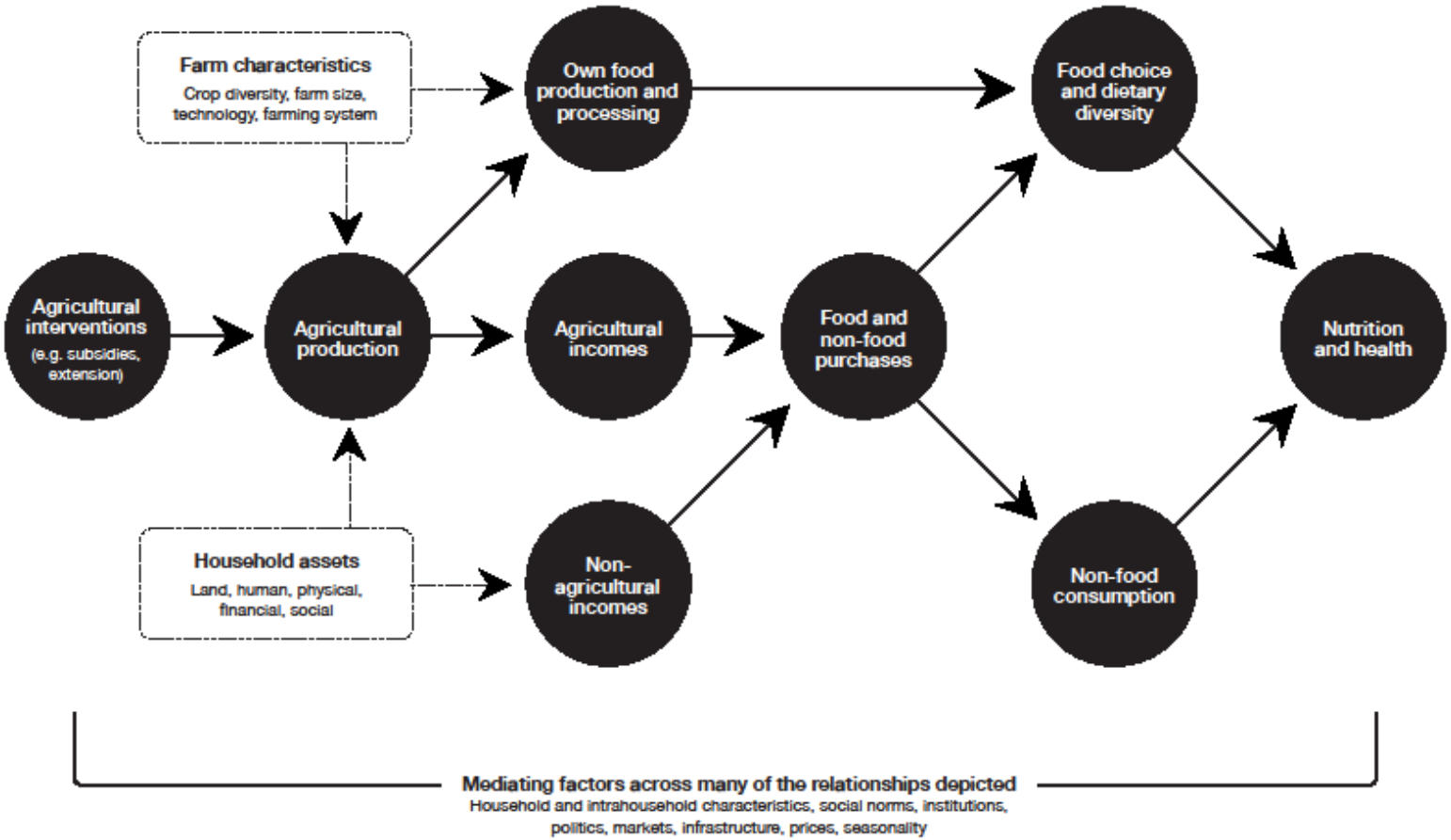
# Introduction agriculture/nutrition in Malawi

- Significant burden of malnutrition and associated poor health.
- Maize dominates diets – >50% of household calorie intake, and grown by ~90% of households with access to land.
- A single rainy season shapes ag production, food prices & diets.
- Government strategy focuses on fertilizer & seed subsidies, mostly for maize – e.g. Farm Input Subsidy Programme (FISP).
- Most households do not produce enough food to last from one season to the next – and rely on markets to access food.
- Production for own consumption less diverse than crops grown by farming households, suggesting own-farm production a weak driver of dietary diversity – & suggesting a role for **food markets**

# Introduction – food markets

- A recent review (Jones, 2017) found a positive relationship between market access & dietary diversity.
  - Yet, the studies used diff measures, and metrics of food market access are crude.
- In Malawi specifically, several studies have found small positive effects of farm production diversity on dietary diversity, but market participation a more important determinant of dietary diversity.
  - The Malawi studies examined market participation in terms of existence of local markets and distance to district market, not actual market purchases.
- A need for more evidence and improved methods of data collection and analysis to understand the relationship between market participation, food choices and dietary diversity in different contexts.

