Assessing the Impact of Community Policy on Physical Activity and Health with Health Impact Analysis

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Health Impact Assessment (HIA)

A combination of procedures, methods, and tools by which a policy, program, or project may be judged as to its potential effects on the health of a population, and the distribution of those effects within the population (Gothenburg consensus statement, 1999)

Health Impact Assessment

- Tool to objectively evaluate a project/policy *before* it is implemented
  - Provide recommendations to increase positive and minimize negative health outcomes
- Encompasses a variety of methods and tools
  - Qualitative and quantitative
  - Community input and/or expert opinion
- Has been performed extensively in Europe, Canada and other countries
  - Regulatory and voluntary basis

Potential Contributions of HIA

- Bring potential health impacts to the attention of policy-makers, particularly when they are not already recognized or are otherwise unexpected
- Highlight differential effects on population sub-groups

Using HIA for Projects vs. Policies

- Projects: Physical developments (highway, rail line, park, trail, housing complex, etc)
- Policies: Set of rules and regulations that govern activities and budget expenditures (zoning, farm subsidies, living wage law, etc.)

HIA Level of Complexity

- Qualitative – describe direction but not magnitude of predicted results
- Quantitative – describe direction and magnitude of predicted results

Voluntary vs. Regulatory

- Voluntary (a tool used by a health officer to inform a planning commission)
  - Simpler, less expensive, less litigious
  - Less likely to be used if not required
  - More politically acceptable
- Regulatory (modeled on a required environmental impact statement)
  - More complex, more expensive, more litigious
  - More likely to be used if required
  - Less politically acceptable

Community Involvement in Conducting an HIA

- Increases community buy-in to project
- Helps identify social issues as well as health issues
- Commonly used in HIAs in Europe
- May add substantially to time and resources needed to conduct HIA
- Combining lay vs. expert knowledge
- Difficult to identify all stakeholders

Environmental Impact Assessments

- 1969 National Environmental Policy Act (NEPA) Requires Environmental Impact Assessments
- The purpose of NEPA is to protect the “human environment” and “stimulate the health and welfare of man” (NEPA, 1979, sec. 2)

Environmental Impact Assessments

- Under NEPA, A federal agency must:
  - Evaluate the potential environmental consequences of their proposals
  - Consider alternatives to their proposed action
  - Document their analysis
  - Make their analysis available to the public for comment prior to implementation

Relationship of HIA to Environmental Impact Assessment

- HIA components could logically fit within an EIA but…..
  - Long, complex documents
  - Time-consuming, expensive and litigious
  - Focus on projects not policies
  - Focus on adverse effects
  - Often too late to affect design
  - Funded by decision proponent
  - “Reactive” public involvement

Bringing Health to EIA: Opportunities for involvement

- Assisting in the development of health-related sections of an EIA as a "Cooperating Agency"
- Participating in public review of an EIA during scoping and review of draft EIAs
- Providing technical support to other agencies and stakeholder groups involved in the preparation and review of an EIA

