

Near-Real-Time Welfare and Livelihood Impacts of an Active Civil War: Evidence from Ethiopia

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1. Introduction

- While much of the earliest work on the impacts of violent conflict is cross-country in nature, the availability of household survey data in the last decade has generated some recent micro-level studies (e.g., Akresh et al., 2012; Brück et al., 2019; Martin-Shields and Stojetz, 2019).
- The micro studies that have focused on African conflicts have typically examined delayed outcomes observed many years following conflict.
- Most micro-level studies evaluating the impact of violent conflict suffer from several data related limitations.
 - The outbreak of violent conflict disrupts traditional data collection efforts
 - Tracking the trajectory of outcomes associated with violent conflict may require high-frequency data
 - There are limited studies on immediate disruptions in livelihoods, supply chains and markets during conflicts

2. What do we do and contribute?

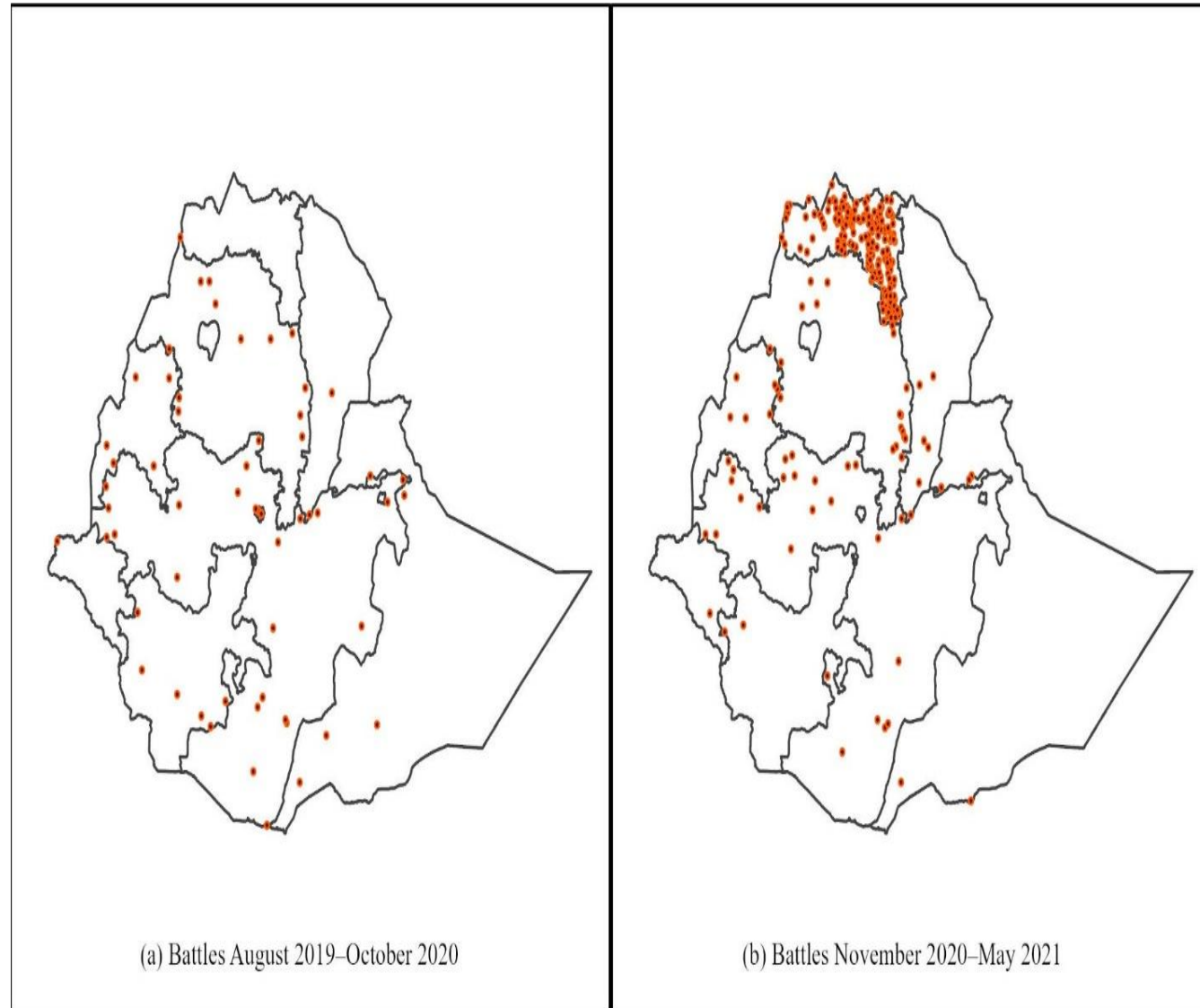
- This paper provides fresh evidence on the *ex durante* impacts of an on-going conflict on food security and livelihood activities.
- We use the unique WB High-Frequency Phone Survey (HFPS) data
- We merge these HFPS with the Armed Conflict Location and Event Data (ACLED).
- We make several key contributions to this literature:
 - We provide quantitative *ex durante* study of the microeconomic consequences of an active large-scale conflict
 - We also document disruptions to livelihood pursuits and food markets.
 - We discuss how similar data collection efforts could be best be mobilized

