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EFFECTS OF RAINFALL SHOCKS ON CHILDREN MALNUTRITION IN SENEGAL

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INTRODUCTION

- Malnutrition is an important policy issue in developing countries (Smith et Haddad, 2000; Oruamab, 2015;)
- Wide interest in nutrition and climate linkages (Deschênes, 2013; Bonjean et al., 2012; Ogasawara et Yumitori, 2019)
- However, little evidence on:
- - Indicators other than stunting
- - Causal socioeconomic transmission channels mostly beyond income
- - Effects in a West Africa settings

RESEARCH QUESTIONS

- What are the effects of prenatal and postnatal rainfall shocks on children nutritional outcomes in Senegal
- What are the effects by gender?
- Are causal transmission channels indentified consistent in explaining the nutritional changes over time induced by rainfall shocks?

DATA AND VARIABLES

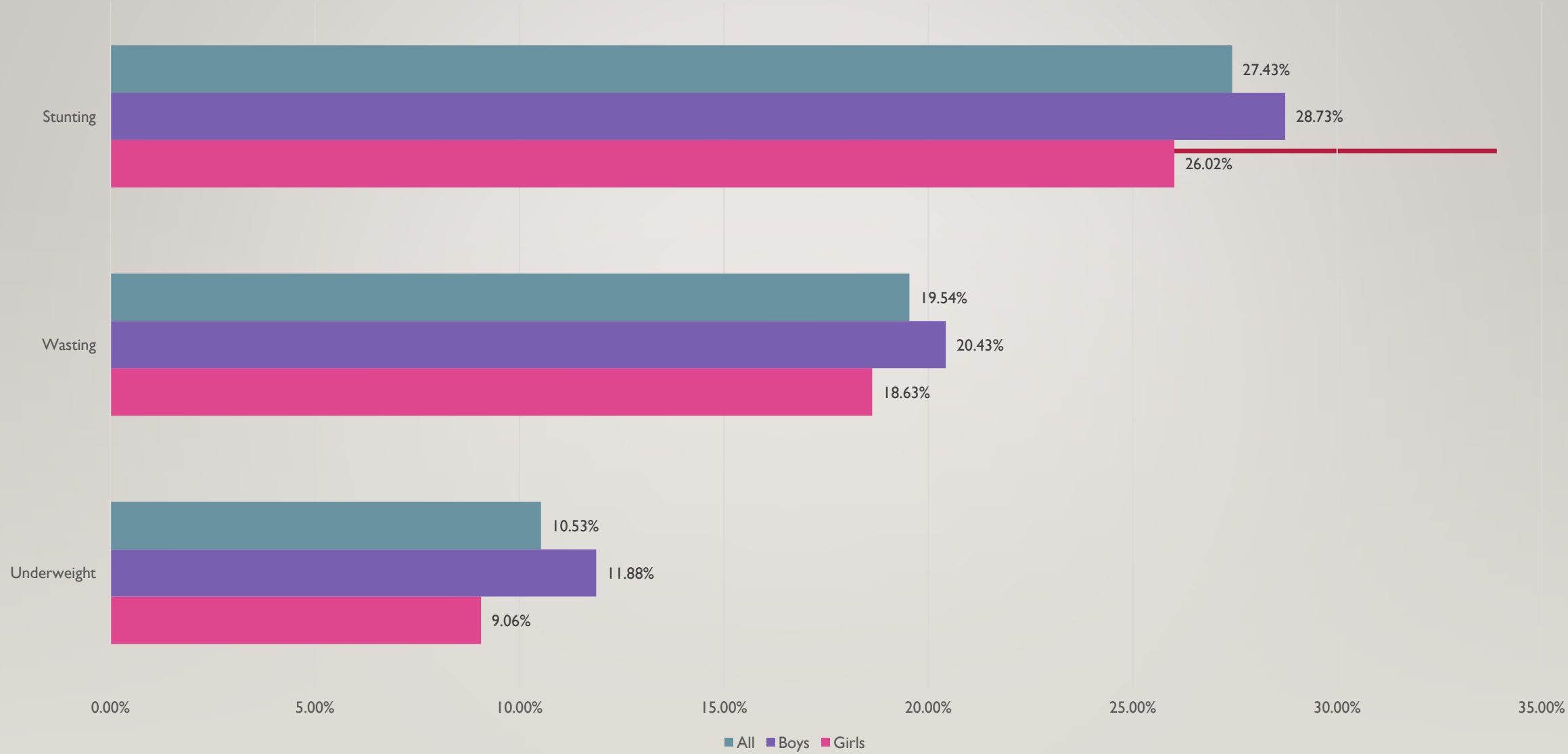
- Socioeconomic data (FTF baseline, 2014) with anthropometric indicators: weight-for-age (wasting), height-for-age (stunting), weight-for-height (underweight)
- Sample size: 3740 children between 0 to 60 months
- Monthly Rainfall data from National Meteorology Agency (17 stations)

