

<b>UTC Project Information</b>	
Project Title	MPC 426 – Does the Livability of a Residential Street Depend on the Characteristics of the Neighboring Street Network?
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Brief Description of Research Project	<p>What makes a high-quality residential street? Existing research shows that a combination of streetscape features and social factors contribute to the quality of a residential street. Yet, most residential neighborhoods in the US depend heavily on arterials—roads that carry high volumes of fast traffic—for everyday travel and access to public transit, nearby shopping, and other activities. In this research we investigate the hypothesis that residents’ perceptions of the quality of their residential street, and their travel patterns, reflect not only the quality of their own residential street, but also the quality of the arterial roads in their neighborhood.</p> <p>Since the 1920s, traffic engineers and planners in the US have removed traffic from residential streets and channeled it onto major roads (arterials) because people want to live on quiet residential streets, and arterial roads can be designed to accommodate the high traffic flows. This strategy, exemplified by the functional classification system (Federal Highway Administration, 1997), aimed to preserve traditional neighborhood life in the face of increasing motorization and traffic, while optimizing traffic capacity in the road transportation system (UK Ministry of Transport, 1963).</p> <p>Yet, creating networks of single-purpose streets has produced a new set</p>

of conflicts. Arterials concentrate heavy traffic into one place, which can burden adjacent neighborhoods and create barriers for pedestrians, bicyclists, and transit riders. Traffic congestion is also a problem on arterials, and drivers may choose to cut through residential neighborhoods where streets are not designed with sidewalks or other kinds of protection for this kind of through-traffic. In cities across the country, and in particular here in Denver, policy makers, engineers, and designers search for strategies to help make traffic more livable (City of Denver, 2002).

Solving the problem of traffic in neighborhoods is not as simple as installing sidewalks, though they may a good starting point. Streetscape features such as street trees, good lighting, visual complexity, and secure places for pedestrians also increase the livability of streets (Jacobs, 1995; Owens, 1993). Similarly, social factors such as fostering social surveillance and reducing crime also seem to make a difference (Jacobs, 1961 [1992]; Doeksen, 1997; Hur and Morrow-Jones, 2008).

Decades of qualitative and quantitative research have looked at the livability of residential streets, but these studies have not analyzed residential streets in the context of their networks. In this proposed research, we introduce a new question: Does the perceived quality of one's residential street, as well as residents' use of their residential and arterial streets, also depend on characteristics of the neighborhood street network?

We will select four case neighborhoods in Denver, CO for in-depth study to identify how the combination of traffic, network design, streetscape design, and street life affects residents' perceptions of neighborhood livability and their travel patterns within their neighborhoods. Research methods include environmental measurement, residential surveys, and focus groups.

We hypothesize that people who live on good residential streets surrounded by good arterials travel farther and more frequently in their neighborhood, use their residential streets more frequently, and rate their residential streets as being very livable (see Table 1). In contrast, we expect that residents who live on poor residential streets surrounded by poor arterials minimize the travel in their neighborhood and use of their street, and rate their residential streets as being very unlivable.

For those who live in neighborhoods with good residential streets but poor arterials, or in neighborhoods with good arterial streets but poor residential streets, we expect that the relationships between arterials and residential streets will be more complicated. In these cases, we expect that the negative effects of poor arterial streets spill over onto residential streets, which will decrease their livability and use. Similarly, we expect that having good arterials will still attract trips, but fewer than would have been the case if the residential streets had higher quality.

	<p>Research Objectives</p> <p>This study will:</p> <ol style="list-style-type: none"> <li>1. Explore and test the following hypotheses outlined in Table 1.</li> <li>2. Identify the most important explanatory variables and dependent variables that we should carry over into a larger study.</li> <li>3. Propose a plan to scale the research using the Denver Region Council of Governments (DRCOG) Front Range Travel Survey, which provides information from travel diary surveys about where people travel and how often.</li> </ol> <p>To the extent possible in this pilot study, we will consider how gender, income, and race/ethnicity influence the answers to our research question, but a full investigation of social and demographic characteristics will require a more synoptic study design based on secondary data. We have the appropriate secondary data to carry out such a study in the future (Front Range Travel Survey), but first need to investigate validity of our constructs and hypotheses before applying them to the entire region.</p>
<p>Describe Implementation of Research Outcomes (or why not implemented)</p> <p>Place Any Photos Here</p>	<p>The character of the nearby arterial road influences residential livability across a number of livability measures. When controlling for income, high levels of traffic and low levels of urban design on the arterial both detract from the livability of those living in the surrounding neighborhoods. Moreover, some results suggest that residential streets with heavy traffic near a low traffic/high design arterial are just as livable, if not more, than residential streets with light traffic near a high traffic/low design arterial. Our study includes three different measures of residential satisfaction, so the specific influence of the arterial road depends on whether one focuses on satisfaction with the neighborhood street, satisfaction with the neighborhood, or overall sense of happiness. The results suggest that arterials perceived as vibrant are associated with increased residential satisfaction – above and beyond other features of the residential environment.</p>
<p>Impacts/Benefits of Implementation (actual, not anticipated)</p>	<p>By no means should this be taken as a call to increase traffic on residential streets; rather, planners and engineers looking to promote residential livability need to begin taking a broader, network perspective to understanding livability. Livable residential streets can only be part of the solution; we also need more livable arterial roads. The results point to land use policies, enforcement of social norms, and the design of pedestrian and transit environments as measures to maximize the contributions of commercial arterials to neighborhood livability</p>
<p>Web Links</p> <ul style="list-style-type: none"> <li>• Reports</li> <li>• Project Website</li> </ul>	<p><a href="http://www.ugpti.org/resources/reports/details.php?id=847">http://www.ugpti.org/resources/reports/details.php?id=847</a></p>