3. Context and data

- Political disagreements between the Ethiopian federal government and the Tigray regional state ensued into full-scale war on November 4th, 2020.
- The war involved the Ethiopian federal army and its allied forces (e.g., Eritrean army) on the one side and the armed forces of the Tigray region on one side.
- The conflict initially played out in Tigray while also spilling over into parts of Amhara and Afar regions.
- Banking, telephone, electricity, transport, and other basic services were suspended.
- After weeks of intense fighting, the federal forces took control of the regional capital Mekelle at the end of November 2020.

- After capturing the regional capital Mekelle, the federal government installed a provisional regional government in Tigray that lasted until June 2021
- The conflict moved southwards into neighboring Amhara and Afar regions when the Ethiopian federal army and allied forces left Tigray in June 2021
- The expansion of the war into neighboring Amhara and Afar regions have caused further economic damages in those regions.
- The HFPS data are monthly survey cover the period until May 2021
- This forces us to focus on impacts of the first phase of the civil conflict, which was confined to the Tigray region.

- Figure 1 presents the distribution of battles (August 2019-October 2020) and after the outbreak of the war (November 2020-May 2021).
- Based on conflict event records in the Armed Conflict Location and Event Data (ACLED).
- Battles were sparsely and evenly distributed across regions before November 2020.
- During November 2020 - May 2021, there was a dramatic spike in battle events.



3.1. Data and data source

- We use the World Bank's HFPS data, conducted between April 2020-May 2021
- The phone survey sample is a subsample drawn from the LSMS-ISA 2019.
- The LSMS-ISA 2019 data are nationally representative sample of 6,770 households.
- Of which 3,247 of them were successfully interviewed in the first phone survey in April 2020
- These households were re-interviewed every 3-4 weeks, for 11 rounds, until May 2021
- The 2019 baseline data provide detailed characteristics of households, including GPS coordinates, which we used to merge these data with the ACLED database.

- The HFPS sample continually declined in follow-up rounds due to non-response and attrition.
- The sample from Tigray was especially affected by the war itself and disruptions in telecommunication
- Our analysis is based on the panel of households interviewed in the pre-war and post-war-onset phone surveys.
- The phone sample may differ in systematic ways from the original 2019 sample
- To account for these systematic non-responses in the phone surveys, we constructed inverse probability sampling weights.
- Our final sample consists of those households appearing (at least once) in the pre-war and post-war-onset phone survey rounds

