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Defining Place: A Review of How Place Type Is Measured and Constructed

Kelly Rodgers
Portland State University

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Defining place: A review of how place type is measured and constructed

Friday Transportation Seminar
Portland State University
January 26, 2018
Kelly Rodgers



- The relationship between built environment and travel behavior is the most studied (Ewing & Cervero, 2010)
- Looking beyond BE variables, researchers construct neighborhood or place types
- But if variables explain* travel behavior, why study place type?

*Demographic and attitudinal factors also play a role





Dan Burden

- Ease of understanding; analytic constructs with fewer independent variables; planning and design (Song & Knapp, 2007)
- Places have bundles of land use and transportation characteristics
- These characteristics interact: potentially confounding, diminishing, or amplifying effects



- But what place type when? Modeling, design guidance?
- Various constructions: binary, composite, categorical, data-driven, intuitive
- Aim: to create a responsive, defensible, and transferable place type typology...



HOME

STRATEGIES

GOALS

ABOUT

EVIDENCE AND INSIGHT FOR BETTER TRANSPORTATION

FIND TRANSPORTATION STRATEGIES THAT

PROMOTE SAFETY

GO

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SUMMARY

EVIDENCE

IMPLEMENTATION



DESCRIPTION

Traffic Calming refers to streetscape design features intended to reduce vehicle traffic speeds and volumes, often used to improve safety for pedestrians and bicyclists. Traffic Calming can be considered an engineering countermeasure to improve safety.

Traffic Calming can be implemented in problem spots ("black spots") or as part of area traffic management. Studies suggest that area-wide implementation may be more effective.

SCALE & CONTEXT

Local scale. Urban street with low to moderate traffic volumes.

COST

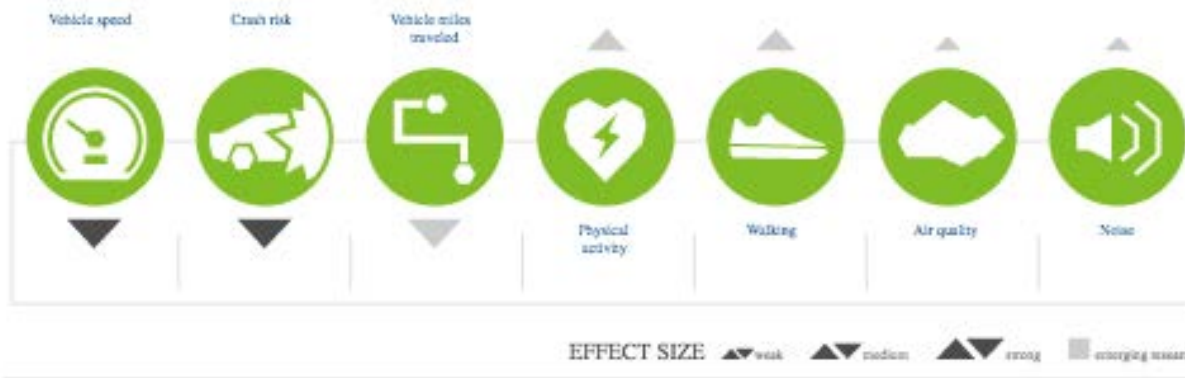
\$\$\$\$ moderate

COMMON TACTICS

- Chicanes
- Diversions
- Pedestrian refuge islands
- Speed humps
- Roundabouts
- Traffic circles

