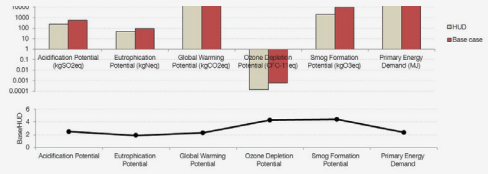
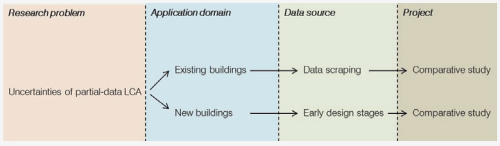
HARVARD
CENTER FOR GREEN
BUILDINGS AND CITIES

Conceptual Life Cycle Analysis

PROBLEM

Precise environmental assessment methods such as life cycle analysis (LCA) require a highly detailed account of material quantities, as well as anticipated construction and maintenance operations. This degree of specificity is typically realistic only at the very late stages of the design process when major changes can no longer be implemented.
This problematic conduct is rooted in the perception that only a wealth of complete design input can lead to reliable impact assessment results. Putting this assumption to the test, the project studies two assessment scenarios based on limited design data. The first looks at early design stages of a given building, and the second examines the application of data scraping from publically available sources in order to create environmental impact assessments of building clusters and entire urban developments.





GUIDING QUESTIONS

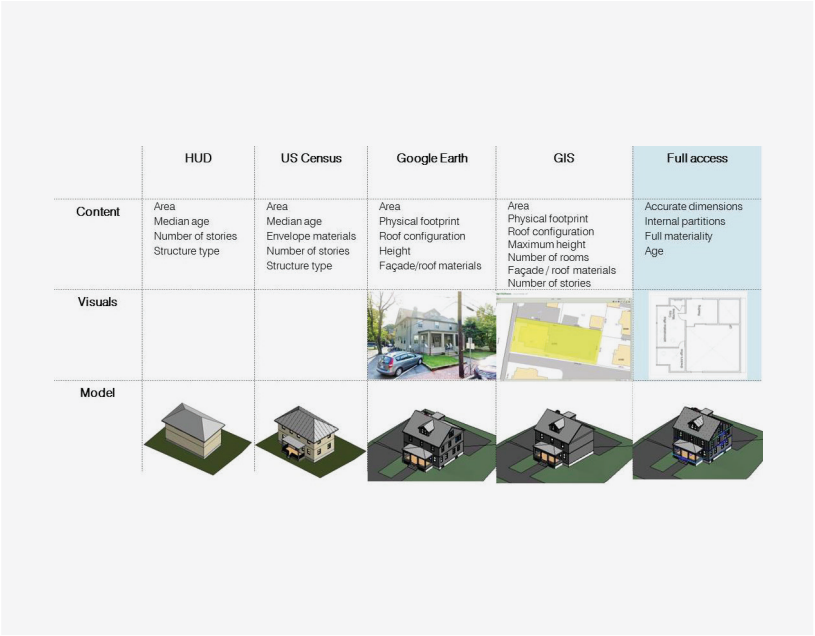
The project's main focus is to investigate how data quality influences life cycle analysis results.

Can life cycle analysis conducted based on early stage of design successfully predict environmental impacts of the final design?

How accurate are life cycle studies based on publically available online data sources?

PROJECT DESCRIPTION

This project aims to test whether the assumption that limited data availability leads to unreliable life cycle analysis results is correct, and to what extent data quality influences the results of life cycle analysis studies. In order to do so, the project compares LCA studies of models based on either early-stage design information or publically available geospatial data sources (such as GIS) and compares them to LCA findings based on fully defined as-built models.



IMPACT

A better understanding of the relationship between input data quality and life cycle analysis findings would allow both practitioners and researchers to assess environmental impact for larger developments in shorter amount of time. Eventually, this could lead to higher adoption rates for life cycle analysis in the neighborhood and urban scales.

Advance understanding of the relationship between input data and life cycle analysis findings.

Enable large developments to assess environmental impacts quickly.

Promote broader adaptation of life-cycle analysis in urban-scale projects.

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