Belt Line Feasibility Study: Final Report

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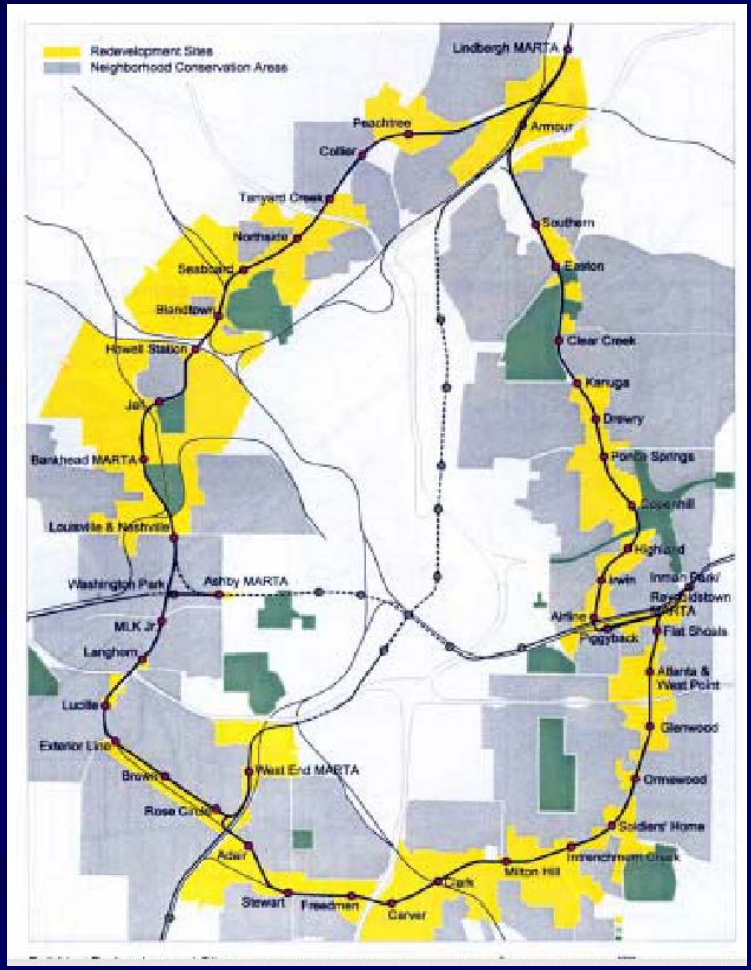
The Problem

- Determine the feasibility of the Light Rail Belt Line system around Atlanta
  - Simulation model to illustrate and examine system
  - Develop study for surrounding areas to approximate future usage



Agenda

I. Neighborhood Opinion

- Surveying neighborhood associations
- What do current residents want/don't want?

II. Land Use Study

- Surveying mixed use developers
- How attractive is development along Belt Line?

III. Simulation

- Gathering simulation constraints
- How will system respond in different scenarios?

Neighborhood Opinion Agenda

I. Neighborhood Opinion

–General Conclusions

- •Important issues to residents
- •Walking distance

–Look at concerns from people against the proposal

- •Safety top concern
- •Reluctance to walk, commuter mindset

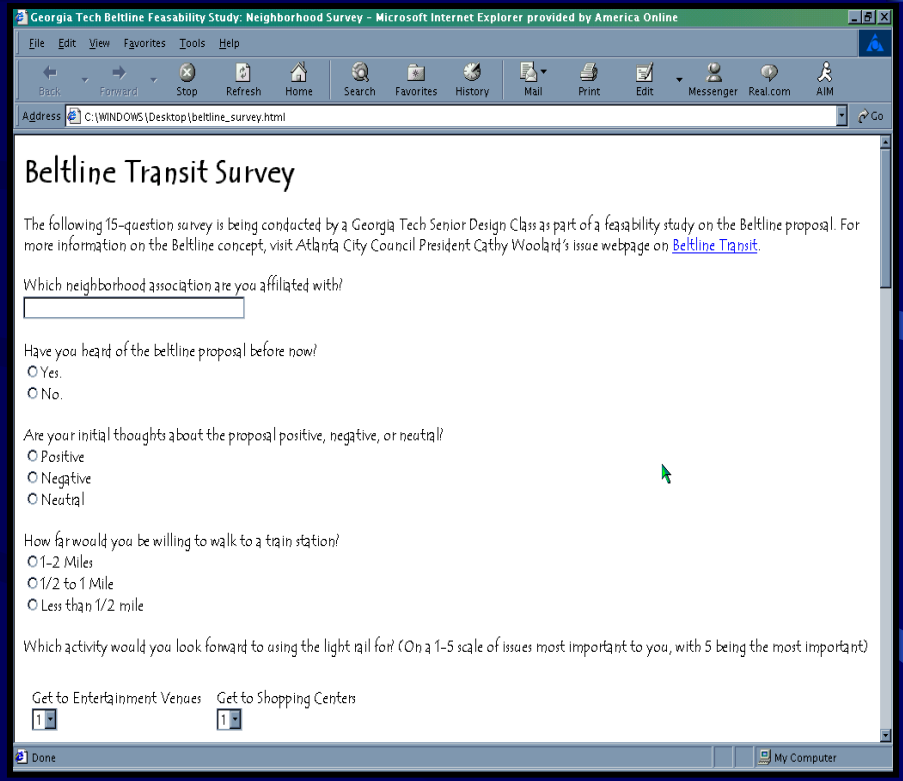
–Group and compare responses by location (Northeast, Southeast, Northwest, and Southwest)

