



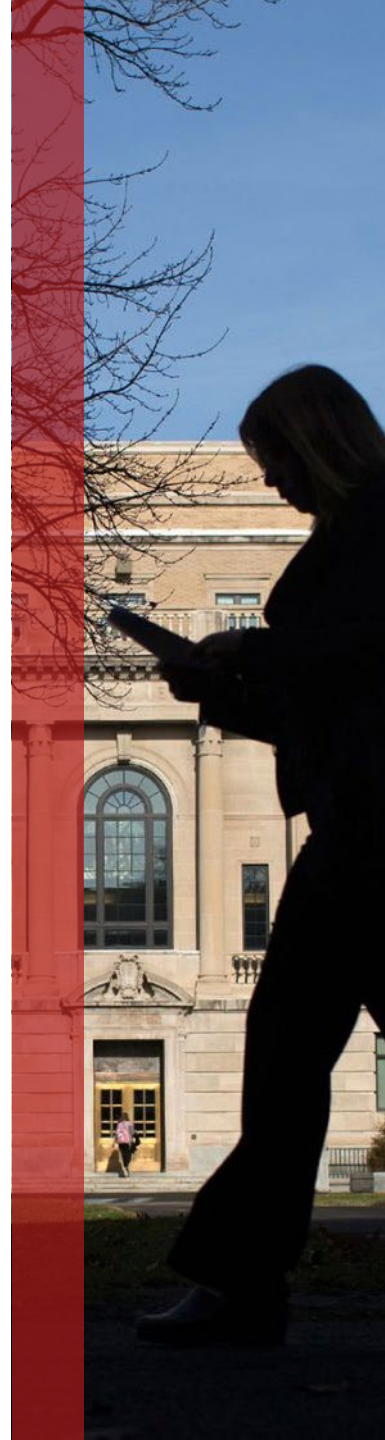
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# COVID-19, household resilience, and rural food systems in low-income countries

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June 16, 2021



# Motivation & Background

- COVID-19: a ‘new’ shock, but sadly familiar *mechanisms* of impact on the rural food system and household food security
- Development resilience is a useful (and increasingly common) lens for examining these mechanisms and impacts
- Food system framing is also highly pertinent
  - Interconnected ecosystems => multiple entry points for shocks
  - Feedback over space – ‘telecoupling’ (Liu et al. 2021) as policy responses have far-reaching effects
  - Feedback across scales – household, market, community, national, etc.
  - Indirect impacts can exceed direct impacts
- Clear evidence that food security has suffered over the course of the pandemic, across contexts; though pathways diverse and complex





