Theoretical Light Rail Extension & the Incorporation of Cyclists

GIS2 Final Project Presented by
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Background

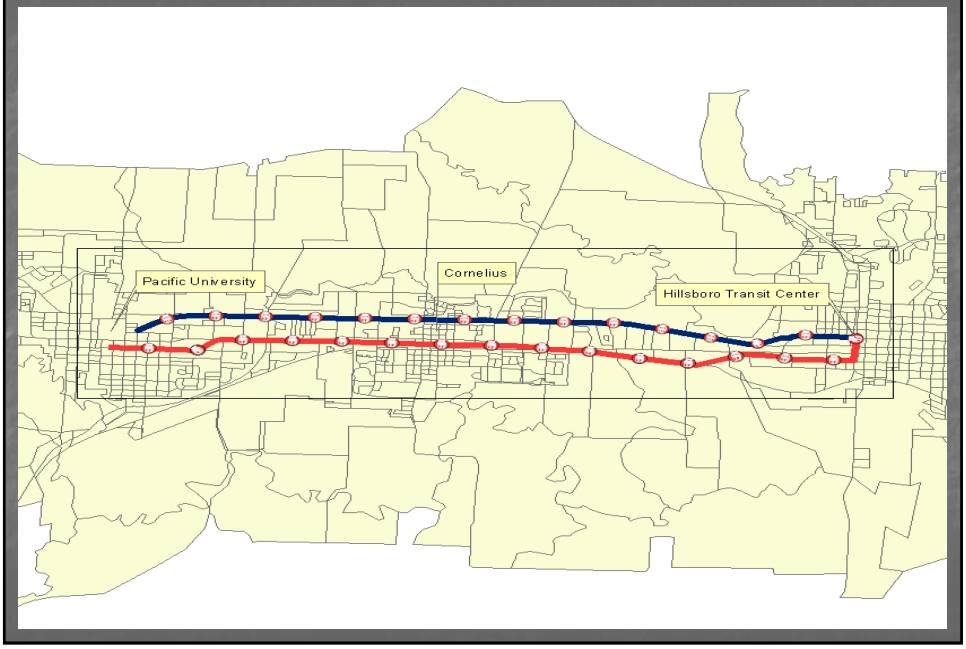
- Metropolitan Area Express (MAX) is Trimet's light rail system serving 3 lines (blue, red and yellow) which consists 44 miles in the Portland Metro area
- Max ridership continues to grow
- More than $6 billion in development has occurred along max line since the decision to build in 1978
- Max takes cars off roads, helps keep air clean and preserves neighborhoods and livability

Proposal and Criteria

- Proposal to extend the Max blue line from Hillsboro to Forest Grove (near Pacific University)
- This 5 mile extension in Washington County is much needed due to urban development in area
- Criteria will include population density and tax lot information using RLIS and Census 2000 data
- Choosing density area buffers was determined by comparing an existing Max track
- Will compare the 2 purposed MAX tacks to determine which one is more feasible to construct

Study Area

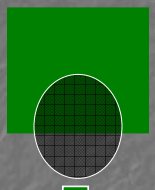
Digitized 2 purposed tracks (Study Area)