- •Northeast concerned with property values getting to shopping centers, other sections want connections to work and home
- •Northeast less likely to walk long distances

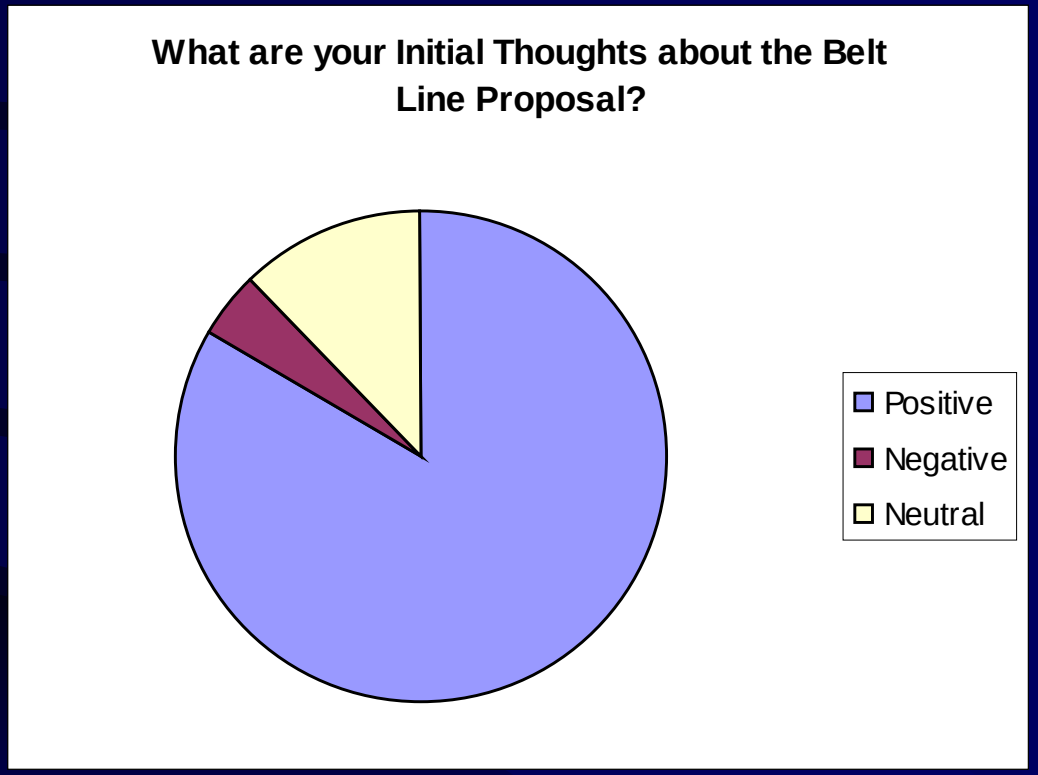
–Recommendations for light rail system

Neighborhood Association Surveys

- Determine what issues are most important to potential riders and residents
- Online survey drew over 200 responses
- Compare with control group from Collier Hills

