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# Measuring Connectivity for Bicycling and Walking

Active Living Research  
Round 1

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# Why Connectivity?

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# Three-Step Project

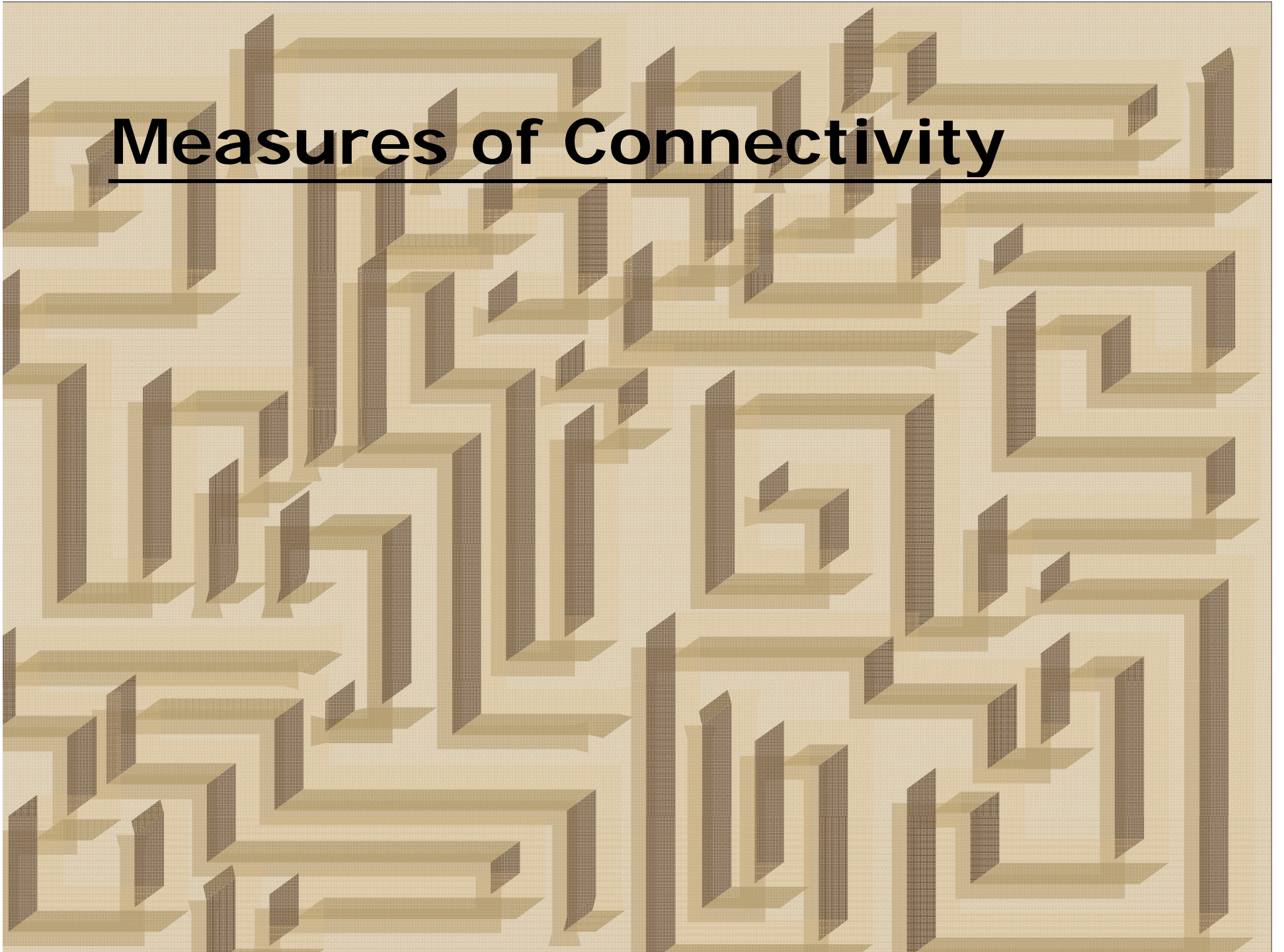
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1. Develop measures of network connectivity
2. Compare connectivity measures to performance measures to help select best measure(s)
3. Evaluate implementation issues



# Measures of Connectivity

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# Measures of Connectivity

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- Block length
- Block area
- Block density
- Intersection density
- Street network density







# Measures of Connectivity

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- Alpha Index
  - *Ratio of the number of actual circuits to the maximum number of circuits*
  - *A circuit is a finite, closed path starting and ending at a single node*
- Gamma Index
  - *Ratio of the number of links in the network to the maximum possible number of links between nodes*



