

Centre for  
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Research

## **Appropriate Dwelling Spaces in Social Housing.**

*Analysis of New Zealand Housing stock  
on spatial configurations and design*

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## Preface

This report presents the findings of the joint research project ‘Accurately calculating thermal performance in timber-framed medium density housing across New Zealand’. The project was in response to results from a 2016/17 investigation which found the ratio of timber in modern construction might far exceed that of code estimates. The current study aims to identify successful methods of 1) data acquisition to confirm the previous study from a more representative sample of buildings and 2) simulation that can accurately quantify the impact of increased volumes of timber in medium density light timber frame construction. The aim for phase one of this study was therefore to test data acquisition systems, and to compare the process and outputs of a selection of alternative thermal calculation tools and to establish.

## Acknowledgments

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This work is made possible by the valued efforts of the partnering researchers from the research group at Studio of Pacific Architecture.

## Notes

This report is intended to aid designers in the delivery of more energy efficient and healthy timber framed buildings. Confirming if there is a more accurate and efficient calculation tool for determining thermal and moisture performance for timber-framed, medium-density housing in New Zealand would greatly improve architect’s and designer’s ability to estimate the impact of various design decisions while there is still time to change them.

## **ABSTRACT**

### *Appropriate Dwelling Spaces in Social Housing: Analyzing New Zealand Housing stock on spatial configurations and design*

This paper examines New Zealand's market and state housing stock from 1890-2018 through plans and statistics. Current data specifies that New Zealand's overall house size is increasing while the average number of people occupying a house is decreasing. The aim of this research is to identify key factors in determining what appropriate dwelling space is and whether or not this should be culturally defined.

A comparison of state and market housing shows a clear difference between the average state house and the average market house, with there being (insert percentage) more living/kitchen/dining space. This is along with the average bedroom size being (percentage) larger. This data is compared to NZ Housing standards overtime, showing minimal change to dwelling spaces.

This paper is part 2 of a research project, which identified a lack of consideration in Housing NZ's design guides and New Zealand Standards that has been given to the wider demographics of New Zealand's residents. To add to these conclusions, NZ's cultural demographics have been compared with Housing NZ demographics to find links between culture and what dwelling space is required for a home to be appropriate for its users. This paper then makes direct comparisons of old and new house plans to identify the specific rooms, which have increased and identify how people used to use their homes with how they use/occupy them now.

# Table of Contents

INTRODUCTION .....	7
Research Questions .....	7
BACKGROUND: SOCIAL HOUSING IN NEW ZEALAND .....	9
METHODOLOGY.....	11
Phase One.....	11
Phase Two.....	11
Data Collection .....	11
PRINCIPLES BEHIND SURVEYED MATERIAL .....	13
Case studies examined.....	13
DEFINING APPROPRIATE DWELLING SPACE .....	13
CURRENT NZ DEMOGRAPHICS .....	14
Households .....	14
Family types .....	14
STATE HOUSING CHARACTERISTICS .....	15
COMPARATIVE ANALYSIS.....	16
Housing New Zealand Standard vs Built .....	16
Total Area Analysis.....	18
KEY ROOM ANALYSIS.....	20
1 Bedroom Dwellings.....	20
2 Bedroom Dwellings.....	23
3 Bedroom Dwellings.....	24
4 Bedroom Dwellings.....	25
5 Bedroom Dwellings.....	28
Summary.....	29
IMPLICATIONS FOR DEFINING APPROPRIATE DWELLING SPACE .....	30
LIMITATIONS .....	33
REFERENCES.....	37
APPENDIX A – SUMMARIES OF KEY LITERATURE .....	38
APPENDIX B – DEMOGRAPHIC DATA.....	41
APPENDIX C – HOUSING DATA .....	43

## Table of Figures

Figure 1 : Household composition according to 2013 NZ Census .....	14
Figure 2: : Number of Bedrooms for occupied dwellings in New Zealand according to 2013 NZ Census. .....	14
Figure 3: Comparative Percentage Bar Graphs showing Household Composition by Ethnic Group according to NZ 2013 Census Data. ....	15
Figure 4: Percentage Bar Graphs showing Housing New Zealand's main applicants characteristics and the required bedrooms according to September 2018 Ministry of Social Development Report.....	16
Figure 5: Comparative graph to show Social, Market and Design & Build dwellings designed between 1920-1960 against the Housing Corporation of New Zealand's Architectural Brief. ....	17
Figure 6: Comparative graph to show Social, Market and Design & Build dwellings designed btween 1998-2018 against the Housing NZ 2015 Standard.....	18
Figure 7: Comparative graph showing total area range of State and Market houses from 1900-2018.	19
Figure 8: New Zealand Occupancy rates according to Census data from 1906-2013. ....	20
Figure 9: Box and Whisper Graph showing range of areas and median area for key rooms in a 1 Bedroom Market dwelling.....	21
Figure 10: Box and Whisper Graph showing range of areas and median area for key rooms in a 1 Bedroom State dwelling .....	21
Figure 11: Single men's huts in the railway camp at Gracefield in the Hutt Valley in 1954. Retrieved from Te Ara, by Neill Atkinson, 2010, Retrieved 2019, Jan. 10th, from <a href="https://teara.govt.nz/en/photograph/21417/single-mens-huts-gracefield">https://teara.govt.nz/en/photograph/21417/single-mens-huts-gracefield</a> .....	22
Figure 12: Box and Whisper Graph showing range of areas and median area for key rooms in a 2 Bedroom Market dwelling.....	23
Figure 13: Box and Whisper Graph showing range of areas and median area for key rooms in a 2 Bedroom State dwelling .....	23
Figure 14: Box and Whisper Graph showing range of areas and median area for key rooms in a 3 Bedroom Market dwelling.....	24
Figure 15: Box and Whisper Graph showing range of areas and median area for key rooms in a 3 Bedroom State dwelling .....	25
Figure 16: Box and Whisper Graph showing range of areas and median area for key rooms in a 4 Bedroom Market dwelling.....	26
Figure 17: Box and Whisper Graph showing range of areas and median area for key rooms in a 4 Bedroom State dwelling .....	26
Figure 18: Box and Whisper Graph showing range of areas and median area for key rooms in a 5 Bedroom Market dwelling.....	28
Figure 19: Box and Whisper Graph showing range of areas and median area for key rooms in a 5 Bedroom State dwelling .....	28

## Introduction

This research tests and evaluates examples of market and social housing in New Zealand, in order to define what appropriate dwelling space is. This is through case study analysis, which focuses on spatial arrangement, spatial use, scale, culture and demographics. A previous research project funded by Studio Pacific Architecture (SPA) and Victoria University of Wellington (VUW) in 2017, identified a lack of consideration Housing NZ's current spatial assignment in their dwellings, along with the lack of consideration New Zealand's standards has given the wider demographics. The most significant findings of that study identified that:

- The 2015 Housing New Zealand Standard is the most detailed national standard available around defining dwelling size/scale, but has since been replaced by the Simple Design Guide.
- Existing Spatial NZ standards such as the Simple Design Guide by Housing NZ take a holistic approach to their guidelines by not including qualitative data for which architects can define appropriate space in a dwelling.
- New Zealand Cultural Guidelines e.g. Pacific Housing Design Guide, Ki te Hau Kainga are based upon narrative rather than specific data about design for Maori or Pacifica.
- There is no direct relationship between any cultural guidelines or New Zealand design standards.
- Overcrowding in homes is a larger issue with Maori, Pacifica, and Asian families.

Ultimately, Phase 1 outlined a need for greater knowledge for what the minimum requirements for living in New Zealand should be. This includes all significant cultures that make up New Zealand's diverse population: Maori, Pacifica, Chinese, Indian etc. In order to achieve this, case studies will be interviewed and observed to develop an understanding for how different cultures live from NZ Europeans. This will be done in Phase 3, however in this study, Phase 2, case studies of plans and demographics of New Zealand's housing stock and occupants will be examined and compared over time. From this data, conceptual design techniques will be proposed for future practise based social housing projects. Along with this, a set design strategies for multicultural spaces and household needs will be developed to be translated into more cohesive housing guidelines than those at present. By analysing over 250 market and state homes over a 110 year period, patterns will be identified that will show key areas of space in homes that may have altered overtime or stayed relatively the same. This will indicate the changing needs of users overtime, but may also highlight where design can evolve. This data will then inform proposed housing design guidelines for what the adequate area of living should be for all cultures in New Zealand. While this study highlights the need of social housing to provide, these guidelines will ultimately apply to any dwellings in New Zealand.

## Research Questions

The focus of this study can be summarised by the following research questions:

1. *Do different cultures in New Zealand require different dwelling space?*
2. *How has New Zealand's housing changed over time and what effect has this had on state housing?*
3. *How does NZ's current state housing fail to provide for its residents?*

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## Background: Social Housing in New Zealand

Social Housing in New Zealand currently lacks to provide for those who require it. According to Murphy, New Zealand occupies “a strangely ambiguous position of being at once pioneers of welfare state development and yet laggards in the provision of social assistance programmes” (2003, pp 91). This unique position has meant that while there are many who live happily in New Zealand’s urban centres, there are also many who struggle to find appropriate dwelling spaces. In contrast, New Zealand homes are increasing in size, while average household size has decreased from 3.7 in 1951 to 2.6 in 2011 (Statistics New Zealand, 2008).

Currently in New Zealand, 94% of Social Housing is provided by the Housing New Zealand Corporation, a state owned enterprise, while the rest are provided by local authorities or Public Private Partnerships (Dykes, 2016). The rest are provided by local authorities or charity groups who either own and lease, or lease out of the private market. For example, VisionWest Community Trust is a small provider of social housing based in West Auckland. They provide housing through owning, leasing and managing two, three, and four bedroom unfurnished dwellings (2015).

As urbanisation grows, along with a focus on intensification over sprawl, the question of what deems “appropriate dwelling space” needs to be investigated. As of 30<sup>th</sup> September 2018, Housing New Zealand currently own or manage just over 64,000 dwellings (Housing NZ). Currently, the housing stock needs to change to provide better for those in need, particularly in urban areas. This requires more smaller units (1-2 bedroom) and many more larger units (5+ bedrooms) rather than 3-4 bedrooms. The current push for intensification is also highlighting the need for smaller 1-2 bedroom dwellings, to provide for the countries needs, however little focus is being given to migrant families, those who live together for economic reasons or multi-generation households. New Zealand has continued to produce 3-4 bedroom homes, with smaller homes being extended or dining rooms turned into bedrooms in an attempt to accommodate these groups (Johnson, 2017).

Outside of social housing, increasing rents in NZ makes “appropriate dwelling space” not just an issue for those in, or requiring social/state housing. It is an issue for those renting in the private market and utilizing dwellings that are inappropriate for their families. What is “appropriate” needs to be defined in better terms, however ultimately the dwellings that Kiwis occupy must provide shelter and not put users at risk for health conditions. Unfortunately, there is a link between different ethnicities and their vulnerability to inadequate housing as lower income and rising rents mean they cannot afford to own or rent a dwelling which is adequate.

There is also a link between multigenerational families and cultural values. A BRANZ report in 2015 outlined the increasing number of MGH (multi-generational households) in New Zealand. While there is an overall increase in multi-generational households throughout different cultures in New Zealand due to house demand and cost being high, this particularly affects the Maori and Pacifica families. For example, bathrooms, toilets and laundry should be separated from the kitchen, as having them close together is considered tapu (forbidden/restricted). In addition, Maori/Pacifica families require larger homes to accommodate for larger families that are typically made up of 3 generations. The report highlighted the need for a ‘housing layout that is open plan and flexible and adaptable to changing needs and occupancies’ (pp 22).

Currently, these larger family groups requiring shelter will ultimately adapt to make the most of their options and occupy houses that are too small for them. The paper confirmed this through interviews, one of them, a case where 11 people were occupying a 2 bedroom household due to MGH being a cultural norm, lack of employment and lack of alternative options led to this situation.

In the interviews completed as part of the study, a Samoan participant mentioned the proverb 'A i ai le tagata matua, e malu ai le aiga', translated as 'when there is an elder in the family, that family will always remain protected and sheltered'" (BRANZ, 2015, pp 43). In some cases, the families stayed together due an elderly member being well, however alterations to their house had been done to separate the generations to reduce disruption and increase privacy.

New Zealand state housing has taken a "one size fits all" approach since its inception just over 100 years ago. In turn, in recent years there have been cultural representatives working with Housing NZ to provide more inclusive design guides for Housing NZ's development's such as the Te Matapihi he Tirohanga mō te Iwi Trust (Maori) and Faumuina & Associates (Pacifica). These groups have produced general rules of thumb when designing for Maori or Pacifica families that can be taken into account. However, there is a lack of information about another larger minority in New Zealand's population - Asian. More specifically Chinese and Indian peoples. This group represents 14% of the NZ housing register, similarly to Pacifica with 16% (Ministry of Social Development). These groups may have different requirements/preferences when it comes to dwellings.

There are large number of factors into why NZ's state housing currently does not provide for its users. The one size fits all approach to state housing that once worked when New Zealand was a lot less ethnically diverse in the 1960's and earlier, is no longer suitable. New Zealand has changed dramatically since then, whether it is ethnically, economically, the average family size or the percentage of people that have multiple generations under one roof.

## Methodology

### Phase One

In Phase one, the question “How can New Zealand implement a legislated design standard for dwelling size that considers our culturally diverse population?” was asked. This report utilised Guy Marriage’s paper *Minimum vs. Maximum: size and the New Zealand House (2010)*, a paper which encourages legislation to impose a size minimum of bedrooms, particularly in a case study of shoebox apartments in Auckland. The aim was not to make recommendations for what these minimum requirements should be, instead to understand New Zealand Housing standards, cultural design guidelines and international standards that define appropriate dwelling space. It documented these existing non-legislative standards on a set of specific variables and examined their relevance to our culturally diverse population. This was in an attempt to establish a set of recommendations for a legislation standard to impose a minimum to dwelling size, which also caters for cultural differences.

When trying to create guidelines for Pacific housing solutions, there was a link to a requirement that the housing needed to provide for large families, most of the time including multiple generations. Overcrowding is a huge issue for larger families trying to fit into homes that they can afford – particularly those who are financially disadvantaged. While this may be correct, there is also other cultural groups which require a large home with flexible space, including Maori, Pacifica and Chinese families. Third, families who are 1<sup>st</sup> or 2<sup>nd</sup> generation migrants are much more likely to require these kinds of homes. While for some cultures is an expectation to care for their elders, it is also a financial choice for those families. There needs to be a larger exploration of the cultural use of dwellings to make these statements.

### Phase Two

Originally when Phase 2 begun, this study was going to be “An occupant informed analysis that evaluates existing assumptions of spatial configurations and design”. This was going to follow along from the cultural gaps noticed from Phase 1. However it was assumed early on that this was not possible without earlier organisation to collaborate with Housing NZ in order to interview their tenants. This will now be attempted in Phase 3 after more informed research in Phase 2 that will highlight the key information that the interviewer will need to discover through conversations and observations. This will be discussed in the implications later on in this paper.