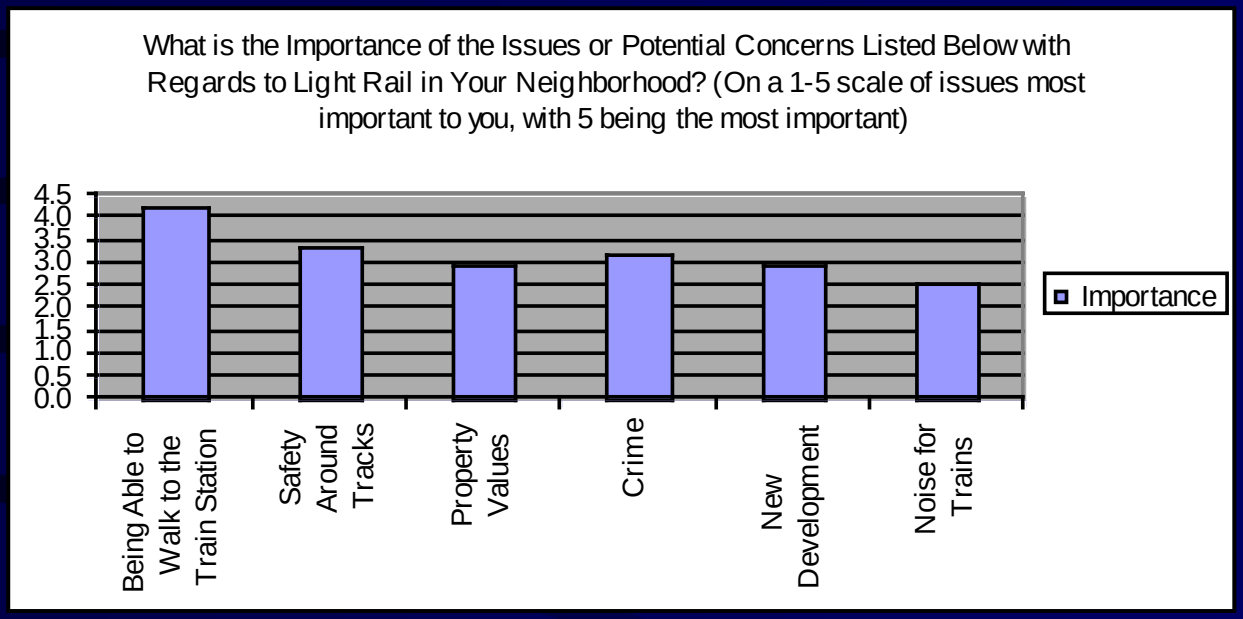


Initial Thoughts mostly Positive



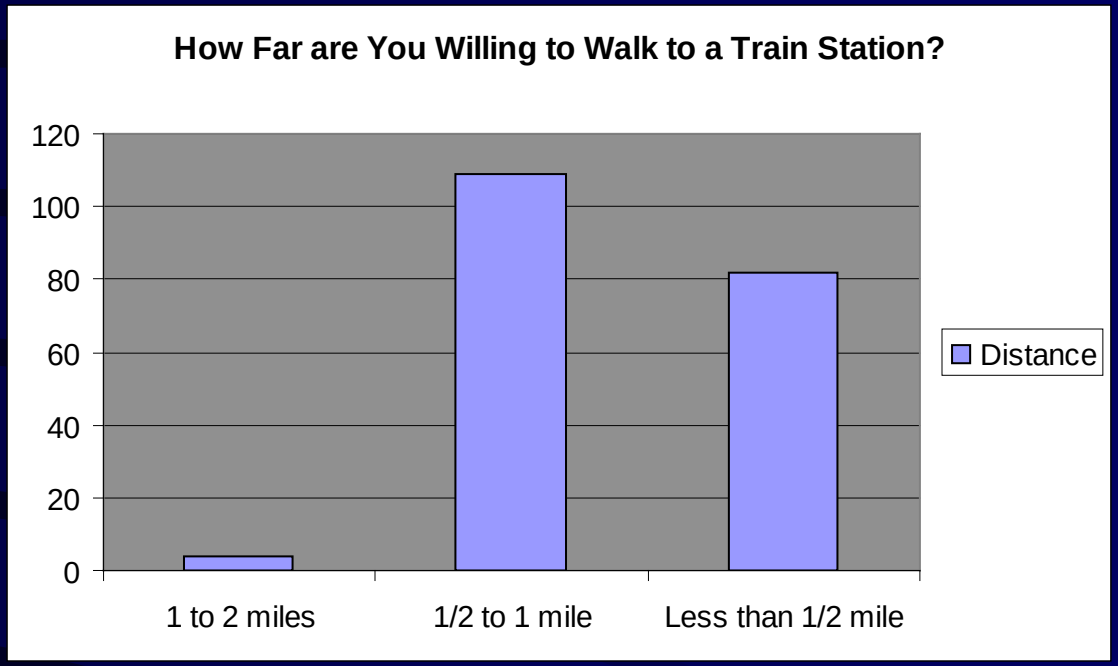
- 83% positive responses with 12% neutral

