# Understanding child-pedestrian injuries in Ghana: Implications for policies and supervision strategies

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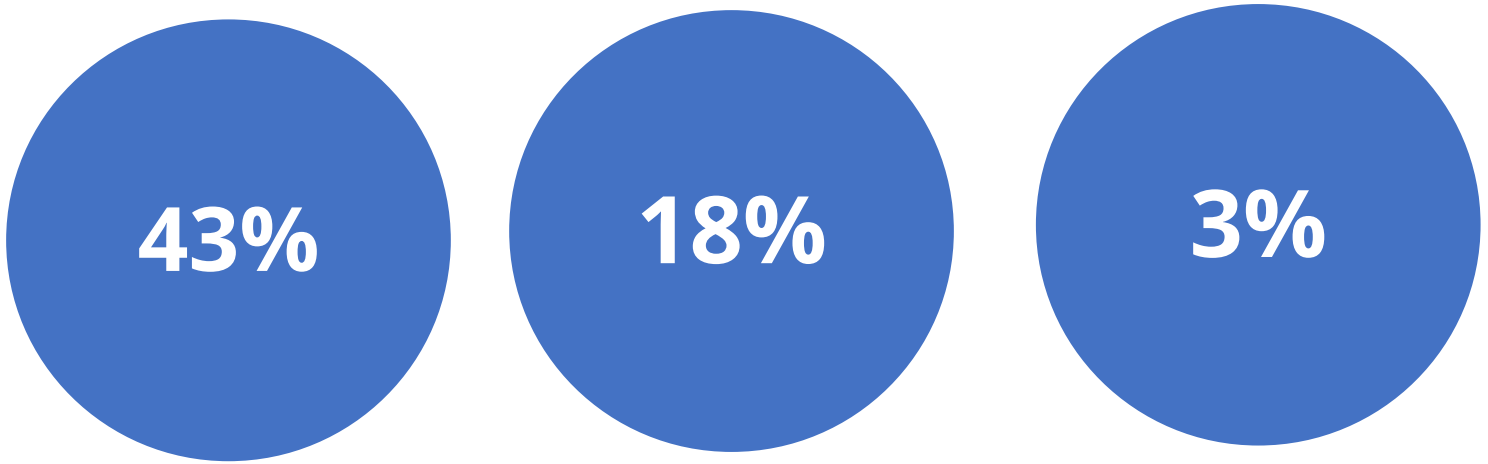
# Presentation outline