### Data Collection

After reflecting on Phase 1, Phase 2 followed a logical research design sequence. The initial portion of the research completed for this report took place through utilizing online database searches, along with Victoria University’s physical and online library. These were all used to begin to understand New Zealand’s dwelling spaces and their relationship with social/state housing in New Zealand. A small portion of this research also took place via undocumented and informal discussions with members of the Studio Pacific Architecture research team and other Research Assistants at Victoria University. These discussions informed the direction of the research rather than any of the research results.

The data from the study included within this paper was sourced from NZ Archives, Stats NZ, Barfoot & Thompson and employees at Studio Pacific. Demographics, floor plans and land titles that ranged from the earliest recorded NZ state provided housing in 1890 till 2018 were required to give a

comprehensive overview of New Zealand's entire housing stock, state and market. NZ Stats were used to understand demographics of dwellings and their residents through comparisons of census data. NZ Archives were used to find historic floor plans of state houses and developer brochures of different eras. Barfoot and Thompson's website provided floor plans and titles which were used to derive case study homes from throughout the timeline mentioned. As Barfoot and Thompson is a company based in Auckland, only Auckland homes were analysed in this section of the study. While this doesn't give a holistic view of New Zealand homes overall, Auckland is the most culturally diverse city in NZ and therefore is the best suited city for this study. The floor plan and dwelling analysis was completed in steps.

The first group of homes to be investigated were market homes. Properties from the website were identified and analysed through floor plans and titles to find the following information:

- House age/era
- Total size (area m<sup>2</sup>) (excluding garaging)
- Location
- Name of the development
- No. and area of bedrooms
- No. and area of bathrooms
- Area of living spaces
- Area of kitchen
- Area of dining spaces
- Storage area

The second to be analysed were social/state homes. It was much easier to gather the necessary info from state homes designed between 1939-1951, particularly from the post-war boom. However, through utilising NZ Archives, the Rail Heritage Trust of New Zealand, Studio Pacific's projects, Housing NZ, NZ Historian Ben Schrader and Steven's & Mackay's books, a range of data was able to be sourced from 1890-2018.

The third to be analysed were members of the public/Studio Pacific employees. Other researchers and employees were asked for the same data that was taken in the Barfoot and Thompson analysis. This was either through participants answering these questions with an area value or by providing floor plans in which the data was extracted. In all case studies, if a home had been altered, the original home was entered as the original date and the addition or change in the home created a separate entry for the home on the date that the change was made.

The fourth were "Design & Build" homes as advertised on housing developers websites. These developers were Platinum Homes, GJ Gardner, Signature Homes, Sentinel Homes, Lockwood and Urban Homes. Many plans had rough areas or the length x width of each room in order to determine areas. However some plans had no information, therefore in order to measure the area as accurately as possible, a doorway was assumed to be 900mm and the rooms were measured from there.

After the floor plans were mined for the relevant data, Housing NZ Standards/Architectural briefs from 1937, 1970 (roughly) and 2015 were analysed against data from the floor plans to determine whether or not NZ Housing has kept up with market housing.

## Principles behind surveyed material

### Case studies examined

In order to establish patterns in NZ homes over such a long time period, a lot of case studies were required. In total, 256 dwellings were analysed. Between November 28<sup>th</sup> till December 21<sup>st</sup> 2018, 102 dwellings were identified to have the information required for the study from Barfoot & Thompson's website. In this same time period, 54 case studies were taken from 6 developer's "Design & Build" plans provided on their websites. 100 state home case studies were found through the multiple sources mentioned in the methodology.

Market dwellings were easily found and many were excluded in order to have an even range of data over the 100 year timeline. Sourcing design & build homes, this was more difficult to be defined as separate from market homes, as these are the homes being built and sold in the market currently and have been for 40+ years. These were only separated when analysing and comparing the average market dwelling with the average provided on the website. This allowed for a comparison of many dwelling types (e.g. apartment vs standalone dwelling) to show just how much or how little space people were living in. 54 case studies were a lot as these homes were all from the same time period (2015-2018), and the sizes did not vary greatly between the different websites. The smallest homes were of similar scale and area, while the largest homes were differently configured, but had a wide range of large areas that made the total area similar. One major difficulty is that design and build homes very rarely come in 1 or 2 bedroom. Only GJ Gardner had a 1 bedroom home on their website. GJ Gardner also provided a 2 bedroom home, along with Lockwood and Urban homes. However as mentioned, there was only 1 option, in contrast to a dozen of 3, 4 and 5 bedroom home options on any of the websites. In contrast, state housing data was the most difficult to find due to the large time period. This is because over half of state homes still in Housing New Zealand's stock currently were built between 1937-1975 (Olsen, McDonald, Grimes & Stillman, pp 4, 2010). These homes were only 2, 3 or 4 bedroom dwellings. A few 1 bedroom home designs from 1943 were found, however these were servicemen homes. The next date which 1 bedroom homes were found was 1983. 5 bedroom homes were even more difficult to come by, the main examples being from 1971 experimental housing, where American developers sent housing plans to Housing Corporation of New Zealand to possibly be built, however not many were.

## Defining appropriate dwelling space

Appropriate dwelling space is still difficult to define. According to Statistics New Zealand, a dwelling is:

"any building or structure, or part thereof, that is used (or intended to be used) for the purpose of human habitation... A dwelling accommodates a person or a group of persons, but is not available to the public. Included are: houses, flats, and apartments; residences attached to a business or institution; baches, cribs and huts; garages; caravans, cabins and tents; vehicles; vessels; or dwellings of the above types that are under construction."

While detailed, this definition does not answer what is "appropriate" which this study will attempt to define. Some people occupy their homes at a different capacity than they are intended or utilise the spaces within it differently than intended. Many people will also use their home differently than

intended, with living rooms being bedrooms or bedrooms being offices for home businesses. The flexibility of a home to allow for a variety of uses is inevitable and if not, a home will be changed by its user to be occupied effectively. It is easy to define what is not appropriate but much more difficult to define what is.

## Current NZ Demographics

### Households

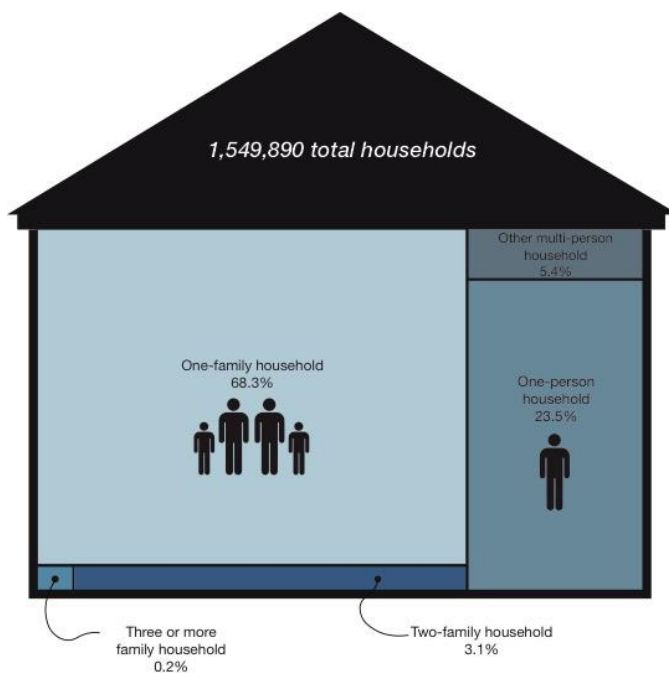


Figure 1 : Household composition according to 2013 NZ Census

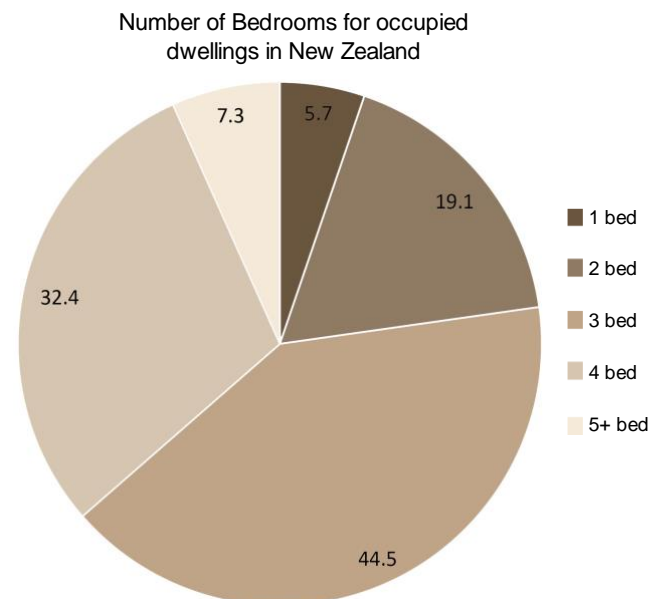


Figure 2: : Number of Bedrooms for occupied dwellings in New Zealand according to 2013 NZ Census.

According to the 2013 Census, New Zealand's households do not match up with the current housing stock (Private Market and State). When observing the number of bedrooms for occupied dwellings in New Zealand in 2013, versus the composition of NZ households in 2013 a few conflicts can be seen. First, 23.5% of households are one-person households, but only 5.7% of the occupied homes in New Zealand are 1 bedroom homes. This means there must be a large number of homes with excess space for the user occupying it. This would be deemed inappropriate dwelling space as there is such a concept as too much space, these 2, 3 or 4 bedroom homes could be owned by a family of 4 and provide for them better than one person. This is unless  $\frac{3}{4}$  of the one person households are occupying these dwellings and running their business out of the other rooms. While these assumptions cannot be made, this does not add up. Second, the data in Figure 2 can be compared with state housing applicant characteristics found in Appendix B. This comparison highlights the lack of 1 and 5+ bedroom homes in both the state and market housing stock. As discovered in initial research, these were not common sized dwellings to be built throughout New Zealand's history in comparison to 3 or 4 bedroom homes. Additional statistics for these trends can be found in Appendix B.

### Family types

New Zealand's population is ethnically diverse. While the earlier information gives an overview of what Kiwis are currently living in and what kinds of dwellings Kiwi's need, this can be further narrowed down to see if specific cultures require different housing.

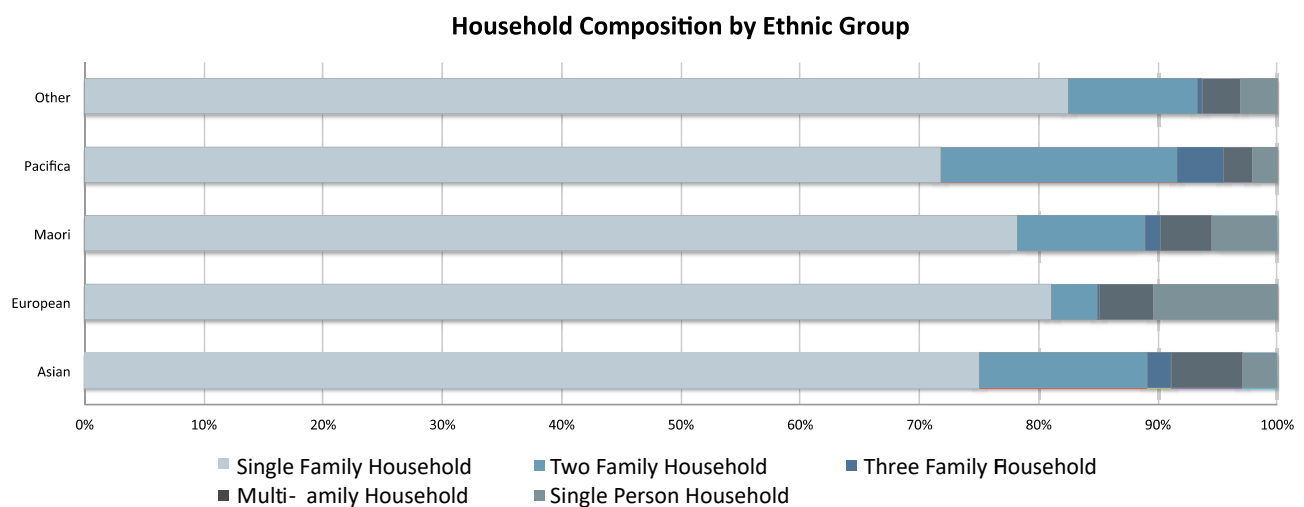


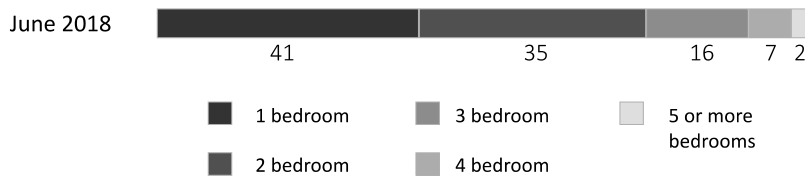
Figure 3: Comparative Percentage Bar Graphs showing Household Composition by Ethnic Group according to NZ 2013 Census Data.

In the developed world, particularly Europe and the United States, there is a growing demand for single person/smaller dwellings as mentioned in Hall & Ogden (2000) and Kreider & Vespa (2015). This is due to smaller family size, having children later on in life, and an increase of single people living alone. New Zealand is also experiencing this growth, but as can be seen in Figure 3, this increase is largely by the European population, with 10.8% of their households being single persons. Along with this, the average occupancy rate for a European Household is 2.57 people. In contrast, Pacifica families have the largest percentage of three family households with 20.1%. This is reflected in the average occupancy rate being 4.19 people. As mentioned previously, this is due to a cultural assumption that the younger generation will care for the older generation. There are also economical reasons as 1<sup>st</sup> or 2<sup>nd</sup> generation migrant families, as they are more likely to live with multi-generationally to help adjust to the country. For example, if a child of a Tongan family has moved to New Zealand when young for better schooling, they will have a better understanding of New Zealand culture and English and can then help the older generations of that family transition to NZ life. Not being a migrant population, but still having focus on family, Maori have a large percentage of two-family households. Their average occupancy rate is 3.36 people. Maori also contribute to the growing need of 1 bedroom dwellings with 6.8% single person households. When reading the Maori Design Guide, this comments largely on the requirements of Maori households and those households being larger. It did not acknowledge growing individual household requirements. There is a perception that Maori and Pacifica families have similar requirements but this is far from accurate. There are many specific ideas that are unique to Maori, and again ideas that are specific to Pacifica peoples.