# Motivation & Background

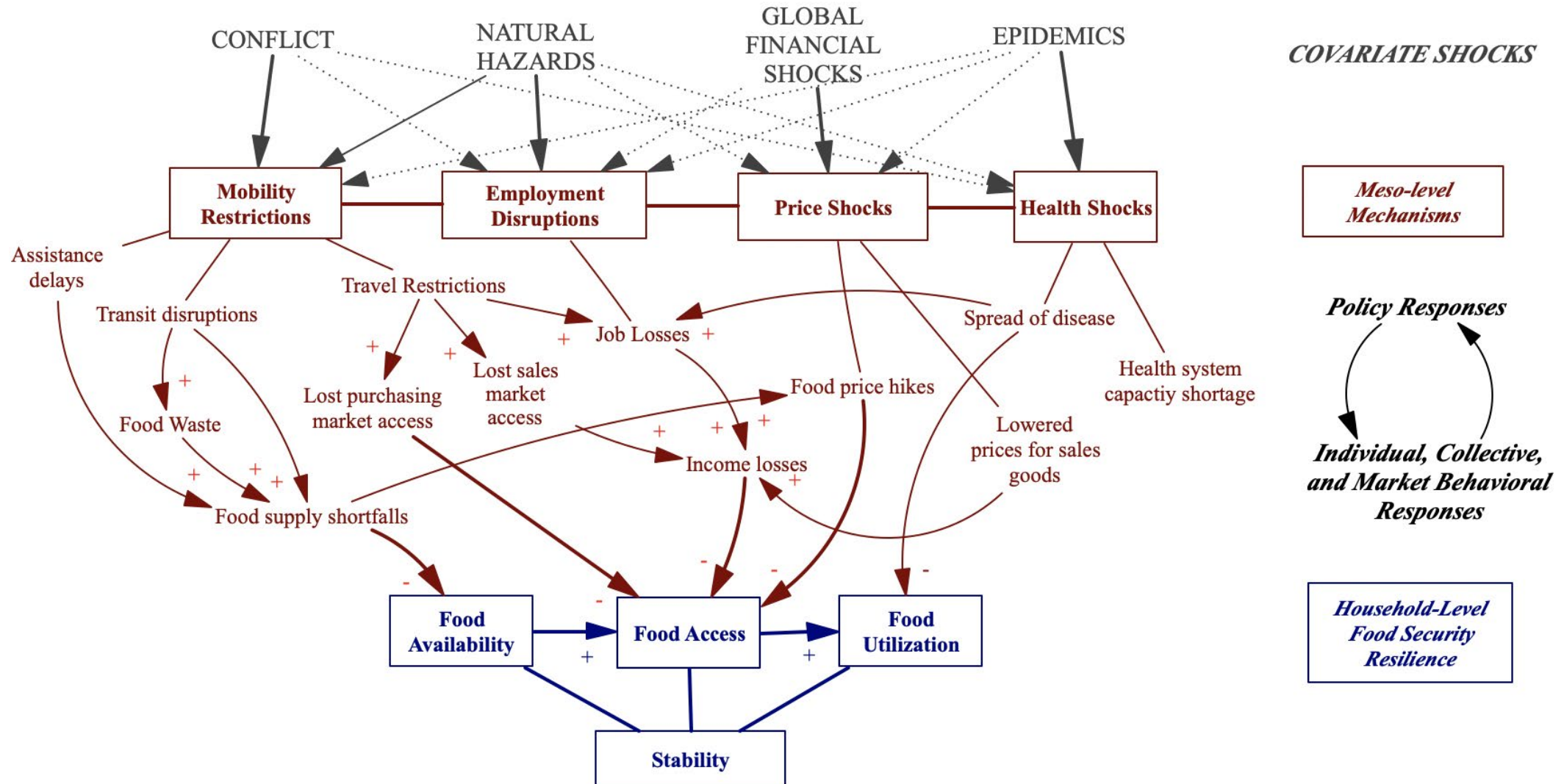


- We harness high-frequency household panel data from rural areas in Malawi, Madagascar and Kenya to examine food security resilience over the course of the pandemic, and the underlying mechanisms
- While not causal, we show how a seemingly unique, shock like COVID-19 has played out in distressingly familiar ways
- Reinforce the need to improve our understanding of resilience to a wide variety of shocks

# Conceptual Framework

- Resilience studies tend to focus on specific shocks; however, often the *mechanisms* are common across different types of exogenous *shocks*
  - E.g., multiple exogenous shocks cause food price hikes
- We frame COVID-19 – and associated global to local policy responses – in terms of the most pertinent *shock mechanisms*
- For “resilience,” simplify with a focus on food security and its stability over time (following Upton et al. 2018)
  - Four dimensions: Availability, Access, Use, Stability – all subject to shared or separate impacts

# Conceptual Framework



## Contexts and Data : Sample Sizes & Locations

Country	Start Date	Region	District	Households Sampled	
Malawi	September 2017	Southern	Chikwawa	750	2250
			Nsanje	750	
			Blantyre Rural	750	
Madagascar	July 2018	Androy	Tsihombe	364	601
			Beloha	237	
Kenya	March 2020	Western	Homa Bay and Kisumu Counties	90	90