# Conceptual framework linking agriculture, food purchases and dietary diversity




Source: Matita M, Chirwa EW, Johnston D et al. *Global Food Security*. 2021.

# Aim, & where our study fits

- We examined the relationship between engagement with food markets (‘food market participation’) and dietary diversity in rural Malawi – in the context of wider agricultural factors including seasonality and the FISP.
- To do this, we also developed a new measure of food market participation, the ‘food purchases diversity score’ (FPDS).

# Methods

- Household survey data from 400 rural households in 2 districts of rural Malawi – in post-harvest (May ‘17) & lean season (Feb/Mar ‘18).
  - Qs about: demographic & household characteristics, incl. participation in FISP, and household assets based on Demographic and Health Surveys; agricultural activities undertaken; food and non-food purchases (over past 7 and 30 days); food obtained from non-purchased sources; and a dietary assessment.
- Data from 4 rural enumeration areas (EA), in 1 traditional authority in each of Lilongwe and Phalombe Districts.
  - Lilongwe District – farming dominated by maize cultivation
  - Phalombe District – a more mixed farming system.
- In each EA, we selected 50 households using a random-walk system.
- Analytical approach drew on unbalanced panel data and involved Poisson regression.

# Methods – regression approach

- **Poisson model specification:**

$$HDD_{it} = \alpha_1 + \beta_1 FPD_{it} + \beta_2 S_{it} + \beta_3 FISP_{it} + \sum_{j=3}^{k} \beta_j H_{jit} + \sum_{j=1}^{k} \gamma_j FP_{jit} + \varepsilon_{it} \qquad (1)$$

where,

- *i = household*, *t = time period,* $\varepsilon_{it}$ =random error term.
- *HDD* = household dietary diversity indicator
- *FPD* = food purchases diversity score
- *S* = seasonality; *FISP* = subsidy programme beneficiary status in 2016/17
- *H* = household & demographic characteristics (age of head, gender of head, asset index, education of respondent, household size
- *FP* = farming characteristics (cultivation of legumes, maize crops)

# Methods – our new measure

- **Food purchases diversity score (FPDS),** constructed as a count of number of food groups purchased by the household in the past 7 days.
- Other studies like Jones et al., 2014, Koppmair et al., 2017 examine market participation in terms of existence of local markets and distance to the district market.
- Unlike these, the FPDS measure captures incidence of purchases using same food groups as for measurement of food consumption.

Source: Walls H. 2017.