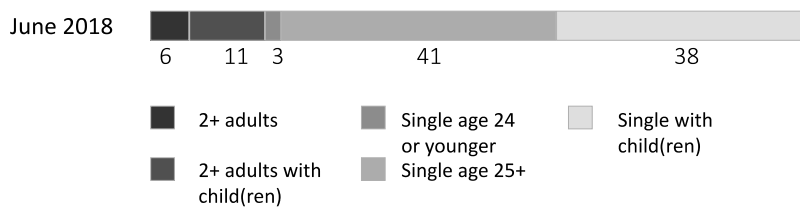
## State Housing Characteristics

In order to better define appropriate dwelling for state homes, the occupants of these homes need to be understood. The Ministry of Social Development release quartley reports which outline who the applicants are and what housing they require.

#### Bedrooms required (%)



#### Household composition (%)



#### Ethnicity of main applicant (%)

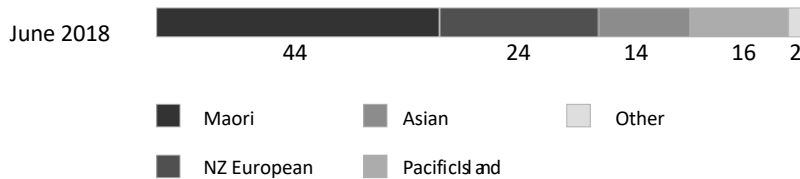


Figure 4: Percentage Bar Graphs showing Housing New Zealand's main applicants characteristics and the required bedrooms according to September 2018 Ministry of Social Development Report.

As mentioned previously, there is a growing demand for 1-2 bedroom homes. In state housing this is clear trend with 76% of main applicants asking for 1-2 bedroom dwellings. This is due to 44% of these applicants being single, while 38% are single with one or more children. These are the people who are at a disadvantage when it comes to affording to buy or even rent dwellings as they do not have someone to split the costs of this. According to Tennancy Services, between July-December 2019, the median rent in a central Auckland flatting suburb such as Kingland is \$397 for a 1 bedroom dwelling (2018). In Otara, in South Auckland, the rent is slightly lower with \$350 for a 1 bedroom flat. While these rents are high, there is also a lack of avaiability of 1-2 bedroom dwellings. 1 bedroom dwellings were traditionally only built for workers dwellings, not for private dwellings for the average Kiwi. With the rise in apartments and town houses, this number has increased, however there is still a large preference to living in a dwelling with a backyard in New Zealand culture – the ¼ acre dream.

State housing reflects the issues of NZ's housing overall, however its unique cultural dynamic and maority of single applicants highlight the need for 1-2 bedroom homes even more.

## Comparative Analysis

### Housing New Zealand Standard vs Built

The state houses that were built in the 1940's-1950's, is still what is known as state housing 70 years on. Many of the state homes that were built at this time are still owned by the New Zealand Housing



Corporation, now known as Housing New Zealand. If anyone in New Zealand is talking about state houses, the 3 bedroom, 1 bathroom weatherboard house with a small entryway porch is what comes to mind. This is even though there have been many additions to the state housing stock since then. There were the infamous duplexes of the 1970's which aimed to provide a more concentrated version of state housing as Auckland wanted to discourage urban sprawl. Many of which have been demolished due to their poor construction and lack of soundproofing. In recent years, many developers have collaborated with Housing New Zealand to build new developments in New Zealand's cities. The state homes have either been provided through blind tenure (houses being picked at random in order to diversify the development and discourage "ghettoing"), or an entire development that is occupied by Housing NZ tenants.

As New Zealand has grown older, the social divide has grown bigger. In the 1940's & 50's when the majority of New Zealand's state homes were being built, they could not be told apart from the market homes. In Figure 5 this is represented in the similarity between the architectural brief/standard and what was actually built, both market and state. In contrast, it is clear that the most recent NZ Housing Standards have not kept up with the market in terms of defining appropriate sizes for dwellings and the rooms within them. While many market homes, particularly design and build models would be considered unnecessarily large, they still provide more for their user rather than less.

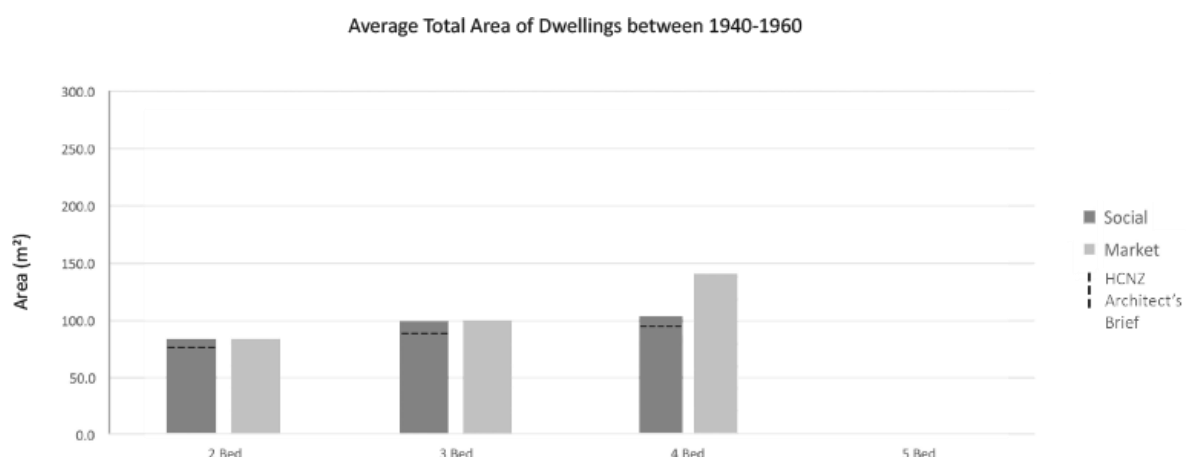


Figure 5: Comparative graph to show Social, Market and Design & Build dwellings designed between 1920-1960 against the Housing Corporation of New Zealand's Architectural Brief.

In current day, many modern homes are being built well above the 2015 Housing NZ Standard size recommendations. Even state homes produced in partnership with developers as can be seen in Figure 4 below. When it comes to 2 bedroom homes, this difference isn't as large, due to apartments and small townhouses being built "too small" as mentioned in Marriage's study in 2010. However, when observing 4 and 5 bedroom homes, this gap is astonishing. While extra space can be useful, justifying the need for 3 separate living areas in a 4-bedroom, design and build home is tricky. However, building below or above the standard is not necessarily a bad thing. In some cases, more area has gone into benefiting the user e.g. through having 2 bathrooms instead of 1 to lessen pressure, or providing more bedroom and living space to include built-in storage. In other cases, hallways and unusable space has been minimised in order for every sqm to be essential space to the user. Space saving techniques would include utilising under-stair storage or creating an efficient floor plan.

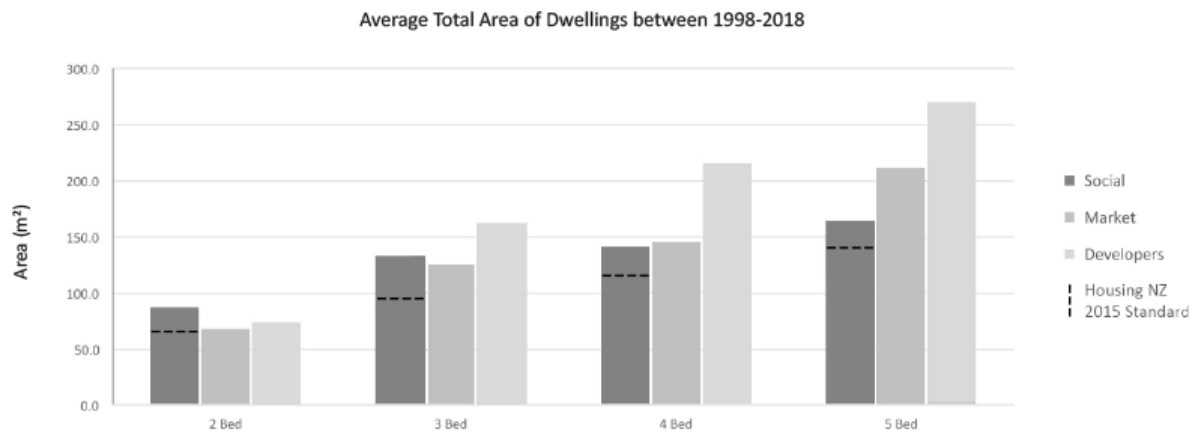


Figure 6: Comparative graph to show Social, Market and Design & Build dwellings designed between 1998-2018 against the Housing NZ 2015 Standard.

In 2018, there was such a significant gap between state and market homes that a middle ground was created by the NZ government – Kiwibuild. Kiwibuild aims to provide homes at a fixed price for first home buyers with an income between \$80,000 to \$180,000. Kiwibuild aims to “make home ownership can be possible for those who otherwise would struggle to do so”. This is not to allow the average Kiwi to afford a home, but it allows those who have recently been excluded from home ownership due to the rise in house prices. Kiwibuild homes are still being developed and will be compared later in this study.

From this study, it is clear to see a disparity in state to market homes currently, in comparison to the similarity between the two, 70 years ago. State housing’s recommended size has not changed greatly, however it cannot yet be determined that this standard does not provide for its residents. Instead, it is clear why 1 bedroom dwellings are in high demand currently when they aren’t being built, but also haven’t been built in the past. To find data on 1 bedroom homes in either group was difficult due to the lack of quantity. 3 bedroom dwellings continue to be built in mass in New Zealand when 1 bedroom is what is needed.

## Total Area Analysis

The total size of New Zealand homes has been continuously increasing over the last 100 years, while the average household occupancy has decreased. According to New Zealand Census Data in 1906 the occupancy rate for New Zealand households was 4.86 people, while in 2013 the occupancy rate was 2.7 people (Figure 8). To compare, total area was analysed in this study and revealed that while the average area of a 3-bedroom home in 1920 was 104m<sup>2</sup>, the average area for a 3-bedroom home built in 2016 is 161m<sup>2</sup>. This shift in size and an increase in the range of sizes could be due to a large number of factors. First, housing in 1920’s New Zealand was rather standardised, as many houses being built were just copies of the same style of home being built in England 20 years ago. When state homes were being mass produced in the 1950’s, this was even more true, which can be seen in the average size of market and state homes being quite similar. This is a stark contrast to now where a “dwelling” could be a range of types, shapes and sizes e.g. apartment, standalone dwelling, townhouse. Second, cultural demographics of New Zealand have shifted dramatically and the way families live has changed. The increase in Maori and Pacifica population in New Zealand has increased dramatically (see Appendix B), making homes they occupy have different requirements than the simple homes of 1920. As mentioned in Ki te hau Kāinga and Pacific Housing Design Guide, Maori and Pacifica families prefer a home to have 2 living areas. Third, “Design and Build” homes as

advertised by developers such as GJ Gardner, Lockwood and Platinum often have a second, or 3<sup>rd</sup> “living” area to include a media room/cinema or a library into the dwelling.

While there are cultural groups that require extra living spaces, some do not and would not utilise this additional space. A cultural survey would give greater understanding into what is “appropriate” in this sense. For example, the average design and build home design produced by Lockwood homes may provide for the needs of a multi-generational Pacifica family, however would possibly provide too much space for a single-family European household.

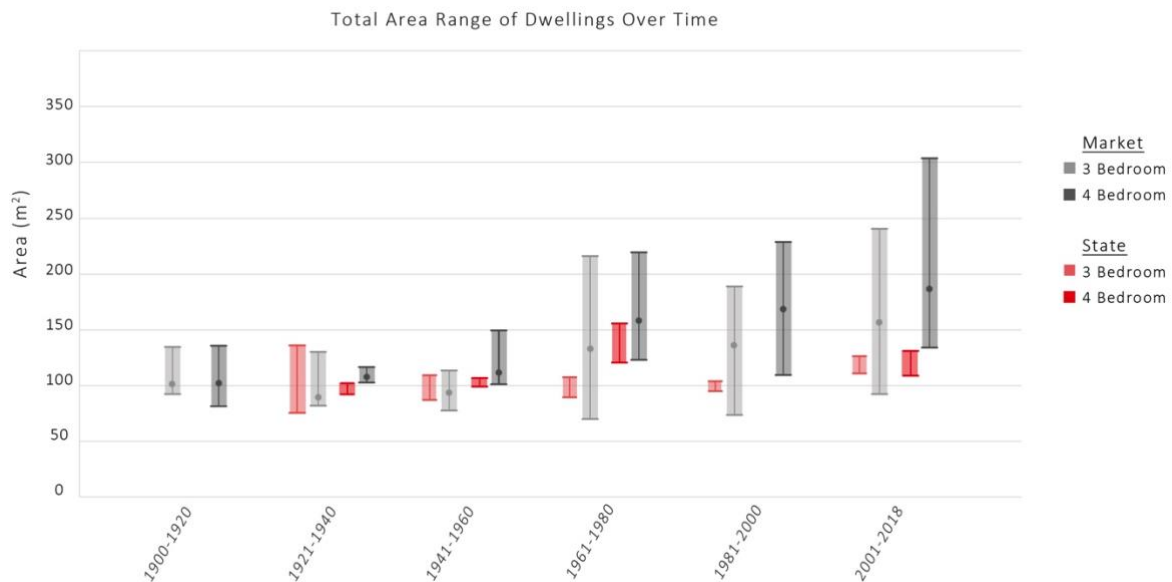


Figure 7: Comparative graph showing total area range of State and Market houses from 1900-2018.

The change in state homes built through the last 100 years can be seen in Figure 7. The overall size has not changed as dramatically as market homes over time. This is expected as previously mentioned; the Housing NZ Standard has not changed greatly since 1937. While size is important in determining “appropriate” dwelling space, so is the number of people that will occupy that space. In this study, occupant numbers can only be assumed as data was collected over a long period of time, and there is no way to gather how many occupants were in what house, when. Occupancy rates from census data as seen in Figure 8 could possibly link to the trend in smaller houses and the growing need for more 1-2 bedroom homes. However, it does not speak to dwellings of different bedrooms and their corresponding areas. In 1937 state homes had a strict occupancy level where a 2 bedroom home = 4 people, 3 bedroom = 6 and so forth. However there was also gender influence on this, for example if a family had 2 daughters, they could occupy a 2 bedroom home happily, however if the family had one daughter and one son, they would have to have separate rooms. This gives an estimated value to the number of people, which occupied a house at that time. The Housing NZ 2015 spatial standard gave these same numbers, however this is no longer found on their website, only a simple design guide is given. Along with this, it is not always the case that Housing NZ tenants will stay the number that they had initially applied as. Many will bring in more family into their home and occupy it differently, or stay in a larger than needed home at fear of requesting to move and being given emergency housing until a suitable home is provided. In the last 2 years alone, the number of applications for state housing has doubled from over 4,700 in 2016, to over 10,500 in September of 2018 (Ministry of Social Development).