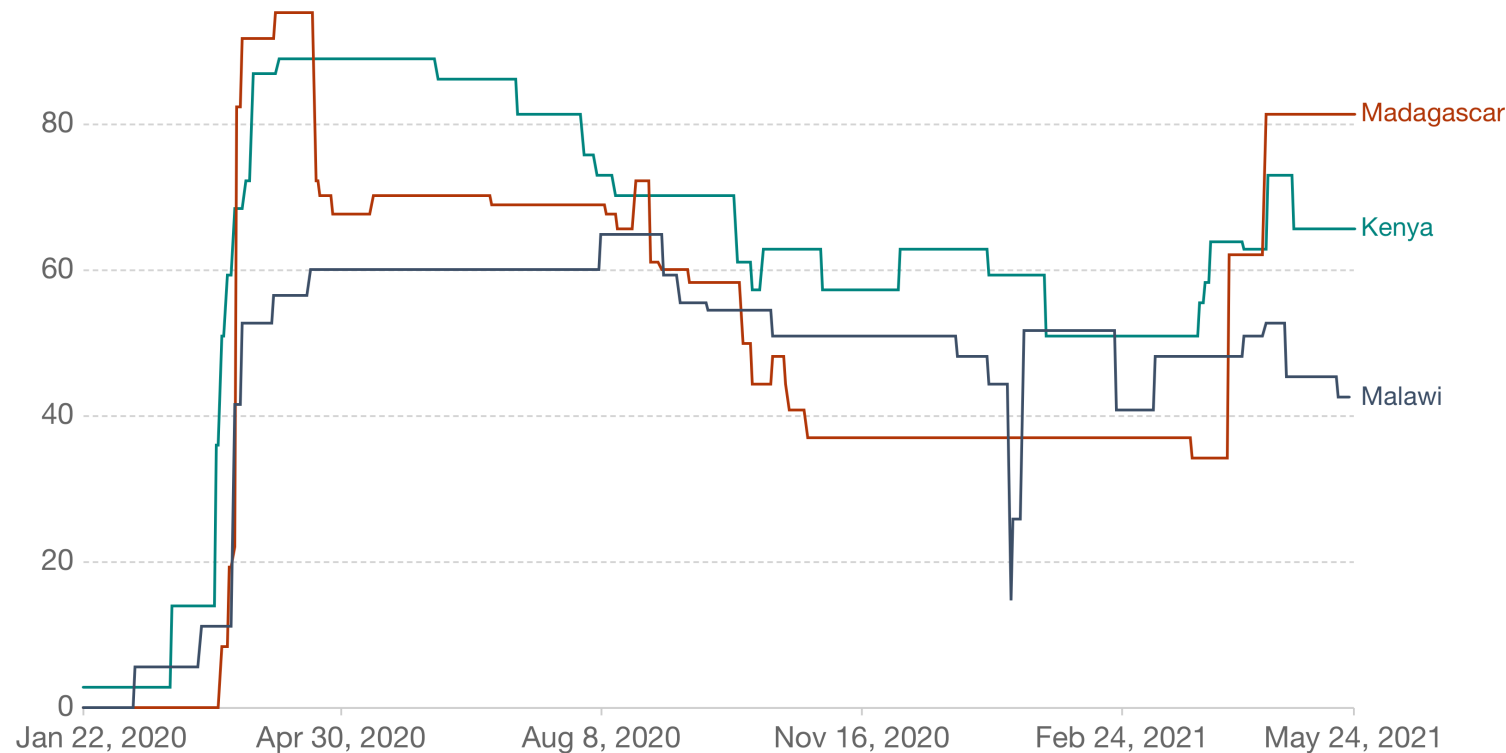
- Data collected monthly; in Madagascar and Malawi with community-based enumerators, in Kenya by phone
- Data from Malawi and Madagascar collected by Catholic Relief Services as part of the Measurement Indicators for Resilience Analysis (MIRA) project, supported in large part by USAID
- Kenya data collection supported by the Cornell Atkinson Center for Sustainability (COVID-19 Rapid Response Fund)

# Contexts and Data : COVID-19 & Policy Response

## COVID-19: Stringency Index

This is a composite measure based on nine response indicators including school closures, workplace closures, and travel bans, rescaled to a value from 0 to 100 (100 = strictest). If policies vary at the subnational level, the index is shown as the response level of the strictest sub-region.