Important Issues



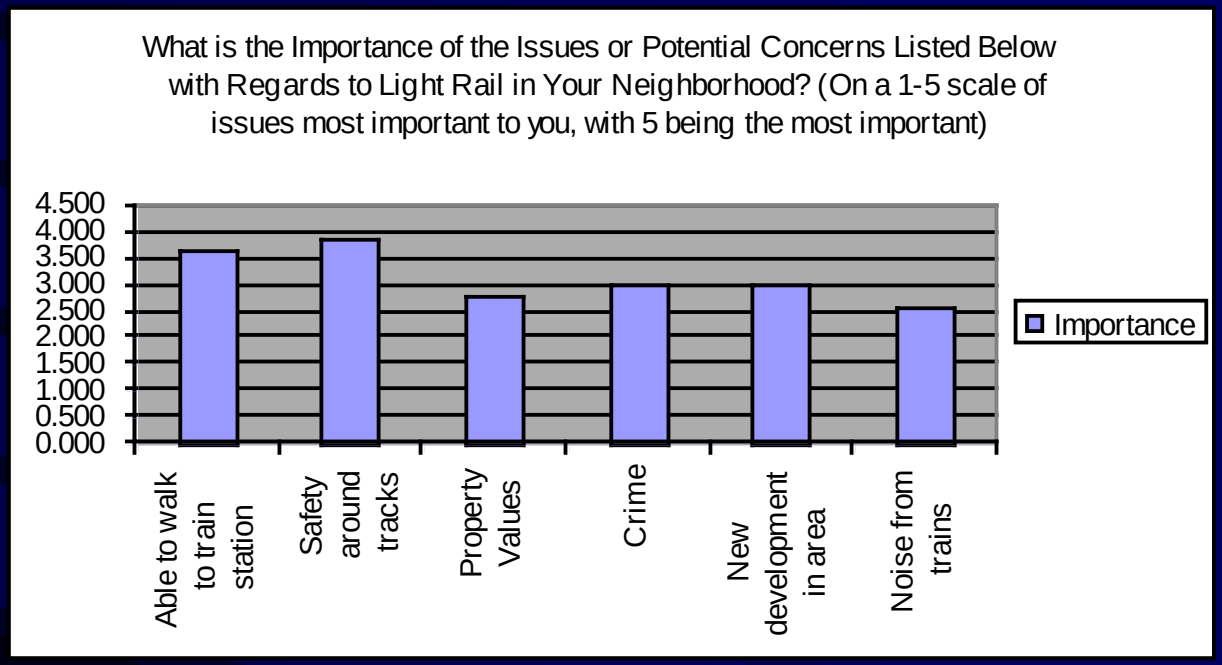
- **Walking to stations top concern**
- **Residents appear to look at the positives**
  - Crime and noise from trains not big concerns

Walking Distance



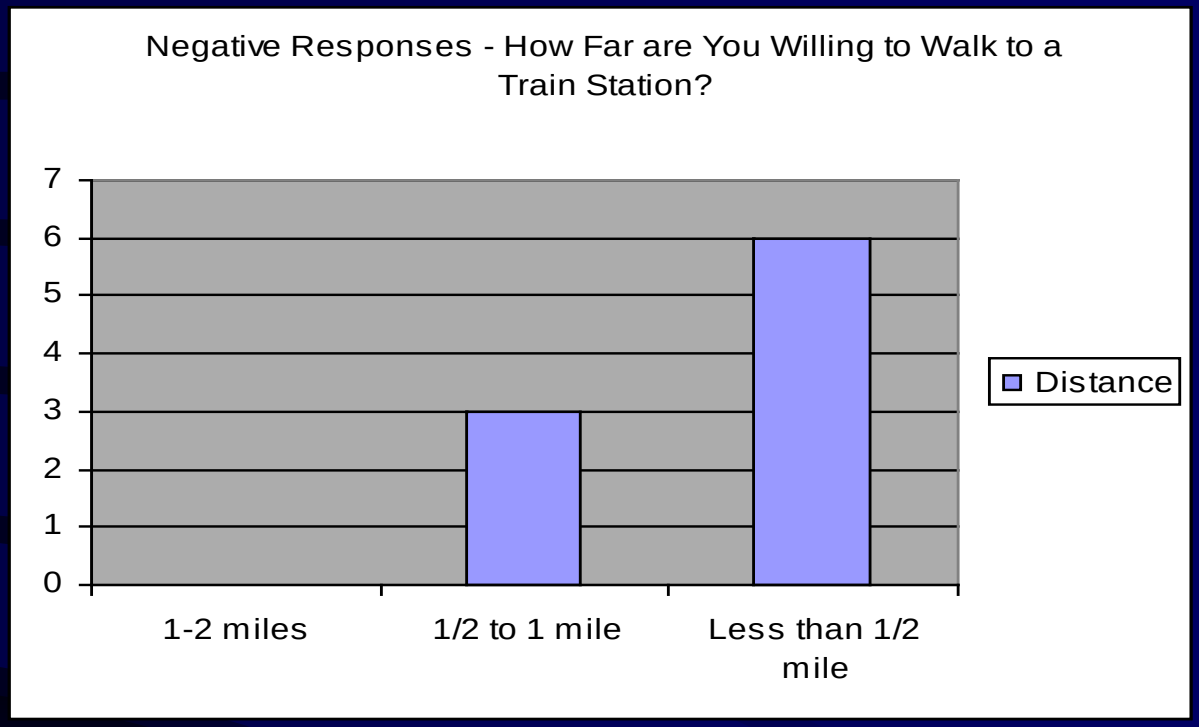
- **Over 90 percent of residents want stations within a mile**
- **Would ride several times a week**