PERFORMANCE DASHBOARD

VIEW A B C

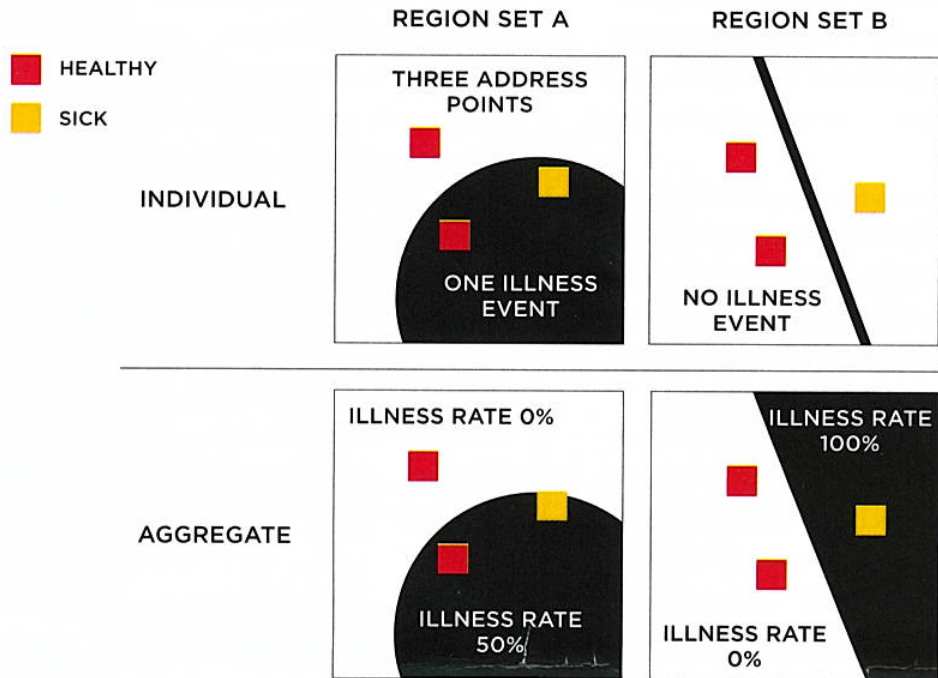


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Factors to consider

The Modifiable Areal Unit Problem

Units make a difference when it comes to geographical analysis:
Changing your areal boundaries can dramatically change your results.



Outlook Tower in Ewing, R. (2017, October).
One more thing for planning researchers to
worry about. *Planning Magazine*, p. 51.

- Unit of analysis—
Modifiable Areal Unit
Problem (MAUP)
- Scale for outcome of
interest; e.g., walking is
local and VMT is regional
(Galster, 2001; Chaskin, 1997;
Handy, 1993)
- Residential self-selection
 - Demographics
 - Cross-sectional data

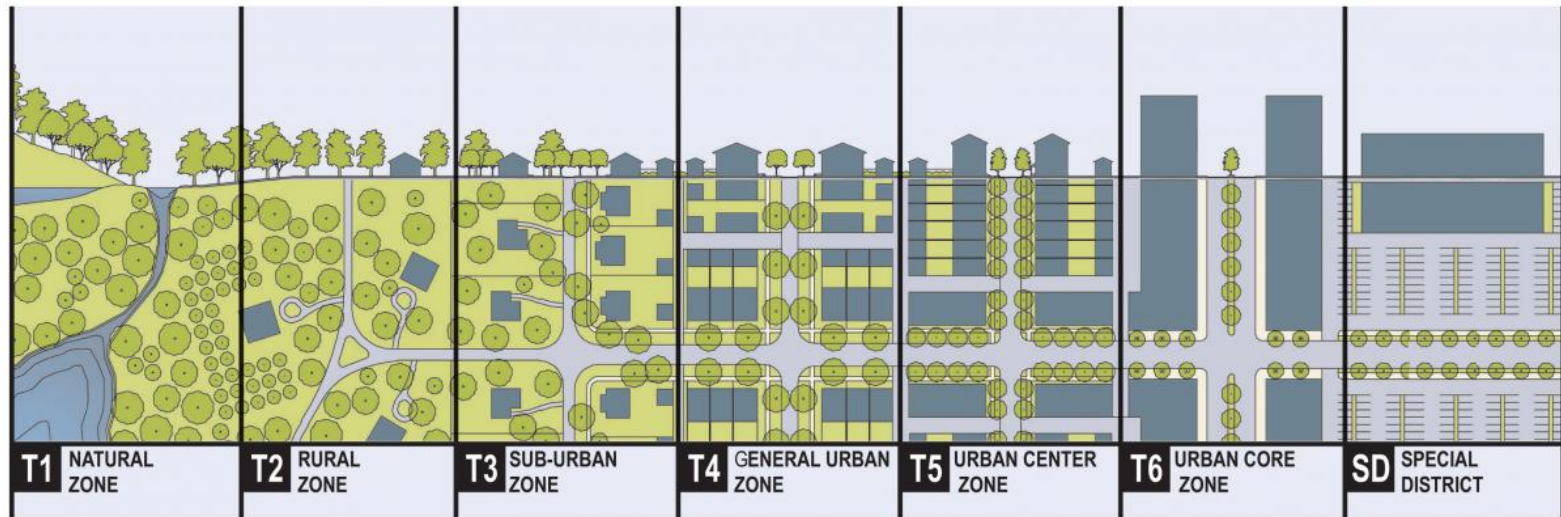


Built Environment Variables

- 5 Ds most frequently used for all types
- Street design, aesthetics for walking and urban design typologies
- Housing vacancy, age, and whether single-family for some data-driven

