Prevalence of child welfare in Egypt using Bayesian Geospatial Modelling

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Associate Risk Factors with Child Welfare including Child Labour and Violence against Child issues in Egypt using Bayesian Geospatial Modelling with Multiple Imputation.

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2 | Outline

- **Child Health and Epidemiology Research Group-Sheffield.**

- **Associate Risk Factors with Child Welfare including Child Labour and Violence against Child issues in Egypt using Bayesian Geospatial Modelling with Multiple Imputation.**

Part I

Child Health and Epidemiology Research Group-Sheffield

Child Health and Epidemiology Research Group-Sheffield

Aim:

- The overall goal of this research group is to develop and deploy new and improved evidence on the causes and determinants of neonatal and child morbidity and mortality, on intervention handling, and on the effectiveness of interventions to enlighten and impact the research priorities in this area nationally and internationally.

- This includes estimating specific distribution of the main causes of under-5 deaths, as well as maternal death and of the proportion of these deaths that can be prevented, and saving life by developing precise interventions, and enhancing modelling methodology along with the newly predications of efficacy and effectiveness of child survival intervention.

5

Child Health and Epidemiology Group-Sheffield

This group covers the following areas:

- **Child Mortality and Morbidity.**

- **Child & Adolescent Mental Health.**

- **Child labour and Environmental influence.**

- **Interventions & Evidence.**

Part II

Associate Risk Factors with Child Welfare including Child Labour and Violence against Child issues in Egypt using Bayesian Geospatial Modelling with Multiple Imputation.

Objectives

- **Determine the distribution of children who work among various provinces/governorates and different business sectors .**

- **To investigate the associations between different types of outcomes (economic activities) and the socioeconomic and demographic indicators. This is because little or no research has extensively modelled these associated risk factors with the child labour.**

- **Furthermore, little is known about geographical affects of the child labour in Egypt.**

Outcome Variables

- **Type of work and the number of hours per week**

This study, however, has used the ILO classifications which are classified the number of hours worked per week into three groups as follows: A) Less= 15hrs a week; B) between 16 and less than 45hrs a week; and C) over 45hrs a week.

- The economic activities were classified into three groups as well:

- A) Non-Hazardous wage work

- B) Hazardous wage work

- C) Household work

Risk Factors

- We considered the following socio-demographic factors and the associated risk factors of the child labour as explanatory variables: child's age (5-17years), sex, household size, place of residence, wealth index, mother education, father education, parental survivorship and violent discipline approaches against children.

- Wealth index were used as proxies for the socio-economic position of the household because EDHS does not collect information on household income and expenditure. Egypt comprises of 27 governorates, which were categorised by EDHS into 7 areas namely: Urban governorates, Lower Egypt urban, Lower Egypt rural, Upper Egypt urban, Upper Egypt rural and Frontier governorates.

- However, in spatial analysis, we have used 27 governorates to investigate the spatial effects in the prevalence of overlap economic activities of children at the state level. This was achieved using a geo-additive semi-parametric multinomial model.

Statistical Methods

- To estimate model parameters, we applied the fully integrated Bayesian approach. Though the estimation method with this model is difficult, the estimated posterior odds ratios (OR) that were produced could be understood as similar to those of normal logistic models. The analysis was carried out using version 2.1 of the BayesX software package, which certifies Bayesian inference based on Markov chain Monte Carlo (MCMC) simulation techniques (See Khatab, et al, 2017, PLOSONE).

- Due to a significant proportion of missing data that affected few variables, a multiple imputation was used in this stage.

Prevalence and sectoral distribution of child labour

- Results showed that at least **6.7%** of the children in age group from **5-14** are working, while in the age group from **6-14**, there are **88.1%** attending school. **However, 6.3%** engaging in child labour while they still attending school.

- It showed also that only **10.8%** completed the primary school.