# Study design…

# data collection…

# and analysis.

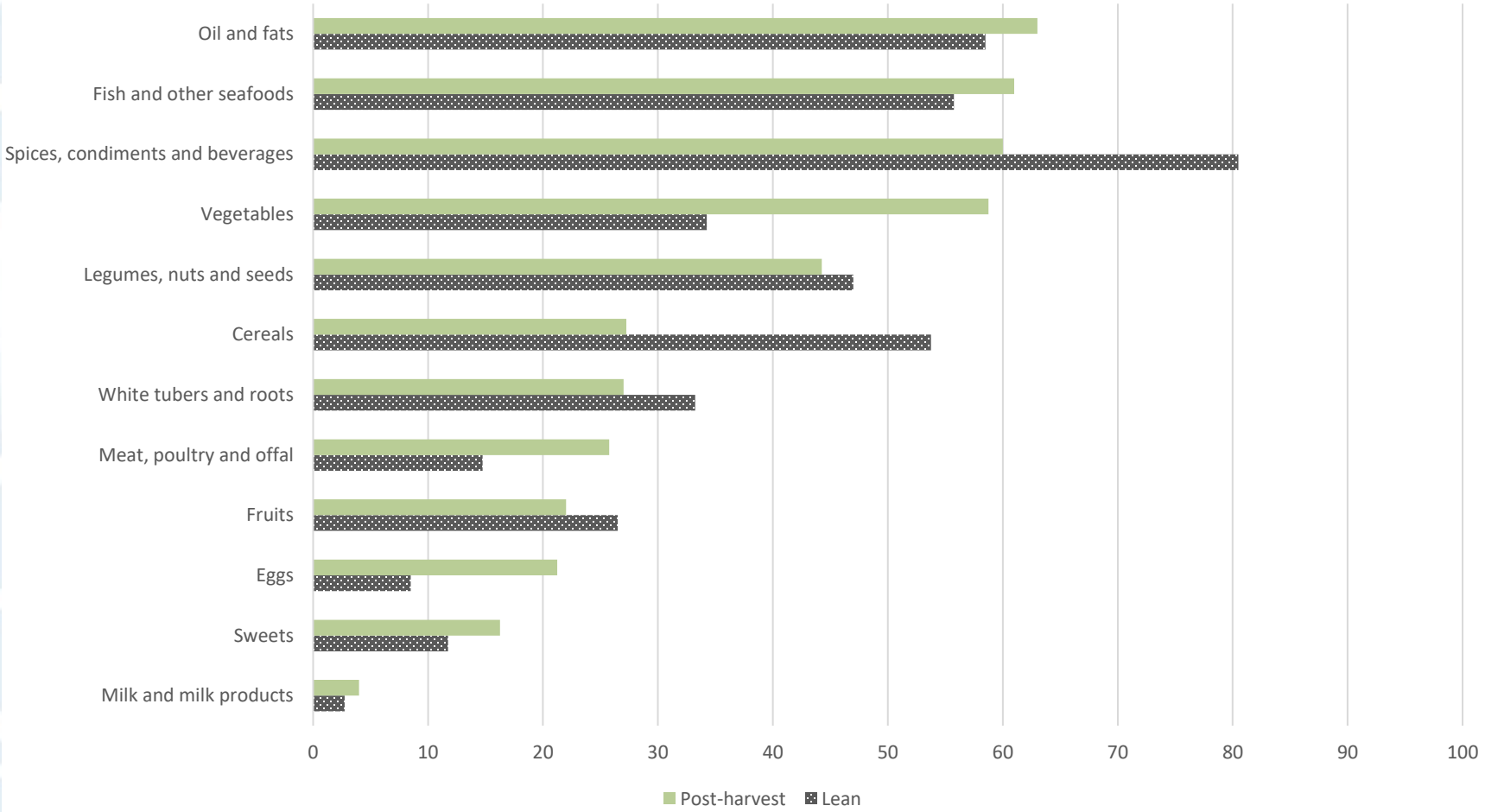
Source: Walls H. 2017.

Source: Walls H. 2019.