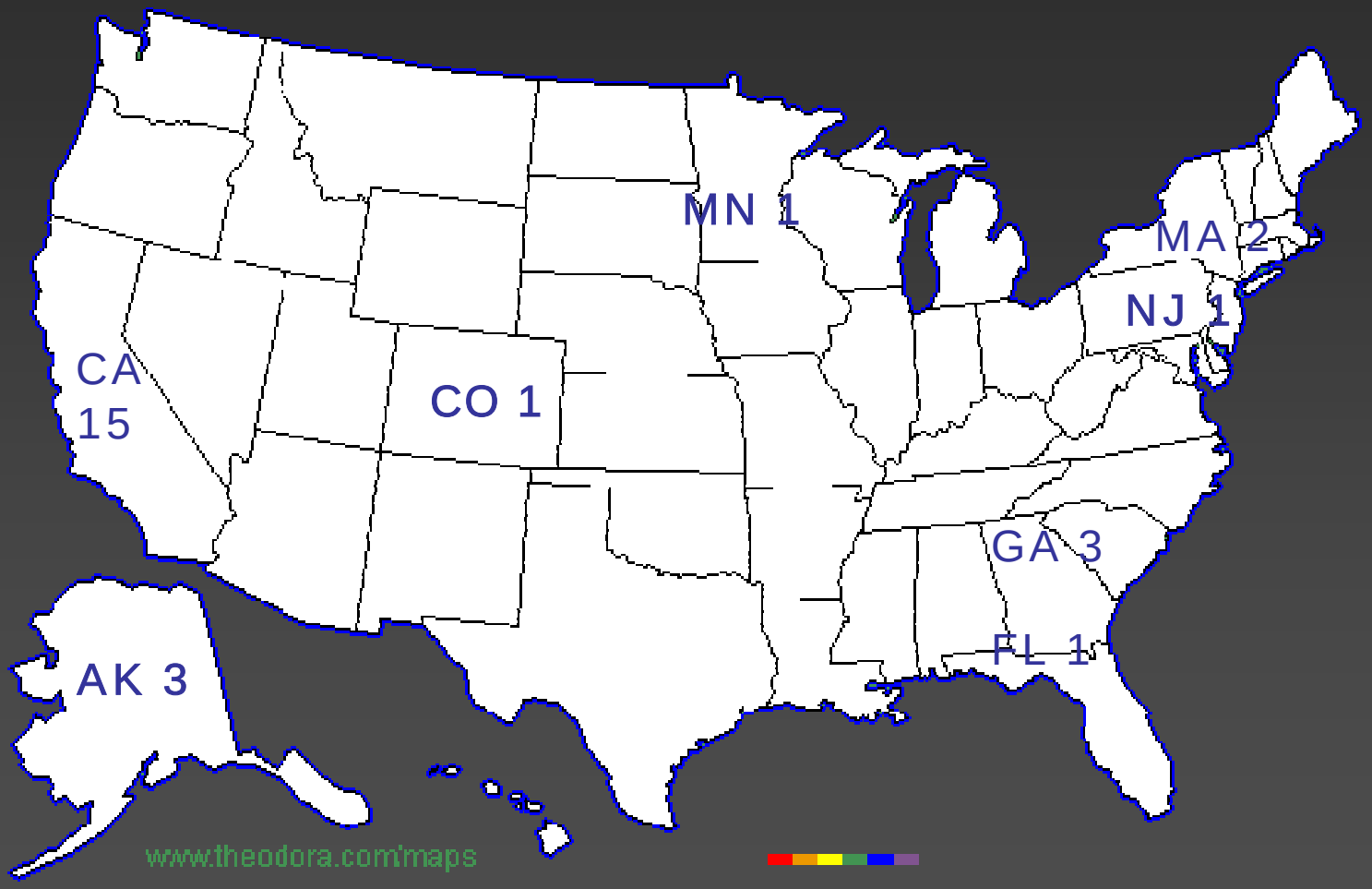
HIA efforts outside the U.S.

- Extensive work for nearly a decade
- Increasing interest
- Usually focused on local projects
- Often linked to EIA or focused on facilitating community participation

HIA in the U.S.

- To date 26 have been completed
- Mostly voluntary
- There have been at least 10 training courses conducted since 2005 with several hundred people trained
- There is multisectoral support for HIAs (APA, NACCHO, CDC, RWJF, ARC, CQGRD)

Location of 27 Completed HIAs in United States, 1999-2007



HIAs of Projects (N=13)

1. Housing redevelopment: Trinity Plaza CA
2. Housing redevelopment: Rincon Hill CA
3. Mixed-use redevelopment: Executive Park CA
4. Senior housing: Jack London Gateway CA
5. Transit Village: MacArthur BART station CA
6. Transit-related greenway: Alameda County CA
7. Urban redevelopment: Oak to Ninth CA
8. Urban redevelopment: Commerce City CO
9. Corridor redevelopment: Buford Highway GA
10. Corridor redevelopment: Lowry Avenue MN
11. Transit, parks and trails: Atlanta Beltline GA
12. Coal-fired power plant: Taylor County FL
13. Farmers market revitalization: Trenton NJ

HIAs of Policies (N=14)