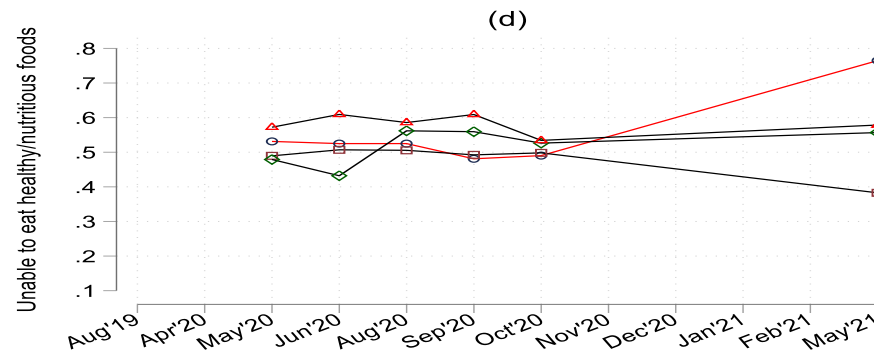
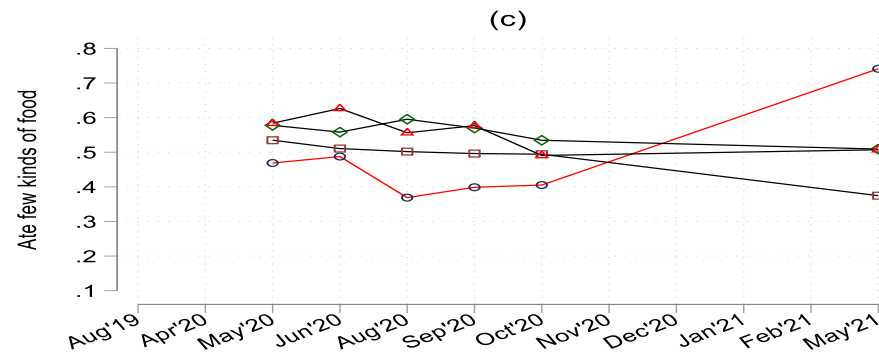
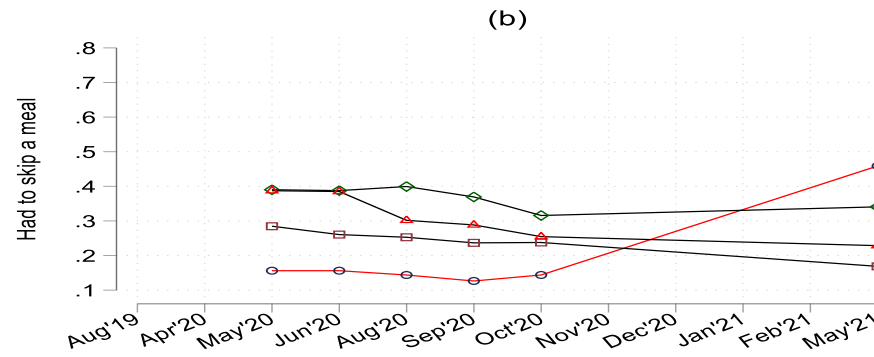
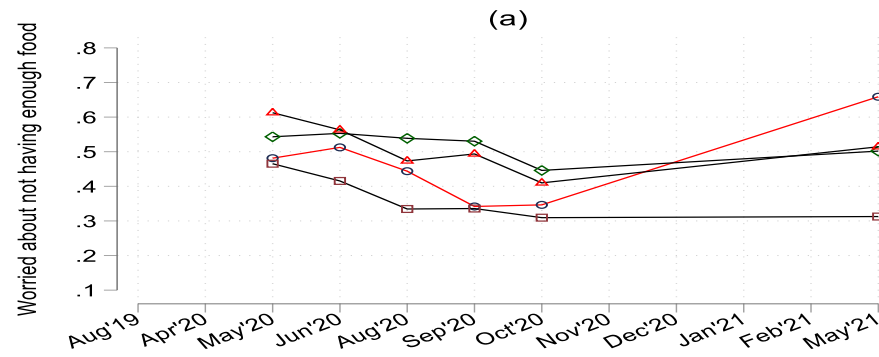
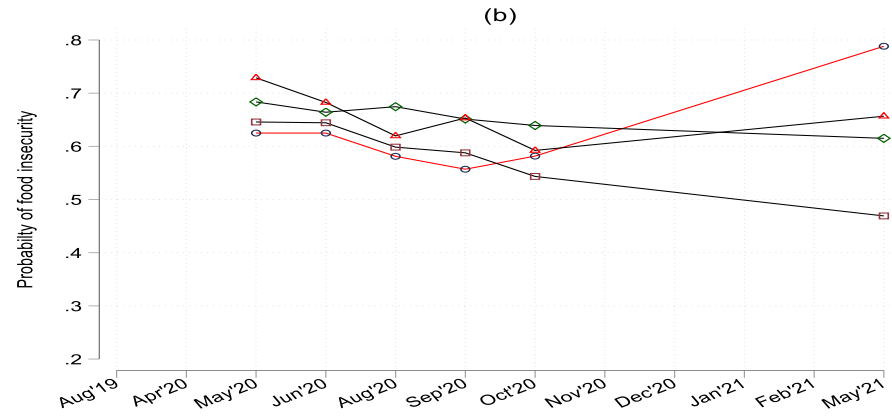
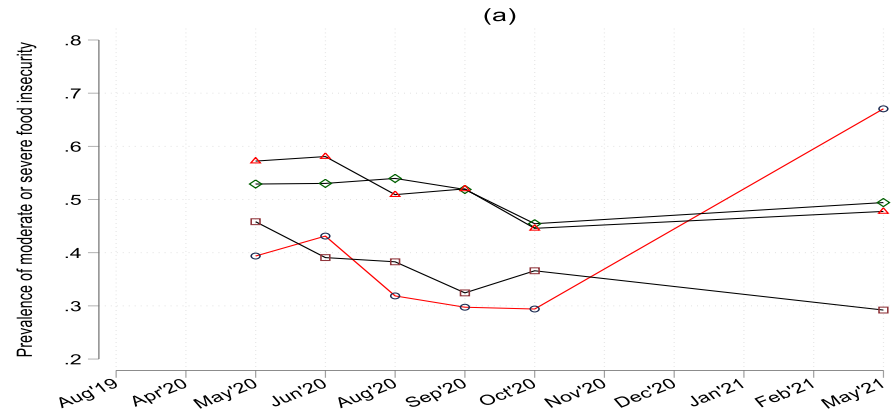
Table A2: Sample of households interviewed across survey rounds

