Distance to Existing Stores

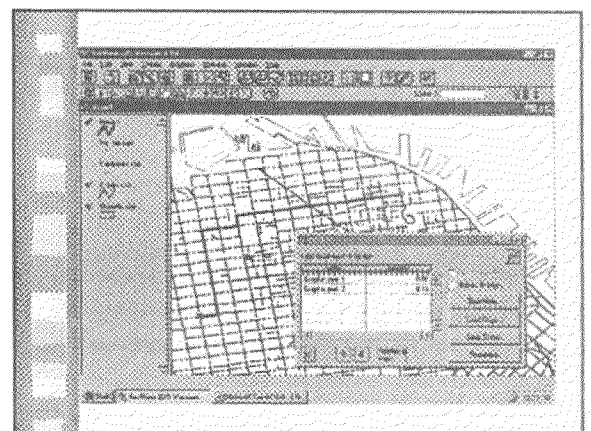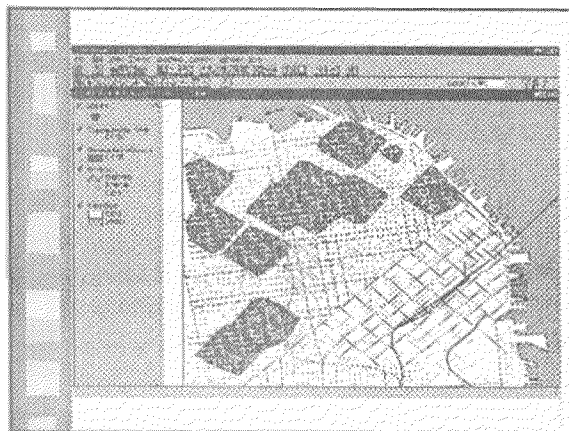
Red Areas -- Near Population and Far from Other Stores

Network Analysis

- Minimum path through a network permits optimal routing
  - Trucking companies and delivery operations
  - Public transit companies
- Such logistics programs use GPS and GIS
- Urban transportation planning is just starting to use GIS networks

Network Analysis Example

- Networks, such as streets or pipes for water or sewer, are important to planners
- Using the street network (length in meters) in San Francisco we can determine
  - Service areas around stores (.5 Km)
  - Shortest path between two points

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Urban Allocation Models

- Long history of using region-level urban allocation models in planning
- Models project population, jobs and/or land use to a future time period
- Projections are "allocated" to zones within the region
- Success and reputation of these models is mixed

Other Urban Models

- There is also a long history of urban transportation planning models
  - Well developed methodologies
  - Changing over time to reflect new thinking
    - Feedbacks and agent-based simulation
    - Focus on integrating land use and air quality
- Fiscal impact and environmental models widely used

Current Situation

- Many different model types
  - Land use, transportation, environmental, fiscal
- Different scales -- regional, corridor and local scale
- WIDE variation in quality of the different models

Some Current Allocation Models

- John Landis California Urban Futures (Version II)
  - GIS based raster model using transition probabilities to project land use change
- Richard Klosterman What If?
  - GIS based land use allocation model based on user defined weights
- Michael Batty's various models
  - Fractal, cellular automata, etc.

Definition of Planning Support Systems

- PSS is a software tool for urban-focused decision makers and analysts that integrates GIS, projective and assessment models and visualization tools in an integrated desktop environment.

Some History

- Britton Harris proposed the concept of a planning support system in 1989
- Paul Densham developed the Location-Allocation Decision Support System (LADSS), optimization based techniques for matching facility supply and demand

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The Three Components of a PSS

- GIS
  - Storage, manipulation, display
- Models
  - To project alternative futures and to estimate impacts (fiscal, transportation, environmental)
- Visualization tools
  - Screen designs that are understandable to a wide range of users

PSS Puts Things Together

- PSS is a "big" concept
- As such, it can be interpreted in many ways
- For example, these are very different
  - Doing computerized building permits
  - Locating a new school
  - Projecting regional population growth to 2020
  - Estimating the ridership on a new rail line

Where is PSS Going?

- Tools are there to build planning support system — GIS, models, visual display tools
- BUT need to recognize the current state of urban models and decide on a clear problem definition
  - What do we want to be able to do?
  - Project regional futures? Estimate traffic from a shopping center?

Conclusion

- Computer tools, such as remote sensing and GIS, are important tools for government
- Governments can start with a small effort and build to a larger system
- Must be careful to select reasonable efforts and NOT to promise too much

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