1. Local planning: Eastern neighborhoods CA
2. Area plan and rezoning: Eastern neighborhoods CA
3. After-school programs: Statewide CA
4. Walk-to-school programs: Sacramento CA
5. Public housing flooring policy: San Francisco CA
6. Living wage ordinance: San Francisco CA
7. Living wage ordinance: Los Angeles CA
8. Community transportation plan: Decatur GA
9. Low income rent subsidies: Statewide MA
10. Low income home energy subsidies: Statewide MA
11. Oil and gas leasing: Outer continental shelf AK
12. Oil and gas leasing: Chukchi Sea AK
13. Oil and gas leasing: National Petroleum Reserve AK
14. Federal farm bill: National

Organization that Conducts HIA

Academic group; CDC	N =12
Local health department	N = 9
Private consultants	N = 3
Tribal council	N = 3

Funder of HIA

Robert Wood Johnson Foundation	N = 7
Health department - internal staff	N = 7
Volunteer; multiple sources	N = 5
University fellowship	N = 3
Centers for Disease Control	N = 2
Health department - external contract	N = 2
The California Endowment	N = 1

Steps in Conducting a Health Impact Assessment

- Screening
- Scoping
- Risk assessment
- Reporting
- Evaluation

Screening – When to do HIA

- In general, HIA is most useful
  - For policy-decisions outside health sector
  - When there are likely to be significant health impacts that are not already being considered
  - The HIA can be completed before key decisions are made and stakeholders are likely to use information
  - There are sufficient data and resources available

The Purpose of Scoping

- Scoping…
  - Establishes the foundation for conducting the health impact assessment
  - Designs and plans the HIA
  - Highlights key issues that will be considered

Steps in the Scoping Process

- Establish ground rules
- Define the policy or project
- Gather preliminary information
- Specify what impacts to assess
- Create a logic framework summarizing the relevant causal linkages
- Consider assessment models

Risk Assessment

- Qualitative – describes the direction and certainty but not magnitude of predicted results.
- Quantitative – describes the direction and magnitude of predicted results.

“not everything that can be quantified is important…..and not everything that is important can be quantified”

-Mindell, et al. 2001 (page 173)

Steps in the Assessment Process

- Determine what data are needed and what are available.
- Gather information using a variety of sources.
  - Previous HIAs on similar topics
  - Census data
  - BRFSS, NHANES
  - Grey literature and published literature
- Assess qualitative and quantitative evidence
- If possible, construct quantitative models and estimate potential health effects

Reporting of Results

- Full report
  - Provides details of scoping, literature review, analysis, assumptions, findings, sensitivity analysis, level of uncertainty, discrepant views, and recommendations
  - Helpful to others conducting similar HIAs
- Non-technical report
  - Short and easy to read
  - Include background, findings, and recommendations
  - Created for decision makers, community stakeholders, and lay audiences

Evaluation of HIA

- Three major forms of evaluation
  - Process evaluation of HIA process steps done
  - Impact evaluation of effect of HIA on project or policy
  - Outcome evaluation of later health impacts from project or policy compared to predicted
- Some HIA evaluations have been completed; more needed

HIA Case Study

- Buford Highway HIA
  - Highway redevelopment in Atlanta, GA
  - Part of International Corridor
  - Transit dependent minority population
  - 8 lanes of traffic with few crosswalks
  - Most dangerous highway in Georgia for pedestrians
  - Many similar locations around the U.S.

Case Study: Buford Highway HIA

- Redevelopment of greyfield into pedestrian friendly environment
  - Reduce the number of lanes from 7 to 4
  - Build sidewalks and add crosswalks
  - Add bike lanes
  - Add center median
  - Change local parking requirements to allow shared parking and on-street parking
  - Increase density and land-use
  - Develop unused greenspace