Sectoral distribution of child labour

Children	Age	Percent
Working (%) Population	5-14yrs	6.7(993,417)
Attending Work and school (%)	6-14	88.1
Combining Work and school (%)	7-14	6.3
Primary Completion Rate (%)		10.8

T1: UNESCO Institute for Statistics, 2015

PREVALENCE AND SECTORAL DISTRIBUTION OF CHILD LABOUR

Sector	% of Children work
Agriculture: **Production of cotton** **Caring of livestock** **Fishing activities**	52.2%
Industry : **Quarrying limestone** **Making bricks** **Working in carpentry** **Construction** **Working in aluminium factories**	16.5%
Services: **Domestic Work** **Repainting automobiles** **street work including selling goods, collecting garbage, and sweeping**	30.4%

T2: Sectoral distribution of child labour, EDHS 2014

14 | **PREVALENCE AND SECTORAL DISTRIBUTION OF CHILD LABOUR**

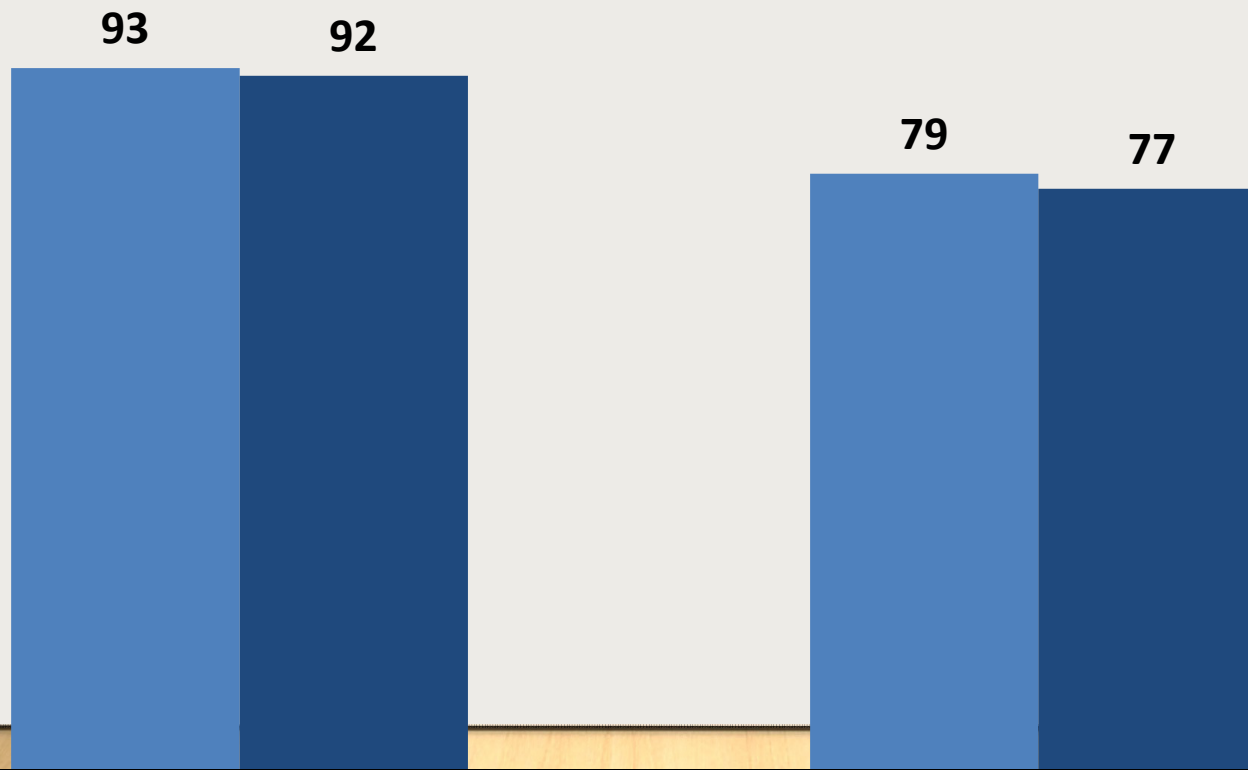## Working Children by sector, Ages 5-14

- Services
- industry
- Agriculure
-

0%

30%

53%

17%

School Attendance

Percent of primary (6-11) and secondary (12-17) age children currently attending school

