

# Female poverty duration determinants in Brazil between 2012 and 2019

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# Goals

- The main goal is to analyze the poverty dynamics of female-headed households and investigate how individual and family characteristics explain the poverty duration.

## Hypothesis:

- Female-headed households tend to face longer poverty duration than the male-headed ones

## Questions:

- Are women more affected by poverty than men?
- Does the absence of a spouse have the same effect between men and women?
- How does the length of time spent in poverty affect the chance of leaving it in the following periods?

# Bibliographical Review

## Theoretical aspects:

- Women and poverty: Batista and Costa (2019); Sousa *et al* (2020)

## Methodological aspects:

- Poverty duration: Fouarge and Layte (2005); Canavire-Bacarreza and Robles (2016)
- Unemployment duration: Menezes-Filho and Picchetti (2000)
- Formal employment duration: Vaz, Santos and Leichsenring (2020)

# Methodology Overview

- Duration analysis (survival analysis):
  - Concerns to analyzing the time to the occurrence of an event.
- We estimate five parametric models using Weibull distribution.
  - Distribution selected through Akaike Information Criterion (AIC)
- Comparison between:
  - Female-headed households
    - With spouse
    - Without spouse
  - Male-headed households
    - With spouse
    - Without spouse
- All regressions corrected for Frailty (Inverse Gaussian)
  - Accounts for Unobserved heterogeneity

# Econometric Approach - Duration analysis

- Weibull hazard function:  $h(t; \mathbf{X}) = \exp(\mathbf{X}\beta)\rho t^{\rho-1}$
- Weibull survival function:  $S(t; \mathbf{X}) = \exp(\mathbf{X}\beta)t^\rho$

## Where:

- $t$ : interviews
- $\mathbf{X}$ : covariates
- $\beta$ : estimated parameters
- $\rho$ : nonnegative parameter (>1 hazard increases over time or if <1 it decreases)

## $\mathbf{X}$ contains:

- Household head age
- Dummy for black household head
- Years of study
- Household head formal employment
- Presence of spouse
- Dummy for skilled household head
- No. of household residents
- Dummy for urban households
- No. of children from 0 to 6 years old
- No. of children from 7 to 14 years old
- % of employed household members

# Database

- Continuous PNAD (Continuous National Household Sample Survey)
  - Quarterly survey from IBGE (Brazilian Institute of Geography and Statistics)
  - It aims to interview households throughout five consecutive quarters
- Answers between 2012 and 2019
  - Only families that answered all the 5 interviews were considered
  - Only families that stayed below the poverty line for  $\geq 1$  periods were considered
  - Only the household heads were kept in the final database
- Poverty line based on the eligibility criteria of Programa Bolsa Familia
  - The family is considered poor if the per capita income is below R\$140 in 2012 and below R\$178 in 2019
  - The total income defined as:  $(labor\ income + non\ labor\ income)$
  - Per capita income defined as:  
 $(labor\ income + non\ labor\ income) / household\ members$

# Descriptive Statistics

Table 1: Average of Selected Variables Within Interviews

	Poor				Non-poor				
	Female		Male		Female		Male		
Household head gender Spouse	Yes	No	Yes	No	Yes	No	Yes	No	No
Household head age (years)	39.08	42.15	41.50	45.85	42.82	48.14	44.68	45.26	
Black household head (%)	80%	76%	78%	73%	60%	59%	56%	61%	
Years of study (head)	6.43	6.91	5.07	5.73	9.54	8.98	8.59	8.36	
Urban households (%)	52%	73%	32%	56%	83%	87%	71%	73%	
Formal employment (%)	16%	23%	18%	24%	55%	54%	61%	53%	
Skilled household head (%)	1%	2%	1%	2%	11%	10%	11%	10%	
Household residents	4.41	3.21	4.29	1.69	3.59	2.69	3.52	1.82	
# of children (0-6 years)	0.68	0.53	0.67	0.10	0.35	0.21	0.36	0.08	
# of children(7-14 years)	0.96	0.76	0.93	0.18	0.48	0.35	0.47	0.13	
Employed residents (%)	0.29	0.24	0.31	0.44	0.51	0.48	0.52	0.68	
Labor income (R\$)	541	421	510	478	2,933	1,696	2,977	1,947	
Total income (R\$)	722	574	680	513	3,547	2,528	3,526	2,537	
Observations	53,213	88,657	197,290	33,534	451,388	552,449	1,487,307	268,342	