- Background
- Methods
- Results
- Recommendation

# INTRODUCTION

In Ghana, vulnerable road users account for most of the road traffic deaths




Pedestrians

Occupants of powered two- and three-wheelers

Cyclists

# Fig 1: Safe system approach to road safety

# Fig 2: Comparison of child-pedestrians supervision in two settings

**Supervised child-pedestrian in Seattle, USA**


**Unsupervised child-pedestrian in Essiama, Ghana**

# Community severance along trunk roads in Ghana

# Fig 3a: Does pedestrians' infrastructure always lead patronage and reduction in pedestrians' incidents?

# Fig 3b: Observation of pedestrians'' crossing behavior

# Fig 3c: Observation-Jaywalking behavior

# Fig 4: Does speed reduction always lead Reduction in pedestrians' injuries?

**Nkawie**

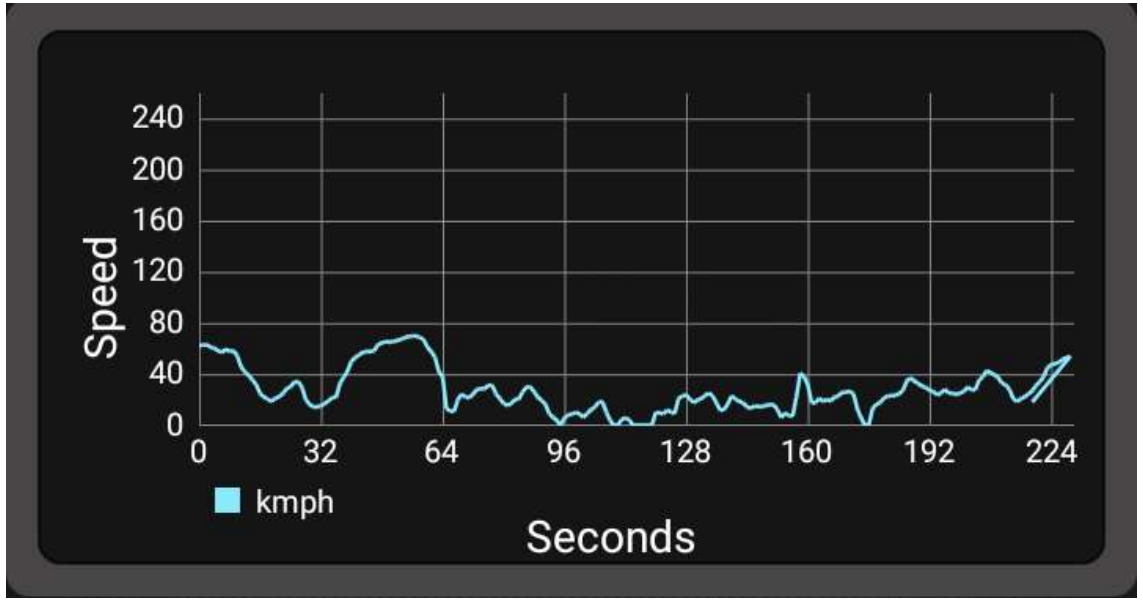



Fig 4 a speed profile at Nkawie

**Nyinahin**

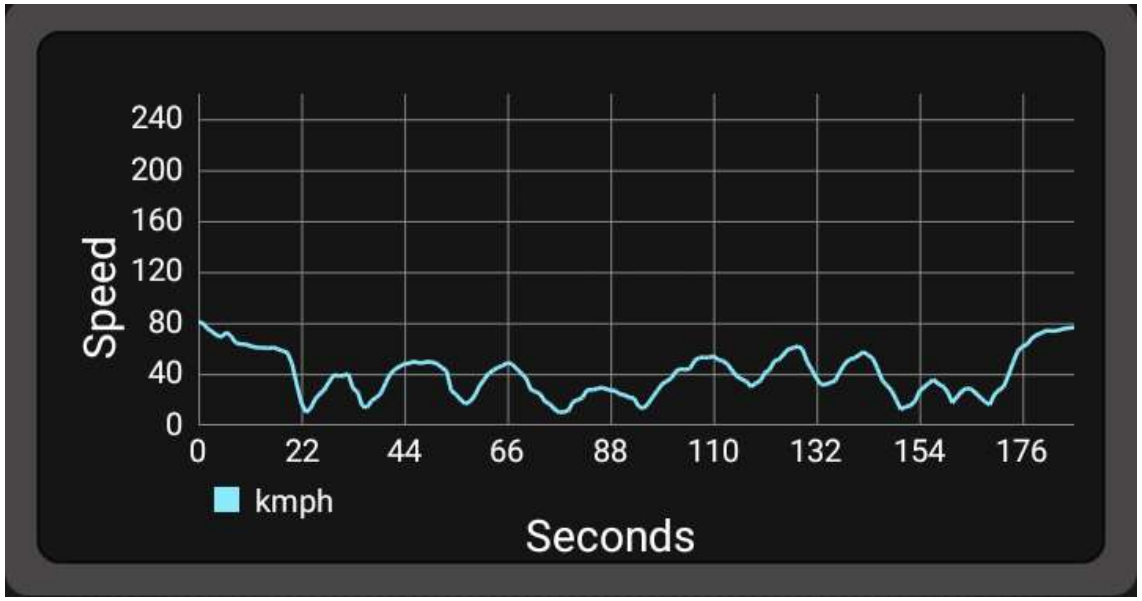



Fig 4b: Speed Profile at Nyinahin

# Objectives

- The main objectives of this research were to establish the;
  I. prevalence of child-pedestrians' injuries and;
  II. the association between child-pedestrian injuries and covariates such as age, gender and temporal characteristics.