Scoping

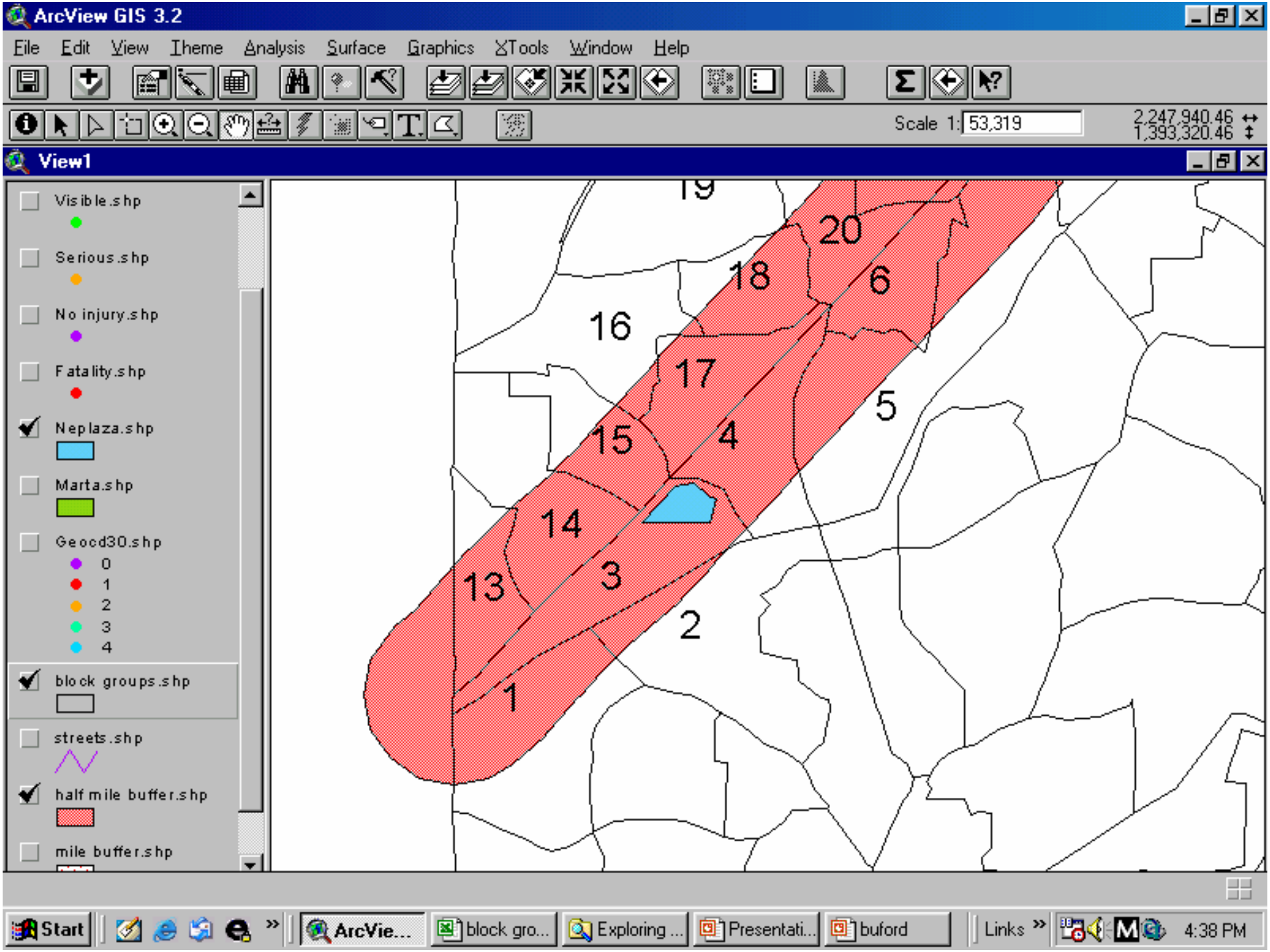
- Specify how policy and infrastructure changes will eventually impact health outcomes
- Determine what type of analysis can be conducted for each of the health outcomes

Risk Assessment

- Qualitative
  - Traffic
  - Pollution
  - Social capital
  - Crime and safety
  - Economic development
  - Gentrification
- Quantitative
  - Injury
  - Physical Activity

Determining Affected Population

- The individuals who live in the study area (N. Druid Hills to Clairmont)
  - 5 census blocks
  - Only counted those that lived ½ mile from highway
  - 14,000 people
- Individuals who drive through study area
  - ADT (23,034) x people per car (1.63)
  - 37,545 people
  - No demographic data available



Demographics for Study Area

	Study Area	Atlanta
% Male	60.0	49.4
Age		
0-17	18.9	26.6
18-29	28.3	18.1
30-39	23.3	18.4
40-49	10.9	15.7
50+	8.6	21.2

