COMPARISON OF TWO METHODS TO DETERMINE THE INCIDENCE OF FALLS IN CHILDREN 0-14 YEARS OF AGE IN THE TRI-COUNTY PORTLAND AREA

Craig Warden
GIS 2 Project
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Injury Free Coalition for Kids®

INTRODUCTION

- Part of Robert Wood Johnson grant to study prevention of fall injuries in children < 15 years old
- Need to target limited resources to high-risk populations
- Can one find high incidence of falls using GIS?

DATA SOURCES

- Census data for census tracts & ZCTAs (www.census.gov)
- RLIS census tract & ZCTA shapefiles
- Records of hospitalized children who were injured from falls abstracted at 2 pediatric trauma centers (OHSU/DCH & LECH) for 2 years
- These only located to zip code of home address
- Limited to children living in Multnomah, Washington & Clackamas counties

Zip Code Tabulation Areas (ZCTAs)

- Approximate areal representations of Zip Codes
- Based on addresses with zips/PO boxes may not match home address
- Each tabulation block should be in one ZCTA
- Change according to USPS needs
- Cannot always match address to ZCTA and ZCTAs may be discontinuous

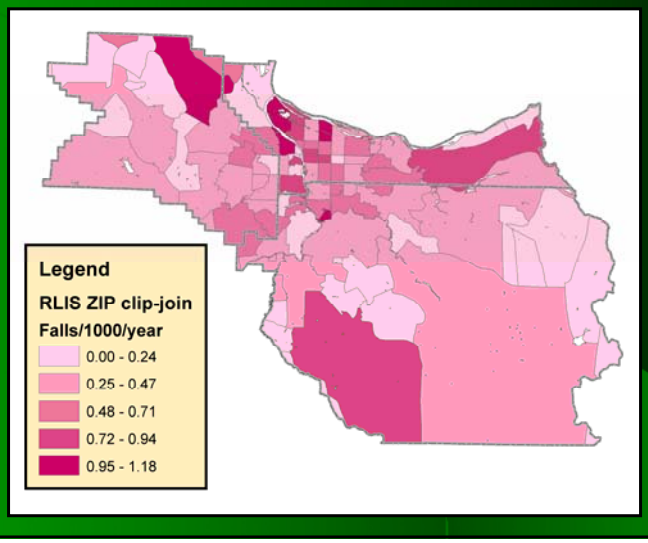
DATA PREPARATION

- Census tract & ZCTAs clipped to tri-county area
- Population data (0-14 years old) joined to CT & ZCTA layers

Calculations

- For ZCTA method:
  - Falls/1000 at-risk population/year

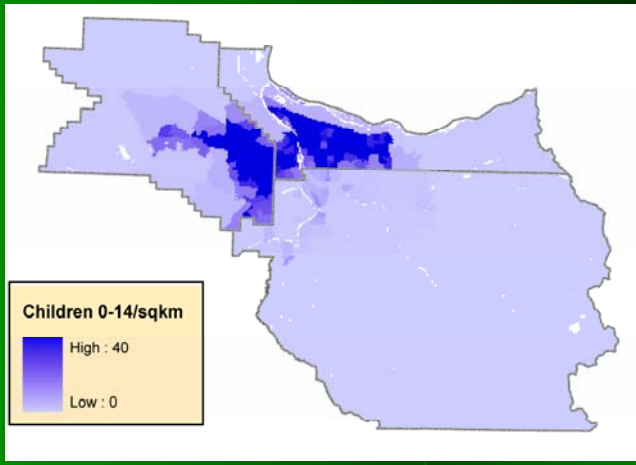
Pediatric Falls Incidence by Zip Code



The Hard Method

- Census tract population density per square kilometer calculated
- Coverted to raster layer

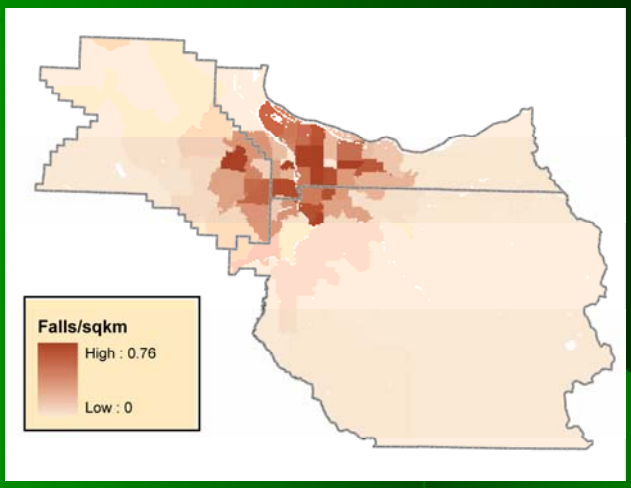
Children 0-14 Years Old Population Density