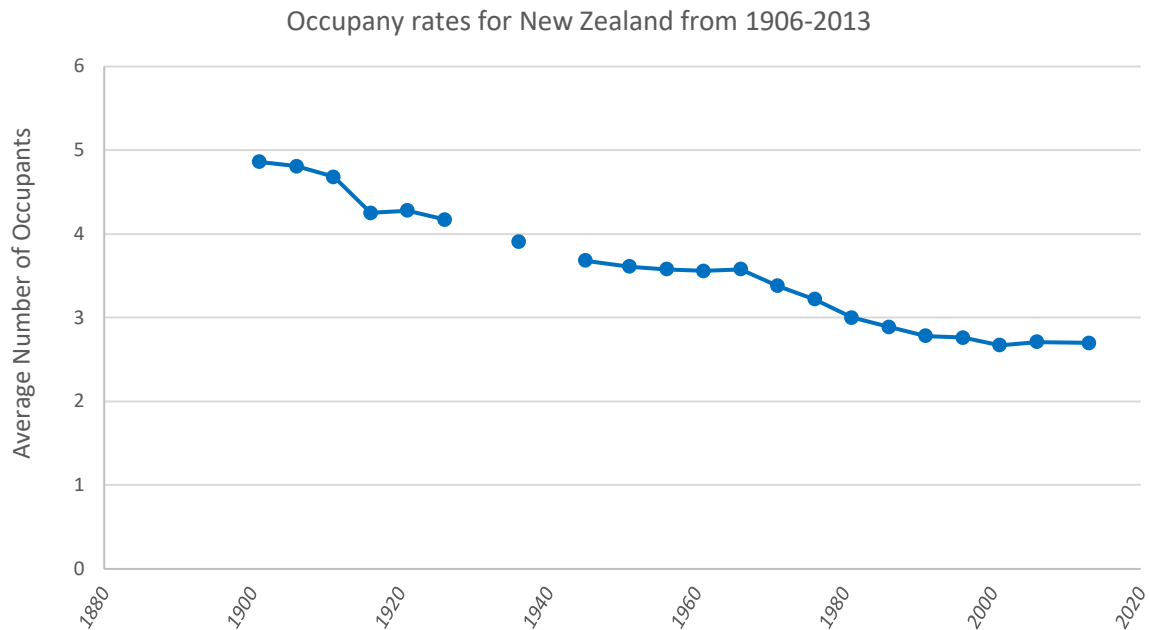


Figure 8: New Zealand Occupancy rates according to Census data from 1906-2013.

## Key Room Analysis

The total area of NZ dwellings is important to understand when determining appropriate dwelling space, however the rooms within a dwelling help to breakdown specific area values. As discovered earlier, there is a large increase in overall area of dwellings in New Zealand, except when it comes to 2 bedroom dwellings. 1 bedroom dwellings were not mentioned in this analysis, as there were no standards or architectural briefs around designing for 1 bedroom dwellings. In this set of analysis, 1-5 bedroom dwellings over time, both state and market will be broken down into their key room areas. Due to the lack of 1 and 5 bedroom dwellings in New Zealand, this data was difficult to source, but what was able to be sourced has been used.

When defining what data would be included and communicated, room areas were defined as such; any living, kitchen, dining, storage or bathroom area was added together so that the total area of that type was accounted. For example, living area in the follow graphs is the total living area within the house, this could be just one large living room or 3 separate living rooms of various sizes. For bedroom area, this was the average bedroom size within a home, as the data is already individual to the certain number of bedrooms in the home.

### 1 Bedroom Dwellings

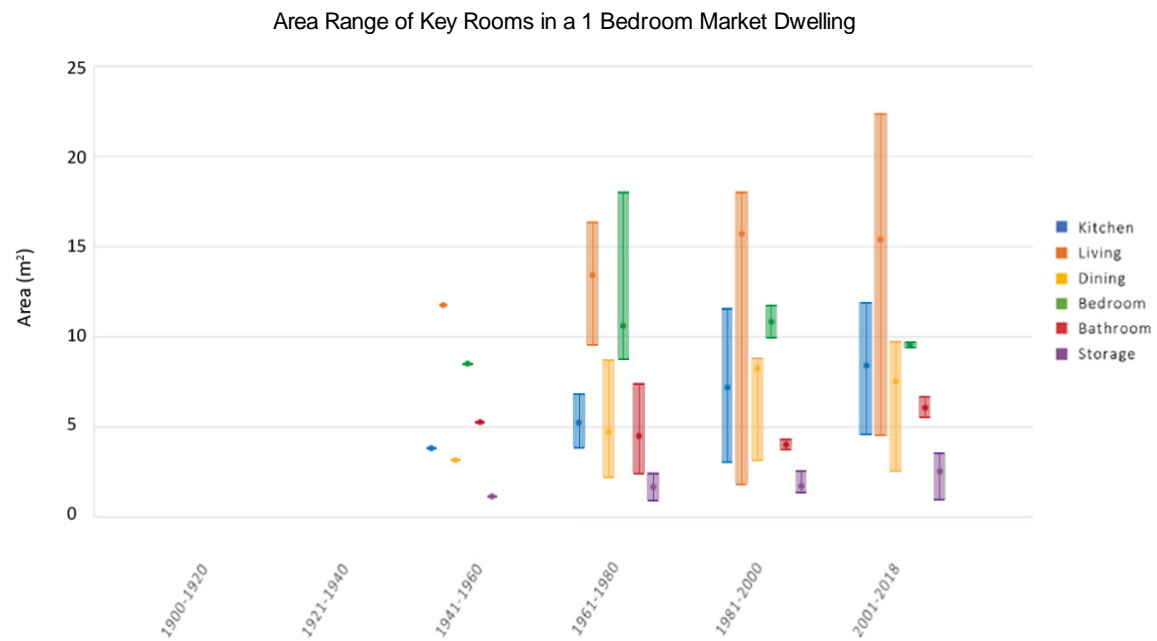


Figure 9: Box and Whisper Graph showing range of areas and median area for key rooms in a 1 Bedroom Market dwelling.

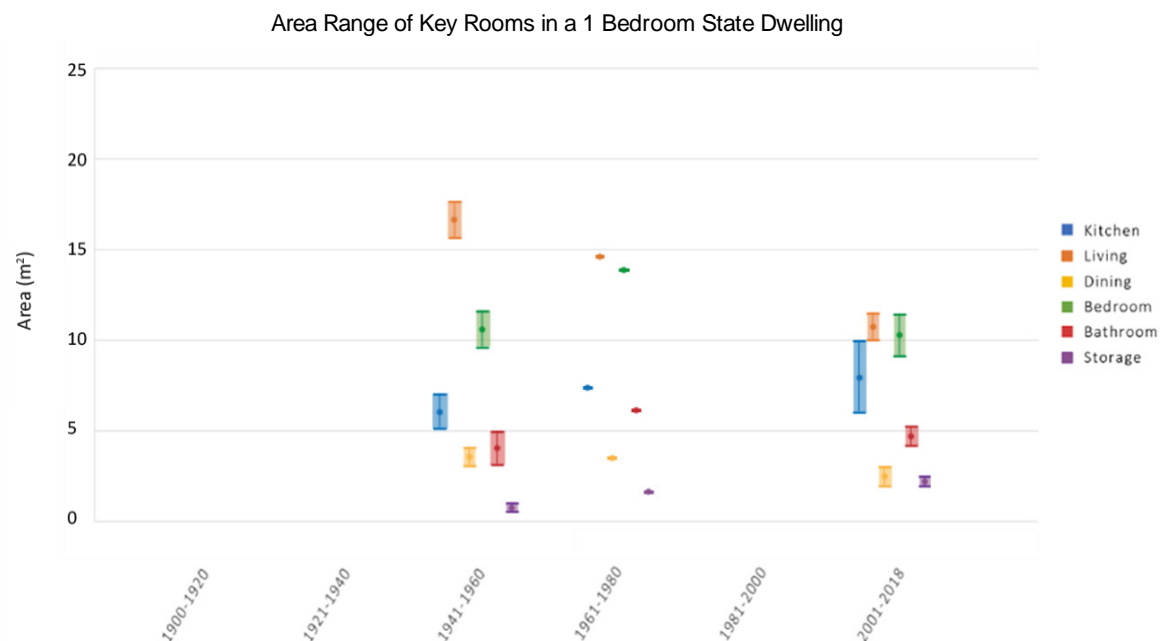


Figure 10: Box and Whisper Graph showing range of areas and median area for key rooms in a 1 Bedroom State dwelling.

Upon first look, there is a clear lack of data of 1 bedroom homes over both Figure 9 and 10. This is not to say that 1 bedroom dwellings did not exist in the era's that data is missing, but it is a representative of the already lacking number of 1 bedroom dwellings. The earliest 1 bedroom dwelling floor plans found in this study were 8m<sup>2</sup> huts for single railroad workers in 1929. As these did not have a separate room for the bedroom, these were excluded in this set of analysis. 100 years ago, it was not as common for people to live alone, many people would live with their family until they found a wife/husband and then live with them and begin their family together. When this occurred, it was always assumed that their first home should be at least 2 bedrooms or 3, in order to allow for the expansion of the family. For those who did not have family or were alone, there were

boarding homes, particularly for men who were single but working, there was worker accommodation such as those huts.

From the 70's onwards, living alone became normalised. Many women and men will leave the home after highschool to go to university or to begin work and join a flat, but once financially comfortable, they will live alone. Couples will also happily live in 1 bedroom dwellings for a long period of time rather than go into a larger home than required straight away as New Zealand's population is having children later in life.



*Figure 11: Single men's huts in the railway camp at Gracefield in the Hutt Valley in 1954. Retrieved from Te Ara, by Neill Atkinson, 2010, Retrieved 2019, Jan. 10th, from <https://teara.govt.nz/en/photograph/21417/single-mens-huts-gracefield>*

With a low amount of data, it is difficult to make conclusions or see clear trends, as a range can mean as little as 2 case studies were found from that era. From this data, the only conclusion that can be made is a lack of data is present due to the low representation of 1 bedroom dwellings over time in New Zealand. In the last 20 years according to the case studies, 1 bedroom dwellings seem to be quite similar in size, apart from market dwellings having larger living and dining space.

## 2 Bedroom Dwellings

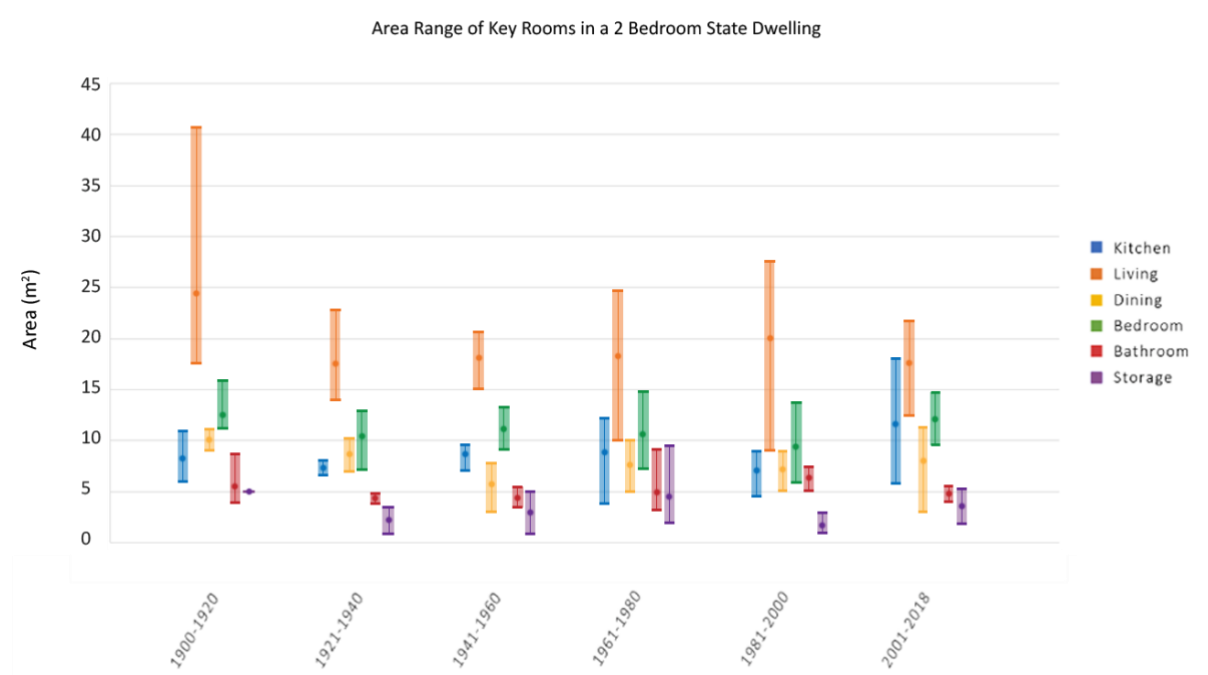


Figure 12: Box and Whisker Graph showing range of areas and median area for key rooms in a 2 Bedroom Market dwelling.

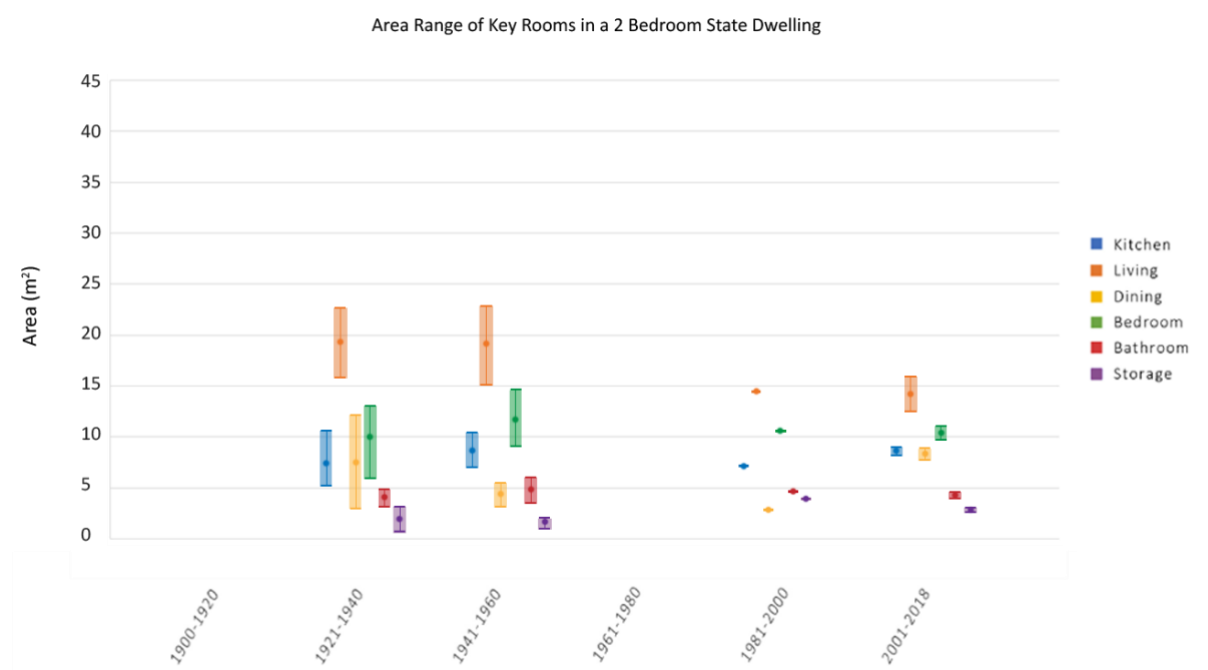


Figure 13: Box and Whisker Graph showing range of areas and median area for key rooms in a 2 Bedroom State dwelling.

