LINKING CLIMATE CHANGE WITH PREGNANCY OUTCOMES
2020 DATA FROM PMA ETHIOPIA

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Check out our blog!

IPUMS PMA Data is Free

HIGHLIGHTS

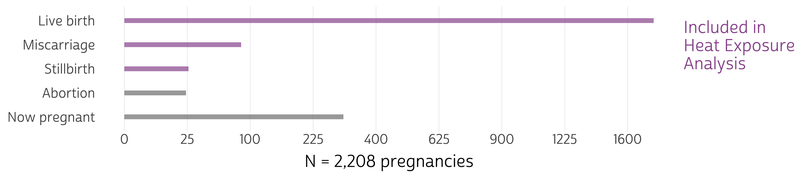
Heat exposure during pregnancy is associated with increased risks for **spontaneous miscarriage and stillbirth**.

However, women develop strategies for mitigating these risks over time.

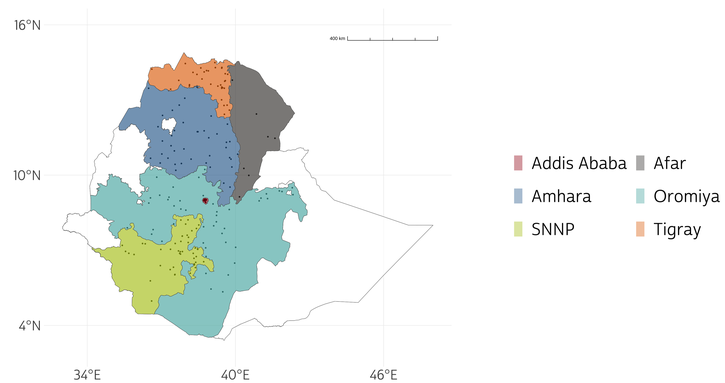
We find evidence that women who have **lived in a hot place for many years** are less likely to experience a miscarriage or stillbirth following heat exposure during pregnancy.

PMA ETHIOPIA - 2020 SURVEY

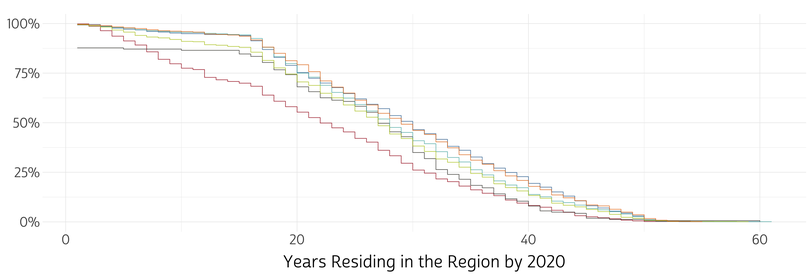
Women report all pregnancy outcomes within 3 years



Must have resided near **sample cluster (•)** for 2 years (<10 km) *and* provide number years residing in current region



Cluster centroid locations (displaced up to 10 km)



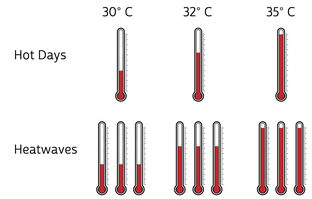
MEASURING HEAT EXPOSURE

We use a daily maximum temperature record, *CHIRTS Tmax*

- 0.05 arc-degree resolution
- Daily measurements 1980-2020
- Combines satellite images with local station data

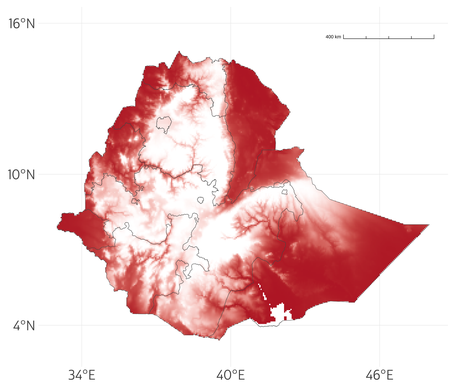
Heat exposure measured at multiple thresholds