# METHODOLOGY

- Study Area-Ashanti Region
- Data-BRRI databank from 2016 to 2020
- MAAP, 78 items
- TRL
- Underreporting (see Salifu & Ackaah, 2009)
- Statistical analysis
  - Accident severity (dependent variable)
  - Independent variables include (age, gender, road user type, vehicle types, rd environment, time of day, day of week. etc)

Fig 5: Regional Map of Ghana

# RESULTS

- **National Pedestrian Casualty for 2016 – 2020**
- Fatal =  3765, Hospitalized = 6925, Minor injury = 3340
- Total = 14030

- **Ashanti Region Pedestrian casualty 2016 -2020 (22%)**
- Fatal = 784 , Hospitalized = 1692, Minor injury = 599
- Total =3075

- **Pedestrian casualty of children <= 17 years 2016 -2020  (26% of AR)**
- Fatal = 194 , Hospitalized = 486, Minor injury = 123
- Total = 803

# Table 1: Distribution of road traffic injury severity by years-Ashanti Region

| Year | Injury Severity | | | |
|---|---|---|---|---|
| | Minor | Serious | fatal | Total |
| **2016** | 24 | 66 | 52 | 142 |
| **2017** | 29 | 69 | 30 | 128 |
| **2018** | 16 | 98 | 30 | 144 |
| **2019** | 30 | 127 | 46 | 203 |
| **2020** | 24 | 126 | 36 | 186 |
| **Total** | **123** | **486** | **194** | **803** |

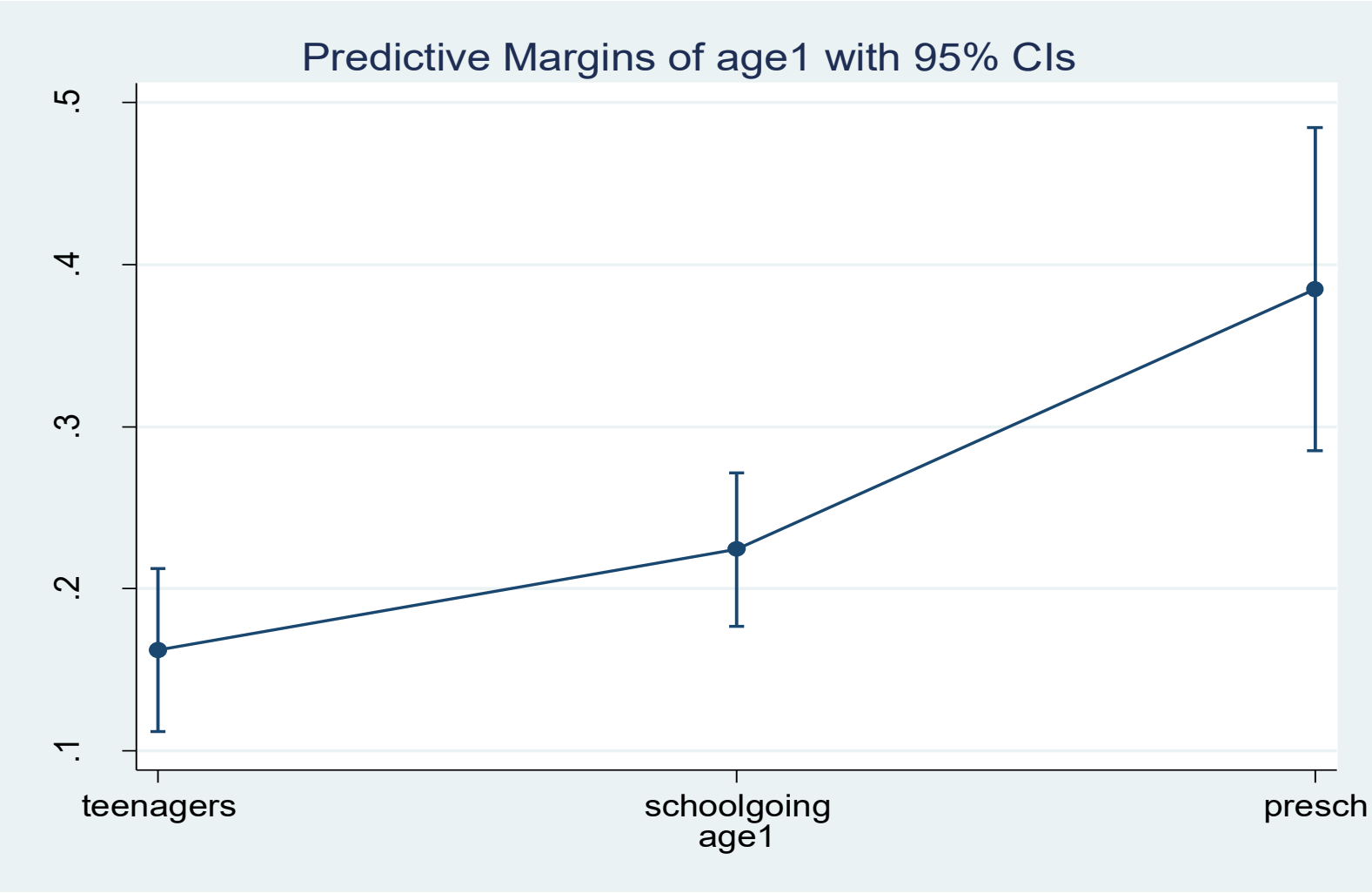
# Table 2: Distribution of child-pedestrians injury severity by action