Negative Reponses



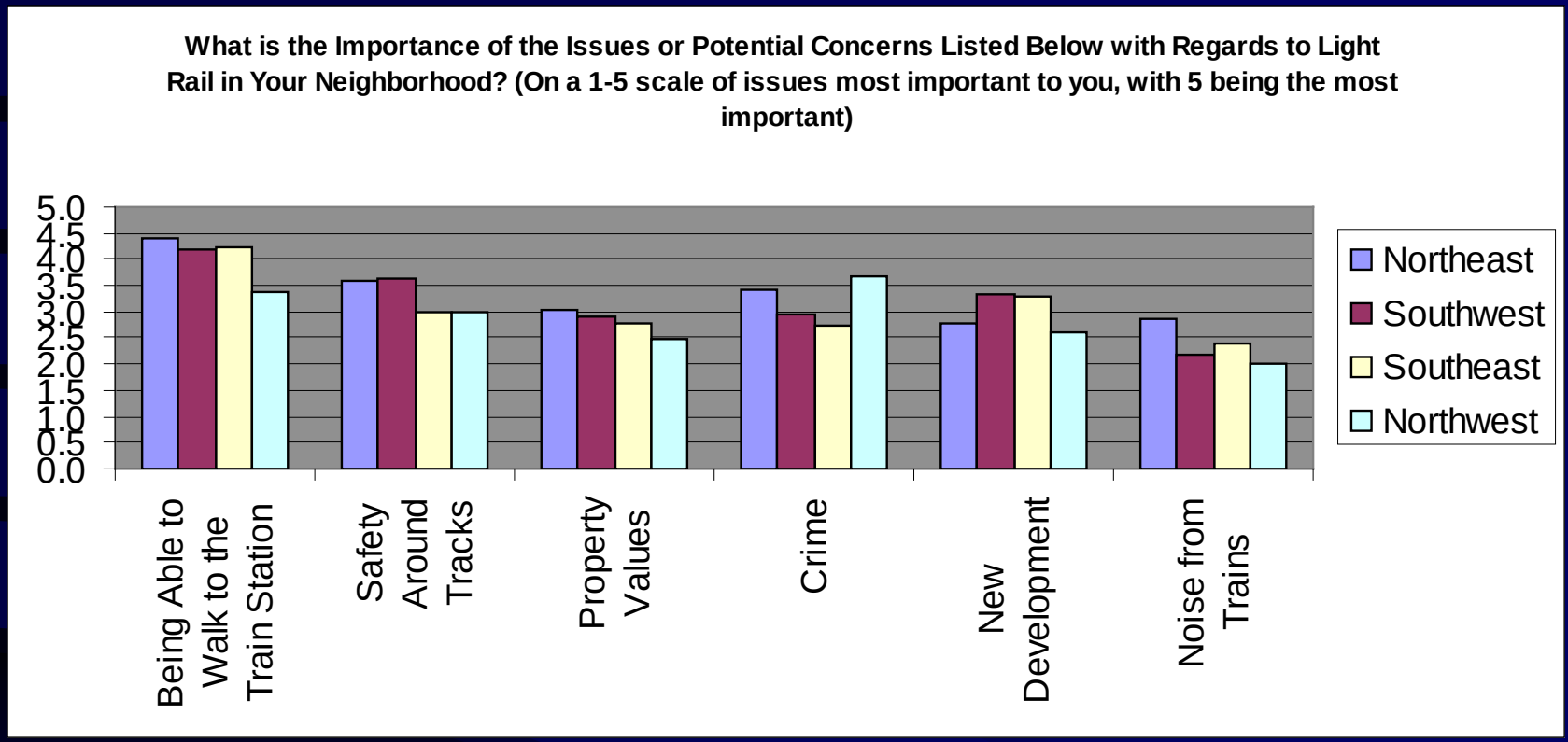
- **Opponents most concerned about safety**
- **Crime, property values, and noise were not the real concern for residents.**