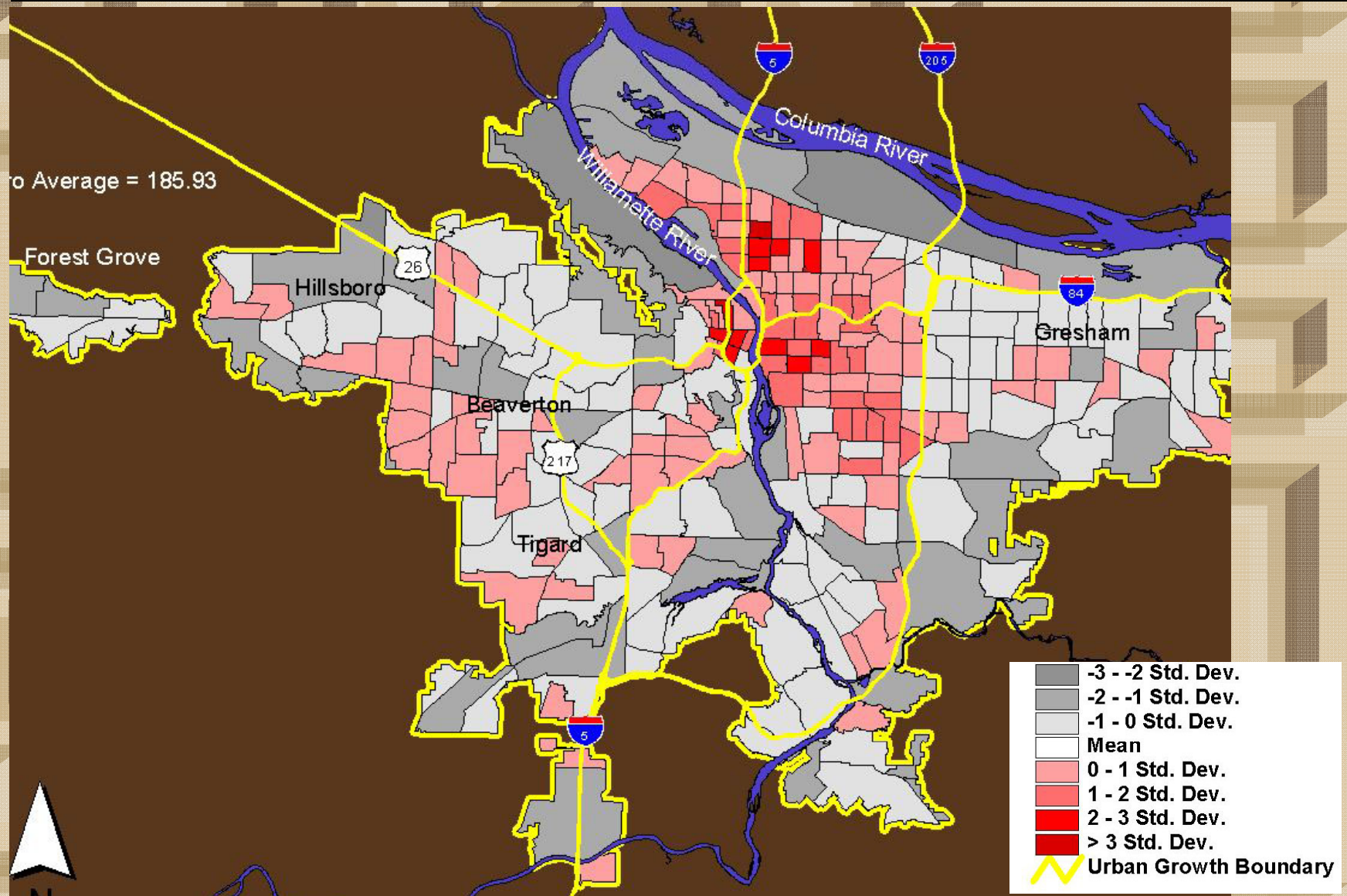
# Measures of Connectivity

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- Effective Walking Area
  - *Ratio of the number of parcels within a one-quarter mile walking distance of a point to the total number of parcels within a one-quarter mile radius of that point*
- Pedestrian Route Directness
  - *Ratio of route distance to straight-line distance for two selected points*

