Pearl Girlz: Using GIS for a Health Ecology Model

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GPS Validity by Observation

SAT
• Acquired Position from 4 or more Satellites

CELL
• Acquired Position through Cell Towers

NULL
• Position Repeats Last Valid Coordinates

21% of Points were Null!
Non-SAT Point Issue

~1600 meters
Euclidean Point Imputation

Step 1
- Determine gaps between satellite acquired points
- Mark gap “anchors”

Step 2
- Calculate distance and time between gap anchors
- \( \frac{\text{Time gap}}{5 \text{ minutes}} - 1 = \# \text{ of imputed points} \)
- Gap distance / \# of points = Distance between points

Step 3
- Create lines between anchor points in ArcGIS
- Generate points from lines using (1) \# of imputed Points and (2) distance between points
Imputation Issues
Points After Imputation
Final Observations (200m Buffer)
Subject Home and Neighborhood Setup
All Crime 2007 to 2009
Crime Interpolation
Correlations

Average 200m crime counts by time of day on non-school days

Average 200m crime counts by time of day on school days

Average 200m crime counts by time of day on non-school days

Average 200m crime counts by time of day on school days
Correlations

Average 200m crime counts by time of day on non-school days
- alc ever: No, Yes

Average 200m crime counts by time of day on school days
- alc ever: No, Yes

Average 200m crime counts by time of day on non-school days
- cig ever: No, Yes

Average 200m crime counts by time of day on school days
- cig ever: No, Yes
Additional Analyses

- Prostitution Arrests
- Narcotic Arrests
- STI Incidents
Travel Mode Effects
Fix Colloquial Naming
Eliminate Secondary Addresses
Match Road Names by Weighted Matrix & Zip
Match Addresses to Location Names
Final Recruitment Underway

New Environment Variables to be Introduced

A Relationship Exists Between Where Adolescent Females Spend Their Time and Health Risk Behavior
Acknowledgements

- Funding from Robert Wood Johnson Foundation and National Institutes of Health
- our community partners in the Near West neighborhoods in Indianapolis
- the ‘Pearl Grlz’ participants