Looking both ways:

Space Syntax for pedestrian exposure forecasting and collision risk analysis

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Abstract

This project used Space Syntax to create a Pedestrian Risk Index for the city of Oakland, California. The Index helped planners identify high risk intersections for the first time, using predicted pedestrian volumes and existing pedestrian - vehicle collision data. A major challenge facing pedestrian safety advocates and urban planners at this time is the availability of detailed, high quality pedestrian exposure data. Exposure is defined as the rate of contact with a potentially harmful agent or event. Pedestrian exposure is therefore defined as the rate of contact with potentially harmfully situations involving moving vehicles (i.e., crossing intersections). Pedestrian risk is defined as the probability that a pedestrian - vehicle collision will occur, based on the rate of exposure. To estimate exposure, pedestrian volume measurements must be made, but such measurements are often unavailable or too expensive. In the absence of accurate exposure data, pedestrian safety decisions are often made by estimation, rules of thumb, or political influence, resulting in mixed and potentially less effective outcomes. This paper explores the value of Space Syntax in generating volume estimations for pedestrian exposure measurement, discusses a novel approach for utilising a "volume co-efficient" to extrapolate volume based on Integration, population density, and a limited set of pedestrian counts, and explores issues associated with applying Space Syntax research in a "real world", resource-constrained planning environment within the United States.

Keywords
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