

Alternative Land Use Patterns: Can They Minimize Congestion?

Research findings
92nd Purdue Road School
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Topics to be covered

- Alternative land use patterns
- 1. Travel impacts
- 2. Economic aspects
- 3. What residents think
- Lessons learned



New Urbanist Land Use



- Neighborhoods *compact*, pedestrian-friendly, and mixed-use.
- Many *activities of daily living* should occur within walking distance.
- A village center
- Street networks to encourage walking, reduce the number and length of automobile trips.

Source: Congress for the New Urbanism, www.cnu.org

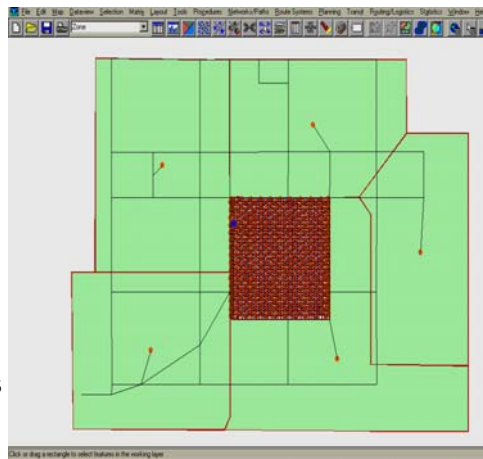
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1. Does mixed land use reduce trip lengths?



In travel demand model,

- Subdivide standard TAZs into block-size minizones.
- Move non-residential “attractions” into neighborhoods. (NPTS + ITE T/G)
- Let trip productions choose attraction ends for full study area.



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1. Mixed land use reduces trip lengths



- % change in trip length (mi) w/rt “EUCLID”
- Minor change to study area VMT
- Noticeable change to neighborhood VMT

	UTOWN	REN
HBW	-2.4	-4.8
HBNW	-9.3	-10.2
NHB	-4.0	-40.3

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2. Can neighborhoods support enough businesses?



- Walkable neighborhood of 1 square mile
- Economic census data: households needed to support each business type
- Lure of businesses outside the neighborhood

TABLE 5 Number of Establishments Supported by Catchment Area from Market Analysis

Retail Trade Sector	5 HH/acre
Grocery Stores/ Supermarkets	0.8
Foodservice and drinks	5.9
Beer wine and liquor	0.8
Furniture and home furnishing	0.9
Health and Personal Care	0.9
Amusement and recreation	1.2
Bookstore	0.2
Building Material & Equipment	1.62
Clothing and accessories	1.89
Commercial Banking	1.31
Electronics and Appliances Store	0.62
Movie Theatre	0.10
Personal and Laundry Services	2.50
Pharmacy/ Drugstore	1.10
Public Library	0.01
Sporting Goods and Hobbies	0.98

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Consumer expenditure market analysis



**Units = (HH Expenditure * Total HH) /
Average Sales**

Example: No. of Grocery Stores

**= (\$3000 per HH * 100 HH) / (\$600,000
per unit) = 0.5 units**

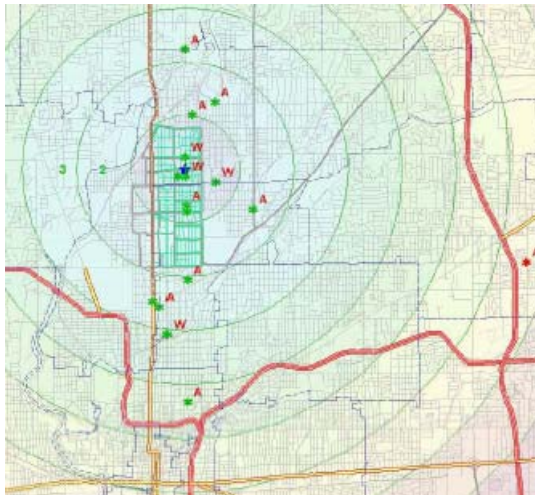
**→ 100 HHs can support 0.5 grocery
stores**

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2. Neighborhoods cannot support most businesses

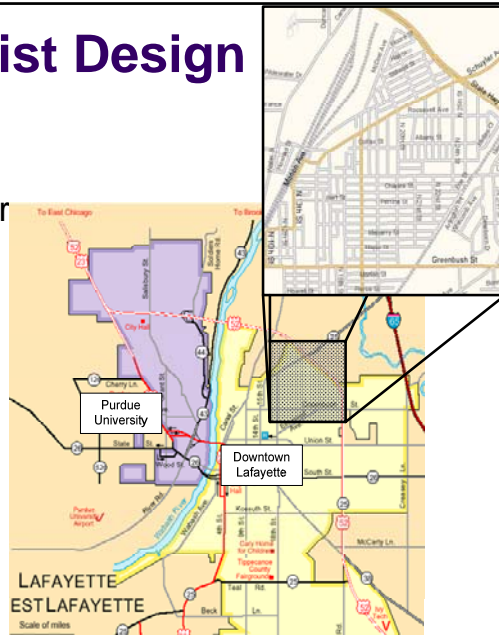


- Meridian-Kessler Neighborhood
- Mailback survey: many “basic” trips go outside neighborhood
- Sidewalk survey: 38% < 1 mi, 46% > 2mi



3. Is New Urbanist Design popular?

- St. Lawrence-McAllister neighborhood (Lafayette)
- Surveys: Best attributes and land uses in neighborhood
- Hypothetical changes



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Community input and preferences

- Thriving neighborhood center means vehicle traffic from outside
- Acceptable: Businesses on edge on neighborhood
- Repeat economic support analysis



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4. Do new “New Urbanist” designs reflect New Urbanism?



- Village of West Clay
- Variety of architecture
- Long walk distances to “center”
- Center lacks businesses that meet frequent household needs.

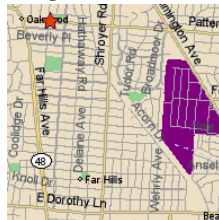


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5. Some mixed use neighborhoods work



- Oakwood OH
- Old development preserved and/or updated
- Businesses along busy streets at neighborhood edges



5. Some mixed use neighborhoods work (2)



Supermarket street side



Parking lot behind store



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Lessons learned



- LU changes can reduce VMT.
- Mixed land use must be economically viable.
- Adapt land use designs to specific conditions (tp. network, citizen attitudes)
- Preserve and enhance existing mixed land use.
- Provide choices!