As mentioned previously, 80-100 years ago, 2 bedroom dwellings were the standard minimum number of bedrooms in a New Zealand dwelling. This meant 2 bedroom dwelling data was significantly easier to find. When the Ministry of Housing called for Architect's designs for state housing in 1937, 2-4 bed designs were required. The requirement were 60 2 bedroom designs, 100 3 bedroom and 40 4 bedroom designs. These were built over the next 30-40 years and influenced the NZ state housing stock until now and will continue to until they are replaced with the next generations method of housing the HNZ applicants. In 1937, 2 bedroom homes were suitable to first home families with 1-2 children of the same gender, while 3 bedroom homes could provide for a nuclear family or those with 3 children.

From Figure 12 and 13, it is clear than the average size of key rooms within 2 bedroom dwellings has not shifted than greatly overtime. Living area has fluctuated but decreased, while kitchens have increased. Kitchen size has increased in all sized dwellings overtime as ktichens are no longer the scullery in the rear of the home, but now an integral part of the kitchen/living/dining area of a modern home.

### 3 Bedroom Dwellings

3 bedroom dwellings are the most common type of dwelling in New Zealand. As seen previously in Figure 2 44.5% of dwellings in NZ are 3 bedroom. Many trends can be seen in Figure 14 and 15 due to the large amount of data provided. The only era in which state and market cannot be compared is 1900-1920, as state housing, even railway workers cottages were not built until 1923 onwards.

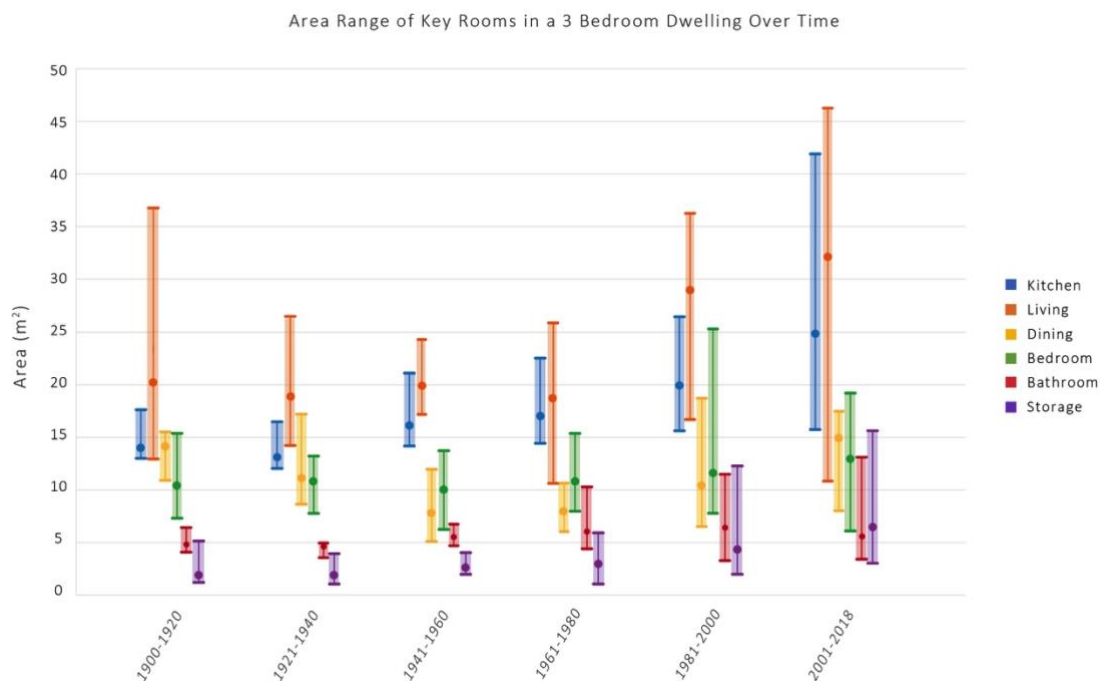


Figure 14: Box and Whisker Graph showing range of areas and median area for key rooms in a 3 Bedroom Market dwelling.



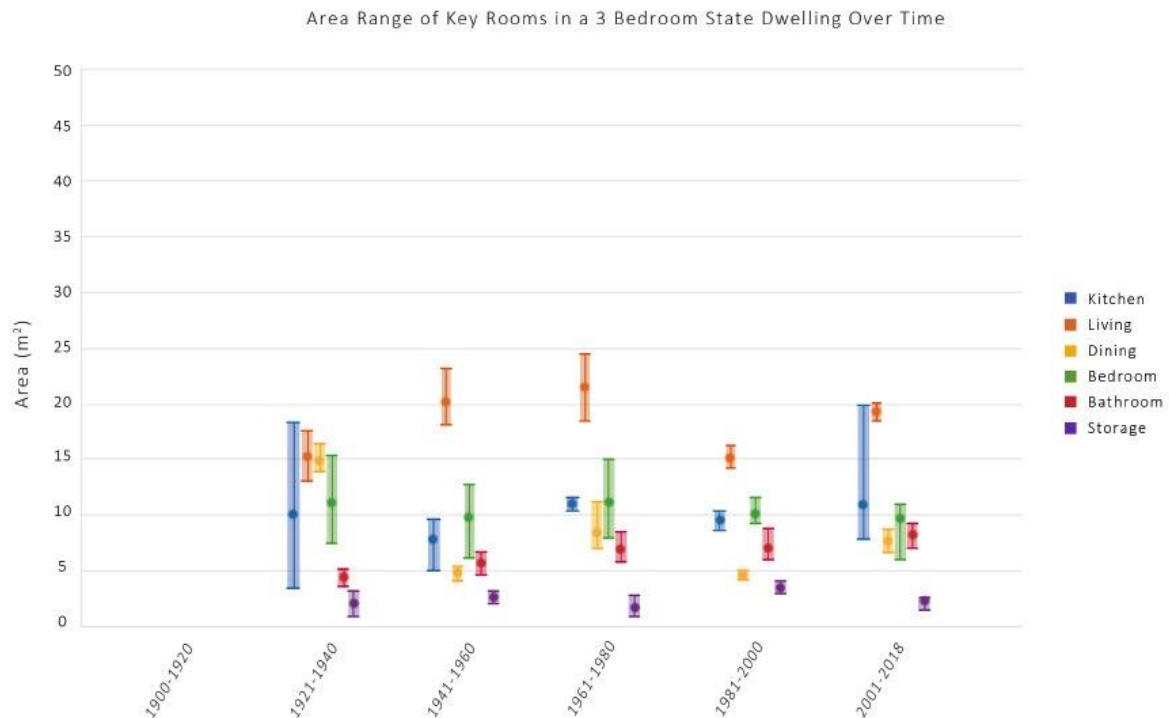


Figure 15: Box and Whisker Graph showing range of areas and median area for key rooms in a 3 Bedroom State dwelling.

Living area overall has increased dramatically in the last 40 years in market homes, while it has fluctuated but ultimately stayed a similar size in state homes. In 1980's and onwards, it was not unusual for dwellings with 3 bedrooms or more to have 2 living areas. With the rise of disposable income, comes the rise of consumerism in New Zealand. In Architecture, this equates to homes changing from living rooms that centred around a fire, the view outside or family activities, to living rooms orientated to a blank wall where a TV will sit on a console or be mounted to the wall. As the TV's have increased, people have wanted larger living areas. Then some families wanted 2 living areas, one for the kids to watch TV, and a more formal living area just for adults or entertaining, which may or may not also include a TV.

Once a focal room in the home, dining space is now based upon what size table you require. In the 1920's dining had its own room within the home. In the 1950's, kitchens and dining rooms had started to open up to each other in a shift towards open plan living, which we have now. Dining area is now based upon the size of the table desired for the amount of people in the home, along with the type of people that occupy the home. For example, a family who does not cook large meals, have guests for meals or eat together consistently is less likely to want a large dining table.

Storage space has gradually increased over time. The state homes from the 50's have less storage than necessary and less living space. State homes being produced in 2016 have increased storage significantly, especially built in storage. For example, the average state home in 1951 had 1-2 m<sup>2</sup> of storage area (equivalent to 1 ½ wardrobes). In 2016, many state homes will have a small wardrobe in each bedroom and also storage located under the stairs if the home is multi storey. Housing NZ's residents can make much better use of a dwelling if they do not have to purchase a lot of extra furniture, especially when they don't always stay there long term. Along with storage, modern state homes have increased the number of bathrooms

#### 4 Bedroom Dwellings

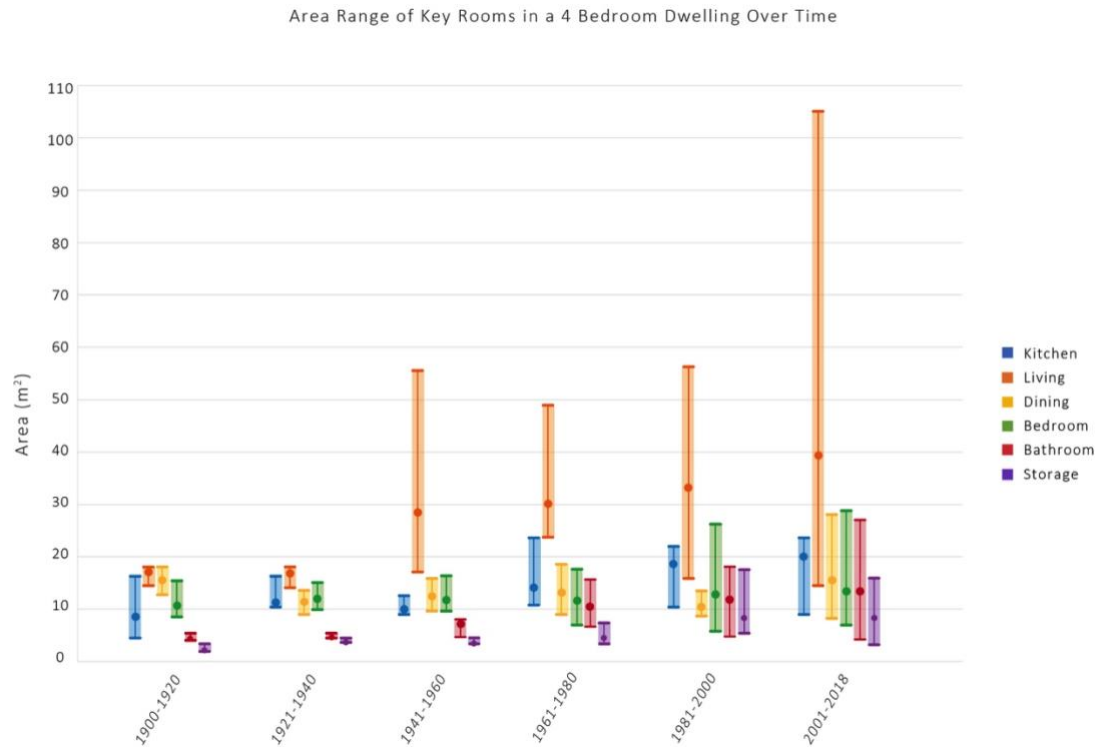


Figure 16: Box and Whisker Graph showing range of areas and median area for key rooms in a 4 Bedroom Market dwelling.

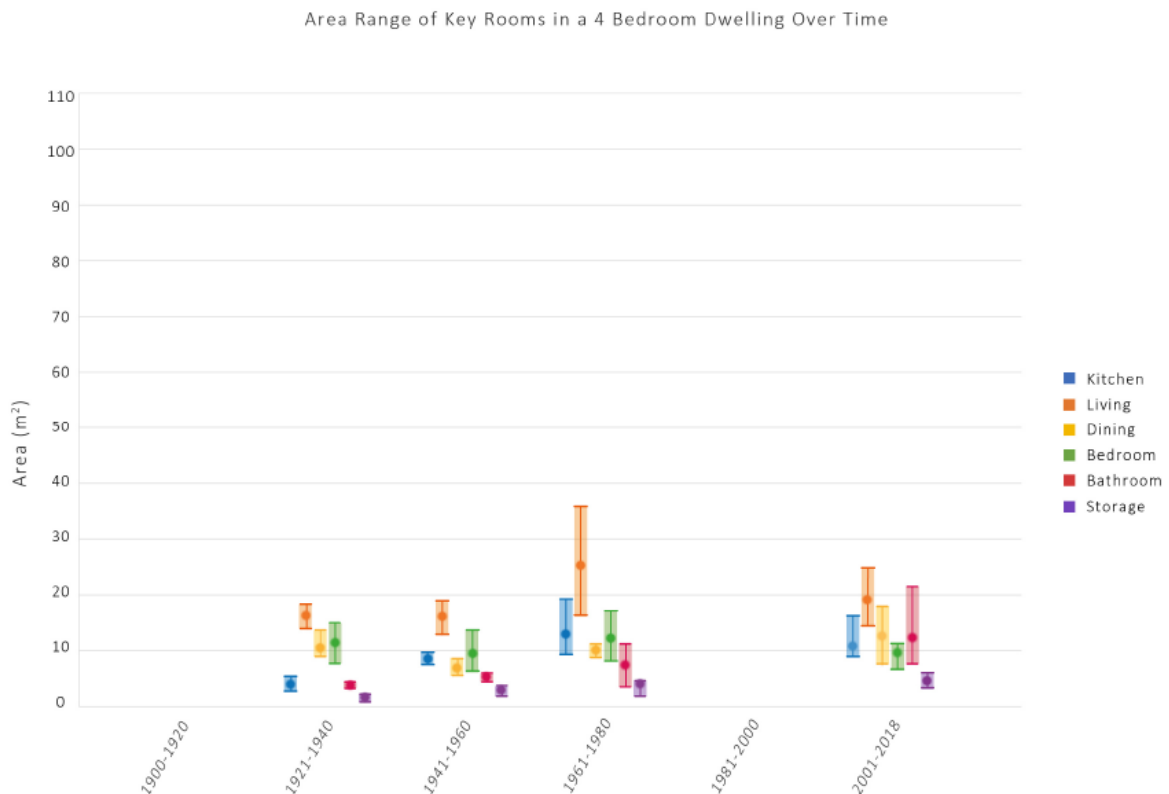


Figure 17: Box and Whisker Graph showing range of areas and median area for key rooms in a 4 Bedroom State dwelling.