Demographics for Study Area

	Study Area	Atlanta
Race		
White	47.3	63.0
Black	20.8	28.8
Asian	4.8	3.3
Ethnicity		
Hispanic	49.8	6.5

Demographics for Study Area

	Study Area	Atlanta
Foreign-born	61.1	10.3
Non-resident 1995	26.6	4.1
Poverty	15.8	9.2
Avg. income	$45,511	$51,948

Household Demographics

- **Average family size is 3.4**
- **Most families (70%) have 2 or more workers**
- **12% of households have no car and 48% have 1 car**
- **17% take transit to work and 3% walk**

Pedestrian Data for All Crashes in DeKalb County, GA

- 67% of pedestrians hit were males
- 77% of pedestrian fatalities were males
- Of the 62 fatally injured pedestrians:
  - 47% Black
  - 36% Hispanic
  - 17% White

DeKalb Board of Health (2003)

Severity of Injuries in DeKalb on Buford Highway

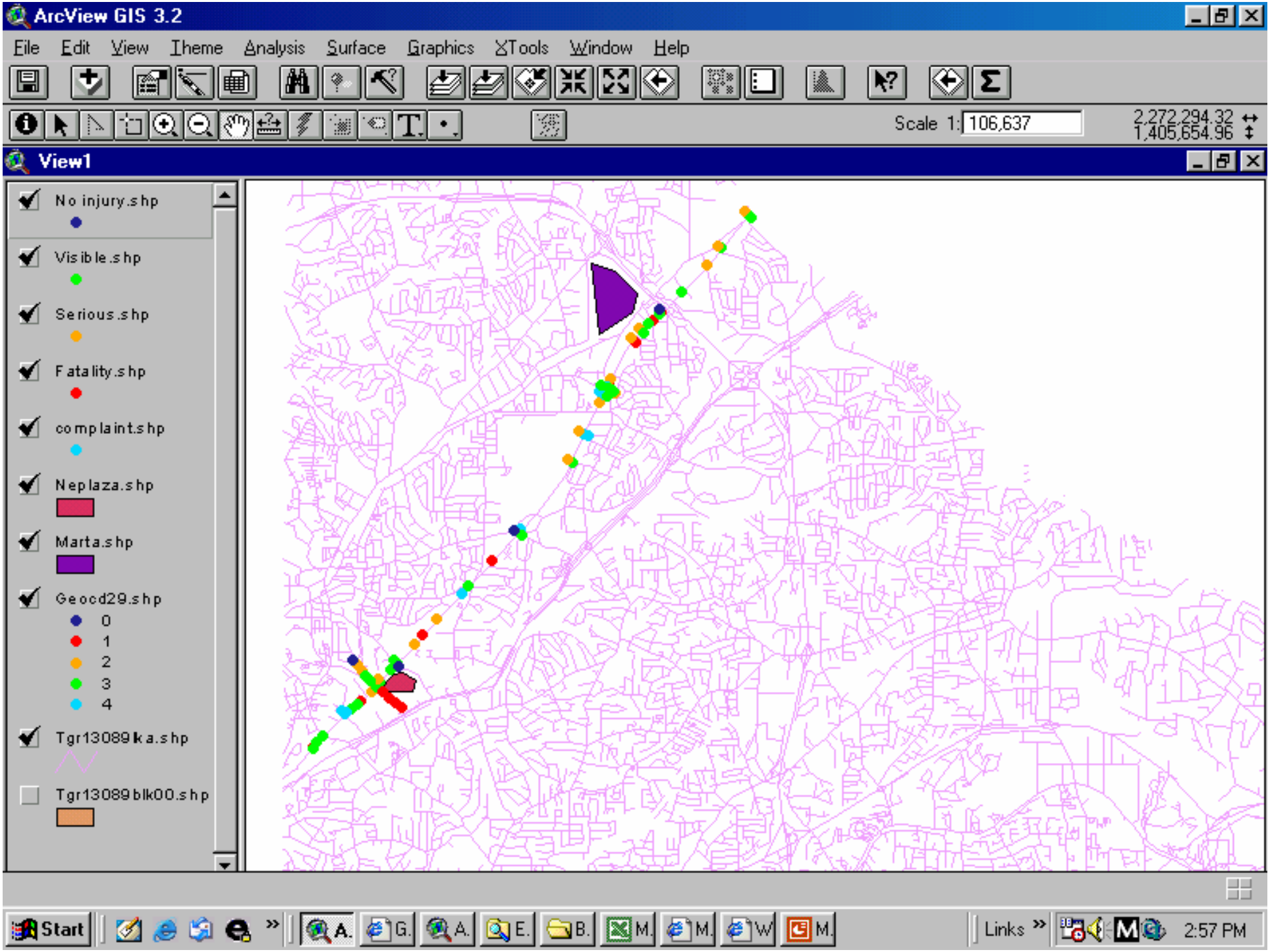
Severity	N	%
Fatalities	12	16.2
Serious Injuries	17	23.0
Visible Injuries	29	39.2
Complaints of Injuries	12	16.2
No Injuries	4	5.4