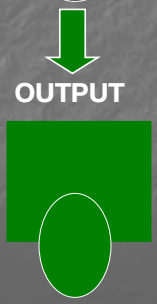


Buffers within a quarter mile (1320') walking distance

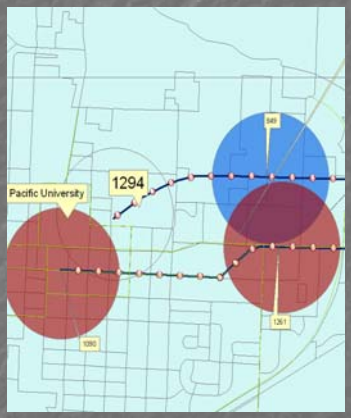
Overlay

INPUT





OUTPUT



Attribute Table

Added 2 fields

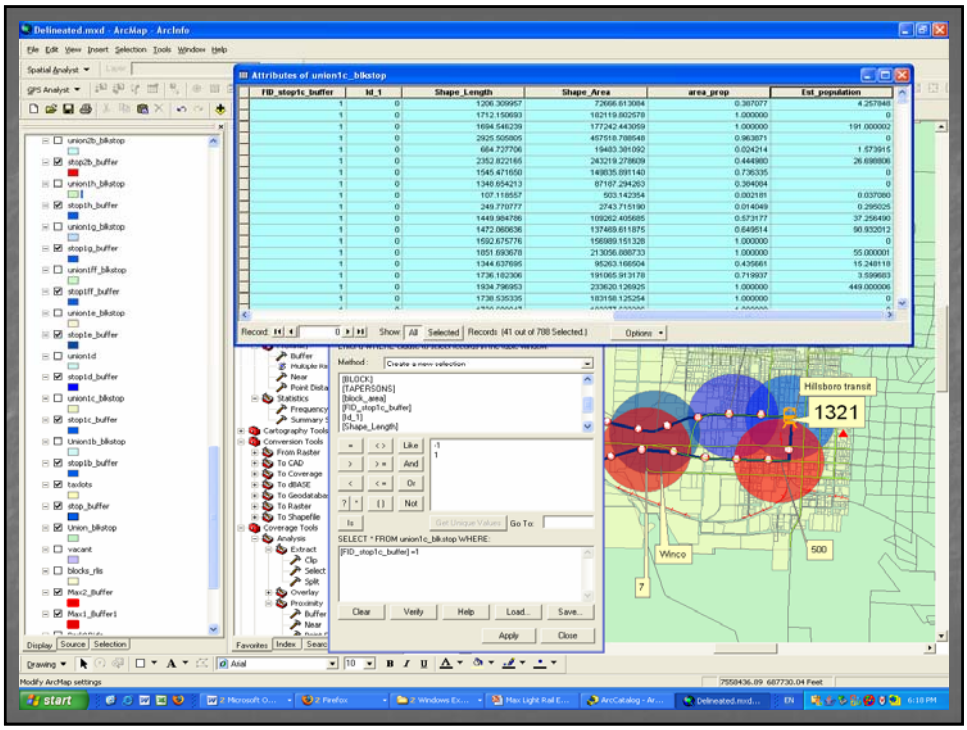
Est_pop

Area_prop

TRIMET

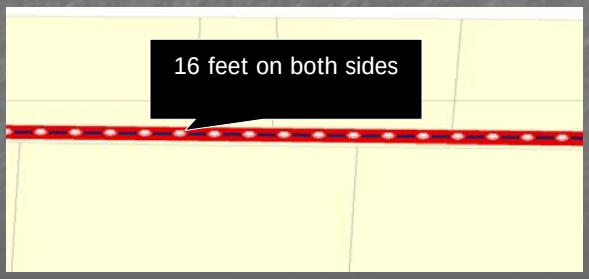
Calculated
Tapersons*area_prop

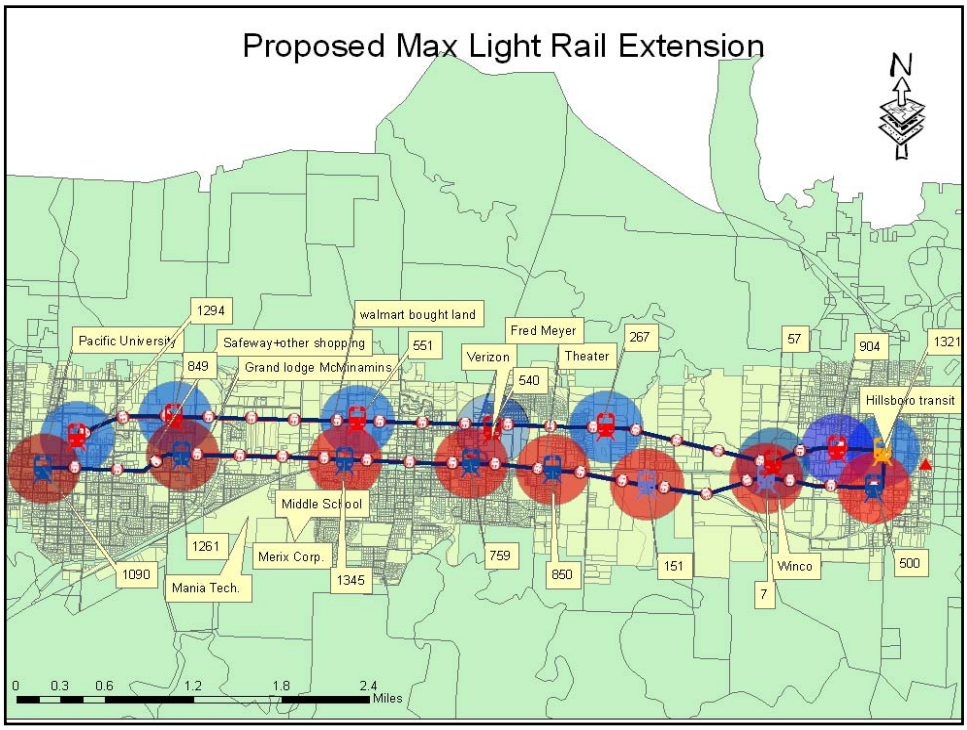
Calculated
Shapearea/blockarea



Taxlot Information

- Buffered 16 feet around both proposed tracks
- Track 1 (Top) total value= $3,284,420
- Track 2 (bottom) total value= $28,042,760
- “Total value” includes both building and land values