Falls Density

- Falls per square kilometer calculated for each zip code
- Converted to raster

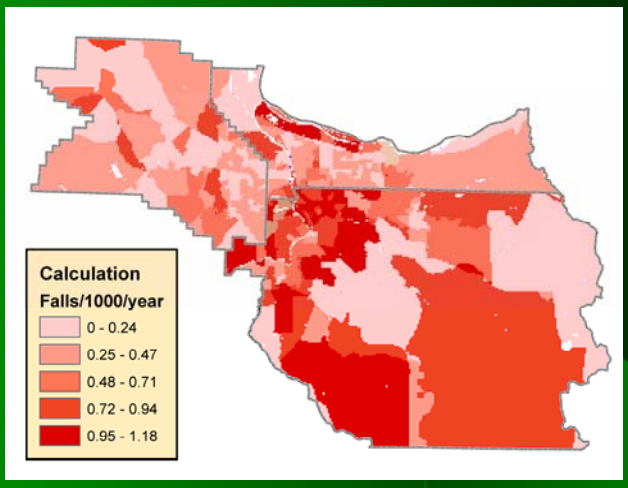
Falls Density

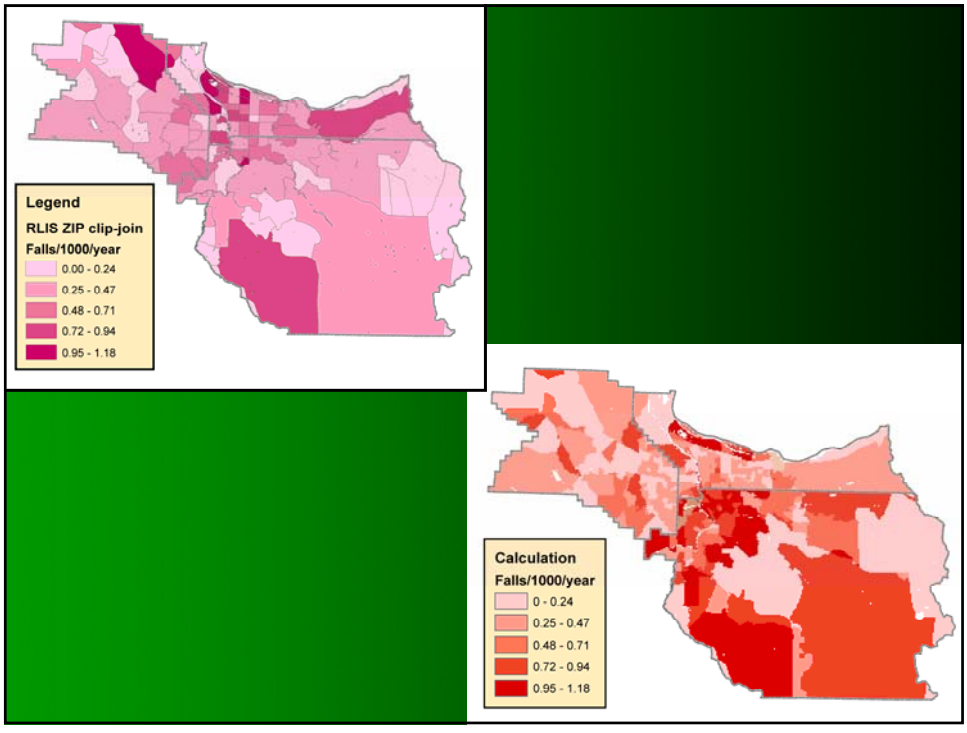


Falls per 1000 at-risk population per year

- Raster calculator:
  - Falls density/square kilometer raster divided by population density
  - Divided by 2 to get per year
  - Multiplied by 1000 to per 1000 at-risk
  - Produces density map

Falls per 1000 at-risk per year





Conclusions

- Need to statistically compare ZCTA rates
- Low incidence rates cause instability of estimates
- Need to geocode address data but confidentiality concerns