Round	Time/month	All regions	Outside Tigray region	Tigray region
Baseline	19-Aug	6770	6094	676
1	20-Apr	3,247	2,915	332
2	20-May	3,105	2,782	323
3	20-Jun	3,056	2,737	319
4	20-Aug	2,876	2,569	307
5	20-Sep	2,768	2,465	303
6	20-Oct	2,702	2,412	290
7	20-Nov	2,535	2,277	258
8	20-Dec	2,221	2,144	77
9	21-Jan	2,076	1,992	84
10	21-Feb	2,176	2,041	135
11	21-May	1,982	1,896	86

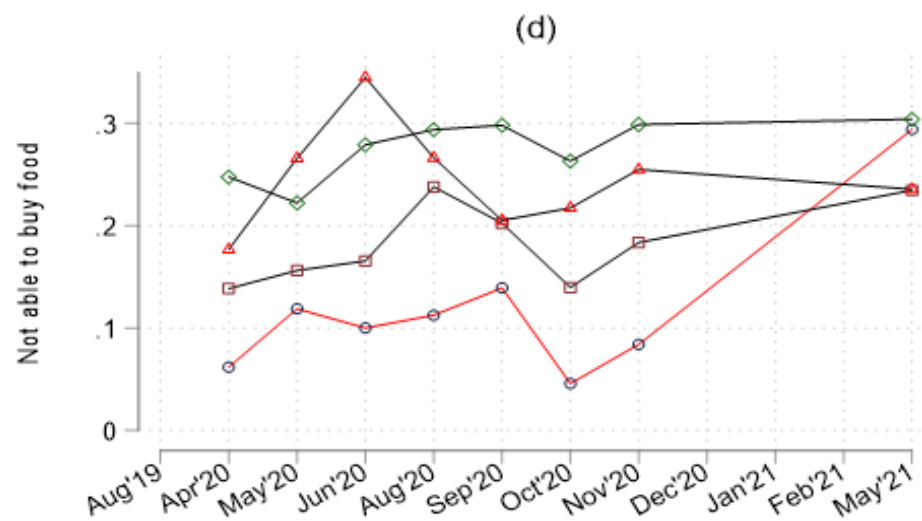
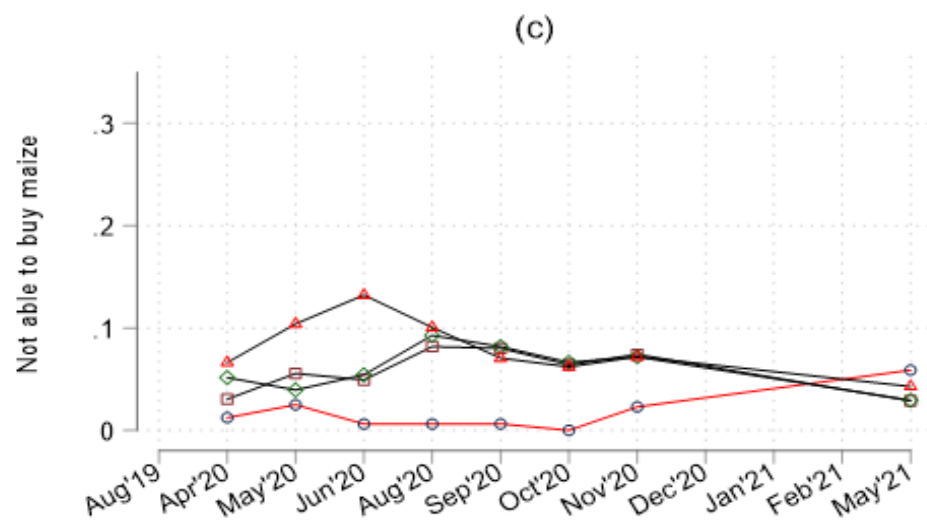
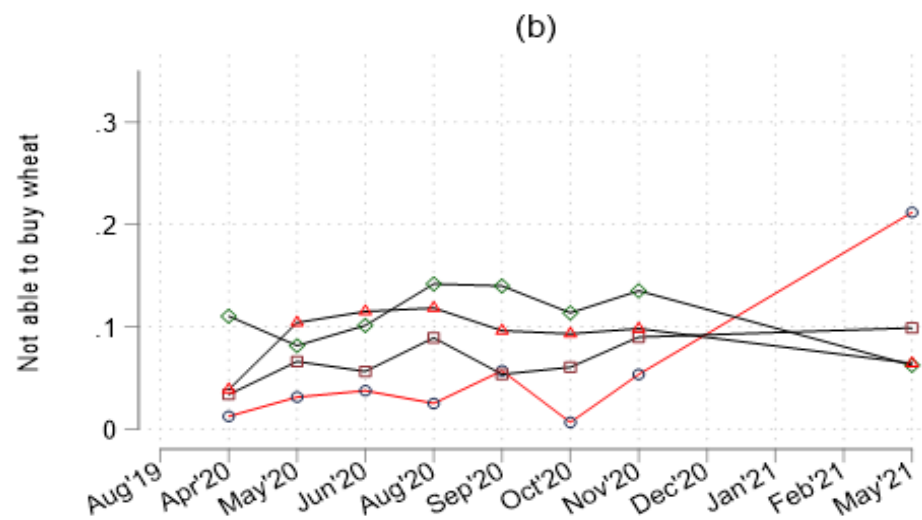
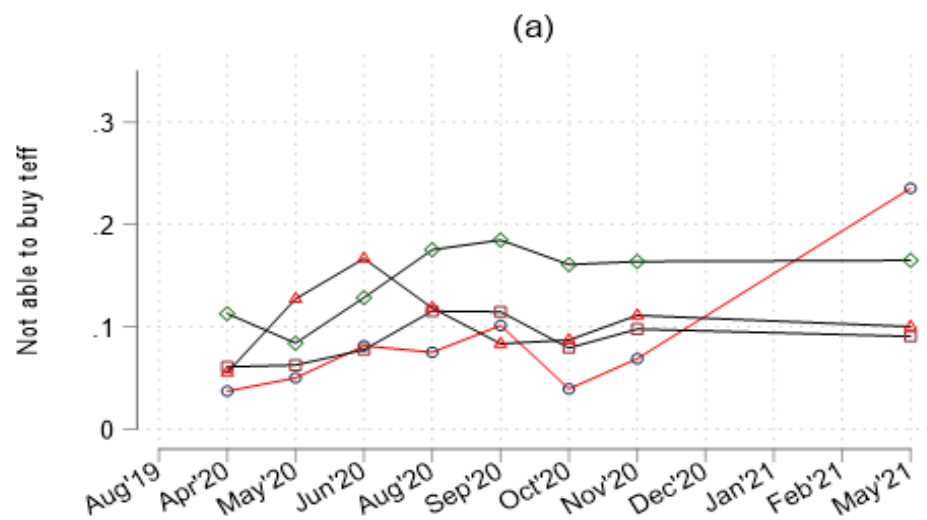
Measuring Key Outcomes