■ Male ■ Female

	Male	Female
Primary school	93	92
Secondary school	79	77

Nonviolent Methods of Child Discipline

Many children age 1-14 were disciplined during the month before the survey using **nonviolent** methods such as:

- Explaining to the child their behavior is wrong (**85%**)

- Taking away privileges, forbidding something the child likes, or not allowing the child to leave the house (**46%**)

- Giving the child something else to do (**38%**)

Violent Methods of Child Discipline
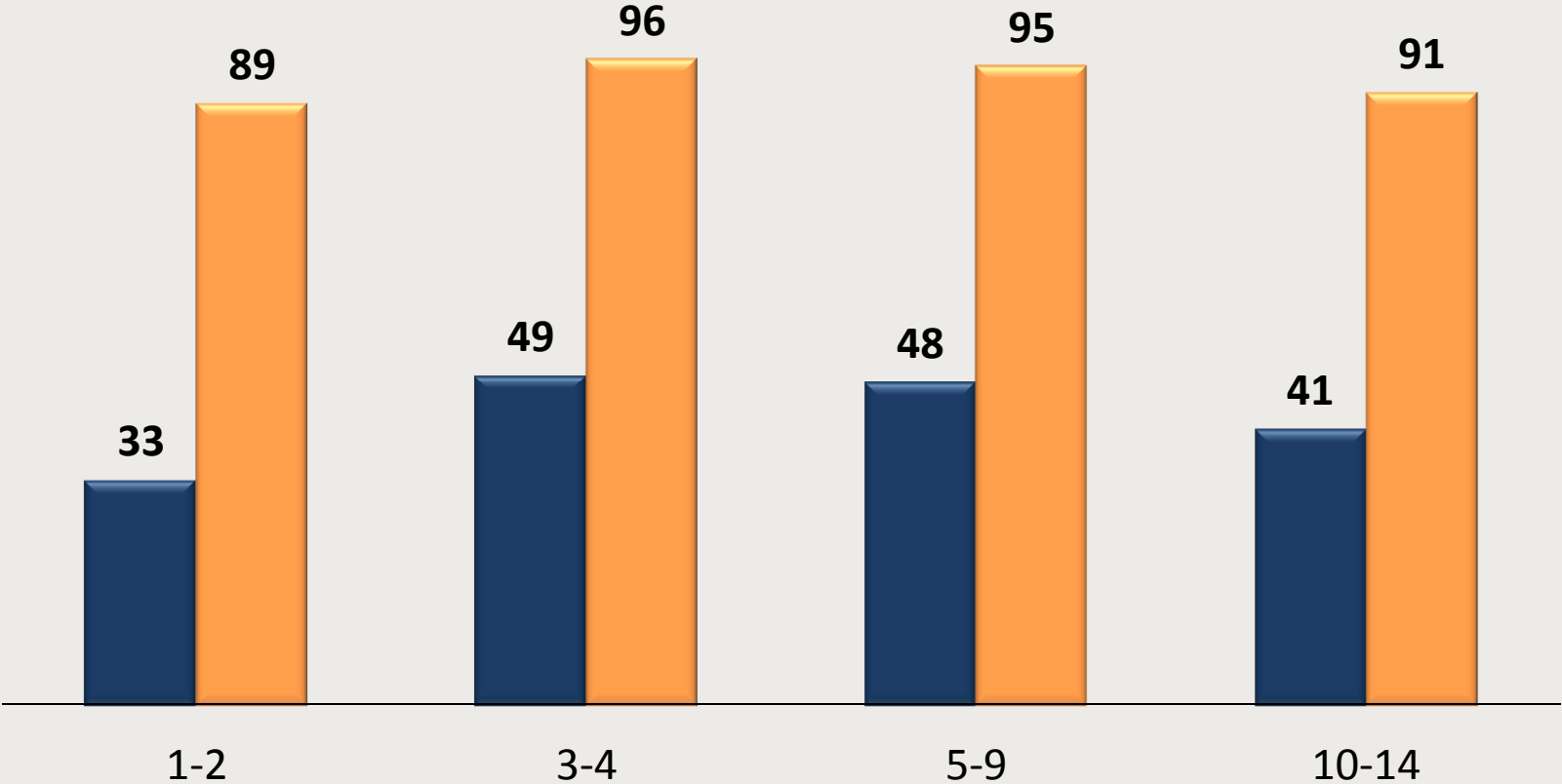
Many children were also disciplined with **violent** methods including:

- **Psychological aggression** – shouting, yelling, screaming (**88%**) and calling child dumb, lazy, or stupid (**63%**)

- **Physical punishment** – shaking (**46%**), hitting the child on the hand, arm, or leg (**55%**), spanking on the bottom with bare hand (**37%**), and hitting child with belt or other hard object (**23%**)

- **Severe physical punishment** – hitting or slapping child on face, head, or ears (**41%**) or beating the child over and over as hard as possible (**11%**)

Child Discipline by Age

Percentage of children age 1-14 years

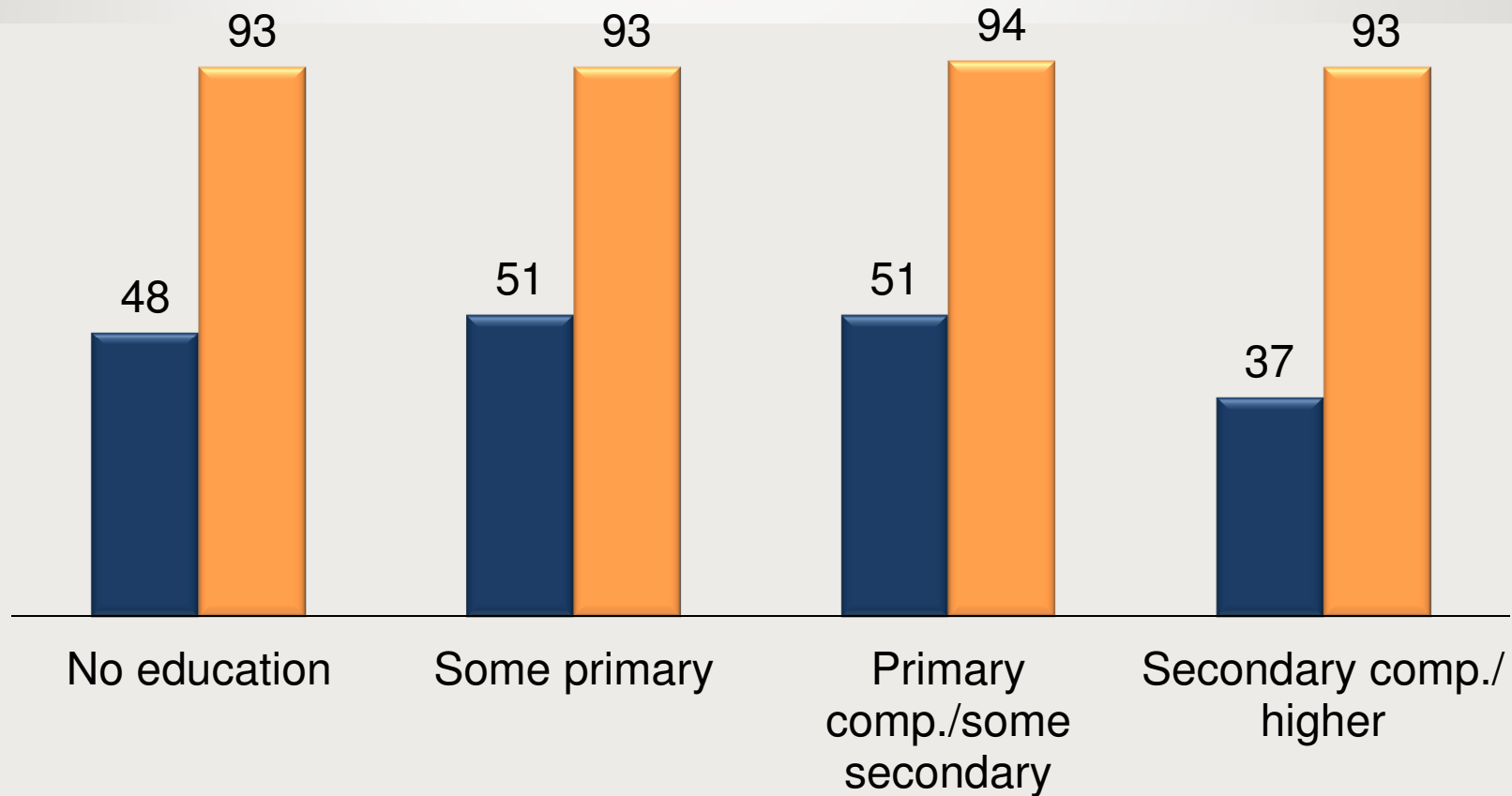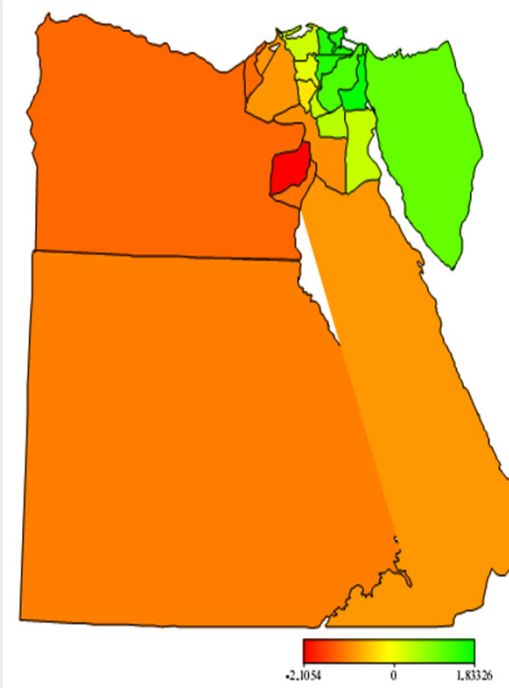■ Any severe physical punishment   ■ Any violent discipline method

