QUANTIFYING NEW ZEALAND'S URBAN DENSITY

A systematic review-based study that evaluates how density is defined and quantified in practice.

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INTRODUCTION & METHOD

As New Zealand's housing landscape shifts to one with denser and more diverse housing, it is crucial that the metrics used to assess and regulate housing areas are adequate in both ease of use and depth of information. Therefore, this research aims to contribute to an understanding of density quantification techniques and their use in New Zealand.

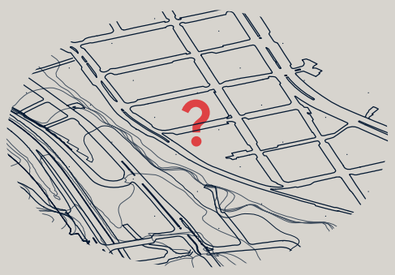
Density quantification is studied through two main methods; literature review and case study analysis. The split strategy is essential. It allows an understanding of existing density quantification methods to be collated first, to inform a preliminary investigation through case studies of barriers and primary factors for density quantification and comparison. Two narrative review searches were undertaken with one focussed on international methods and the other restricted to the methods used in New Zealand. The inclusion of techniques developed in international research is vital due to urban density being a relatively new concern in New Zealand, hence the local understanding and research of density is not comprehensive and has many critical gaps. International density quantification research was also lacking. There is no consensus on the worth of any quantification methods. A new density analysis method is investigated, using case studies, to understands what factors are crucial to representing New Zealand's urban density as well as the relevance of applying precedent measurement techniques.

RESULTS & CONCLUSIONS

Typical density metrics are rough tools used to predict and control land use to improve urban environments. However, understanding these beyond their ratio format is hindered by loose and oversimplified relationships with the physical and perceived urban environment. There is a concerning simplicity in the use of New Zealand density quantifications. Housing is classified as low, medium, or high density and commonly defined by dwellings per hectare or by typology, if it is defined at all. Furthermore, these definitions vary between regions and organisations. The New Zealand case studies revealed that common assumptions about the use and composition of open space and the relations between dwellings, dwelling size and household size are incorrect. Even in state housing, open space is predominantly car-oriented or an amalgamation of dead space and dwellings and households are incredibly diverse so cannot be assumed from each other. A rigorous analysis of New Zealands housing density and vital density factors needs to be completed to generate an appropriate density analysis method.

1 INFORMATION GIVEN BY METRICS

TERRITORY



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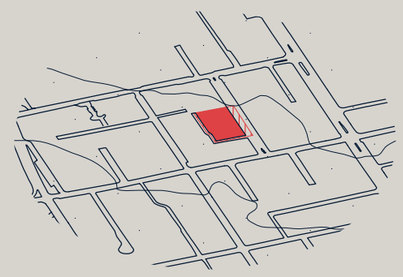
NUMBER OF PEOPLE

OR

NUMBER OF DWELLINGS

2 COMMON ASSUMPTIONS

TERRITORY



= GROSS (including public network)

= NET (private space only)

=

NUMBER OF DWELLINGS

(evenly distributed within green open space)

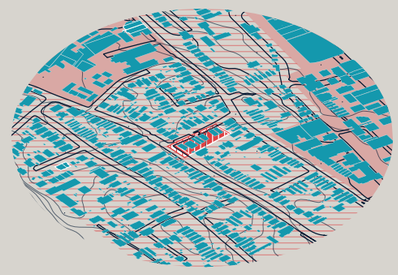
=

NUMBER OF PEOPLE

(predictable from number of dwellings)

3 NEW ZEALAND REALITY

TERRITORY



KEY

- GROSS (all urban fabric)
- GROSS RESIDENTIAL (residential fabric)
- GROSS PLOT (incl. half of roads)
- NET DEVELOPABLE (developable area)
- NET PLOT (legal plot area)
- BUILDING AREA (building footprint)

=

NUMBER OF DWELLINGS

(unevenly distributed within some amalgamated open spaces but mostly car-centric space)

=

NUMBER OF PEOPLE

(complex relationship with number of dwellings)