Further Proposal

- Commuters that choose to bike and not walk to Max stations
- Determine friendliness bike routes in proximity to the proposed Max stations

Changing Modes

Problem Statement

- Cycling routes are already in place are they friendly and accessible for the theoretical MAX? What station(s) may prove to be the best one for cyclists?

Affected Bike Routes within Study Area

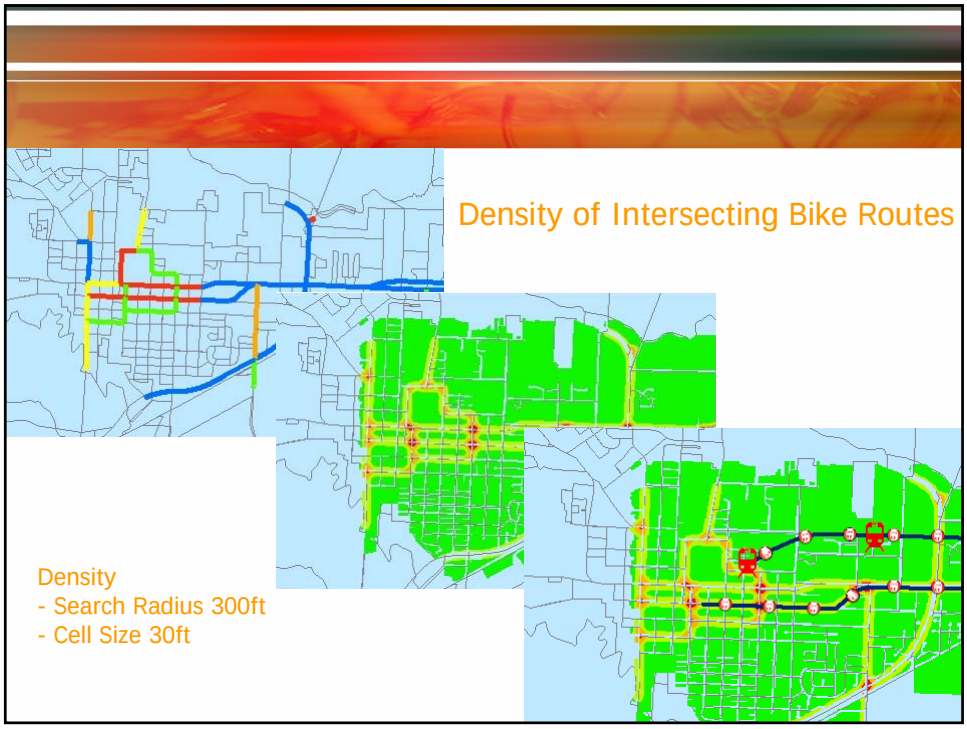
11.42 Miles of routes