# Occupation Distribution

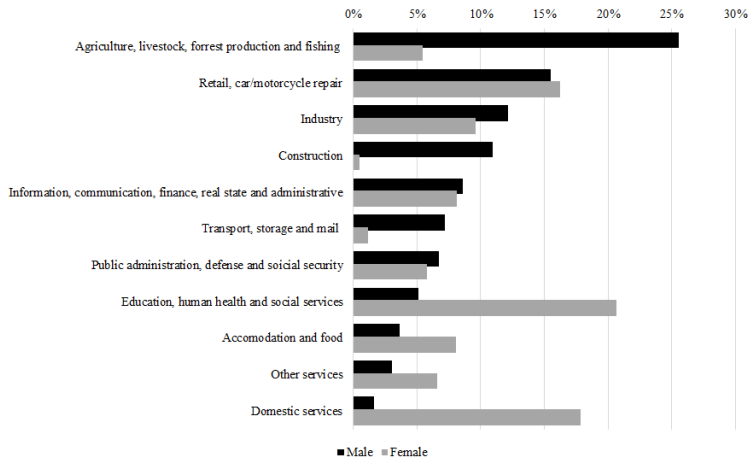


Figure 1: Occupation Distribution - 4Q of 2019



# Survival Functions

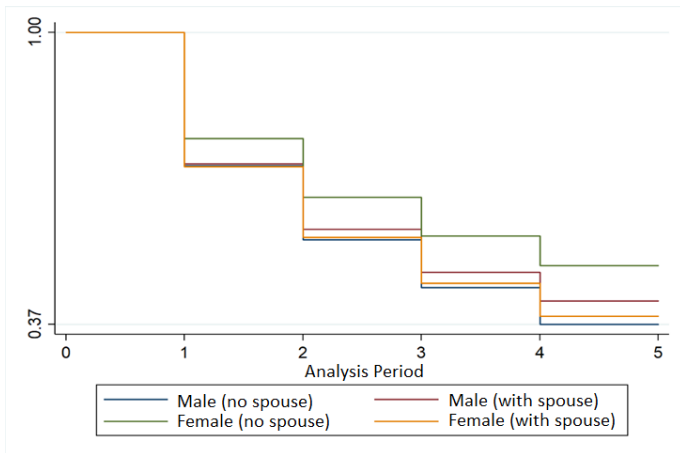


Figure 2: Kaplan-Meier Survival Estimates

# Hazard Functions

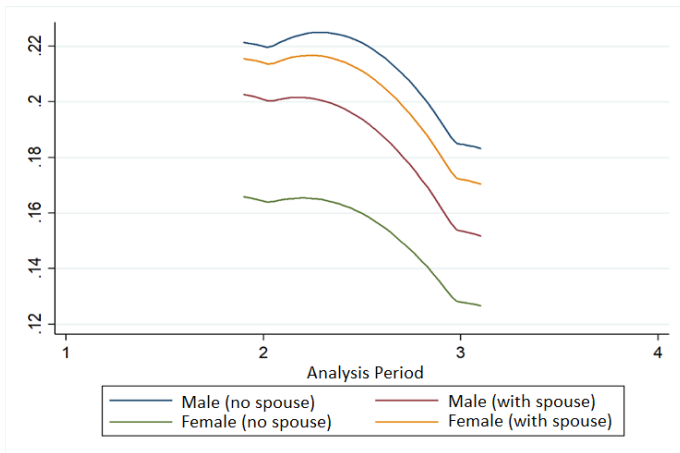


Figure 3: Smoothed Hazard Estimates

# Regression Results (1/2)

Household head Spouse	-	Woman Yes	Man Yes	Woman No	Man No
Presence of spouse	0.324*** (0.0122)	-	-	-	-
Female head	-0.104*** (0.0111)	-	-	-	-
Household head age	0.0257*** (0.00289)	0.0318*** (0.0105)	0.0295*** (0.00699)	0.0298*** (0.00377)	0.0140* (0.00716)
Squared age	0.000349*** (0.0000345)	0.000453*** (0.000129)	0.000408*** (0.0000823)	0.000403*** (0.000045)	0.000203** (0.0000846)
Blackhousehold head	-0.0294*** (0.00987)	-0.0113 (0.0333)	-0.0513** (0.0232)	-0.0377*** (0.0124)	0.00795 (0.0282)
Years of study	0.0648*** (0.0012)	0.0856*** (0.00396)	0.0638*** (0.00275)	0.0696*** (0.00155)	0.0413*** (0.00339)
Urban household	1.076*** (0.00905)	1.181*** (0.0312)	0.823*** (0.0274)	1.142*** (0.011)	0.720*** (0.026)
Formal employment	0.844*** (0.00958)	0.738*** (0.0325)	0.971*** (0.0225)	0.883*** (0.0123)	0.505*** (0.0272)
Skilled household head	0.0881*** (0.0212)	0.219*** (0.0618)	0.0948** (0.0401)	0.0980*** (0.031)	0.0113 (0.0533)
Total of residents	0.0331*** (0.00443)	0.0896*** (0.0135)	0.161*** (0.0106)	-0.00954* (0.00565)	0.0674*** (0.0191)

Robust standard errors in parenthesis. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$  e \*  $p < 0.10$

# Regression Results (2/2)

Household head Spouse	-	Woman Yes	Man Yes	Woman No	Man No
# of children from 0 to 6 years	-0.298*** (0.00772)	-0.135*** (0.0248)	-0.429*** (0.0206)	-0.286*** (0.00941)	-0.284*** (0.0475)
# of children from 7 to 14 years	-0.295*** (0.00681)	-0.148*** (0.0201)	-0.363*** (0.0169)	-0.277*** (0.00845)	-0.238*** (0.0355)
% of employed household members	1.119*** (0.0201)	2.152*** (0.0765)	1.436*** (0.0502)	1.041*** (0.0264)	0.741*** (0.0847)
$\rho$ $\ln(\rho)$	2.672 0.983*** (0.00175)	2.713 0.998*** (0.00623)	2.71 0.997*** (0.00399)	2.638 0.970*** (0.00233)	2.883 1.059*** (0.00442)
$\theta$ $\ln(\theta)$	4.019 1.391*** (0.00613)	3.618 1.286*** (0.0196)	3.967 1.378*** (0.0131)	4.354 1.471*** (0.00901)	3.347 1.208*** (0.0125)
Observations	442,134	40,326	70,826	284,960	46,022

Robust standard errors in parenthesis. Significance levels: \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$  e \*  $p < 0.10$

# Final Remarks

- Presence of spouse contributes for a shorter poverty duration
  - Female-headed households without a spouse (Brazilian emergency aid)
- Access to labor market is crucial
  - Formal occupations
- Social and co-responsability (forms of conciliation)
  - Access to services that allow families to reconcile work and family lives
- Public policy strategies
  - Developed according to the household composition
  - Temporary and chronic poverty

**Thank you!**

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