Due to a similar occupancy of 4 bedroom dwellings and 3 bedroom dwellings to provide for one family households, or multi-person households, Figure 16 and 17 show similar trends to Figure 14 and 15. 4 bedrooms are the 2<sup>nd</sup> most common sized dwelling in NZ with 32.4% of occupied homes being 4 bedroom. While they are similar, some are amplified by the higher occupancy. The maximum of living area is just over double what it was for 3 bedroom dwellings with 35.4m<sup>2</sup> vs

105.3m<sup>2</sup>. While the average living area is quite similar, this still indicates that those with 4 bedroom homes may feel like they require more living space than a 3 bedroom dwelling. This could be investigated further through interviews and occupancy study to see who utilises this extra living space, if there is a cultural link and if the space actually gets used or whether it could be deemed “inappropriate dwelling space” in order to better define what “appropriate” dwelling space is in terms of living. In saying this, apart from in the 70’s, state living area has stayed quite similar over time. This could be compared with market home data to see if that area is appropriate for those who occupy that dwelling, as it is almost half that of the average market living area.

Similarly to 3 bedroom dwellings, the size of kitchens in 4 bedroom homes has increased over time. This was the same in state and market dwellings over both types of homes. No longer is the kitchen a small room for the wife to prepare meals, instead it stands as the heart of the home as part of the living/kitchen/dining area. As gender roles shifted and the idea of family changed over time, the kitchen became an area for all in the home, requiring more space. In state homes however the kitchen has increased some with the cultural and design shift, but not as greatly as it has in the market.

Bathroom space has increased over time significantly as now it is normal for a 4 bedroom home to have 2 or 2 ½ bathrooms to provide for a full house. In 1951, market and state houses would typically only have 1 bathroom but it would be spilt into a bathroom and separate WC to make sure the users of the household didn’t have to wait.

Throughout the many type of dwellings that have been discussed, bedroom area remains an area that fluctuates rather than a clear larger or bigger area. In market dwellings, it seems the more bedrooms there are, the larger the range in area bedrooms are. 1 bedroom dwelling bedroom size has decreased, while 2 & 3 bedroom dwelling bedrooms have stayed a steady size, but with 4 bedroom dwellings the average area has slightly increased, with the range showing very large areas. The master bedroom in the last 20 years has begun to look like a 1 bedroom apartment or hotel suite, than a bedroom that simply provides for its residents. The bedrooms a dwelling has, the more important a master bedroom seems to become in a home. This may also contribute to the increase in bathroom area as these large bedrooms will almost always be accompanied by an ensuite. The average house in the 1950’s had bedrooms which were quite similar to each other in size, rather than the variance that is seen in modern homes. Analysis of 5 bedroom dwellings below will help to determine whether a higher occupancy in a home means the master bedroom area, total bathroom area and total living area increases.

## 5 Bedroom Dwellings

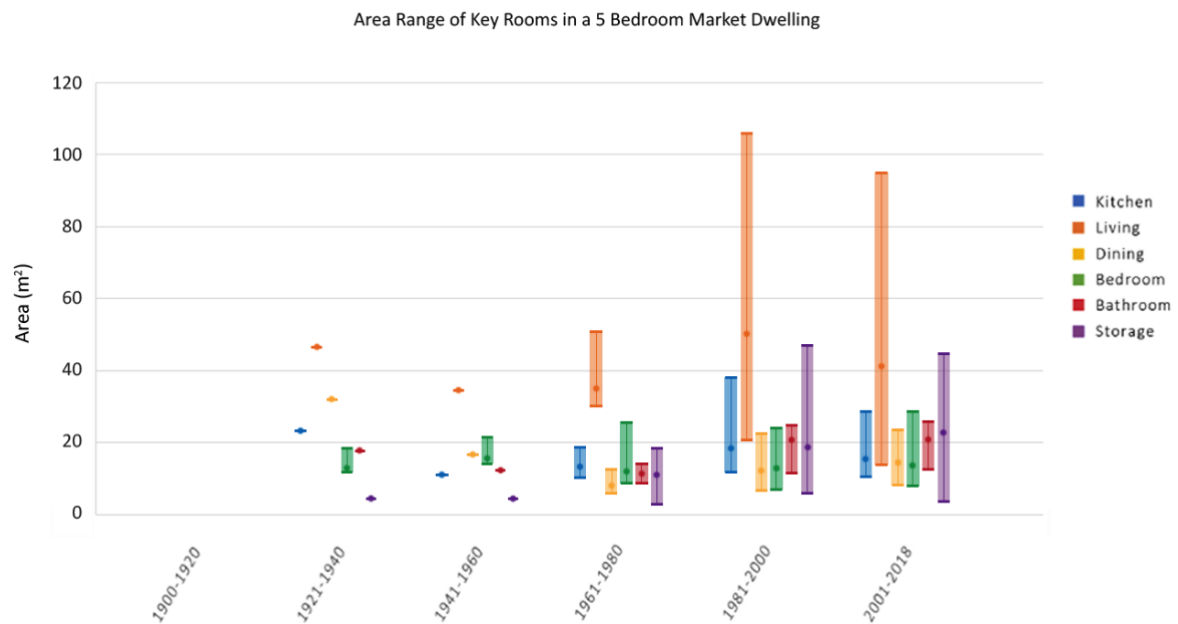


Figure 18: Box and Whisker Graph showing range of areas and median area for key rooms in a 5 Bedroom Market dwelling.

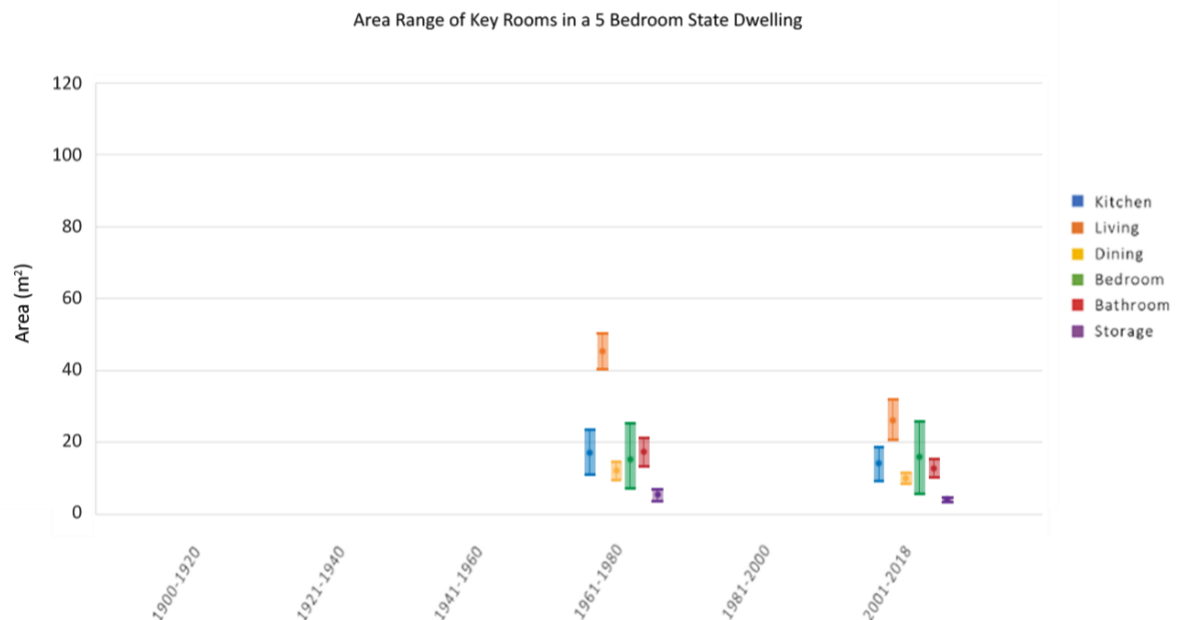


Figure 19: Box and Whisker Graph showing range of areas and median area for key rooms in a 5 Bedroom State dwelling.

The lack of 5 bedroom dwelling case studies from 60+ years ago makes it difficult to compare dwellings overtime, particularly when it comes to state vs market homes. However, similar patterns can be seen with 4 bedroom dwellings in Figure 18 and 19. Living area seems to have increased but then decreased in the last 20 years slightly. As mentioned in earlier dwelling studies, storage area has increased in homes overtime as people have favoured built in storage over furniture that

manages storage needs. This also links into the rise of consumerism in New Zealand over time as people have had more disposable income, even if the amount of it varies greatly.

Figure 19 doesn't present many trends at all. The case studies from 1961-1980 were from the same area (Miramar) due to the lack of 5 bedroom state homes built in New Zealand. The same can be said for 5 bedroom case studies from 2001-2018, as these were also from the same area – Overlea in Tamaki, Auckland. The only conclusion that can be made is that there hasn't been a large shift in the area of most key rooms in the house, even the range in size is very similar, therefore it can be said that 5 bedroom state homes haven't changed greatly since the 1970's.

Observing the difference between living area in some market homes and the living area in an average state home indicates that those in some market homes are living in excess. The averages are still similar, but in reality having a 30-40m<sup>2</sup> living room is a large area and could accommodate many people, not just the family who occupy the home. Many 1 bedroom apartments are 40m<sup>2</sup>, providing to all the needs of 1-2 people, let alone just a living room that on average will provide for up to 10 people (with occupancy assumed at max of 2 persons per bedroom).

## Summary

Upon analysing 1-5 bedroom dwellings with the data collected in this study, both trends in market and state homes of 1-5 bedroom can be seen. Some of these are consistent trends over all NZ dwellings e.g. storage area increasing more and more based upon the assumed occupancy. Some trends were very unique to the type of dwelling. For example, bathroom area being almost identical throughout time in 1 bedroom dwellings, in contrast to changing hugely in 3 or 4 bedroom market dwellings. 1, 2 and 5 bedroom dwellings had some unclear trends as there was not sufficient data for the 118 year period in which data was sourced, in order to see or discuss how those dwellings had changed overtime. In contrast, 3-4 bedroom dwellings provided clear trends and patterns in the increase, decrease or fluctuation of area of key rooms, along with the overall area of these types of dwellings. More of this data can be found in Appendix C.

While state homes are being designed and built in the last 40 years are to be analysed, these still do not make up the majority of state homes in New Zealand as there is still a clear typology around NZ state housing that is visible in every city of New Zealand.

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## Implications for Defining Appropriate Dwelling Space

In the Introduction of this paper, the focus of this study was captured in the following research questions:

1. *Do different cultures in New Zealand require different dwelling space?*
2. *How has New Zealand's housing changed over time and what effect has this had on state housing?*
3. *How does NZ's current state housing fail to provide for its residents?*

Defining “appropriate” dwelling space has not been done through this study. After conducting case study analysis of 252 NZ dwellings and comparing these to one another and NZ Standards, some of these questions have been left partially unanswered, or not at all. This research has established what kind of homes are required for appropriate dwelling space in the future, but not numeric values as to what size certain rooms should be. When New Zealand first began mass-producing state homes, they were built to be identical to other homes at the same time. These homes were also successful for their low maintenance requirements and standardised areas giving the users of the home equal space and priority. These themes were also reflected through the community as those who lived in state houses appeared to be living in homes the same as their neighbours. At the time, these were “appropriate” dwelling spaces, as many residents later bought their state homes from 1962 onwards.

In order to discuss the implications of this study in full, each research question will aim to be answered as follows:

1. *Do different cultures in New Zealand require different dwelling space?*

New Zealand's cultural diversity does not necessarily therefore require diverse homes. While census data indicates that different ethnic groups have higher percentages of certain types of households, this does not equate to these groups requiring homes of different configurations, sizes or types. This kind of data cannot be confirmed without asking or observing those who occupy these dwellings. While this study has analysed many homes, it has not included any input from the people who occupy New Zealand's market or state homes at all. Along with this, there are also many cases of people not being simply one ethnicity. New Zealand's population has never been 100% European, as we are a country that experienced colonisation, ethnicity has never been “pure” except for before New Zealand was “discovered” by European explorers from 1642 onwards. Because of this, ethnicity in NZ is not black and white, many people are a combination of 2 or more ethnicities, making their idea of an appropriate dwelling different from someone who is solely one ethnicity. In turn, ethnicity may also have no sway on how someone lives, or what they would prefer in a dwelling. For example, someone may have Chinese heritage, but as they have lived in New Zealand so long, they may not even speak Mandarin or Cantonese, or celebrate any of the cultural holidays.

In order to determine whether different cultures require different dwelling space, people need to be involved in a study. Even if this study deems that culture isn't a factor in the way people want to live, this is key information to designing a home as many assume that culture does have an influence on the way someone may desire to live, as presented in the Maori and Pacific design Guides. While it is more likely that 1 generation immigrant families will have strong ties to their culture, it is yet to be clear that this affects the desired area or layout of their home. Further study could investigate this. For example, a design guideline for Indian or Chinese families could be produced, considering these groups are large minorities within the New Zealand population. Investigating this could also uncover whether this is even necessary or not.

## *2. How has New Zealand's housing changed over time and what effect has this had on state housing?*

As this study has uncovered, New Zealand's housing overall has changed from smaller to larger, however this has not happened in the same manner to New Zealand's state housing, nor has it happened equally to dwellings of different scales. Looking at New Zealand's market dwellings, 1-2 bedroom dwellings have changed in a different manner to 3-5 bedroom dwellings. As seen in Figure 5, 6 and Appendix C, the average area of 1-2 bedroom dwellings over time has fluctuated but stayed the same size. This is true with both state and market, however it is the range of areas that have increased over time in market dwellings. There is a larger disparity now than there used to be, with some recently built 1 bedroom apartments in Auckland Central being 32m<sup>2</sup>, while 40m<sup>2</sup> state house developments exist in Berhampore, Wellington. There are 2 bedroom market dwellings which are 128m<sup>2</sup> in area, but there are also 54.9m<sup>2</sup> market dwellings, significantly larger and smaller than the current average area for both state and market being 80-85m<sup>2</sup>. Along with this, the recommended area of 2 bedroom state dwellings given by the Ministry of Housing/Housing Corporation of New Zealand/Housing New Zealand has decreased slightly since it first began in 1937.

In contrast, throughout case study analysis the average area and range of area of 3-5 bedroom dwellings have increased significantly. In the 1960's, the average home was 128m<sup>2</sup> with the occupancy rate being 3.3 people. In the last decade in average NZ dwelling was 208m<sup>2</sup>, with an occupancy rate of 2.7 people. These numbers are coming from the 76.3% majority of 3-4 bedroom dwellings in New Zealand. As to be expected, the Housing NZ Standards/ recommendation over time has had an impact on the lack of change of total area of state 3-5 bedroom dwellings. While it has fluctuated over time with the small increase in recommended area, state dwellings have not changed that much in comparison to market 3-5 bedroom dwellings. Therefore, it seems that the market trend of increase has had a small impact as the minimum area has increased, therefore the recommendations have shifted accordingly, however no extra has been given.