Negative Responses



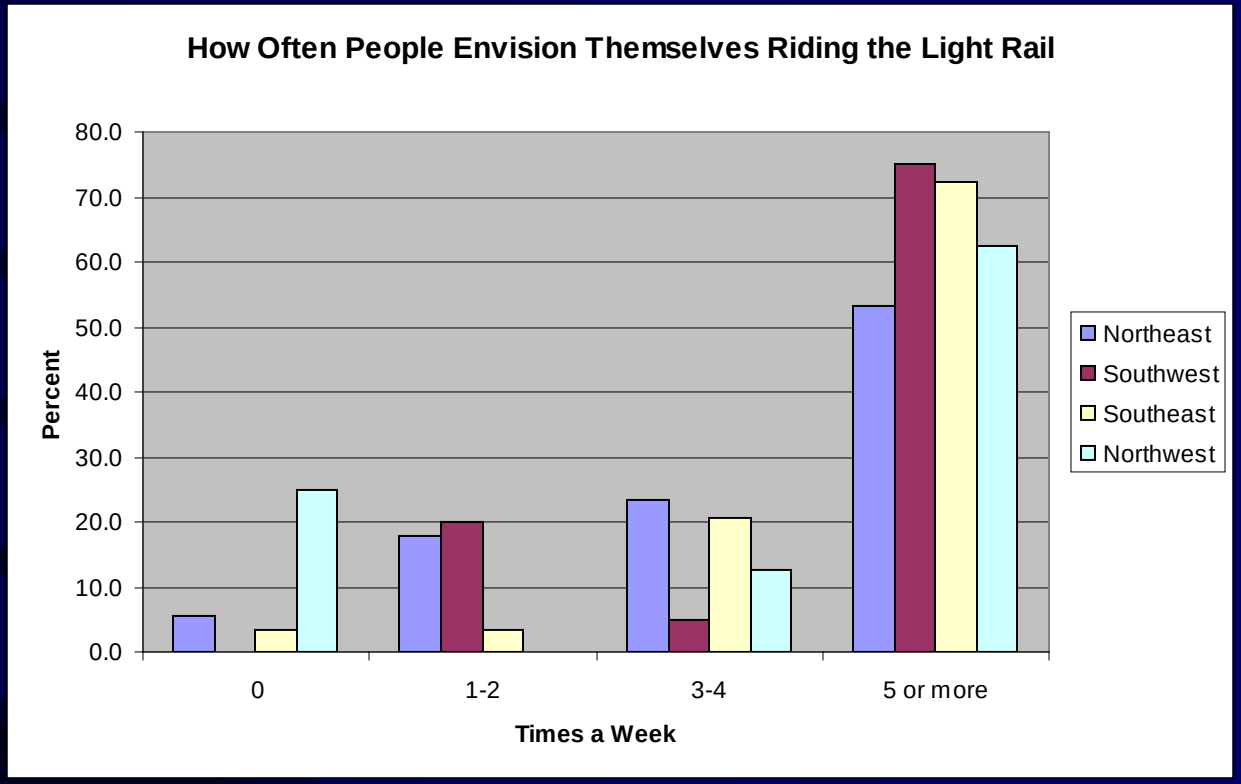
- **People opposed to the light rail system are reluctant to walk from their homes or work to the station.**
- **Opposition to the light rail likely stems from the commuter mindset of most Atlanta residents.**

Regional Differences



- **Only the Northwest section rates crime as high on the list of concerns. In fact, all three other regions consider it a low priority and instead emphasize being able to walk to the train station as the most important.**
- **The Northeast section also rated property values high, different from the other sections.**

Regional Differences



- **The majority of Northeast residents felt comfortable riding it several times a week, but still significantly less than residents in other regions.**
- **The results also suggest a hesitation by the Northeast section from walking a long distance to the rail stations. Over 50 percent of Northeast residents would not be willing to walk more than half a mile to a train station.**

Drawing Conclusions

- Main issue: 1/2 walk or less
- Address crime coming into established neighborhoods
- Highlight the ability of the light rail to increase property values.
- The Northeast section also highlights a desire to use the rail to get to shopping centers. For this section of the Belt Line, connecting people to shops, stores, and malls will be an essential component for ridership.

Belt Line Development is Crucial

- Attract a consistent ridership in order to maintain financial feasibility
  - Create mixed-use developments
- Provides future tax base that will fund the system
  - Business and property taxes

Belt Line Development is Crucial

- Goals: Gauge development interest in areas around Belt Line and determine how to increase it
- Focus on southern Atlanta: most unused land