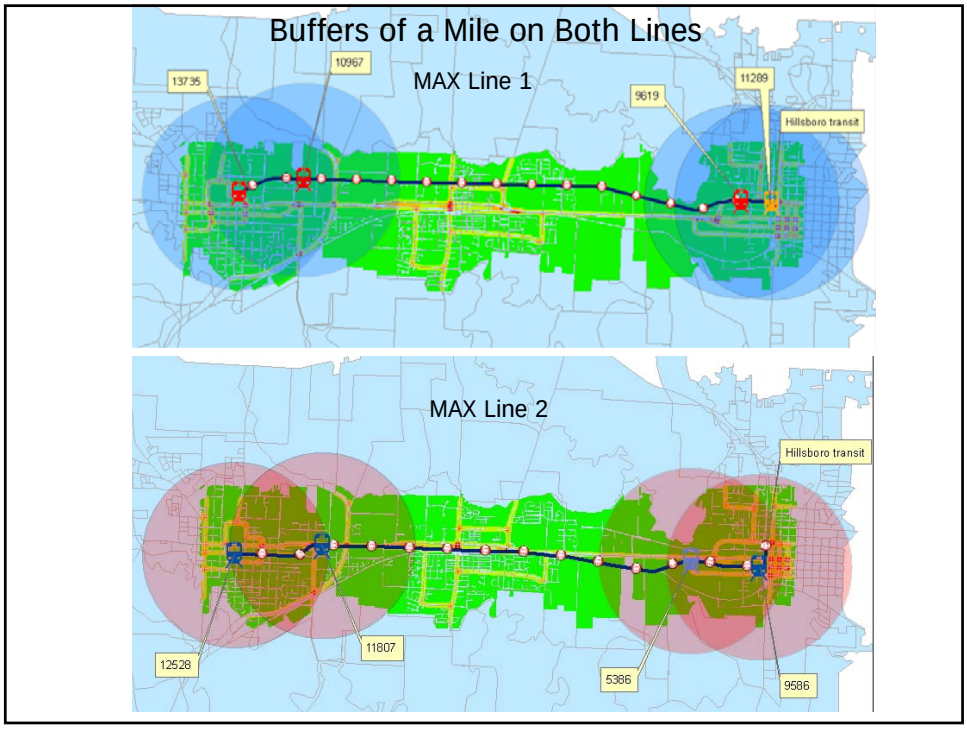
Methodology

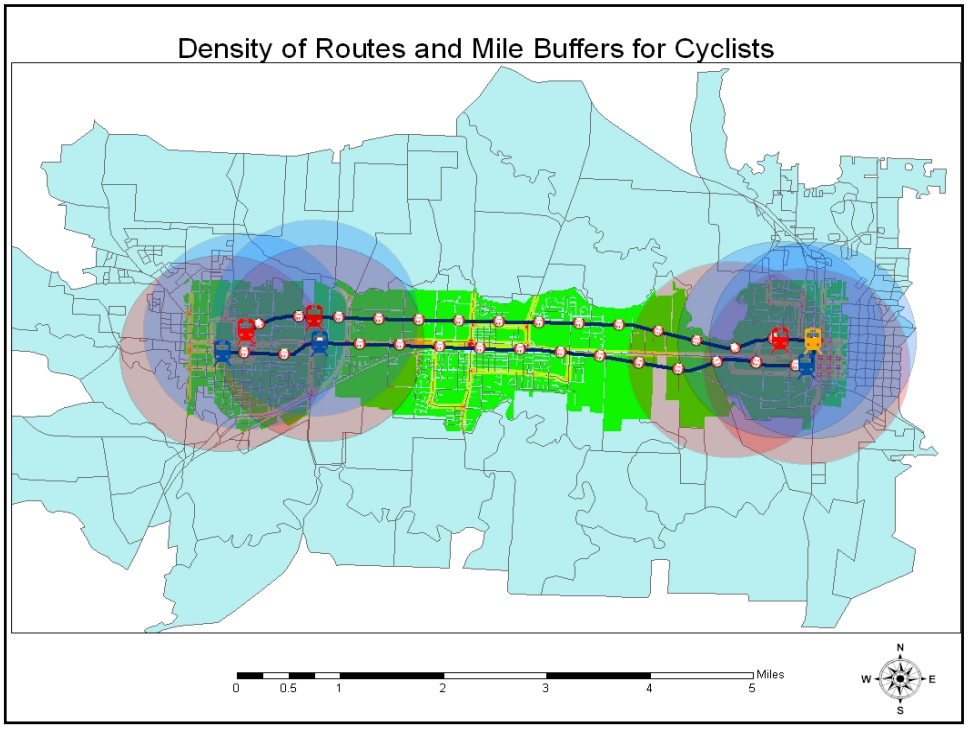
- According to the coined definition of “Friendly”, it constitutes accessibility and proximity to a MAX station.
  - Picked 4 different MAX stations on each theoretical line
    - Used density to show intersects of Bike Routes
      - Lie within the buffer
      - Proximity to Stations
    - Buffered the areas to a 1 mile radius
    - Union Blockgroup to buffer to show affected pop.