- The paper focuses on three broad categories of outcomes. These are:
 - **Household food insecurity experience**
 - **Households' access to food markets**
 - **Participation in labor market and livelihood activities.**
- Food insecurity is measured using the Food Insecurity Experience Scale (FIES)
- Households were asked whether they were able to buy enough staple foods
- Labor market participation of household members in the last 7 days or one month.

Trends in prevalence of food insecurity

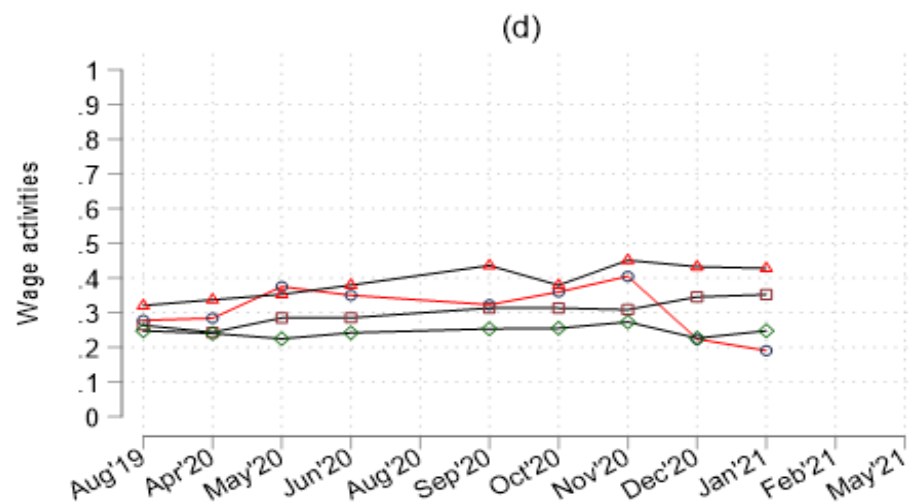
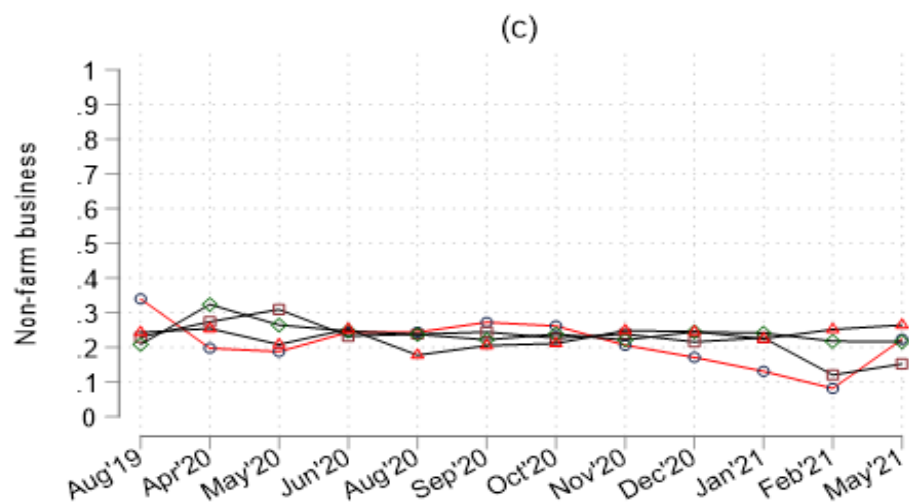
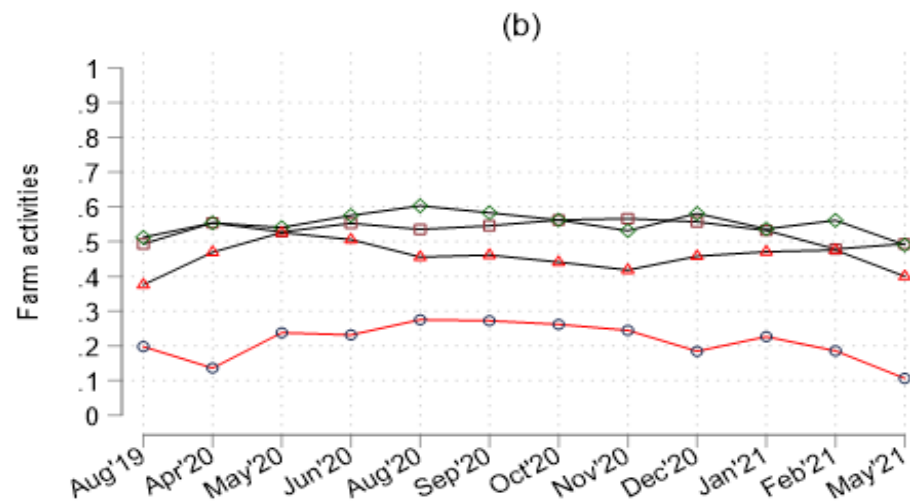
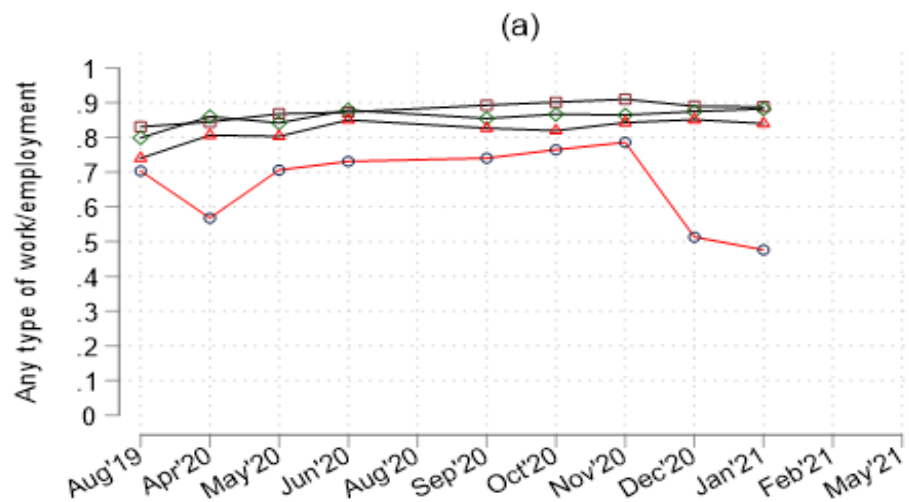