| Ped action | Injury Severity | | | |
|---|---|---|---|---|
| | Minor | Serious | fatal | Total |
| None | 1.7 | 1.1 | 2.2 | 1.4 |
| Crossing | 59.5 | 71.5 | 63.2 | 67.7 |
| Walking along | 30.6 | 18.3 | 16.5 | 19.8 |
| Playing | 0.0 | 0.8 | 0.5 | 0.6 |
| On path | 0.0 | 0.2 | 0.0 | 0.1 |
| Other | 8.3 | 8.1 | 17.6 | 10.3 |
| Total | 121 | 471 | 182 | 774 |
| | | | | |

# Table 3: Relative risk of death among child pedestrians

| Variable | cOR | aOR | P-value | 95% CI |
|---|---|---|---|---|
| | | | | |
| **Age** | | | | |
| *Adolescent (11 to 17)* | 1.00 | 1.00 | | |
| *School going (6 to 10)* | 1.36 | 1.51 | 0.09 | 0.93 to 3.30 |
| *Pre School (0 to 5)* | 2.27 | 3.31 | 0.04 | 1.66 to 6.59 |
| **Gender** | | | | |
| *Female* | 1.00 | 1.00 | | |
| *Male* | 1.64 | 1.89 | 0.03 | 1.08 to 3.30 |
| **Year** | | | | |
| *2016* | 1.00 | 1.00 | | |
| *2017* | 0.46 | 0.43 | 0.003 | 0.29 to 0.75 |
| *2018* | 0.42 | 0.39 | 0.001 | 0.22 to 0.69 |
| *2019* | 0.47 | 0.49 | 0.004 | 0.30 to 0.80 |
| *2020* | 0.41 | 0.40 | 0.001 | 0.24 to 0.69 |

# Fig. 6: Probability of child-pedestrians' fatality



# RECOMMENDATIONS

- And so what?
- What can we do?

# Fig 7: First, Child-pedestrians' education

- Social Learning theory
- Vygotsky's zone of proximal development; Percer (2009)
  - Child's own capability and knowledge
  - Support from his significant others
- Interplay between biological development and sociocultural inputs-ZPD (scaffolding)
- Social learning theory improves child-pedestrians' crossing behavior(Thomson & Whelan 1997; Thomson et al. 2005)

# Fig 8: Child-pedestrian behavior modelling

# 2 Mandatory Supervision Law for child-pedestrians under 6

# Thank you