

SobreVIDA: From data to dynamics and back in Intimate Partner Violence (IPV) modelling

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Context

- Intimate partner violence (IPV): **any behaviour within an intimate relationship that causes physical, sexual or psychological harm**
- Multicausal, pervasive, with attributes at the personal, communitarian, and societal levels
- Response from policy involves multiple facets (health, public security, social-economics, support)

Model

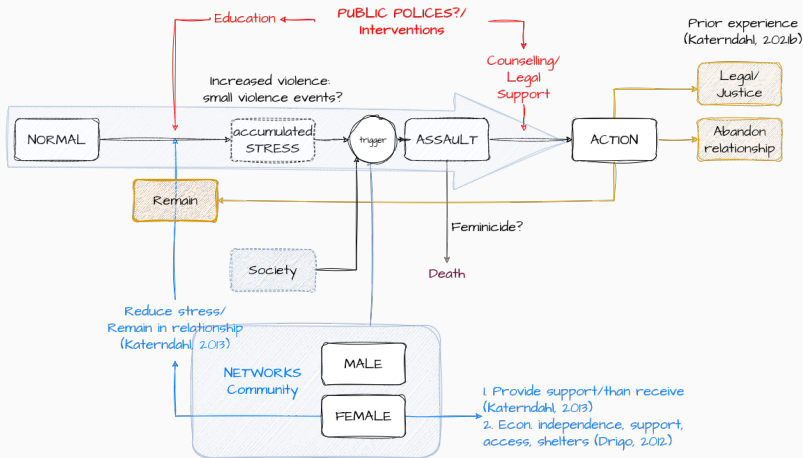
- Building upon previous work [?], we delve into finer theory, data, and processes
- Purpose:
 - simulate relationship dynamics
 - represent the influence of stress, socioeconomic factors, and social networks; and
 - calibrate, validate and
 - observe policies

- **Ecological model** [?]: IPV occurs at 4 interconnected levels: individual, relational, community and societal.
- **Agent Zero principle** [?]–disposition to act:

$$D_i(t) = \underbrace{V_i(t)}_{\text{Stress}} + \underbrace{C_i(t)}_{\text{Community}} + \underbrace{\sum_{i \neq j} \omega_{ij} D_j(t)}_{\text{Network Influence}} \quad (1)$$

- **Rescorla–Wagner rule:** agents update their expectations based on the difference between predicted and experienced events

Conceptual model



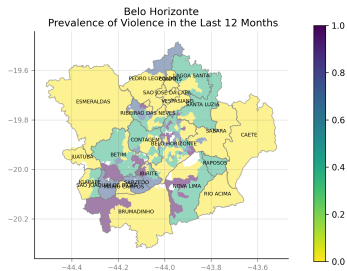
- **Agents:** education, economy, household, age, colour, gender, history
- **Society:** machismo index, homicides (violence)
- **Networks:**
 - Females: rebellious vs permanence
 - Males: reinforce typical behaviour

Calibration: Porto Alegre data

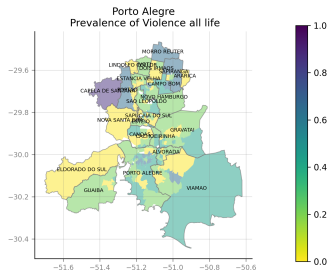
Validation: Attempt from Belo Horizonte data

Results

Preliminary results



(a) Belo Horizonte



(b) Porto Alegre

- Developed an integrated IPV framework combining theory and data
- Calibration completed; validation underway
- Supports comparison of the relative impact of different policy interventions