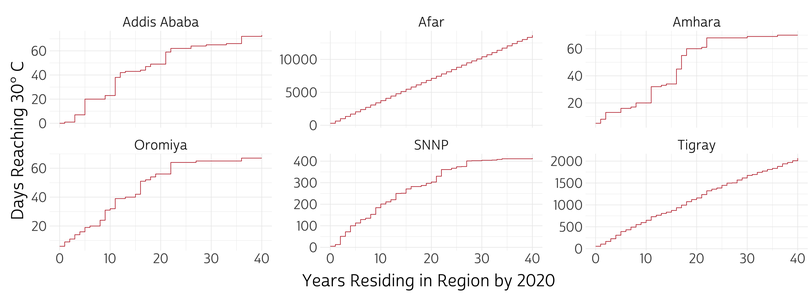
Heatwave defined as 3+ days reaching threshold



Pregnancy exposure measured at **sample cluster**. Precise to 10 km.

Lifetime exposure measured by residence in **region**. Spatial mean adjusted for population density.





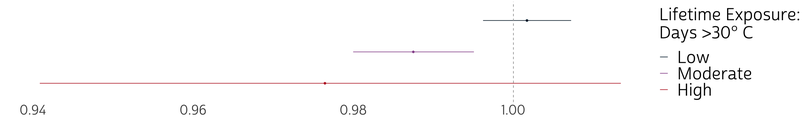
LIKELIHOOD OF MISCARRIAGE / STILLBIRTH

For each heat measure, we define **lifetime exposure tertiles** relative to each woman's length of residence in her region.

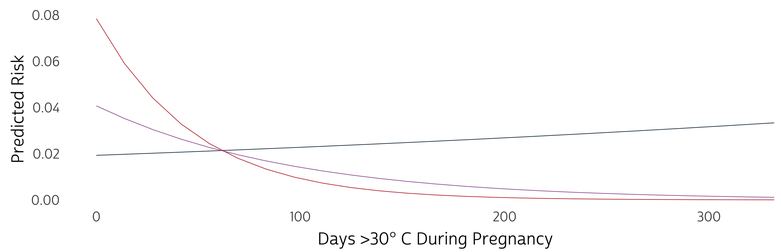
These were interacted with a corresponding measure of **pregnancy exposure** in a binary logistic regression model for spontaneous miscarriage or stillbirth.

HEAT MEASURE: PREGNANCY DAYS REACHING 30° C

Odds Ratios for Spontaneous Miscarriage or Stillbirth (95% CI)

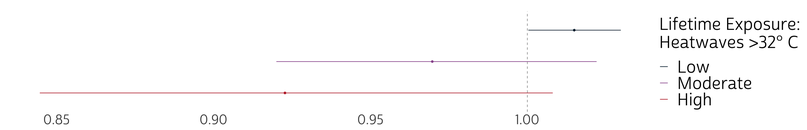


Diminishing Predicted Effects for Women with Moderate/High Lifetime Exposure to Days >30° C

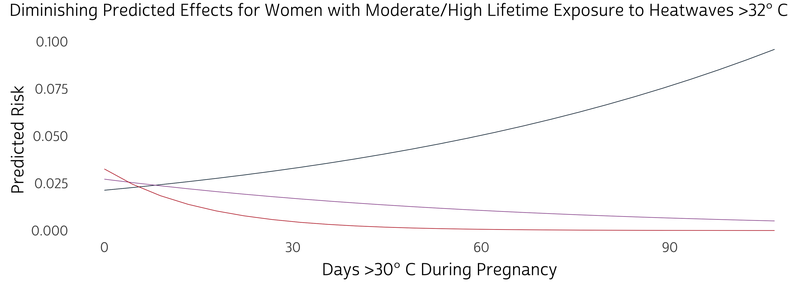


HEAT MEASURE: PREGNANCY HEATWAVES REACHING 32° C

Odds Ratios for Spontaneous Miscarriage or Stillbirth (95% CI)



Diminishing Predicted Effects for Women with Moderate/High Lifetime Exposure to Heatwaves >32° C



Controls include: mother's age, partnership status, educational background, household wealth, religion, pregnancy intentions at conception, and clustered fixed effects for sample strata (region + urban).