Access to Food and Food Markets



○ Tigray □ Amhara ◇ Oromia ▲ SNNP

Trends in labor market participation



○ Tigray □ Amhara ◇ Oromia △ SNNP

4. Empirical strategy

- We start with the following DID specification:

$$Y_{hrt} = \alpha_h + \alpha_1 Wartime_t + \alpha_2 Tigray_r \times Wartime_t + \alpha_3 X_{hrt} + \epsilon_{hrt}$$

- Where Y_{hrt} stands for a measure of outcomes
- α_h stands for household-specific fixed effects.
- $Wartime_t$ stands for an indicator variable equal to 1 for the post-war-onset period, the period after November 2020, zero otherwise.
- The first stage of the war, November 2020 to June 2021 took place in Tigray and later expanded to neighboring regions of Amhara and Afar in late June 2021.

- We estimate the following disaggregated DID specification:

$$Y_{hrm} = \alpha_h + \alpha_m + \sum_{m=1}^{M1} \delta_m Tigray_r \times \mathbb{1}(D = m) + \sum_{m=M1+1}^{M2} \gamma_m Tigray_r \times \mathbb{1}(D = m) + \varepsilon_{hrm}$$

- α_m is a vector of month or round dummies.
- Pre-war survey rounds 1 to $M1$ while post-war-onset range from $M1+1$ to $M2$.
- The third (interaction) term captures Tigray specific pre-war trends
- The fourth (interaction) term captures Tigray specific trends immediately after the outbreak of the war in November 2020.