Our World  
in Data



Source: Hale, Angrist, Goldszmidt, Kira, Petherick, Phillips, Webster, Cameron-Blake, Hallas, Majumdar, and Tatlow (2021). "A global panel database of pandemic policies (Oxford COVID-19 Government Response Tracker)." Nature Human Behaviour. – Last updated 26 May, 11:00 (London time)  
OurWorldInData.org/coronavirus • CC BY



# Food Security : *Availability, Access, Use, Stability*

## Malawi

- Appeared if anything better than prior years (due to good harvest);
- But causal analysis (Upton et al., under development) reveals coping strategies worse than should have been, especially for the previously worst off

## Madagascar

- Very difficult year (failed harvest); dietary diversity in particular extraordinarily poor, with timing suggestive that COVID-19 – related mechanisms exacerbated impacts of the poor harvest
- Coping strategies similar to prior years, though as in Malawi, made “more worse” for the previously worst off

## Kenya

- Situation less grave over all; but, increased coping strategies from March to June, then returning to pre-pandemic norm (confounded by harvest timing and flooding)
- Reduced movement restrictions, while increasing illness rates/concerns, also associated with stabilizing coping strategies



# Meso-level Mechanism 1 : Health Shocks

- Direct concerns: COVID-related morbidity and mortality, and health system capacity constraints
  - Health system capacity constraints leading to excess morbidity / mortality from other causes
- Less direct: concern / fear of infection (real or perceived) can influence behavior, and lead to damaging effects
  - Changes in health-seeking behavior could likewise diminish health access, lower vaccination rates for other diseases, etc.

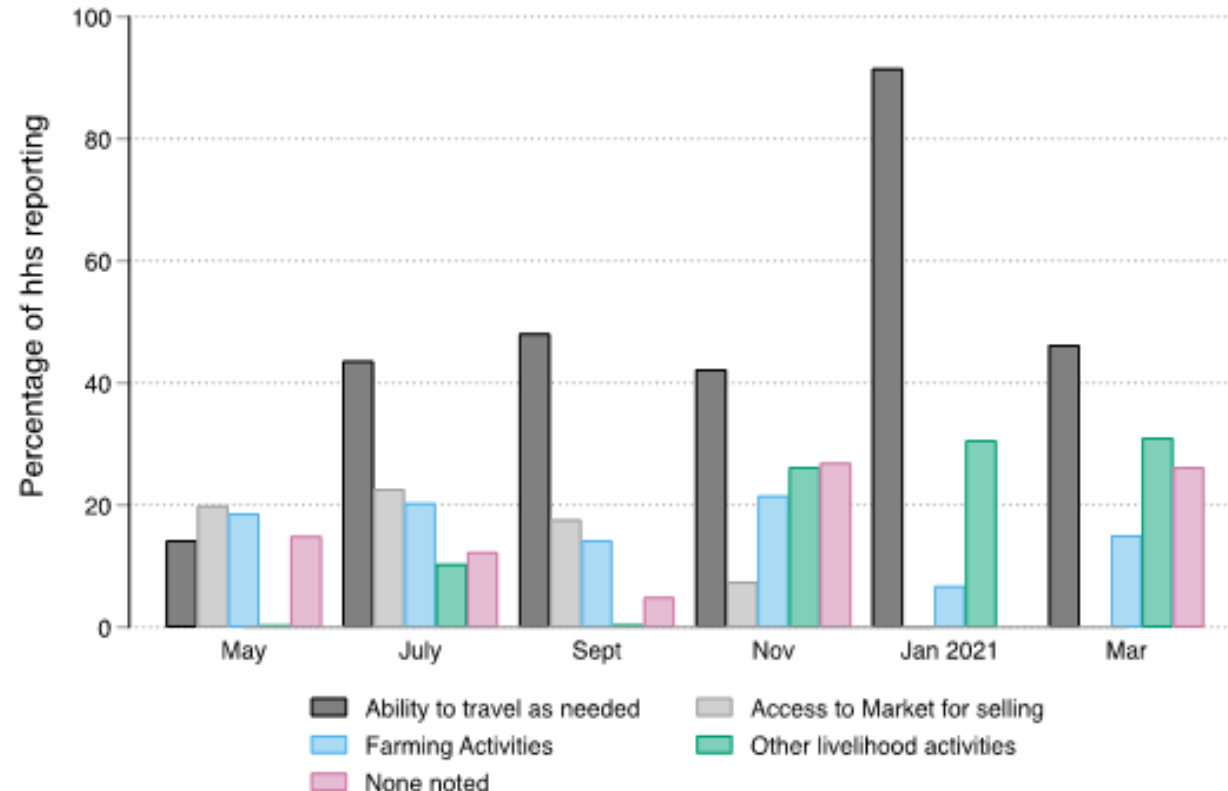
# Meso-level Mechanism 1 : Health Shocks