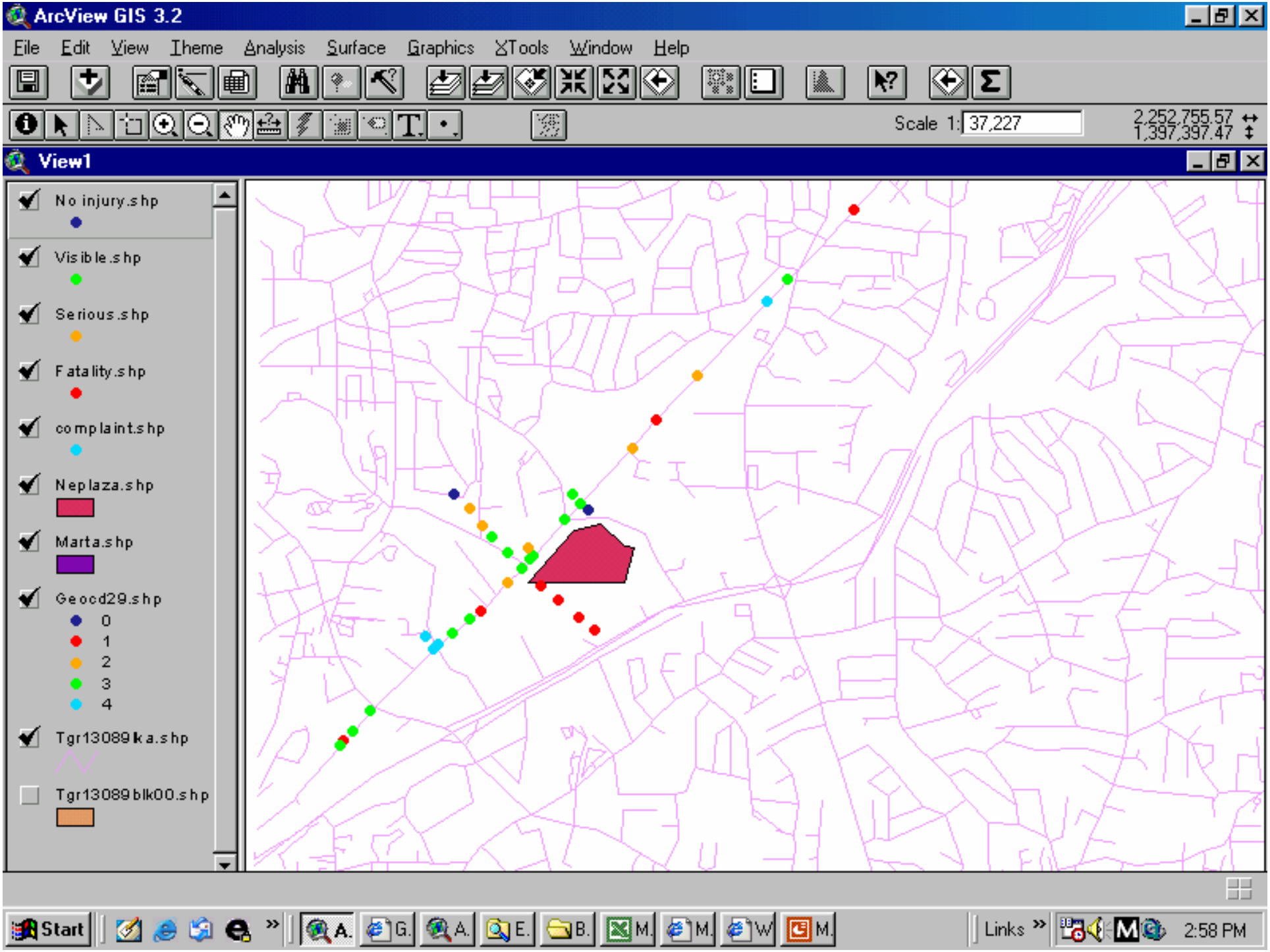
* DeKalb Board of Health

Number of Injuries and Deaths on Buford Highway

	DeKalb (8 miles)	Study Area (2.37 miles)
Injuries/year	18.6	6.7
Deaths/year	3.6	1.8

DeKalb Board of Health (2003)





Estimating Changes in Injury

- No studies could be located to determine injury reduction based on proposed changes
- Hired senior traffic engineers (Hamilton & Associates) to calculate expected changes

Estimating Crash Reduction

CRFt = CRF1 + (CRF2) (1-CRF1) + … (CRFn) (1-CRF1) (1 – CRF2)…(1-CRFn-1)

- Where CRFt = CRF of combined measures
- CRF1 = CRF for the first countermeasure
- CRF2 = CRF found the second countermeasure
- CRFn = CRF for the nth countermeasure

Collision Reduction Factors

Improvement Measure		All Collisions CRF	Pedestrian Collision CRF
Replacement of two-way left-turn lane with raised median		25% - 45%	55%
Sidewalks		1%	65% - 75%
Added/improved pedestrian crosswalks		13% - 25%	19%
Reduced speed limit		1% - 3%	15% - 30%
Access control: service road/frontage road		5% - 12%	10% - 30%
Combined measures	Range	39% - 65%	89% - 94%
	Best-guess point estimate	60%	91%

Hamilton & Associates (2004)
*ranges represent upper and lower bound estimates from studies

Injuries and Fatalities: Study Area

	Current	Expected Reduction	After
Pedestrian Injuries/Year	6.7	.91 (.89- .94)	0.4
Pedestrian Deaths/Year	1.8	.91 (.89- .94)	0.1
Automobile Injuries/Year	120	.60 (.39 -.65)	46

Assumptions for Estimating Injury

- Traffic calming measures used in other parts of the county will have the same effect along Buford Highway
- The effects of the crash reduction factors are additive
- The best available estimates for CRFs were used, which included personal communication with local DOTs, and the predictive certainty of most of the CRFs are unknown

Assumptions for Estimating Injury