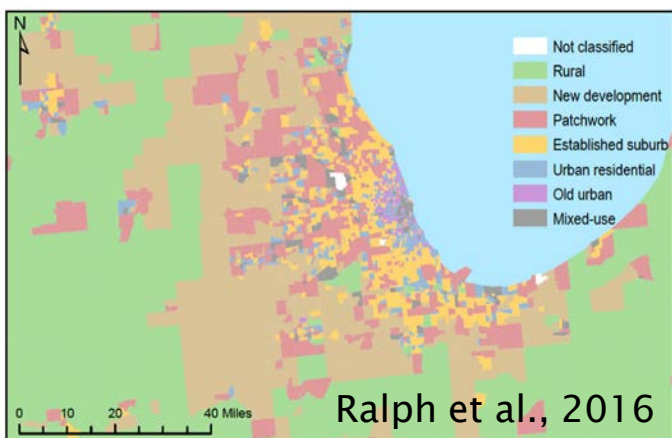
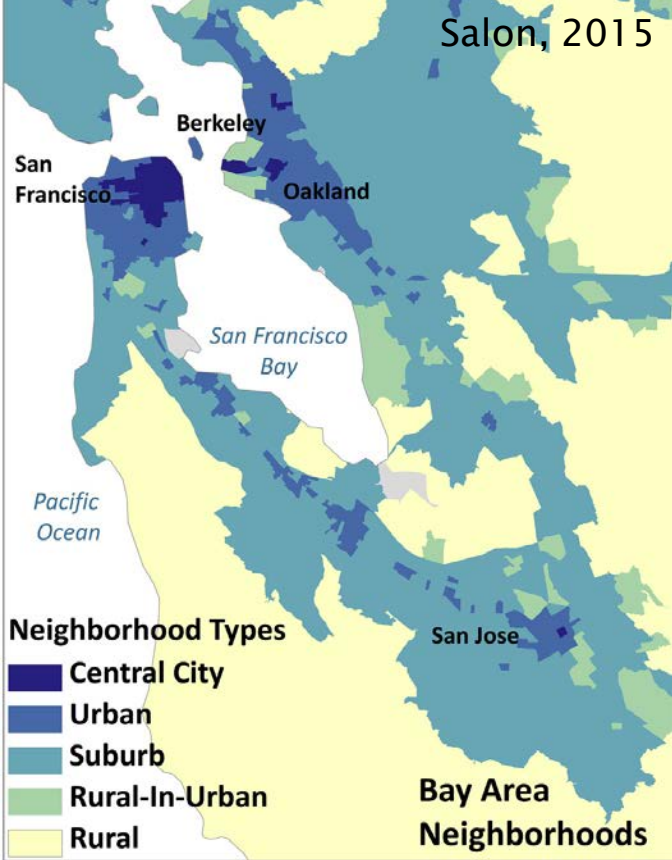
Urban Design Types

- Intuitive approach with a lasting influence on travel research and practice, particularly with Smart Growth (Handy et al., 2002)
- Rural-to-urban transect, Context Sensitive Design
- Employed for “neighborhood character” and transportation design guidance