METHODS

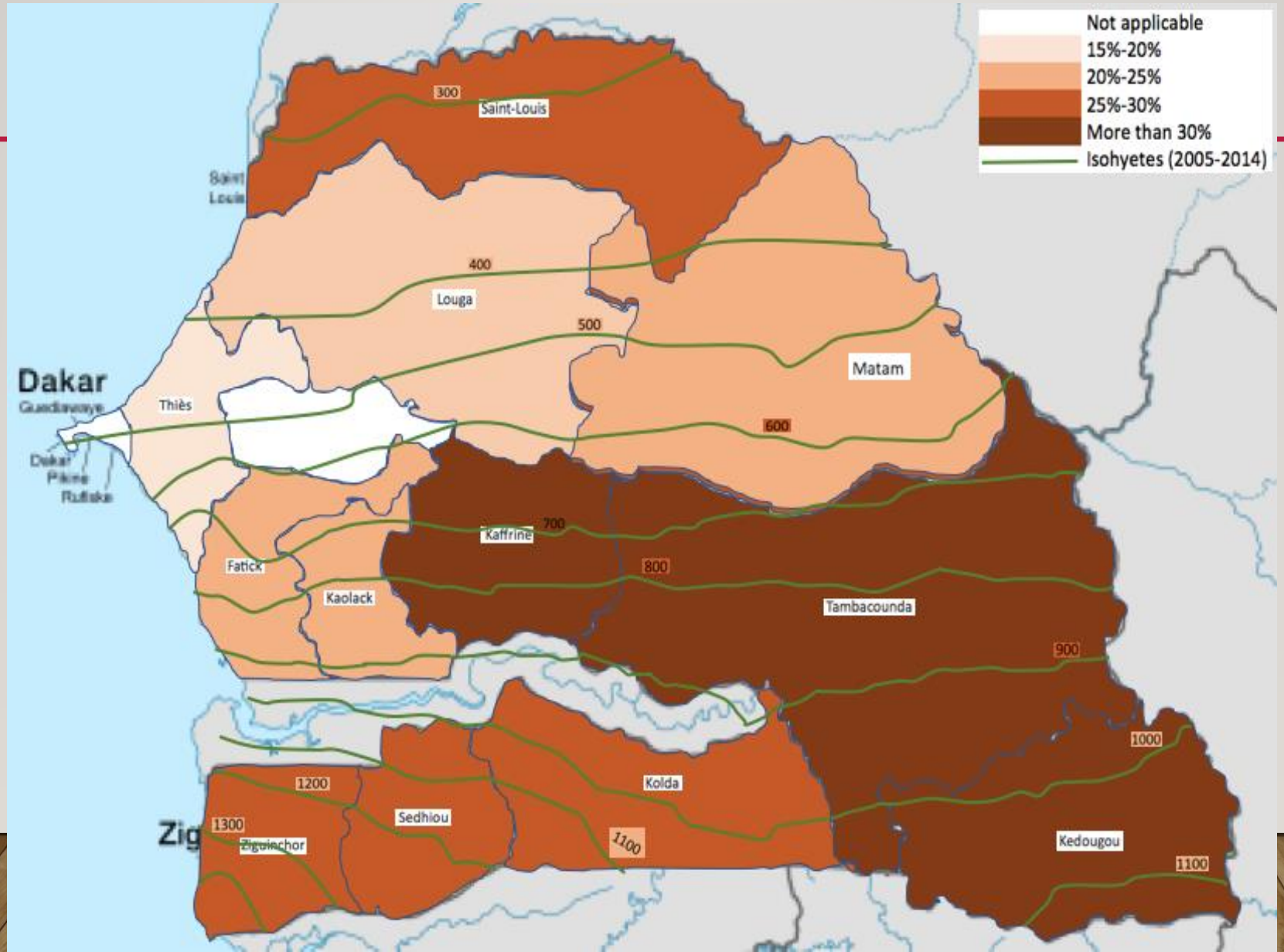
- Linear regression with WAZ, HAZ, WHZ as dependent variables, rainfall shocks as independent and some control variables
- Rainfall shocks: Standard deviation of annual rainfall over long term (10 years) average rainfall
- Z-scores based on WAZ, HAZ, WHZ respectively for underweight, stunting, wasting (malnourished if z-score<-2)