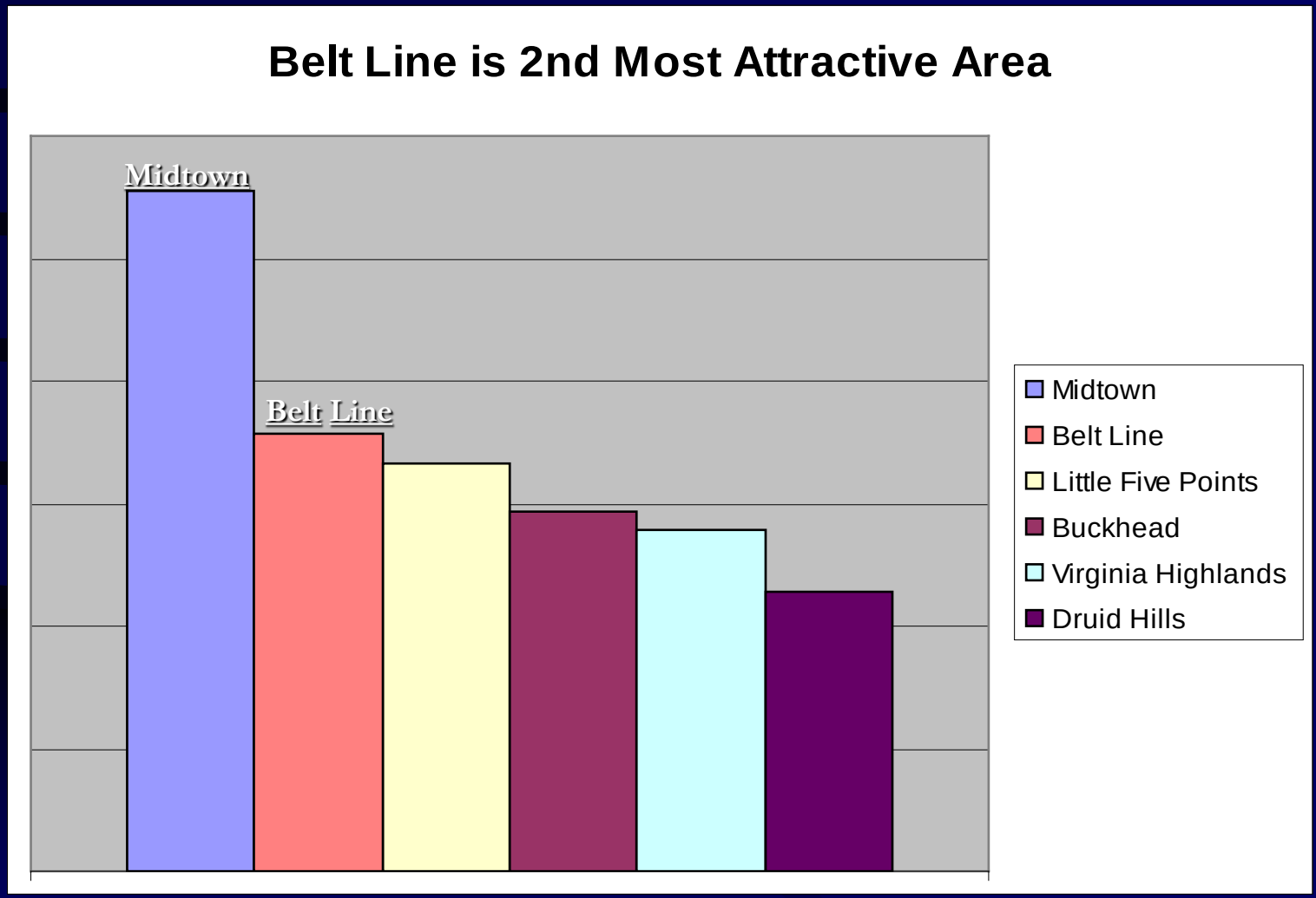
Key Information Sources

- Quantitative & qualitative survey responses of 7 developers
- Interviews with 3 developers:
  - Kim King - Kim King and Associates
  - Dan Dupree - Barry Real Estate Companies and Cousins Properties
  - M. Von Mkosi - Atlanta Neighborhood Development Partnership

Developer Viewpoints

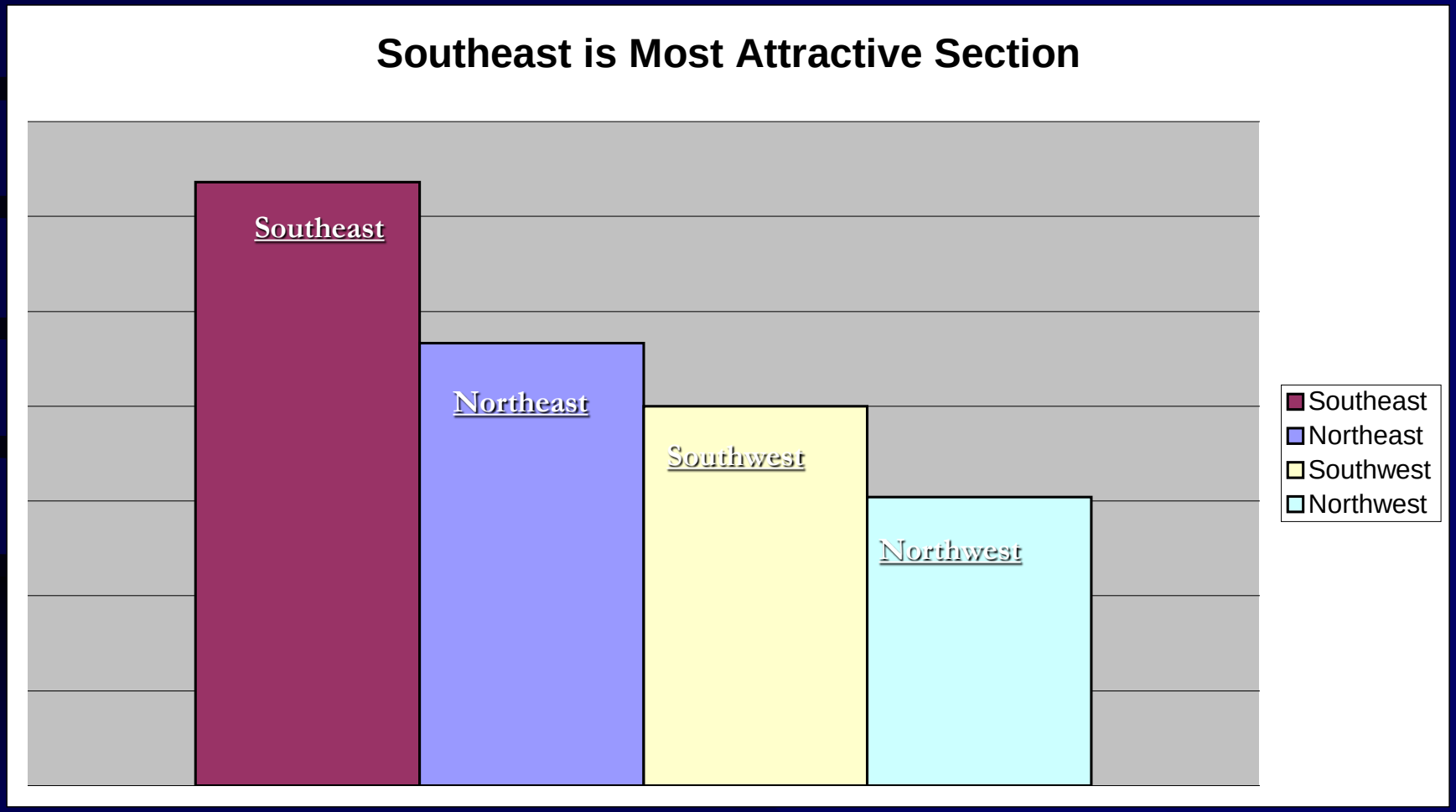
- Kim King: excited about the current form of the project
- Dan Dupree: does not like concept; feels Belt Line would not help Metro Atlanta as a whole
- M. Von Mkosi: excited about idea and emphasized the need to connect and develop all parts of Atlanta

