The Development of a Data Model for Research on the Environmental Correlates of Physical Inactivity and Obesity.

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Abstract
Development of information systems to support research on environmental correlates of physical activity and nutrition has to date been largely ad hoc and driven by single research project requirements. In this rapidly growing field, research databases are becoming increasingly complex as researchers attempt to model the impact of multiple aspects of the environment such as neighborhood characteristics, site and building design, and nutritional environments on both aggregate and individual level measures of physical activity and weight. The presentation reports on the initial implementation of a logical data model in the context of an ongoing research program that is exploring the relation of neighborhood physical and demographic characteristics on physical activity levels measured in time and space.

Description of problem addressed and purpose of project
Public Health is increasingly concerned with the promotion of physical activity and healthy nutrition. Developing effective interventions requires an understanding of individual and environmental factors that determine eating patterns and activity levels. The complexity of the relationships between determinants and outcomes requires a more systematic approach to development of information systems than has been used to date. In particular there is a need to develop a data model that enables time stamped activity and location data to be aggregated at varying scales and correlated with environmental characteristics derived using GIS. The authors will discuss an implementation of the conceptual model in a database that integrates data from several large scale multi-level data sets, that include travel behavior, urban form, physical activity, BMI, and other outcomes, recently collected in the Atlanta, Seattle, and Baltimore regions. The combined database will be used to identify differences in the relationship between the built environment and utilitarian activity versus the relationship between the built environment and recreational physical activity. Regional differences in these associations will also be explored.

Findings from multi-region studies have ready applications, because public health agencies are interested in providing input to planning processes, conducting health impact assessments, and developing surveillance systems for the environmental and policy factors that are related to physical activity, nutrition, and obesity. The project will also assess the relevance of the data model developed in a research context for the development of more applied information systems. The authors will discuss whether alternative conceptual or logical data models are likely to be more useful to support health needs assessment and surveillance system development.