Regional Transportation Goals: Reducing Sprawl through Interconnected Centers

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A "polycentric" region is a network of compact developments (centers) that are connected with each other through high-quality transportation options. As the antidote to sprawling suburbs, compact centers can encourage all the things that sprawl discourages: **public health, environmental sustainability, social cohesion, and economic diversity.** But how can metropolitan planning organizations ensure that their regional plans will actually meet these goals?

Polycentric development has been advocated by urban and transportation planners for more than a decade. However, effective practice must be backed by solid research, and to date there has been little or no research that quantifies the transportation benefits of having multiple centers – or defines what actually makes a center. A new study from the National Institute for Transportation and Communities (NITC) offers the strongest evidence yet produced on the transportation benefits of polycentric development. Researchers partnered with local agencies to help the Salt Lake County region in Utah make informed decisions about future growth patterns.

HOW DO YOU DEFINE A CENTER?

The researchers analyzed **126 regional transportation plans (RTP)** to see how they promote polycentric development. Specific, quantitative definitions of "centers" were not common – only 25 of the 126 plans included any type of quantitative indicator. Synthesizing the quantitative and qualitative criteria found in the RTPs, they developed guidelines for identifying five of the most common:

- **REGIONAL CENTER**: Dense business, civic, commercial and cultural centers which serve the county and region with an intense diversity of land uses.
- **URBAN CENTER:** Mid- to high-density centers which are pedestrian, bicycle, and transit friendly, and include mixed-use development.
- **ACTIVITY CENTER**: Places, varying in scale, that contain a concentration of business, civic and cultural activities, creating conditions that facilitate interaction.
- **TOWN CENTER**: Roughly 1/3 the density of urban centers, these cater especially to pedestrians: providing walkable connections to surrounding neighborhoods.
- **EMPLOYMENT CENTER**: Industrial or business parks: As with the activity center, the scale of an employment center varies - from the regional employment center down to the suburban employment center.

Within the 25 plans that included quantitative criteria, the factors for designating centers can be classified into four main categories: employment density, residential density, total population or employment, and area size. Other factors, covered only in a few of the plans surveyed, include land use mix, building design, transit service, and street density. Researchers next tried to find optimal values to maximize transportation benefits of polycentric developments. The final report offers detailed guidance.

TRANSPORTATION BENEFITS: REDUCED VMT AND INCREASED WALK TRIPS

Researchers compared travel outcomes between center households and non-center households. On average, **households living in centers tend to make fewer and shorter automobile trips, take transit more often, walk more, and bike less.** Most centers are walkable and well-served by transit, so their residents might have less need for bike travel. When a household in a suburban area moves into an existing center, or a center is newly developed, the average household is expected to have significantly shorter auto trips and more walk trips. This shows that centers are effective at reducing vehicle miles traveled (VMT) and increasing walk trips, which offers multiple benefits from improved public health to fewer greenhouse gas emissions.

Another transportation benefit of centers can be examined by looking at "trip chains," also known as travel "tours." A trip chain is a sequence of trips that begins and ends at home, and one is considered efficient if it includes travel modes other than the personal automobile (the higher the proportion of walk, bike, or transit trips, the more efficient the trip chain). The research team investigated trip chaining efficiency within three types:

1. Those that fall entirely within a center; in other words, all trips were generated inside a center;
2. Those where some trips were generated inside a center and the rest outside;
3. Those that do not have a single stop inside a center.

The most efficient trip chains are the ones that were generated within a center, since they have the highest means of using walk, bike, and transit modes. These trip chains are associated with lower auto share, and fewer VMT per trip and chain length as well. Among trip chains that are hybrid, the mean value of walk trips is substantially higher when both ends of trips are inside a center, compared to the trips that are not inside a center or only one end (i.e., either the origin or destination) is inside a center. So, these results tell us that individuals are mostly inclined to use their vehicles or transit to reach a center and once they are inside of it, the chance of walking is exceptionally high. Trip chains that occurred entirely outside of a center show the lowest bike and transit shares, and the highest auto share and VMT per trip. In other words, these trip chains are highly auto-dependent, and sustainable modes of transportation are discouraged.

BEST PRACTICES IN POLYCENTRIC DEVELOPMENT

Seeking to outline context-specific strategies for Salt Lake County, the researchers conducted four case studies in regions with more or less polycentric policies: Twin Cities of Minneapolis-Saint Paul, Denver, Seattle, and Portland. The strongest case study was Portland, Oregon. From interviews and document reviews for the City of Portland, Portland Metro, and TriMet (Portland's transit agency), the researchers identified strategies that these agencies are using to promote polycentric development:

- The development of new capital projects and fixed-guideway transit lines;
- The concentration of resources in specifically designated corridors in the form of high-frequency service;
- The acquisition and retention of critical real estate;
- The prioritization of transit funding over freeway funding, as illustrated by the use of funds for MAX light rail lines rather than the Mount Hood Freeway and the Western Bypass.

IMPACTS OF THE FUTURE OF SALT LAKE COUNTY

Salt Lake County is in a unique position to develop and invest in centers. Several within the county have already begun to form organically. The Wasatch Front Regional Council (WFRC) has been planning for polycentric development since the Wasatch Choice for 2040 Vision was released in 2010. The WFRC is incorporating some of the findings from this report into future updates of its regional transportation plan, "Wasatch Choice 2050." Researchers recommend that the plan dictate where growth should be concentrated, emphasizing centers and efficient use of space. Context-specific strategies like this can help the region reach its goals of **fostering economic growth, preserving communities, increasing environmental sustainability, connecting transportation networks, improving air quality, and minimizing homelessness.**

ABOUT THE AUTHORS

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THE FULL REPORT and ONLINE RESOURCES

For more details about the study, download the full report **Reducing Vehicle Miles Traveled, Encouraging Walk Trips, and Facilitating Efficient Trip Chains Through Polycentric Development** at **nitc.trec.pdx.edu/research/project/1217**

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