

# Potential Walkers and Neighborhood Characteristics Around Public Schools in Georgia

**Matt Falb, MHS**  
**Epidemiology Branch,**  
**Georgia Division of Public Health**

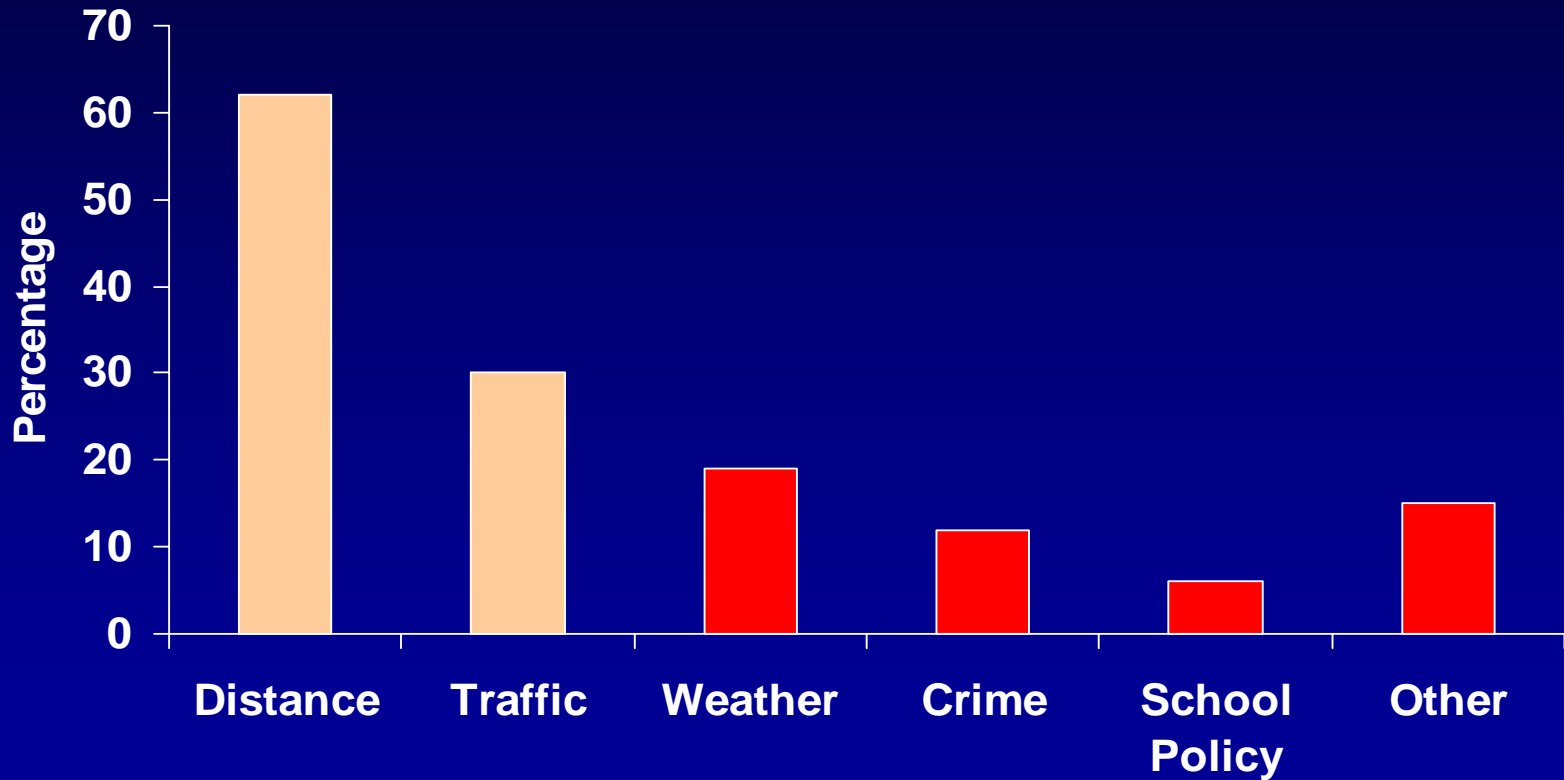
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# Percentage of children walking to school in US and Georgia