- The first two approaches consider Tigray as the “treatment” region
- With this definition, our estimates measure intention to treat (ITT) impacts.
- We generate more granular measures of exposure using ACLED’s battle events

$$Y_{hrt} = \alpha_h + \alpha_m + \varphi_1 \text{Battles}_{hrt} + \omega_{hrt}$$

- where Battles_{hrt} stands for the cumulative number battles experienced within 20 km or 30 km radius.
- The follow-up phone surveys are prone to systematic non-response and attrition.
- To account for these systematic non-responses, we construct and employ sampling weights.
- Estimates may be lower bound

5.1 Results and Discussion: DID results

- The conflict led to 38 PP increase in moderate or severe food insecurity.
- Incidence of food insecurity in Tigray is 26 percentage points higher

Table 2: The Impact of violent conflict on aggregate measures of food insecurity

	(1)	(2)	(3)
	Moderate or severe food insecurity	Food insecure	Raw score
Wartime dummy	-0.014 (0.017)	-0.025 (0.015)	-0.073 (0.106)
Tigray × Wartime dummy	0.384*** (0.052)	0.261*** (0.033)	1.607*** (0.236)
Household fixed effects	Yes	Yes	Yes
R-squared	0.008	0.004	0.007
Mean dep. var (pre-war)	0.361	0.557	2.054
No. observations	14523	14523	14523

5.1 Results and Discussion: DID results

- The war increased households' experience of alternative forms of food insecurity
- The conflict increased the share of households who skipped meals by 39 PP

Table 3: The Impact of violent conflict on experience of food insecurity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Worried not enough food	Unable to eat healthy foods	Ate few kinds of food	Skipped meal	Ate less food	Run out of food	Hungr y but did not eat	Didn't eat all day
Wartime dummy	-0.004 (0.015)	0.001 (0.018)	0.003 (0.021)	-0.049*** (0.015)	-0.053*** (0.019)	-0.011 (0.022)	-0.015 (0.019)	0.005 (0.020)
Tigray × Wartime dummy	0.251*** (0.047)	0.344*** (0.055)	0.343*** (0.051)	0.388*** (0.081)	0.364*** (0.087)	-0.025 (0.036)	0.046 (0.040)	-0.041 (0.044)
Household fixed. eff	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R-squared	0.003	0.006	0.006	0.010	0.008	0.000	0.000	0.000
Mean dep. var	0.387	0.429	0.427	0.221	0.287	0.183	0.098	0.062
No. observations	14524	14524	14524	14524	14524	17196	17196	17196

5.1 Results and Discussion: DID results

- The war disrupted households' overall labor market participation.
- The war caused 10 and 15 PP decline in non-farm business and wage activities
- On the contrary, participation in farm activities remained unaffected/increased

Table 5: The Impact of violent conflict on labor market and livelihood activities

	(1)	(2)	(3)	(4)
	Any activity	Farm activity	Non-farm business	Wage related activities
Wartime dummy	0.016 (0.010)	-0.031*** (0.007)	-0.013* (0.008)	0.020*** (0.008)
Tigray × Wartime dummy	-0.101* (0.057)	0.032* (0.018)	-0.097*** (0.025)	-0.151*** (0.029)
Household fixed effect	Yes	Yes	Yes	Yes
R-squared	0.001	0.003	0.002	0.003
Mean dep. var (pre-war)	0.801	0.313	0.241	0.417
No. observations	21940	28558	28558	21940

6. Concluding Remarks

- Using HFPS and ACLED data, we show that the Ethiopian civil war led to significant disruptions to livelihoods with adverse impacts on food security and access to food.
- Seven months into the conflict, the outbreak of the civil war increased the probability of moderate to severe food insecurity by 38 percentage points.
- Exposure to one additional battle leads to a 1 PP increase in the probability of moderate to severe food insecurity.
- Non-farm and wage-related activities have been the most affected by the conflict, while farming activities have been relatively more resilient.
- Economic activities in urban areas have been more affected than those in rural areas.