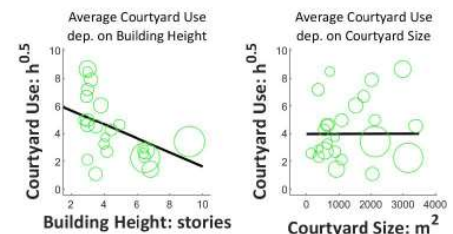
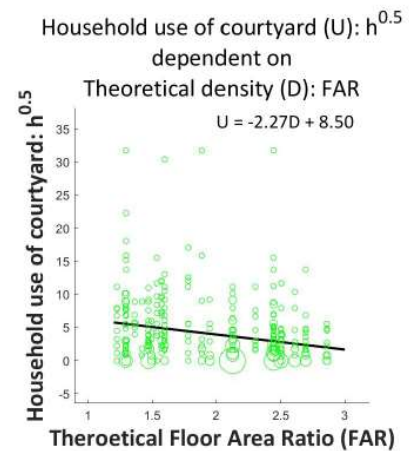
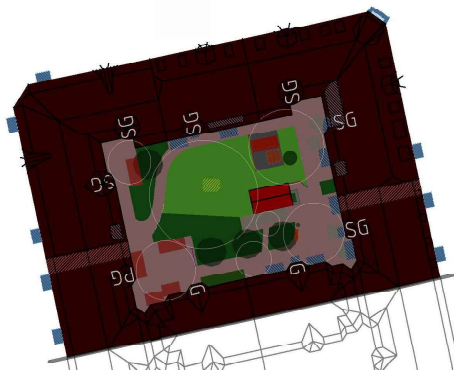


DAVID HAMMARSTEN

POSSIBLE COURTYARDS

- a study of courtyard density, design and usage



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This Master Thesis is a study of domestic courtyards in densifying cities. The objective was to provide knowledge on how courtyard density, dimensions and design affect courtyard use and experience. The research questions were: How does courtyard density affect courtyard use and experience? How should building height, courtyard size and light conditions be balanced given a certain density? Do other factors affect courtyard use and experience? An additional objective was to develop useful tools and thinking models. The study was conducted on 24 courtyards in Gothenburg. Data on household usage and experience of their courtyard was gathered through surveys. The courtyards were mapped in AutoCAD. Analyses were performed in Matlab and focused on the amount of courtyard usage. Answering the first question; courtyards with higher density are used less ($p < 0,0001$). Density explains 3-6% of individual household usage variability (R^2), and 6-18% of variability in courtyard average usage. Introducing the second question; courtyards surrounded by higher buildings are used less, explaining 3.5-5.3% of household and 18-30% of courtyard variability. Sunnier courtyards are used more, but explains less of variability. Courtyard size is uncorrelated

with usage. To answer the second question, analyses were done again, after controlling for density. In this sample of courtyards, building height and sunlight lose their correlation to usage, respectively. Larger perceived courtyard spaces are used less ($p < 0,001$). The size of accessible space shows no correlation. Answering the third question; courtyards described as cozy are used more. Courtyards feel cozy if they are richly programmed and well kept, and if the courtyard has several well-defined areas. The most frequently valued courtyard traits were trees and large courtyard size. Trees seem to amplify use in less dense courtyards. Courtyards in this study are mainly used for coffee breaks, reading, grilling, play, sunbathing and chatting. Lastly, tools developed include a system for categorizing free text answers, which can support analysis of urban planning dialogues, and a Matlab-code analyzing light-conditions from line-models. To compare courtyards, a theoretical density measure, based on courtyard dimensions, was developed. Controlling for density is a novel intervention.

Keywords: greenspace, survey, urban, quantitative, domestic