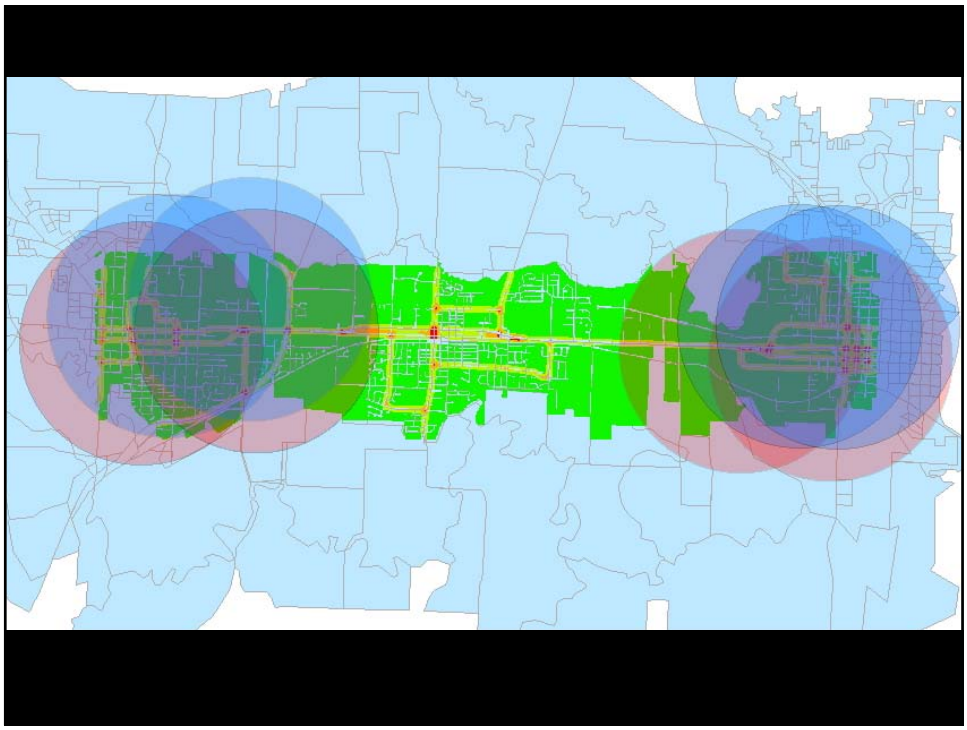
Analysis

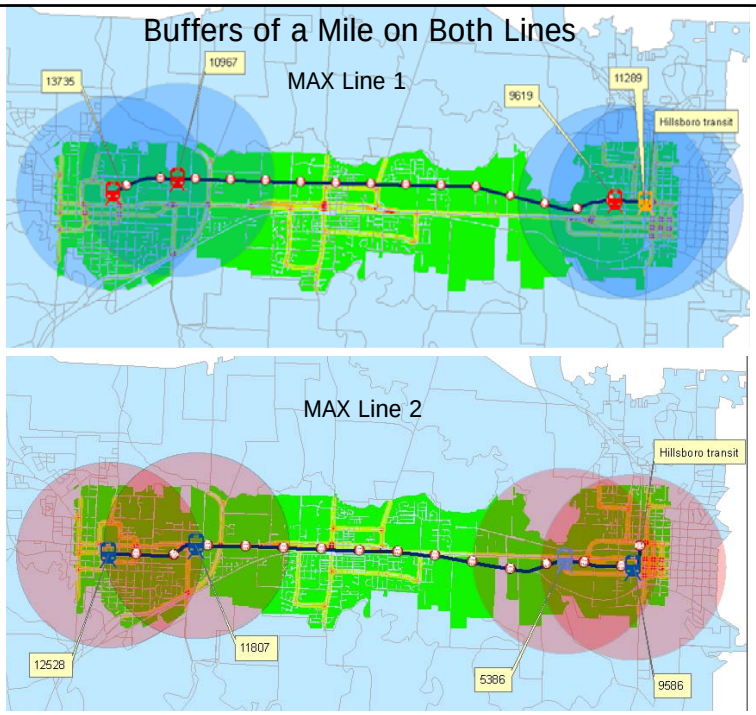
- Mile buffers show a significantly larger population affected compared to quarter mile
- Incorporating more bike routes might inhibit rider-ship
  - Bike on MAX 1 -24,702 left 19,998 right
  - Bike on MAX 2 – 35,669 left 14,972 right
    - Overlap


Density of Intersecting Bike Routes
Density
- Search Radius 300ft
- Cell Size 30ft


Buffers of a Mile on Both Lines
MAX Line 1
13735
10967
9619
11289
Hillsboro transit
MAX Line 2
Hillsboro transit
12528
11807
5386
9586


Density of Routes and Mile Buffers for Cyclists
0
0.5
1
2
3
4
5
Miles
N
W
E
S





Affected Population

- Affected POP within Buffers
  - MAX 1 - 5,738
  - MAX 2 - 7,284
  - Bike on MAX 1 -24,702 End 19,998 Add-on
  - Bike on MAX 2 - 35,669 End 14,972 Add-on

Conclusion

- Classifying “Friendliness”
- If theoretical MAX line is implemented the present bike route design will probably need restructured
- Buffers show limited population (quarter mile vs. mile)

Discussion

- Limitations to performing transportation diagnostics?
- CBA Using Spatial Analyst a possibility?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Forest Grove
TRIMET
HAVE A SAFE
COMMUTE