

Rethinking the 15-Minute Standard: A Demand-Based Assessment of Urban Accessibility in Compact Cities

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Abstract:

Sustainable urban development increasingly relies on bringing daily needs closer to where people live, and the 15-minute city has become a leading planning concept built on this principle of walkable,

low-carbon neighbourhoods. Yet two gaps limit how the concept is currently applied in practice. Most evaluations rely on supply-side accessibility indicators and offer little evidence on whether the accessibility being provided actually matches what residents want. In addition, treating 15 minutes as a single uniform threshold ignores how people tolerate different walking times for different kinds of amenities. Both shortcomings become especially consequential in high-density cities where land is scarce and competition for space is intense. This study reframes 15-minute city evaluation around resident demand using high-density Shenzhen as the empirical setting. We build a three-dimensional spatial hedonic pricing model to estimate how walking accessibility to five amenity categories, namely education, recreation, retail, public transport, and healthcare, is capitalized into housing values and thereby reveals residents' preferences. Walking time is split into three intervals of 0 to 5, 5 to 10, and 10 to 15 minutes rather than a single cutoff. Proximity to all five amenity types is generally valued positively, with the only exception being community parks reached in 10 to 15 minutes on foot. Preference strength varies markedly across amenity types and walking-time intervals. We therefore argue that sustainable 15-minute city planning should move toward a function-specific spatial arrangement calibrated to how residents weigh access to different services.

concrete action, reflection, conceptualization, and experimentation rather than simply absorbed through transmission. Compared with traditional lecture-centered instruction, experiential approaches require students to act, decide, receive feedback, and revise their mental models in response to consequences. A large body of pedagogical research has shown that active learning tends to outperform passive lecturing on achievement outcomes, including in higher education across STEM, humanities, and social sciences (Freeman et al., 2014; Kozanitis & Nenciovici, 2023). More specifically, simulation-based learning appears especially effective for the development of complex skills because it places learners in realistic, feedback-rich environments where they must integrate knowledge and action rather than merely reproduce information.

Experiential learning differs from traditional “book learning” not because theory becomes unimportant, but because theory is tested in context. Conventional instruction is often optimized for acquisition and recall: students learn definitions, frameworks, and analytic tools, then demonstrate mastery in examinations or written assignments. Experiential methods, by contrast, are optimized for application: students must interpret incomplete information, coordinate with others, make trade-offs, and adapt when initial choices produce poor outcomes. Recent higher-education research on business simulations illustrates this distinction well. Business simulations have been shown to bridge theory and practice, deepen engagement, and strengthen perceived skill development, while systematic and empirical studies increasingly associate experiential formats with improved decision-making, critical thinking, and strategic intuition. Such findings align with the broader proposition that decision competence is developed not only by knowing what frameworks mean, but by learning when, why, and how to use them under competitive conditions.

Against this backdrop, the present study starts from a theoretically important possibility that academic strength, while meaningful, may not translate directly into successful decision-making in dynamic competitive environments. Teams composed of students with stronger grade point averages may enter a simulation with more academic capital, but that capital may be insufficient unless it is converted into effective interpretation, coordination, adaptation, and execution. In essence, excellence in reading, memorizing, and reproducing concepts may support classroom success without guaranteeing superior performance in settings that reward action, timing, and strategic adjustment.

This study employed a quantitative, correlational research design to examine whether team characteristics were associated with team performance in a simulation-based learning environment. The unit of analysis was the team. Data were collected from student teams participating in the Capsim Capstone business simulation, and team performance was assessed using multiple Balanced Scorecard-related indicators. Team characteristics including team average grade point average, and team diversity as indicated by heterogeneity in characteristics such as gender, academic major, and nationality. Pearson product-moment correlation coefficients were computed to assess the direction and strength of relationships between team characteristics and performance outcomes. The primary sample consisted of 31 teams, although analyses involving team average GPA were based on 30 teams due to missing data. Statistical significance was evaluated using two-tailed tests.

By examining whether team average academic performance is associated to team balanced scorecard performance in a competitive simulation context, this study contributes to an important debate in higher education, pedagogy, and training research in terms of whether academic accomplishment is a reliable predictor of applied decision quality, or whether the gap between knowing and doing remains substantial. The logic of experiential learning theory and the transfer-of-training literature suggests caution in assuming equivalence, and the present study is positioned to provide empirical support for that caution.