Land Use – Most Attractive Area



Land Use – Most Attractive Section

Feasibility Study



Developer Suggestions

- Get approval of Neighborhood Associations b/c projects have been delayed in the past
- Build entire system
- Create public/private partnership
- Condemn land around Belt Line, resell to developers

STREAMLINE

Facilitating Redevelopment

- Help with financing
  - Affordable housing
  - Mixed Use complications
- Ease property tax raises on elderly
- Emphasize ridership demand, not political & social aspects
- Develop infrastructure to support commercial and residential development
- Locate city offices around Belt Line

Marketing

- System must be safe & clean
- Owning a car often exceeds mortgage costs
- Market other benefits
  - e.g. if an applicant gives up a car, they can get a larger loan from Fannie Mae

Conclusion

- Skeptical of “build it when they will come”
- Biggest Concern: streamline development process
  - -helping developers gain support from current residents
  - -aiding developers in obtaining necessary finance
  - -simplifying the zoning process
- Developers will move quickly if the city can streamline process

Simulation

- Objective: Illustrate functionality and examine system by adjusting setup and studying achieved service levels.
- Simulation goals:
  - Setup of system to achieve anticipated system performance
  - Traveling time between stations

Simulation Outline

- The basic model
- Scenarios
- System performance measures
- System Setup

Analysis of the Input Data II

- Train traveling time between stations
  - Maximum allowed train speed
  - Acceleration, constant velocity, and deceleration phases
  - Triangular Distribution approximation
- Train delay at the stations
  - Regression analysis
    - Based on Experiment at Midtown MARTA Station
  - Minimum and maximum delay at the station

Analysis of the Input Data II

- Hourly customers flows (20 hour days)
  - Daily customer flow at the stations
  - Traffic distribution percentages by hour
  - Same traffic distribution throughout the system as well as throughout the week
  - Customer flow modeled as Poisson process with exponential interarrival times

Scenarios

- Variation of Customer Flows
  - Increased given customer flow values by 25%, 50%, 100%, and 200%
- Variation of Train Schedule
  - 4-7 single trains
  - 4-7 double trains
- Variation of Train Speeds
  - 25 mph, 30 mph, 35 mph

System Performance Measures

- Average waiting time
  - 5 minutes
- Maximum waiting time
  - 13 minutes
- Maximum number of people able to board a train
  - 60 people
- Maximum allowed utilization
  - 60 % of crush load

System Performance Measures

		Driving		Light Rail @ 25mph		
From	Destination	Distance	Time	Distance	Time	Difference in time (Driving - Train)
Inman Park	Copenhill	0.8	2	2.0	12.6	-10.6
Lindbergh	Kanuga	3	5	3.0	15.0	-10.0
Inman Park	Easton	4.6	10	4.2	20.0	-10.0
Irwin	Kanuga	1.9	3	1.8	12.1	-9.1

- Driving times (via Yahoo!) are about 10 min. faster
- Doesn’t account for rush hour

System Setup

- Recommendations for each system setup

	Customer Flow Increase				
	Current	25%	50%	100%	200%
Chosen number of Trains	4	4	5	4 double	5 double
Chosen train speed (mph)	30	25	25	25	25

Final Recommendations

- Conduct a study on the potential economic return of the Belt Line
- Begin researching the process of acquiring land around the Belt Line and reselling the land
- Form a public/private partnership with Atlanta developers
- Build the entire transit system, not section-by-section
- De-emphasize building around parks, look at how the system could connect existing centers

Questions?