- Nationwide trends
  - 42% in 1969
  - 15% in 2001
- Georgia
  - 13-17%

# Parental reports about why their children can't walk to school



# Purpose

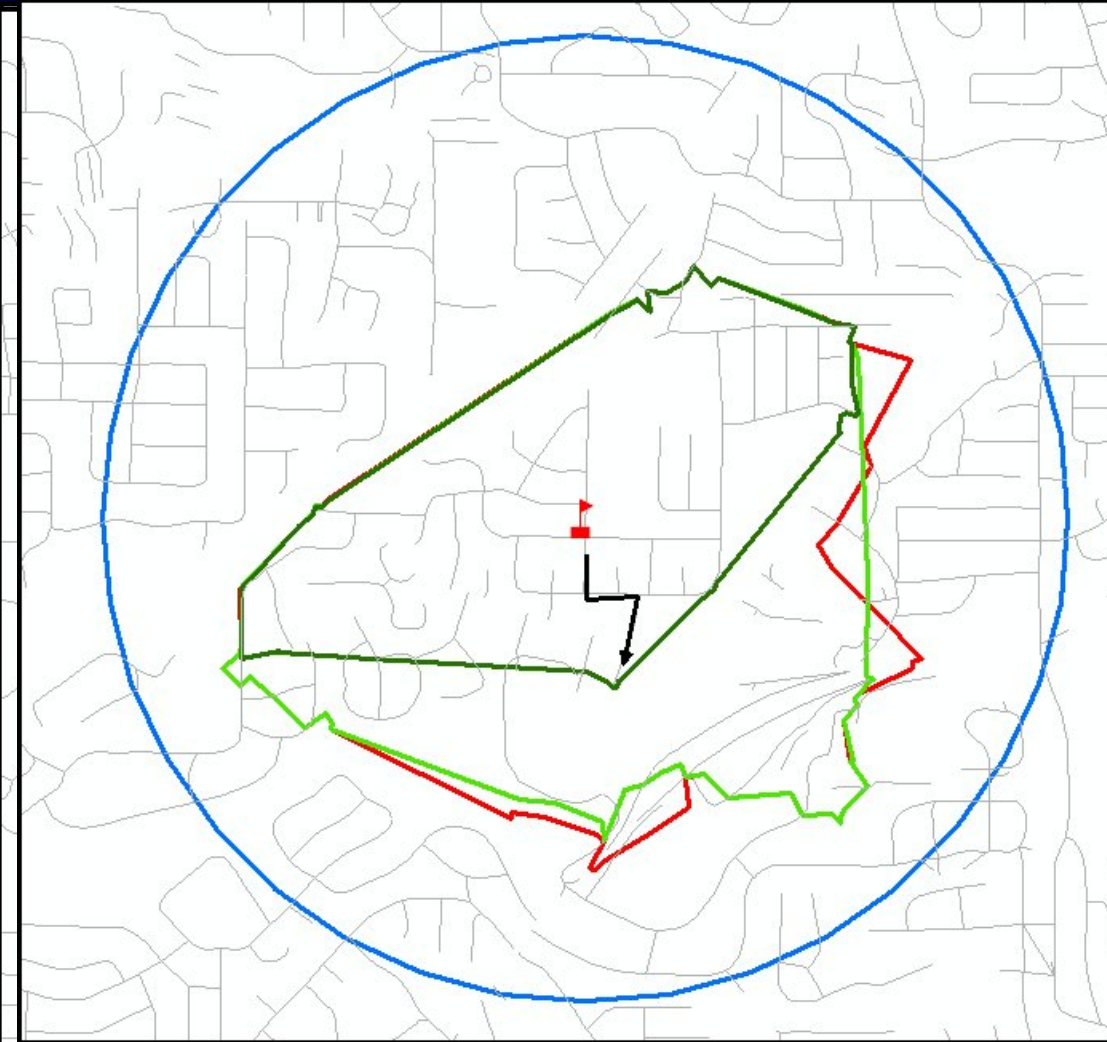
- **How many could walk a safe and reasonable distance**
- **Neighborhood characteristics associated with potential walkers**

# Mapping Schools - ArcGIS



- 1,887 public schools for 1999-2000 school year
- Address matched schools using TIGER data
- Manually verified school locations
- Adjusted location of all schools to main entrance along street segment

# Creation of Pedestrian Catchment Areas (PCA)



- Created 8 different PCAs at 1 and ½ Mile increments
- Radial – crow-fly buffers
- Street network
- Speed limit restrictions

# Neighborhood measures

- **2000 U.S. Census**
  - Age
  - Population density
  - Income
  - Housing units
- **Street connectivity**
  - Street density
  - Intersection density
  - Ratio of intersections to cul de sacs
  - Ratio of street network to radial PCA area