In Auckland in particular, but also in other NZ urban centres, market and state developments are making space saving an integral part of design. While design & build developers will continue to build homes that have excess space and space all one 1 storey, this is not the trend. In the last 5 years many developments that are tied to Housing NZ are architecturally design in a way that utilises an entire site, but does not take away valuable land. As mentioned in Housing NZ's "Simple Guide to Urban Design & Development", diverse homes that use space in a smart way are encouraged. This means not building too high where not needed, but also not building too low (1 storey) where possible. Designs should be accessible, use orientation well to warm a home, exceed building code to be warm and dry and many more qualitative concepts. The design guide is a good step for Housing NZ as it allows new ideas to create their dwellings so Architects and developers are not restricted. However, there is no quantitative data that can be used to encourage better dwellings to be built, e.g. a minimum size for bedrooms, or minimum area of living space based on x no. of people occupying the home.

## *3. How does NZ's current state housing fail to provide for its residents?*

Over the last 50 years, state housing has come under fire for not providing good quality, accessible dwellings for its residents, along with there simply not being enough stock to house the 10,892 applicants on the state housing list as of September 2018. However, this study has focused on appropriate space in the form of area, which is not a topic that has been critiqued in the same way



the other issues have. This study has uncovered that a significantly higher percentage of 1-2 bedroom homes need to be provided for the 76% of state housing applicants who require them. While this is also true for NZ overall, state housing is where there is a significant gap. Along with this, there is also a small requirement for more 5+ bedroom dwellings to be provided. As discussed earlier, there is a larger percentage of Multi-Generational households, along with migrant families that have larger families than the 2.7 people per household average of New Zealand. From this study there is yet to be a conclusion about how big certain rooms in the home should be. There is an average presented, however this cannot be deemed “appropriate” without further inquiry. Certainly state homes should be providing significant storage based upon the size of the family occupying the home. As state home occupants may move and are not in a financially stable position, built in storage allows this process to be more simple by eliminating moving extra furniture or having to purchase it. Along with this, flexible space to allow for a shifting of occupants is reasonably necessary. Assuming that state dwellings are going to be utilised for a long period of time, even if New Zealand established a long term renting culture, a house would still see multiple different tenancies over its life span. These different tenancies may have different desires for their dwellings.

The original question of what is appropriate dwelling space comes from an empathetic place. Currently many housing NZ residents and those renting in the private market are occupying dwellings that are not appropriate for their needs. This is either that the home does not provide the basic requirements or a warm and dry place of shelter, or it does not have enough room for the users. This same issue also happens to those at the lower end of market renting. Many are making do by utilising garages as bedrooms and extra living spaces. This is not “appropriate” as these rooms are not weather tight and lead to illness when used in the wrong manor.

## Limitations

Throughout this study, many limitations restricted the outcome of results. This was to be expected due to the nature of the research, as it asks large questions that cannot be answered in 1 or 2 studies. Limitations were found in the method of research, data collection, analysis and future work.

In methodology, there were initially issues in the scope of the study and how the data would be found. First, it would be naïve to assume that Housing NZ would allow the directors of this study to interview their residents without a long period of organisation and ethics meetings to define the questions and how the study would be run. Because of this, the study shifted to a quantitative approach of analysing floor plans from market and state homes around New Zealand over time. This study originally aimed to focus specifically on state dwellings, however it was quickly understood that market and state needed to be compared and the outcome of this study would reflect the need of both markets. However, it was very difficult to find the amount and type of data needed for analysing 1-5 bedroom dwellings over time from just 1 real estate website and NZ archives. Barfoot & Thompson was the only real estate website that had floor plans with measures and the titles of the homes. This meant that all of the data required could be extracted (areas of the home, rooms and the age of the home), rather than only some, leaving the case studies partially completed. Barfoot & Thompson is an Auckland based realty company, which includes the outer most areas of the Auckland region, rural and urban. While Auckland represents 38% of the NZ population, only using Barfoot & Thompson homes skews the data so that conclusions about NZ housing overall cannot be made. By using members of Studio Pacific and family friends, this allowed homes from Wellington to also be included, however any representation from the South Island was missed. Newer market homes were better represented through including Design & Build homes, as they represent a significant part of the built market currently. A better representation of market homes could have occurred if architectural firms from all over NZ could be included to allow for a greater number of homes from a range of areas of New Zealand, from a range of eras. This would also benefit the limitation of there only being so many 1, 2 and 5 bedroom dwelling case studies.

State homes in this study were mostly evenly represented, as these homes have a standard approach over the whole of New Zealand, especially in the past. However, only some plans could be found at the Wellington Archives office. There are other floor plans of state homes in Christchurch and Auckland's offices that could enhance the overview of state homes over time as developed in this study. Considering the standard approach and lack of change in Housing NZ's standards, these floor plans might repeat what has already been discovered through this study. It is not certain that these floor plans would give new information that would benefit the study.

Due to the lack of data for some types of dwellings, both state and market, there are limitations in analysis due to an inability to make conclusions. General, overall trends can be made about both market and state homes, however links to certain eras and what happened at the same time as these trends are not able to be linked when there isn't data.

All these limitations lead into a large series of limitations for future work on this topic, as this is Phase 2 of a multi-phase research. The conclusions made from this study, along with the lack of data for some homes is a conclusion in itself. There is a clear under representation of 1,2 and 5 bedroom homes due to the lack of number of them in NZ's housing market as seen in NZ Census data. This however still does not answer what "appropriate" dwelling space is. Total number of bedrooms needed is now known, however the overall area of the home and the rooms within it still need to be defined. This will require a qualitative research approach, to add to the quantitative study that has just been completed.

There are limitations to where this study can go. Studies have already been conducted in which users of state homes were interviewed about what they think of their dwellings. Due to the position

the users were in, they were happy to accept and make the most of what they have been given. While this is nice, this does not provide the interviewer with ways in which they could make state housing better. In other studies where the goal was improve a situation, it is difficult to ask any human what they would do to improve their surroundings if they don't perceive that there is an issue or there is such a range of things that could happen but in their mind they will never occur so they won't mention it. Humans will respond to this kind of questioning better if there are options presented to them. However, when it comes to dwellings, it is hard for anyone to put themselves in a different environment and know that it will provide them with what they need if they have never experienced it before. Alternatively, users of different homes could be interviewed post occupancy. These could be Housing NZ occupants of older state homes, that are then moved into newer developments and compare the two, making comments about what they liked better or less in the different dwellings. These responses could then be turned into taking the positives and negatives of each example and making design recommendations of "appropriate" dwellings that combine the best qualities of state homes. This is limited to only comparing the smaller homes of the NZ housing stock together, and would not include market dwellings, which are not excessive, but provide a comfortable living area that is suitable for its occupants. Alternatively, responses from post-occupancy evaluations of both state and market homes could be compared and noted on the floor plans of the dwellings to see where spaces were too big or too small and why. While these are a few options for further research, an extensive literature review on the best methods to gather qualitative data from users of dwellings would need to be completed. It would be easy for an entire phase of research on a study to be a waste if the study were to be completed in a way in which the original question of what "appropriate" dwelling space does not get answered in any way. This study has only partially answered the original questions, however it has given insight into what is needed for "appropriate" dwelling space, rather than stagnated the study.

In future study, ethnicity may also be considered, along with its place in designing dwellings for state homes. This will require extensive studies to see if there is a clear link between the way different ethnicities occupy their homes, what this way is, and how it differs as ethnic boundaries differ. Very often ethnicity is not black and white, which would make each family different from one another. If this is the case, it would not be wise to design dwellings, which may provide shelter to over 20 different families over its lifetime, only specific to one sub-culture of one ethnicity. Instead it would be assumed that state and market dwellings need to be designed to be flexible to those who occupy it, and could solely be based on the occupancy rate of the home, with a restriction on how many people may occupy the dwelling, which is enforced by Housing NZ. Even then a base form for an "appropriate" dwelling needs to be set, the recommendation cannot just be to provide flexible housing, because what definition does that give to architects who are designing the homes? The users of the homes need to feel at home in their dwellings, but the home should not be so individual that only that family can live there for the home's entire life as very rarely does that occur within NZ.

There are many larger complexities which influence Housing in NZ, making defining "appropriate" dwelling space in 1 or 2 studies very difficult. Ultimately preliminary research into the scope and method of each study that impact the larger research should be extensive as to make each study count and learn new trends from each different study that can all impact the main body of research. Defining appropriate dwelling space will take time due to the number of limitations, especially when it comes to state housing as gaining access to the opinions of their residents can have ethical, political and social restrictions as defined by the Government entities that administer these state benefits.

## DEFINING APPROPRIATE DWELLING SPACE

*What has been done and where to go next?*

### PHASE 1

- Analysed NZ's recent spatial standards from a range of sources and compared them to international examples of similar countries
- Simplified Pacifica and Maori design guides to show key spatial characteristics.

### PHASE 2

- Analysed NZ's changing cultural and household demographics over the last 100 years.
- Studied NZ market, state and design & build floor plans to identify the average area and ranges of areas for a dwelling & the key rooms within it.
- Compared & contrasted these homes against one another, along with Housing NZ's spatial standards.

### PHASE 3 OPTIONS:

01

Complete observations and interviews with a range of Housing NZ occupants representing the main ethnic groups (Maori, European, Pacifica, Asian (Chinese & Indian)). However this could be unproductive and not yield results unless it was an observational study to look at how people utilise their homes, rather than simply asking question about what size they think is appropriate and what they like in a home. As Lily encountered in her elderly social housing study, people may be inclined to just say that they're happy with what they have because they just accept what they are given and have no other choice.

02

A study in which design options are presented to the interviewees and they can choose from the options given. This encourages the occupant to think about possibilities rather than what they are currently in or what they have previously occupied. This could result in a better understanding of what Housing NZ residents of different cultures want from their dwellings. This could also show whether there is a trend between culture and dwelling size requirements.

03

Post-occupancy analysis on Housing NZ tenants (who have lived in older Housing NZ homes) of newer developments could be undertaken. This would cause the occupants to compare their old dwellings to their current ones and pick out what they liked and disliked about both. This would be questions about how they used their dwellings and what sizes they preferred in their old or new dwellings.

## References

- Carmona, M., Gallent, N., Sarkar, R. (2010). Space standards: the benefits. *Housing standards; Evidence and research*. CABE, London.
- Dykes, P. (2016). The quasi-market approach: the answer for social housing in New Zealand?. *Policy Quarterly*, 12(2). doi:10.26686/pq.v12i2.4594
- Housing New Zealand. (2018). Managed Housing New Zealand Properties by Number of Bedrooms as at 30 September 2018. *Housing New Zealand Corporation*. Retrieved from <https://www.hnzc.co.nz/assets/Publications/Research/Housing-Statistics-Managed-stock/September-2018/Managed-Stock-September-2018.pdf>
- Johnson, A. (2017). *The Demand for Social Housing in New Zealand* (August 2017). Retrieved from <https://www.salvationarmy.org.nz/sites/default/files/uploads/20170814spputakingstockreport.pdf>
- Kreider, R. M., Vespa, J. (2015, April). *The historic rise of living alone and fall of boarders in the United States: 1850–2010*. Paper presented at the Population Association of America annual meetings. Retrieved from <https://www.census.gov/content/dam/Census/library/working-papers/2015/demo/SEHSD-WP2015-11.pdf>
- Mckay, B., Stevens, A. (2014). *Beyond the State: New Zealand State Houses from Modest to Modern*. Auckland: Penguin Books Ltd.
- Murphy, L. (2003). Reasserting the “Social” in Social Rented Housing: Politics, Housing Policy and Housing Reforms in New Zealand. *International Journal of Urban and Regional Research*, 27(1), 90–101. <https://doi.org/http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291468-2427/issues>
- Ogden, P. E., & Hall, R. (2000). Households, Reurbanisation and the Rise of Living Alone in the Principal French Cities, 1975–90. *Urban Studies*, 37(2), 367–390. Retrieved from <https://doi.org/10.1080/0042098002230>
- Olsen, A., McDonald, H., Grimes, A., Stillman, S. (2010). A State Housing Database: 1993–2009. *Motu Economic and Public Policy Research* 10(13), 1–50. Retrieved from [http://motu-www.motu.org.nz/wpapers/10\\_13.pdf](http://motu-www.motu.org.nz/wpapers/10_13.pdf)
- Stats NZ, (2017). Trending topics – Housing. *Stats NZ Tatauranga Aotearoa*. Retrieved from [www.stats.govt.nz](http://www.stats.govt.nz)
- VisionWest Community Trust, (2015). Long-Term Supported Housing. Retrieved from <http://www.visionwest.org.nz/housing/housing-long-term-supported-housing>
- Schrader, B. (2005). *We Call It Home: A History of State Housing*. Auckland: Reed Publishing.
- Shalders, B. (2017). *Railway Houses of New Zealand*. Petone: New Zealand Railway & Locomotive Society Inc.
- Tenancy Services market rent calculator: [https://www.tenancy.govt.nz/rent-bond-and-bills/market-rent/?location=Manukau+-+Otara&period=102&action\\_doSearchValues=Find+Rent](https://www.tenancy.govt.nz/rent-bond-and-bills/market-rent/?location=Manukau+-+Otara&period=102&action_doSearchValues=Find+Rent)

## APPENDIX A – Summaries of Key Literature

Murphy, L. (2003). Reasserting the “Social” in Social Rented Housing: Politics, Housing Policy and Housing Reforms in New Zealand. *International Journal of Urban and Regional Research*, 27(1), 90–101. <https://doi.org/http://onlinelibrary.wiley.com/journal/10.1111/%28ISSN%291468-2427/issues>

After a decade of wide-ranging social welfare reforms in New Zealand, which have resulted in a considerable restructuring of the role of the state in housing provision, the introduction of new housing legislation in 2000 marked a significant attempt to reassert the notion of social provision. This article highlights New Zealand’s unique position of being pioneers of welfare state development yet laggards in the provision of social assistance programs. It compares New Zealand’s legislation and political position on social housing to its neighbour Australia and many European Countries with varying views. It examines the manner in which housing policy has recast the role of social rented housing in New Zealand, & sets out the political context & implications of the new legislation in which housing policy is being pursued. It is argued that while the notion of social provision has been revived, social rented housing is still constructed in terms of a residual model of provision in the political discourses of reform and doesn’t actually address its users.

Johnson, A. (2017). *The Demand for Social Housing in New Zealand* (August 2017). Retrieved from <https://www.salvationarmy.org.nz/sites/default/files/uploads/20170814spputakingstockreport.pdf>

This report released by Salvation Army outlines the history of social/state housing in New Zealand, along with the main issues that the social housing system has currently. It describes the balance between having the correct sized and located homes for those who require social housing with having enough money to purchase or lease these homes from the private market. It also highlights those at higher risk for needing housing assistance and the variety of groups which require it. In the space of 50 years, New Zealand’s population has changed in diversity, however the housing stock of New Zealand fails to provide for the needs of these different cultures. This is equally if not more prevalent in social housing with larger families and Multi-generational families requiring larger homes that can adapt to the different uses based upon cultural needs.