- Traffic may be diverted onto other streets and there may be a change in injuries along those streets
- The residents will use the medians and crosswalks
- For the CEA It was assumed that the same number of people will be driving and walking along Buford Highway despite the projected increases in population

Reporting and Review

- Manuscript
- Full report
- One-pager for general audience
- Task Force on Buford Highway which consists of County Commissioners, FHWA, GDOT, Mayors, Police Chiefs, CDC, engineering consultants, and pedestrian groups.

Evaluation of Impact

- Northern sections of Buford Highway will be redeveloped starting in the spring of 2006
  - Changes will not be as extensive as those proposed by the CQGRD
  - Added sidewalks, lighting, pedestrian refuge islands, trees, and additional aesthetic enhancements.
  - Discussions currently being held about southern section of Buford Highway

Key Challenges of HIA

- Uncertainties (data, models, policy)
- Timeliness
- Relevance to stakeholders and decision makers
  - Political context
  - Importance relevant to other factors
- Capacity to conduct HIAs

Next Steps for HIA

- Adapting HIA to the unique policy-making environment of the U.S.
- Moving from research to practice
  - Methods to sort through bills/initiatives to find those for which HIA is most suitable
  - Standardizing and streamlining impact estimation
  - Determine feasibility of different types of tools in various settings
  - Training

Summary

- HIA is a new and evolving science in the U.S., however it is a promising new approach to quantify health impacts of a wide variety of policies and projects
- HIA provides only one piece of information (health) in complex decisions and stakeholders may have different priorities
- HIA provides an outlet for health to be appropriately factored into complex decisions