# Potential Walkers

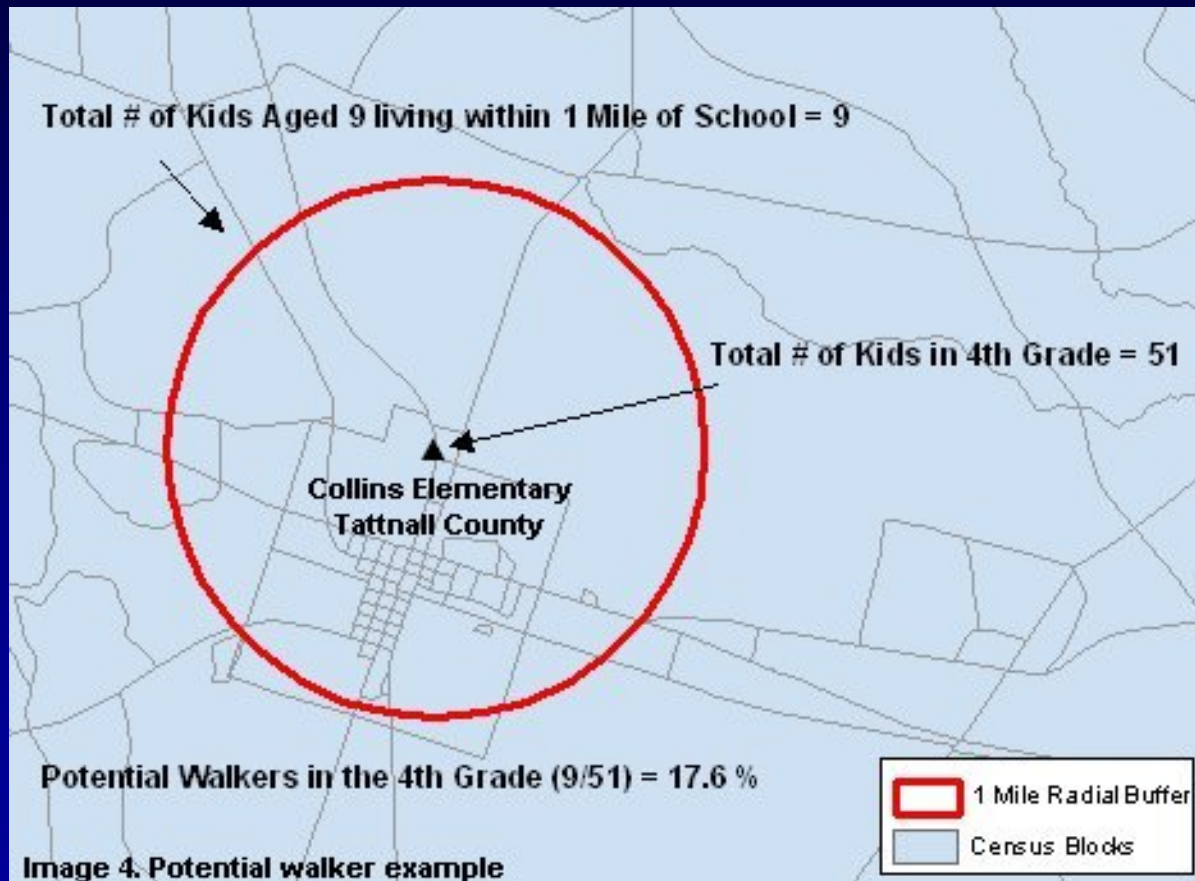
- **Potential walkers =  $\frac{\text{\# of children in PCA}}{\text{School enrollment}}$**

- **Developmental age groups**

	<b>Age</b>	<b>Grade</b>
<b>Early elementary</b>	<b>5-7</b>	<b>K-2</b>
<b>Late elementary</b>	<b>8-10</b>	<b>3-5</b>
<b>Middle school</b>	<b>11-13</b>	<b>6-8</b>
<b>High school</b>	<b>14</b>	<b>9</b>



# Potential Walkers



**Image 4. Potential walker example**

# Safe and reasonable

- Elementary school students
  - 1/2 mile
  - $\leq 25$  mph speed limits
- Middle school and high school students
  - 1 mile
  - $\leq 35$  mph speed limits

# Inclusion criteria

- **Restricted to neighborhood schools**
  - **Special education**
  - **Vocational**
  - **Magnets**
  - **Charters**
- **Excluded schools**
  - **128 out of 1,887 schools**

# Statistical Analysis

- **Descriptive analysis**
  - % of students who could walk
  - % of schools with  $\geq 50\%$  walkers
- **Regression analysis**
  - Multivariate linear modeling
  - 1 mile street network PCA

# Results

# Percent of students who could walk by grade level and PCA type, Georgia, 2000

	1 Mile			½ Mile		
	All Streets	Streets ≤35 mph	Streets ≤25 mph	All Streets	Streets ≤35 mph	Streets ≤25 mph
<b>K-2</b>	30%	29%	19%	9%	8%	6%
<b>3-5</b>	31%	29%	19%	9%	9%	6%
<b>6-8</b>	12%	11%	7%	3%	3%	2%
<b>9</b>	7%	6%	4%	2%	2%	1%