- Comparisons over 2-3 years in Madagascar and Malawi reveal no change in reported incidence of illness
  - *Suggest* little direct COVID-19 infection (to date); but, evaluating direct effects could / would be confounded by already high and heterogeneous burden of disease
- Evidence indeed that *fear* has had important (health and economic) impacts across countries
  - In Kenya, 25-50% of households express fear of COVID-19 infection and/or control measures
- Data insufficient to assess excess non-COVID morbidity / mortality; but, many reports in Malawi of *decreased* over-all use of health facilities for routine and other non-COVID needs
  - State fears of infection, and more recently hesitancy regarding the COVID-19 vaccine

## Meso-level Mechanism 2 : Mobility Restrictions

- Natural disasters often disrupt mobility for extended periods (Hallegate et al. 2016)
  - Dominant implications are market disruption, price shocks, and human capital reductions due to disruptions to schooling (Béné et al. 2021)
- In conflict settings, fear leads to similar effects; for example, disruptions to livestock trade in N. Kenya, Somalia, Darfur; disruption to schooling (Gates et al. 2012); change in crop profiles / economic behavior (Rockmore 2020)

## Meso-level Mechanism 2 : Mobility Restrictions



- Madagascar, formal internal restrictions limited, but a combination of economic depression and fear led to a spiraling effect
  - Policy uncertainty + fear of diseases + restricted opportunity = > transit unavailable
  - MORE households reporting this long after the formal restrictions ceased