FINDINGS

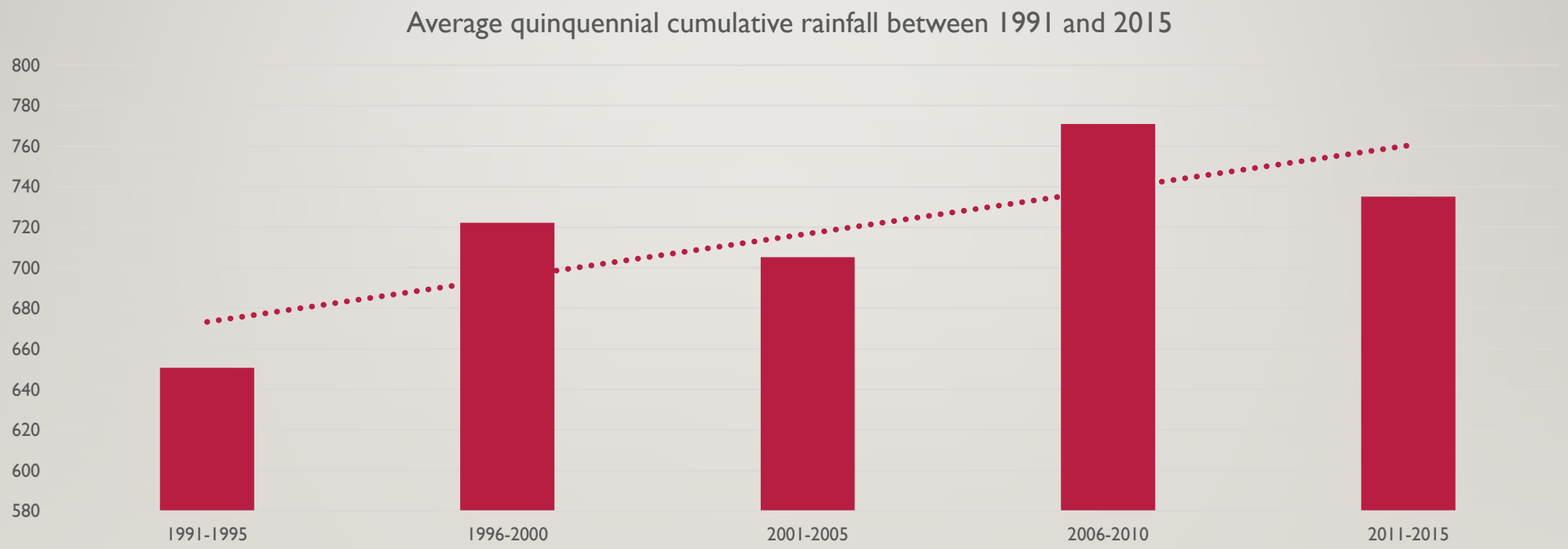
Children malnutrition by gender



SPATIAL DISTRIBUTION OF STUNTING



AVERAGE QUINQUENNIAL CUMULATIVE RAINFALL BETWEEN 1991 AND 2015



RAINFALL SHOCKS AND MALNUTRITION

	(1)	(2)	(3)
VARIABLE	Weight-for-age (underweight)	Height-for-age (stunting)	Weight for height (wasting)
Prenatal Rainfall shocks	0.134 (0.0800)	0.347 ** (0144)	-0.826 (0542)
Postnatal Rainfall shocks	0.0395 (0.0826)	-0161 (0151)	1.677 *** (0578)

RAINFALL SHOCKS EFFECTS BY GENDER

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLE	WAZ (underweight)		HAZ (stunting)		WHZ (wasting)	
	girls	boys	girls	boys	Girls	boys
Prenatal shock	0.216 ** (0109)	0.148 (0103)	0.398 * (0210)	0.408 ** (0191)	1.175 (0927)	-0.556 (0724)
Postnatal shock (1st year of life)	0.0223 (0104)	0.0947 (0106)	-0.168 (0200)	-0.138 (0197)	1.688 * (0880)	1.676 ** (0746)

TRANSMISSION CHANNELS

	(1)	(2)
VARIABLE	**Farm income**	**Non-farm income**
Rainfall shocks	409.213 **	-554.429 ***
	(198.857)	(179.554)

VARIABLE	**Percentage of mother working time**
Rainfall shocks	0.0017686 ***
	(0.0004439)

CONCLUSION

- Prenatal rainfall shocks have significant effects on stunting while postnatal shocks increase the probability of being wasted
- No large differences between boys and girls on induced rainfall shocks changes
- Household income and mother working time activities are consistent transmission channels

NEXT STEPS

- Refine analysis, especially for gender effects
- Include birth season effects in estimations
- Explore potential results biases
- Check for interrelations between causal transmission mechanisms

THANK YOU !