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<b>6-8</b>	6%	<b>5%</b>	3%	1%	1%	0%
<b>9</b>	0%	<b>0%</b>	0%	0%	0%	0%



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# Regression analysis

	<b>Population density</b>	<b>School enrollment</b>	<b>Ratio of network to radial PCA</b>
K-2	+	-	+
3-5	+	-	+
6-8	+	-	+
9	+		+

# Summary

- Few students can walk to school
- Few schools have a high proportion of potential walkers
- Population, school, and street connectivity characteristics are important contributors

# Limitations

- **Assume children go to neighborhood schools (overestimate)**
- **Other barriers to walking to school (overestimate)**

# Recommendations

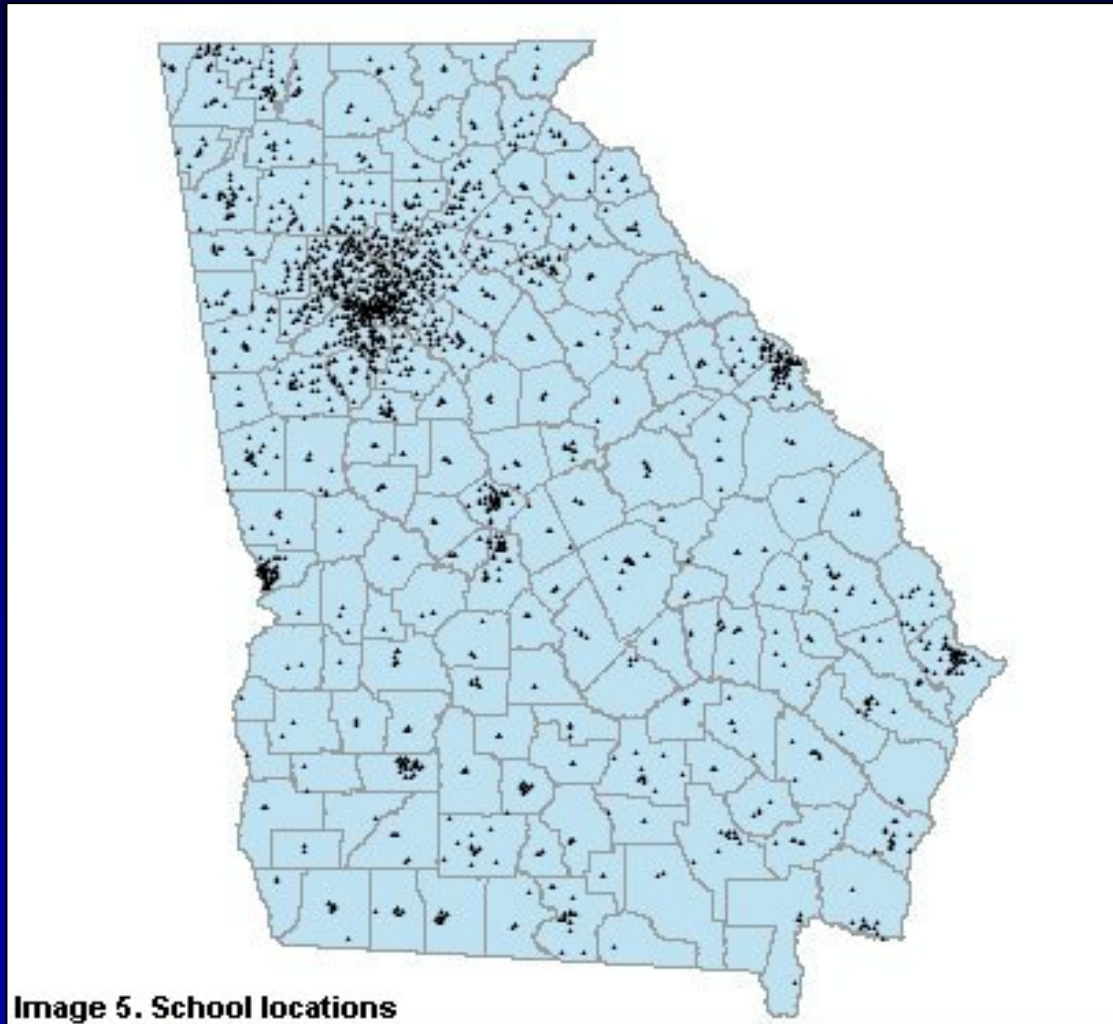
- **Advocacy for improved safety measures**
- **Build small schools in population dense neighborhoods**
- **Improved surveys and surveillance systems**

# Acknowledgements

- **Tony Giarrusso**
- **Dafna Kanny**
- **Ken Powell**
- **Georgia Nutrition and Physical Activity Initiative**
- **CDC**

Extras

# Public Schools in Georgia





# Compilation method

