INTRODUCTION

Mortality and morbidity are known to be disproportionately distributed to the lower end of the socioeconomic spectrum [1,2]. This study investigates the association between socioeconomic status (SES) indicators and the crude mortality rates due to fatal accidents among children 18 years old and younger in Cuyahoga County, Ohio.

MATERIALS & METHODS

- 51 areas determined by zip code in Cuyahoga County, Ohio were studied.
- For each zip code:
  - The number of accidental deaths of children (≤ 18 years old) occurring between 2004 and 2014 were obtained from Cuyahoga County Medical Examiner records;
  - 12 indicators (Table 1) were obtained from the American Community Survey (2007-2011) to capture various aspects of socioeconomic status (SES).
- Crude mortality rates due to fatal accidents were calculated for the ≤ 18 years old population.
- Pearson’s correlation coefficient was used to measure the association between each SES indicator, and between each SES indicator and the crude mortality rates.
- Stepwise multiple linear regression models were calculated to assess which SES indicators best explain variation in rates of fatal accidents.
- Logistic regression models were tested to assess which SES indicators best predict the occurrence of fatal accidents.

RESULTS

- The least consistently correlated SES indicators were the % of families with resident children, and the number of businesses. The correlation coefficients between the significantly (p<0.05) correlated SES indicators ranged from R=0.61 to R=0.98.
- Table 1 shows the correlation coefficients between the SES indicators and the rate of fatal accidents.

<table>
<thead>
<tr>
<th>SES Indicator</th>
<th>Correlation Coefficient (R)</th>
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<tbody>
<tr>
<td>% families living below the poverty line</td>
<td>0.43</td>
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<tr>
<td>% households led by single female</td>
<td>0.02</td>
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<tr>
<td>% households with resident children</td>
<td>0.33</td>
</tr>
<tr>
<td>% households receiving SNAP support (%)</td>
<td>0.06</td>
</tr>
<tr>
<td>% households led by single female</td>
<td>0.52</td>
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</tbody>
</table>

DISCUSSION

The results support an association between socioeconomic status and fatal accidents in areas determined by zip code in Cuyahoga County, Ohio.

While socioeconomic inequality is positively associated with negative health outcomes in the literature [3], the Gini index was not strongly correlated with fatal accidents rates in this study.

Most of the variables co-varied with each other. While only the % of households led by single female and the % of families living below the poverty line had strong predictive power, other SES indicators contribute to explaining the variation in crude mortality rates due to fatal accidents.

SES differences across the zip codes only explained 52% of the variation in fatal accidents rates in this analysis. Other factors, such as the degree of urbanization or industrialization likely contribute to explaining some of the remaining variation in fatal accidents crude mortality rates. The indicator chosen to capture this aspect of SES, the number of businesses, may not be adequately representing the degree of industrialization in this county.

Further analysis may yield varying correlations between SES and specific circumstances of fatal accidents such as motor vehicle accidents.

ACKNOWLEDGEMENTS

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REFERENCES