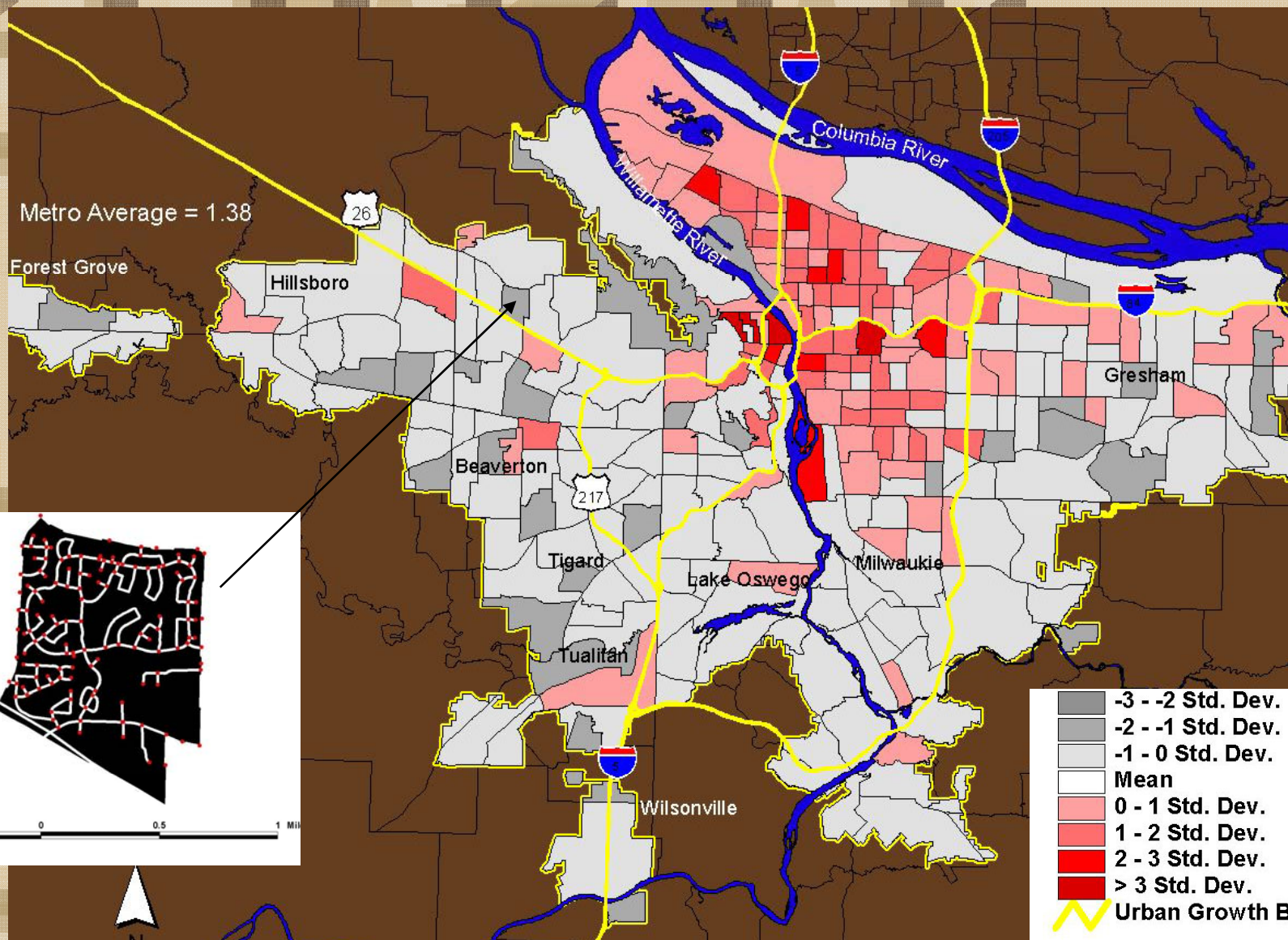


# Intersection Density

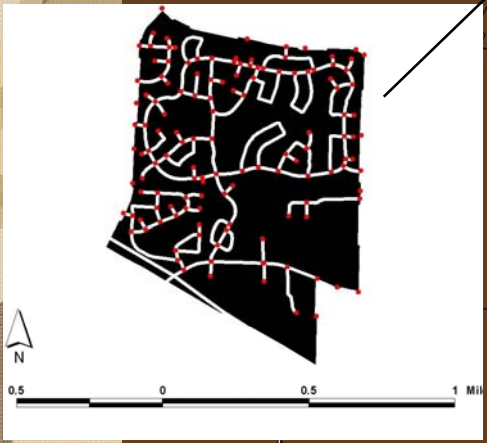




# Link-Node Ratio



- 3 - -2 Std. Dev.
- 2 - -1 Std. Dev.
- 1 - 0 Std. Dev.
- Mean
- 0 - 1 Std. Dev.
- 1 - 2 Std. Dev.
- 2 - 3 Std. Dev.
- > 3 Std. Dev.
- Urban Growth Boundary





# Evaluating Measures

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- Which connectivity measures best reflect minimizing trip distances and route directness?
- Pedestrian Route Directness:  
most direct route/straight-line
- But, difficult to use in research and policy – requires selecting points.



# Applying PRD





# Implementation Potential

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- What can other researchers and public agencies realistically measure?
- Survey of 30 cities





**The end**

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