Reported impacts of the pandemic, April 2020 – March 2021, Madagascar



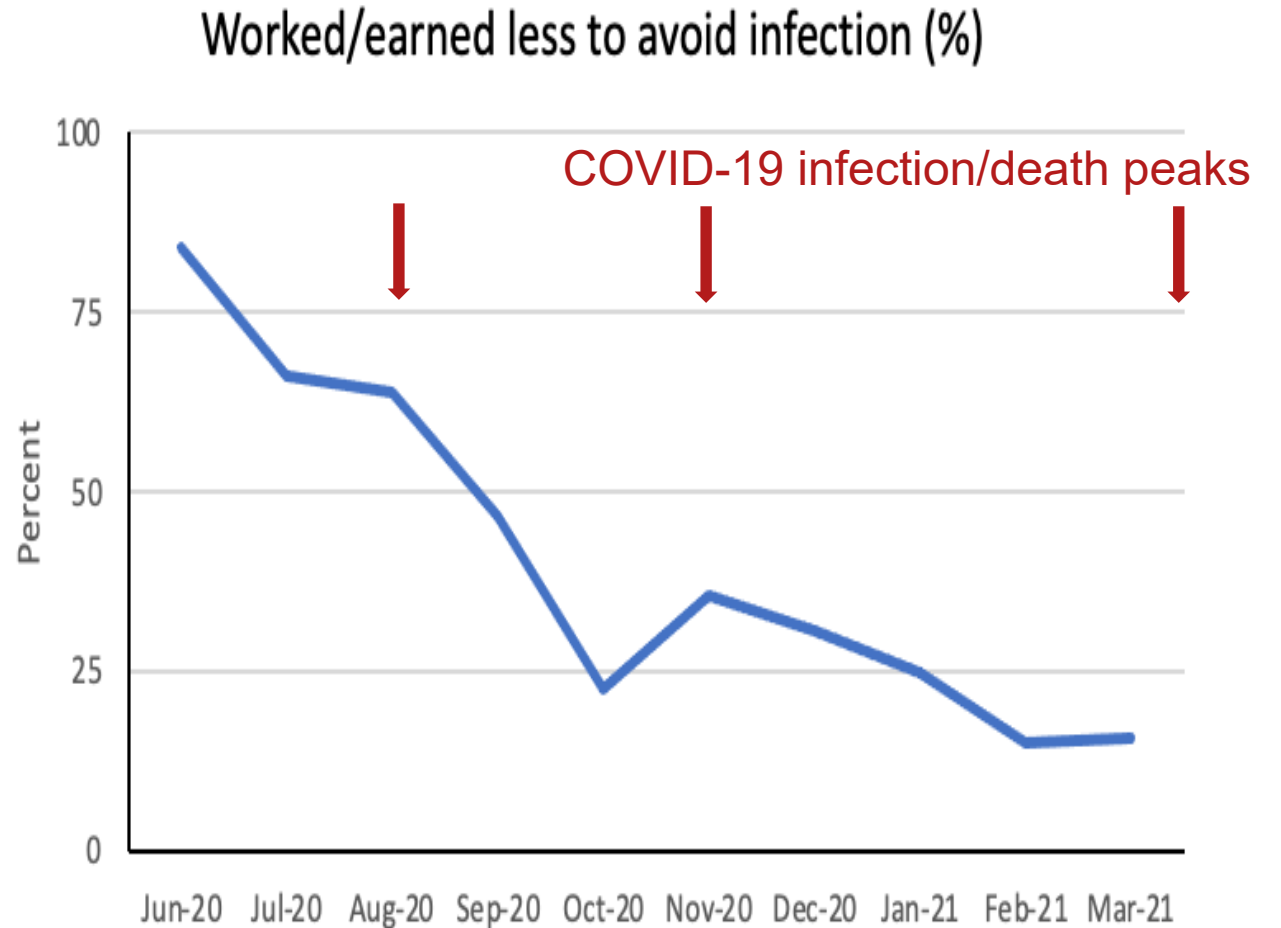
## Meso-level Mechanism 3 : Employment Disruptions

- While large covariate shocks do limit individual earning capacity (e.g. de Waal & Whiteside 2003), indirect labor-market effects are often more widespread (Devereux 2007, and others)
- Initial focus in COVID-19 was on direct income effects for wage earners / businesses affected, such as in the service industry (e.g. Adjognon et al. 2021)
- However, wage earners and piece-workers – in many cases employed by those with affected businesses – make up more of the poorest populations (Egger et al. 2021)