Age	Any severe physical punishment	Any violent discipline method
1-2	33	89
3-4	49	96
5-9	48	95
10-14	41	91

Associate Risk Factors with Child Welfare including Child Labour and Violence against Child issues in Egypt using Bayesian Geospatial
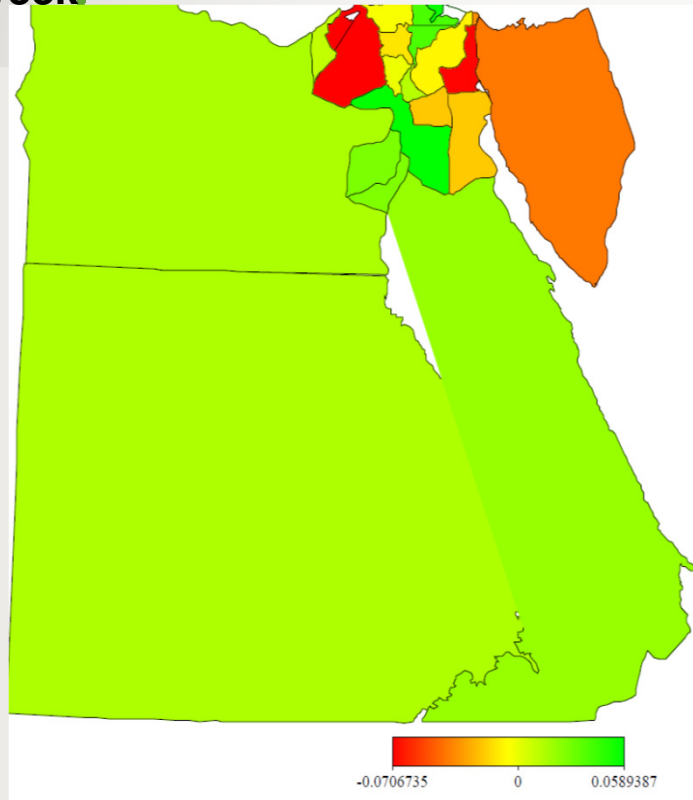
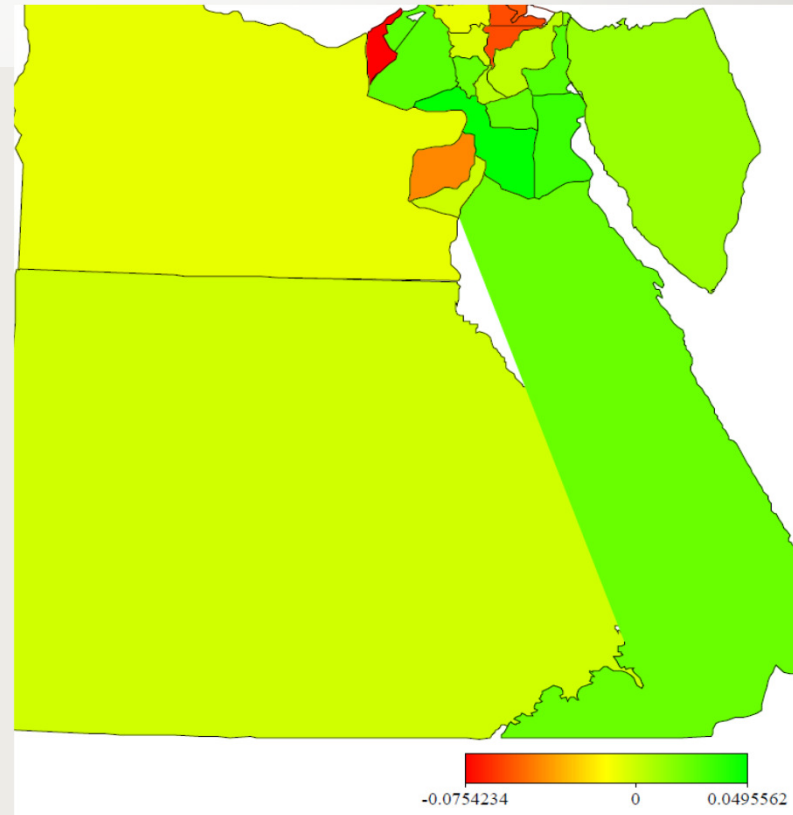**A:less than 15hrs a week**