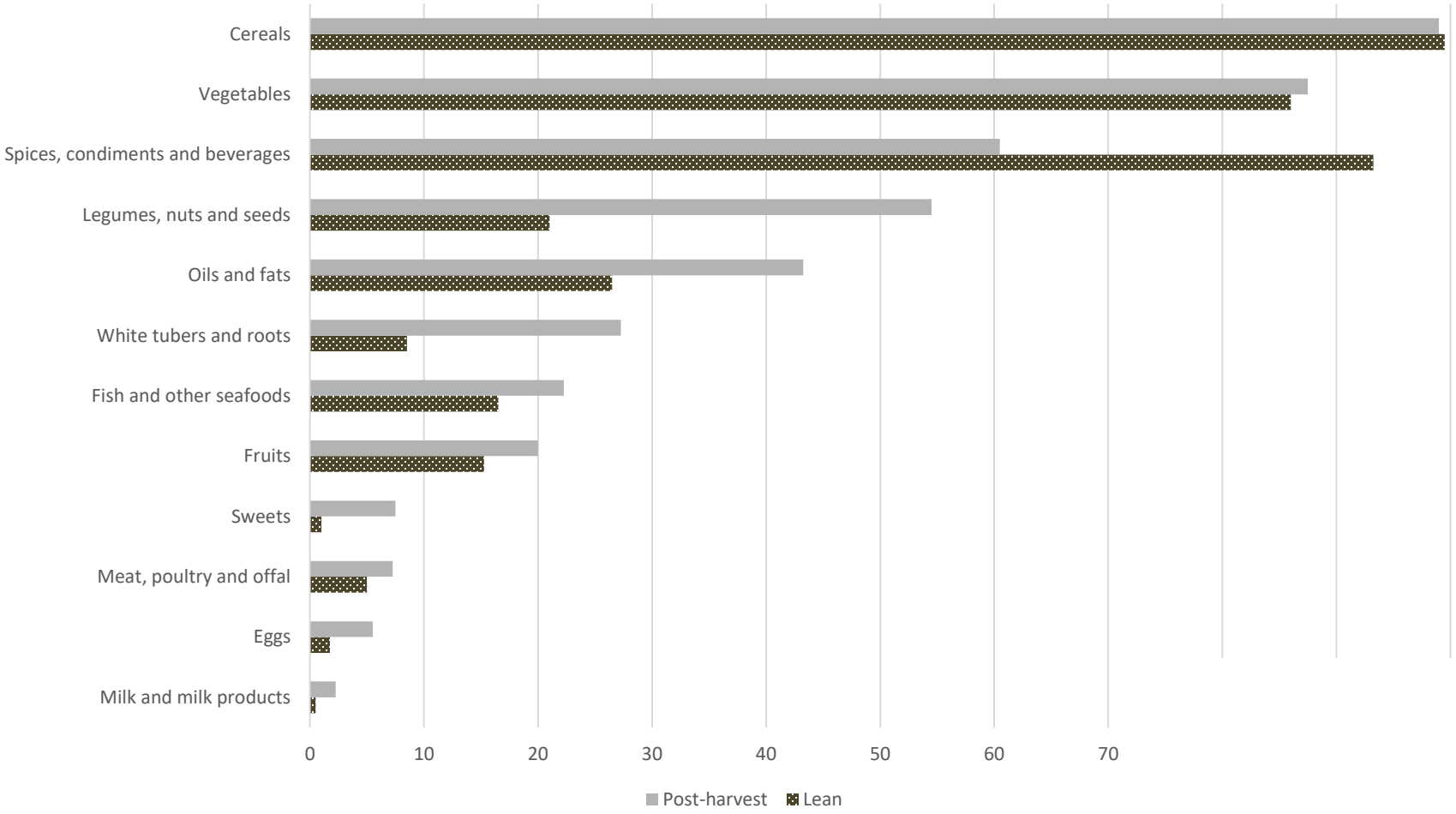
# Results – descriptive statistics

- Average HDDS 4.1 (4 food groups out of 12 possible groups).
- Dietary diversity lower in lean season than in post-harvest season.
- Slightly higher diversity in purchased food groups (5.5 food groups) than in consumed food groups as measured by the HDDS
- FISP in 2016/17 agricultural seasons received by 39% of study sample. Since the programme started (2005/06), at least 72% of the study sample had ever participated in the programme.
- Maize (local or improved varieties) the dominant crop cultivated. Combining varieties, 97% households cultivated maize.
- 76% of households cultivated at least one type of pulse (most commonly, groundnuts and beans).