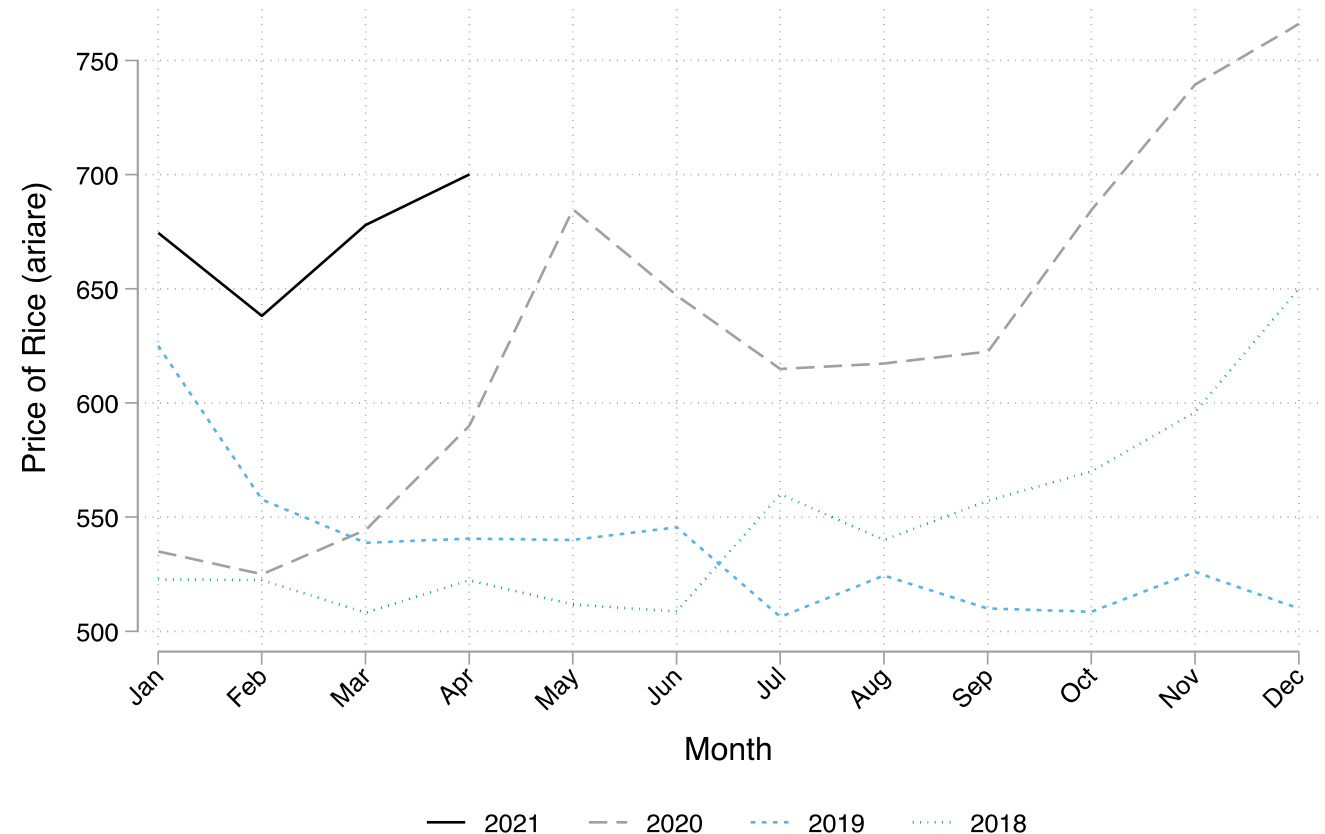
## Meso-level Mechanism 3 : Employment Disruptions

- In Kenya, notable trend to work less to avoid infection, with peaks coinciding with COVID-19 infection waves
- Malawi, the vast majority (~80%) report income reduced “due to the pandemic”; some from business closures, the majority from unavailability of low-wage / piece work jobs



## Meso-level Mechanism 4 : Price Shocks

- Globally, food price implications are ambiguous
- Transit shocks likewise are likely to *depress* prices in high production areas, but inflate them for imports
- Madagascar: COVID-19 acted as a conflict situation, on top of a poor harvest
  - Imported rice most impacted
  - Livestock prices, meanwhile, *dropped*; pinching households from both sides



# Conclusions

- Examining *mechanisms* behind the COVID-19 shocks highlights the recurring theme of structural deprivation in low-income, rural communities
- Intermediate pathways have dominated their experience of the shock for many households
  - Health shock has not dominated for many households (but this could change)
  - Food insecurity indicators fluctuate significantly over time in these communities; things haven't gotten uniformly worse, underscoring that the pandemic is not the only important factor at hand
- Governments face challenge of redressing and rebalancing exposure to shocks in real time – involves complex trade-offs for which shocks affect whom and where (rural, urban)
  - Need to monitor both households and system-level indicators, watching for any of a wide range of shocks or new stressors that might disrupt the delicate equilibria
  - Shoring up meso-level mechanisms that intermediate between covariate shocks and households' food security status is crucial not just to pandemic response but to building household- and systems-level resilience broadly



**Thank you!**

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