B. between16-45 hours a week

Spatial effects of Hazordous Wage Work among Children in Egypt

Spatial effects

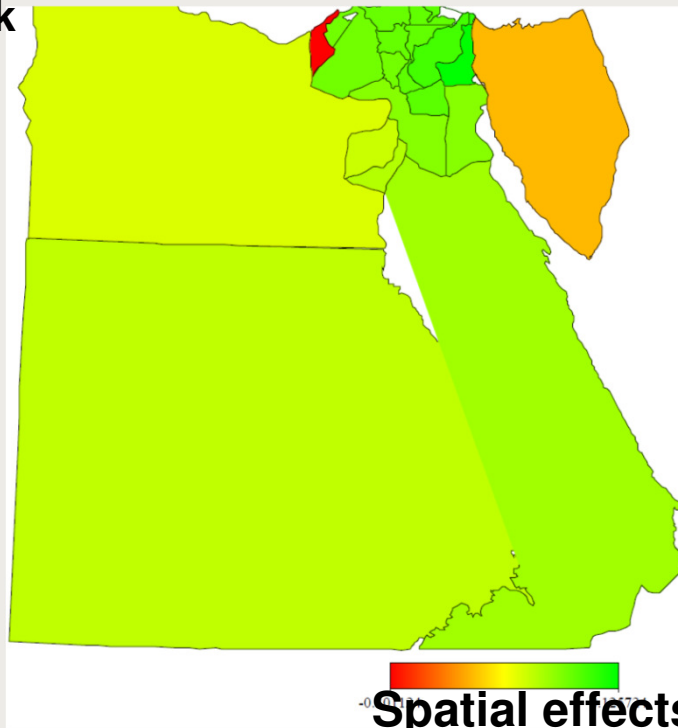**A: less than 15hrs a week**

B. 16- 45 hours a week
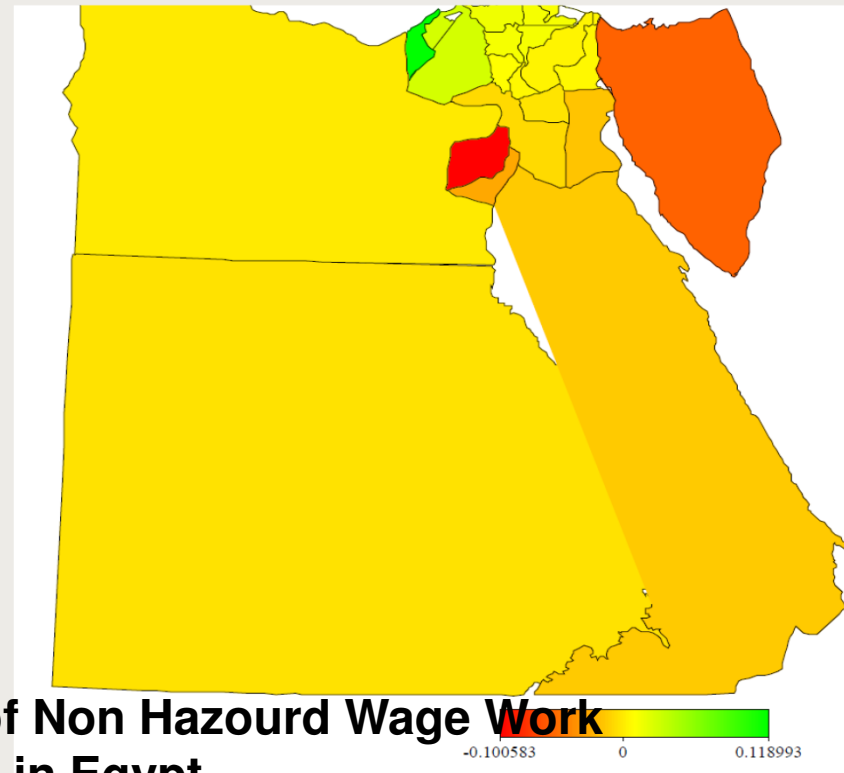

Spatial effects of Household work among Children in Egypt

Spatial effects

A: less than 15hrs a week

B. 16- 45 hours a week

Spatial effects of Non Hazourd Wage Work among Children in Egypt

Results

- Most of factors were significantly associated with the tree types of child labour except father education.

- **Non Hazourd Wage Work:** The following factors were significantly associated with Non Hazourd Work: sex of child (p=0.01), place of residence (p<0.001),household size (p<0.001), wealth index (p<0.001), Mother education (p<0.001), physiological aggression (p<0.001), physical punishment (p=0.02).

- **Hazordous Wage Work:** The following factors were significantly associated with this outcome variable: place of residence (p<0.001), wealth index (p<0.001), Mother education (p<0.001) and the three type of violence approaches (p<0.001).

- **Household work** : All the factors were significantly associated with the household work (p<0.001).

24 | Results

- An increase in household size increases the chance of a child engaged in child labour.

- When the father is missing from the household, girls are more engaged in child labour. However, When the mother is missing, both boys and girls tend to work more.

- Children in the age group of 11-15 are engaged more in house work while children above 15 are more engaged in hazard work.

- Lower and Upper Egypt are more affected by child labour.

Conclusion

- **The maps could be used for targeting regional development in the future. It is obvious that the Nile Delta, Upper Egypt, and south-eastern Egypt have high rates of child labour and are more affected.**

- **Therefore, more attention is needed in those areas. These areas are more likely to have higher poverty compared with other areas.**