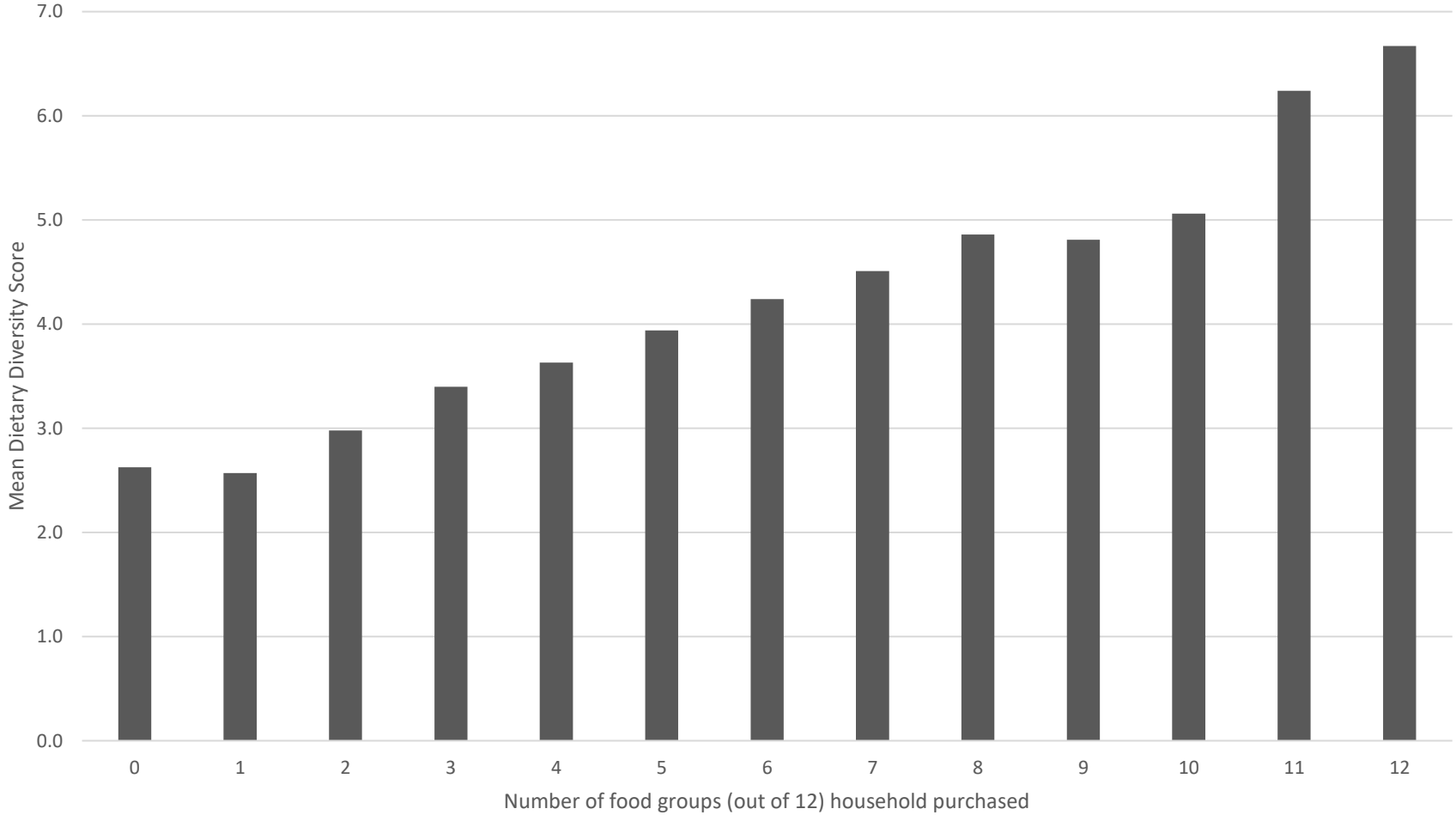
# Foods purchased by households over past 7 days, by season (%)



# Foods consumed by households over past 24 hours, by season (%)



# Household dietary diversity by number of food categories purchased (%)



# Regression results: Determinants of HDDS (selected coefficients & std errors)

| Variable | Panel Poisson regression | Panel poisson regression by season | |
|---|---|---|---|
| | | Lean | Post harvest |
| Food purchase diversity score (past 7 days) | 0.019* (0.012) | 0.040*** (1.012) | 0.051 *** (0.011) |
| Lean season | -0.156*** (0.038) | - | - |
| FISP beneficiary (2016/17) | -0.015 (0.052) | 0.008 (0.054) | -0.025 (0.050) |
| Control variables | yes | yes | yes |

# Discussion

- Using a novel, more rigorous approach than previous studies, we found a clear association between food market participation and household dietary diversity in rural Malawi.
- Households in rural Malawi that engaged more with food markets were more likely to have more diversified diets.
- Dietary diversity was lower in the lean season, when households face food shortages from own production and reduced household income, and higher prices of maize.
- No evidence of associations between legume cultivation with dietary diversity.
  - This differs from some studies – however cultivation of legumes is just one measure of farm production diversity, and effects of farm production diversity on dietary diversity have often been small.

# Discussion

- FISP does not appear to have affected food choices and dietary diversity in any significant way, although was intended to promote nutrition-sensitive ag by providing legume seeds in addition to improved maize seed and fertiliser
- In keeping with our study, Koppmair et al. (2017) found that access to food markets was more important for dietary diversity than diverse farm production.
- Limitation
  - HDDS and FPDS do not reflect quantity purchased, quantity and type/diversity within a food category, level of processing of foods purchased by households. Did not distinguish between purchases for home consumption, resale, or a combination.
  - Localised study; need to validate measure with nationally representative data in different contexts

# Conclusion

- We used a new metric of food purchase diversity, the food purchase diversity score (FPDS) to measure food market participation.
- Households with higher food market participation had higher dietary diversity. The association of farm production diversity with dietary diversity was less clear.
- Food market participation supported food security during the lean season.
  - Increased cereal purchase in lean season signifies dietary importance of maize for food security.
- Highlights importance of household incomes to increase food market participation.

# Acknowledgements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- We wish to thank our data collection team for their support with the fieldwork and of course the study participants.



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