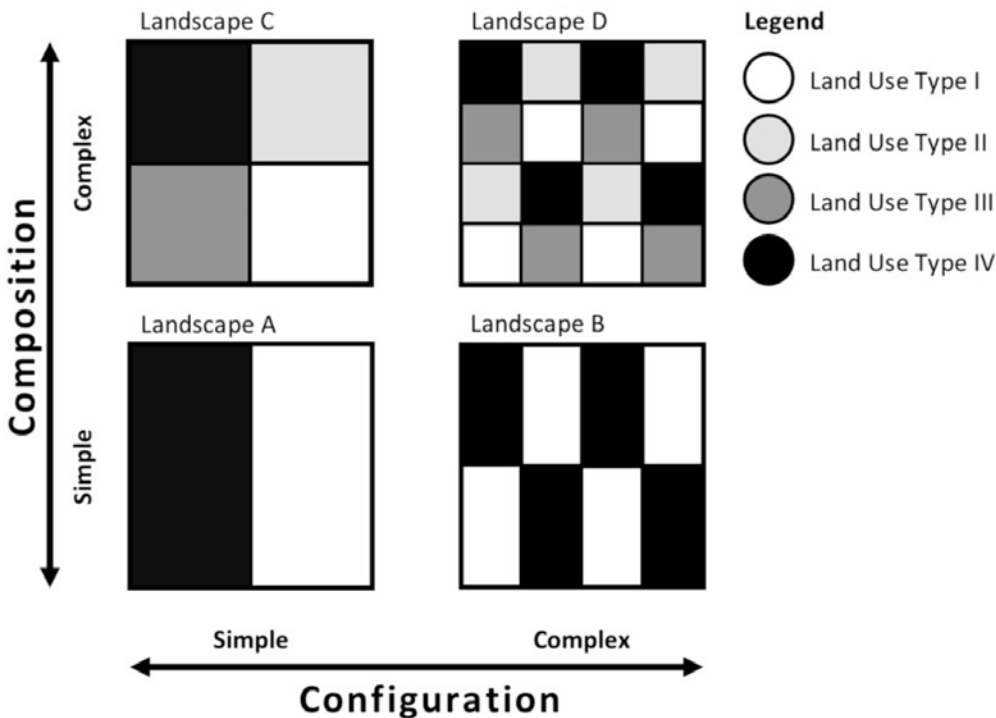


Categorical Approaches

- Early work tended to be binary
- Salon (2013, 2015) and Ralph et al. (2016) used a factor-cluster analysis with census tracts
 - 5–7 place types
 - Heterogeneity and synergistic effects
- Categorical approaches better for some modeling applications



Composite Approaches



Gerke & Clifton (2017)

- Bagley and Mokhtarian (2002) resisted categorical
 - Mostly attitudinal, few BE variables
 - SEM
- Gehrke and Clifton (2017) latent construct of Smart Growth-ness
 - Predict walk mode choice and trip frequency
 - SEM

Area & Development Type

Development Type	Area Type			
	Urban Core	Close in Community	Suburban	Rural
Residential	✓	✓	✓	
Employment	✓	✓	✓	
Mixed-Use	✓	✓	✓	
Transit Oriented Development	✓	✓	✓	
Rural/ Greenfield				✓

- SmartGAP/SHRP2 project
 - Derived from a Smart Growth transect
 - Caltrans Smart Mobility Framework
 - Census block group
- ODOT
 - Estimate travel behavior and VMT in their Regional Strategic Planning Model
 - Piloted SHRP2 typology (EPA Smart Location Database)
 - Adapted with local data–16 types

Next Steps in a Research Agenda

- Further explore how unit of analysis and boundaries relate to outcomes of interest
 - Tracts vs. block groups
 - Walking vs. VMT
 - Threshold effects
- Which typologies do a good job of creating unique place types that produce significantly different effects on VMT? Validation testing.
- Presumption of moderating effect—what if place type is a mediator?

Thank You! Ask me questions at krodge2@pdx.edu or kelly@thinkstreetsmart.org

References

- Bagley, M. & Mokhtarian, P. (2002). The impact of residential neighborhood type on travel behavior: A structural equations modeling approach, *The Annals of Regional Science*, 36(2), 279–297.
- Chaskin, R. (1997). Perspectives on neighborhood and community: A Review of the literature, *The Social Services Review*, 521–547.
- Ewing, R. & Cervero, R. (2010). Travel and the built environment: A meta-analysis, *Journal of the American Planning Association*, 76(3), 1–30).
- Galster, G. (2001). On the nature of neighbourhood, *Urban Studies*, 38(12), 2111–2124.
- Gehrke, S. & Clifton, K. (2017). A pathway linking smart growth neighborhoods to home-based pedestrian travel, *Travel Behaviour and Society*, 7, 52–62.
- Handy, S. (1993). Regional versus local accessibility: Implications for nonwork travel, *Transportation Research Record*, 1400, 58–66.
- Handy, S., Boarnet, M., Ewing, R., & Killingsworth, R. (2002). How the built environment affects physical activity: Views from urban planning, *American Journal of Preventive Medicine*, 23(2S), 64–73.
- Outlook Tower in Ewing, R. (2017, October). One more thing for planning researchers to worry about. *Planning Magazine*, p. 51.
- Ralph, K., Voulgaris, C.T., Taylor, B., Blumenberg, E., & Brown, A., (2016). Millennials, built form, and travel insights from a nationwide typology of U.S. neighborhoods, *Journal of Transport Geography*, 57, 218–226.
- Salon, D. (2015). Heterogeneity in the relationship between the built environment and driving: Focus on neighborhood type and travel purpose, *Research in Transportation Economics*, 52, 34–55.
- Song, Y., & Knaap, G. J. (2007). Quantitative classification of neighbourhoods: The neighbourhoods of new single-family homes in the Portland metropolitan area. *Journal of Urban Design*, 12(1), 1–24.