Lysnar, P., Dupuis, A. (2015). *Meeting the housing needs of multi-generational households (Project LR0461 – 31<sup>st</sup> July 2015)*. BRANZ External Research Report. Retrieved from [https://www.branz.co.nz/cms\\_show\\_download.php?id=70667af9a4b4d01cc83b07ede63a635c8e779b49](https://www.branz.co.nz/cms_show_download.php?id=70667af9a4b4d01cc83b07ede63a635c8e779b49)

This report looks into the diversity of New Zealand’s household types and housing forms, particularly focusing on multi-generational homes. It was a similar study in terms of method to the one which is currently being conducted in conjunction with phase 1. The study completed 53 in-depth interviews with people living in MGHs, along with 17 further interviews with housing professionals and other stakeholders. These interviews were conducted around New Zealand. The factors for a rise in MGHs is also acknowledged. These being: later

- Later age of first marriage
- Impacts of migration where MGHs are the cultural norm

- Adult children returning home after travel or relationship breakdown
- Longer tertiary education
- Increase in cost of elderly care resulting in elderly people living with their adult children
- Younger people/adult children struggling to find employment or having low paid jobs resulting in not being able to afford independent living
- Housing shortages in conjunction with high cost of housing making it difficult or children opt to return to their parents' home to save for a deposit.

It particularly highlights the needs of recently arrived migrants and their descendants having different expectations and requirements to those of a “traditional” Kiwi society (stemming from commonwealth values). While it highlights a cultural link between larger families occupying one dwelling, it does mention the increase overall of MGHs increasing due to the reasons mentioned above. It highlights an important note on what home means for different cultures, “for Pākehā the individual dwelling meant ‘home’, with the associated values of family life, self-esteem, security, belonging etc., whereas for Māori these values were provided by the marae”. Along with this, good contemporary design should allow for the needs of Maori by providing open plan, flexible and adaptable space to meet the changing needs and occupancies for Maori. This includes a strong indoor/outdoor connectivity and large living, kitchen and dining to accommodate up to 20 people. In contrast, Chinese families would often host larger gatherings out of their dwelling e.g. in restaurants or cafes.

Khajehzadeh, I., Vale, B. (2016). “Large housing in New Zealand: Are bedroom and room standards still good definitions of New Zealand house size?”. Paper presented at the 9th Australasian Housing Researchers Conference, The University of Auckland, 17 - 19 February, 2016. [https://cdn.auckland.ac.nz/assets/creative/schools-programmes-centres/URN/documents/AHRC-Papers/Khajehzadeh\\_Vale-Definition-of-House-Size.pdf](https://cdn.auckland.ac.nz/assets/creative/schools-programmes-centres/URN/documents/AHRC-Papers/Khajehzadeh_Vale-Definition-of-House-Size.pdf)

This paper examines the average floor area and number of rooms in New Zealand homes, and then compares these to international studies. This is in order to determine what change has occurred in recent years to New Zealand houses and show how census data could be underestimating the crowding issue in NZ. New Zealand’s household size is large when compared to the global housing sector. More specifically, the average room size is quite large also, with 23.7m<sup>2</sup> being the average, while in Denmark it is 29.7 m<sup>2</sup>.

Carmona, M., Gallent, N., Sarkar, R. (2010). Space standards: the benefits. *Housing standards; Evidence and research*. CABE, London.

This paper highlights the lack of regulation over housing space and how this is a growing issue in recent years as urban growth results in population concentration. It highlights key concepts in the better size allocation of homes: health & wellbeing, family life and children, productivity, adaptability, inclusiveness, mitigating anti-social behaviour and market benefits. Adaptability in terms of long term use of dwellings was particularly examined, with literature encouraging larger floor area to allow for adaptability of dwelling use, but also to make the home more inclusive to those who are less able-bodied. However, other studies confirmed that this is mainly about enlarging communal areas and decreasing the size of bedrooms. Along with this, it mentions that the UK does not have a legal standard to determine acceptable floor area for dwellings, but social housing does have regulations for this, which is also the case in NZ. It also mentions that the benefits of a minimum floor area between private and public housing is the same, suggesting there should be an overall standard for this to ensure quality housing for all.

Shalders, B. (2017). *Railway Houses of New Zealand*. Petone: New Zealand Railway & Locomotive Society Inc.

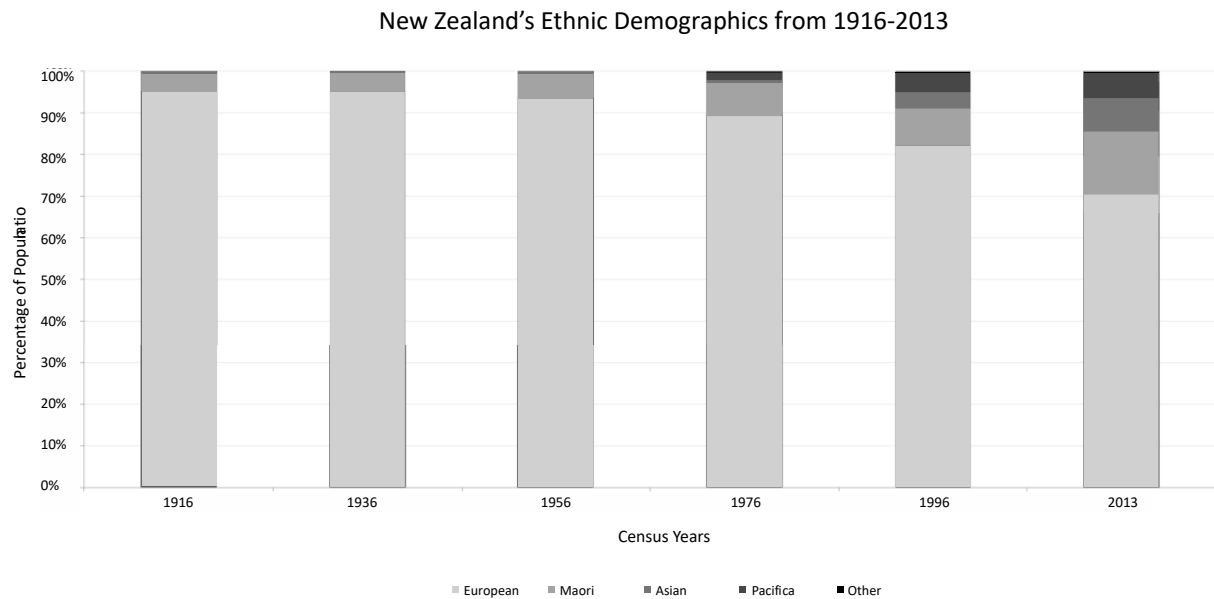
This book details the history of NZ's Railway houses, key additions to NZ's social housing market from 1880's-1950's. Housing in general seems to have always been in short supply in New Zealand, except after WWI where the men who came back were put to work to build, with private land even being suspicious of the government not investing in their building as social houses were a plenty. They built 400 homes per year just in the Frankton Junction area due to an efficient factory scheme that pumped out homes of 4 different typologies known as A,B,C,D, which had the same floor plans. Due to the use of these homes, most faced the railway instead of the street and had minimal backyards.

Schrader, B. (2005). *We Call It Home: A History of State Housing*. Auckland: Reed Publishing.

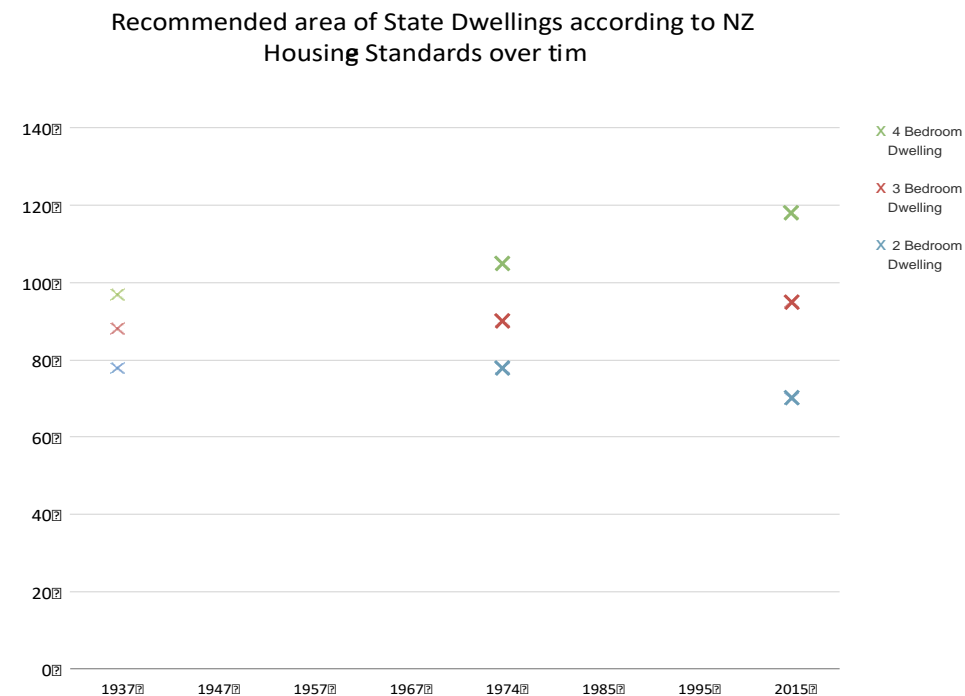
This book speaks to the State/Social Housing throughout New Zealand through the eyes of Urban Historian, Ben Schrader. It begins in 1937, with the story of the McGregor family and NZ's cabinet ministers at the time, including Prime Minister Michael Savage helping move furniture into the first state house to be opened. However, this was not where social housing for NZ started. It began with a need for a better solutions than the slums which were inner-city living from 1860's onwards. The Liberal government in 1902 sought to solve this by building state houses in the suburbs, however these were not supported by the government once built. The users were expected to occupy these dwellings and fend for themselves. Due to the houses being out of town, the workers did not rise to the option. One writing in to say "I am working at night so that it would be very inconvenient for me getting home at 3am, but if I could at any time put in an application for a dwelling in town I shall certainly do so". These homes were the same as market houses of the time. In the 1920's, NZ government had introduced a loans scheme to encourage the purchase of homes in the suburbs. This had been a success – nearly half the houses being built in NZ at the time was funded by the government. These homes were Californian bungalows – less timber required than traditional villas, therefore a lot cheaper and easier to build. Going back to 1935, the first Labour Government wanted to provide homes and stability for people left jobless after the Depression. They loaned money for private house purchases and built houses for the public to rent. Architects provided 400 different designs, and no two homes were exactly alike. By 1939, 57 houses were being built per week. Then men went off to the war. After they returned, they were placed in transitional camps and used to build more houses to deal with the 30,000 waiting list. 10,000 state houses a year were being built by the Government. Whole suburbs were laid out, shops and amenities erected and open space landscaped. A transition to a National government in 1950's, resulted in renters of social houses being encouraged to buy their homes to make up for the debt. Traditionally, State Homes had been low density, but to reduce urban sprawl allegations in 1950's, duplexes made with timber and fibrolite were built in the later 1950's-60's.



## Appendix B – Demographic Data

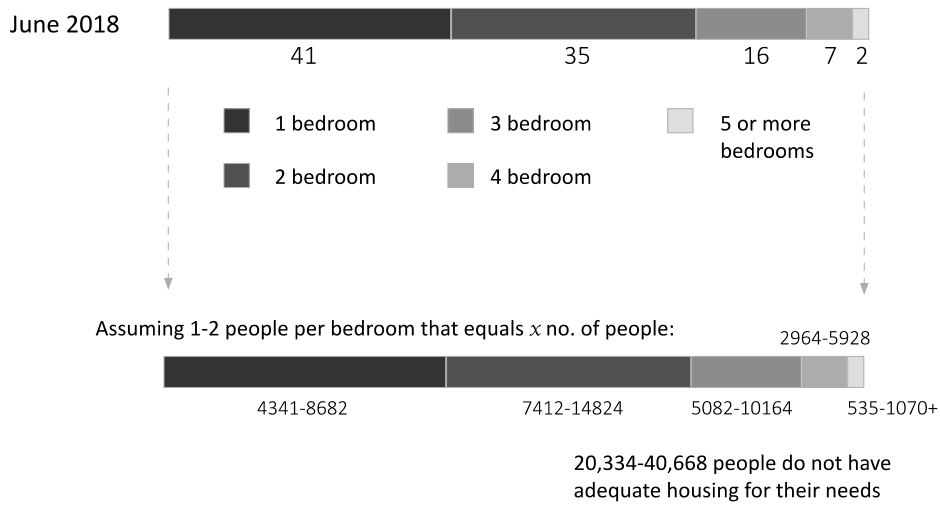


Graph showing New Zealand's Ethnic Demographics in terms of percentage of the total population from 1916-2013 according to NZ Census data

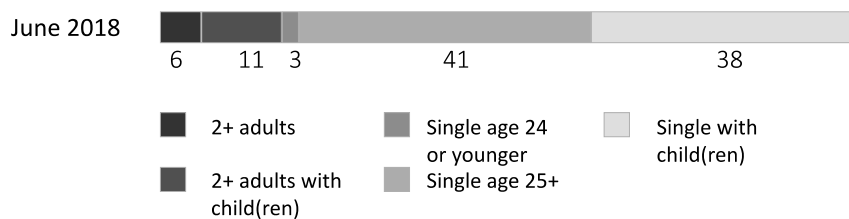


Graph showing how Housing New Zealand Standards or Architect's Briefs have changed overtime in terms of defining appropriate dwelling space.

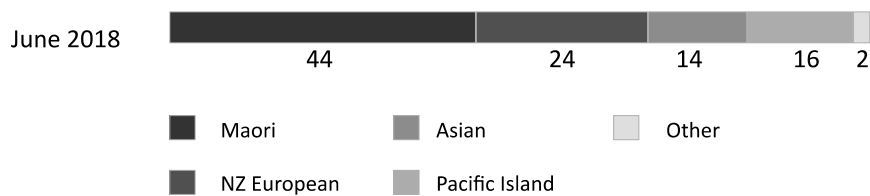
### Bedrooms required (%)



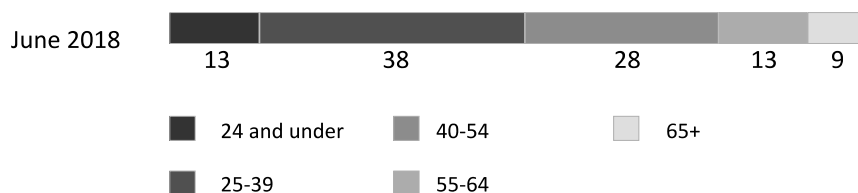
### Household composition (%)



### Ethnicity of main applicant (%)

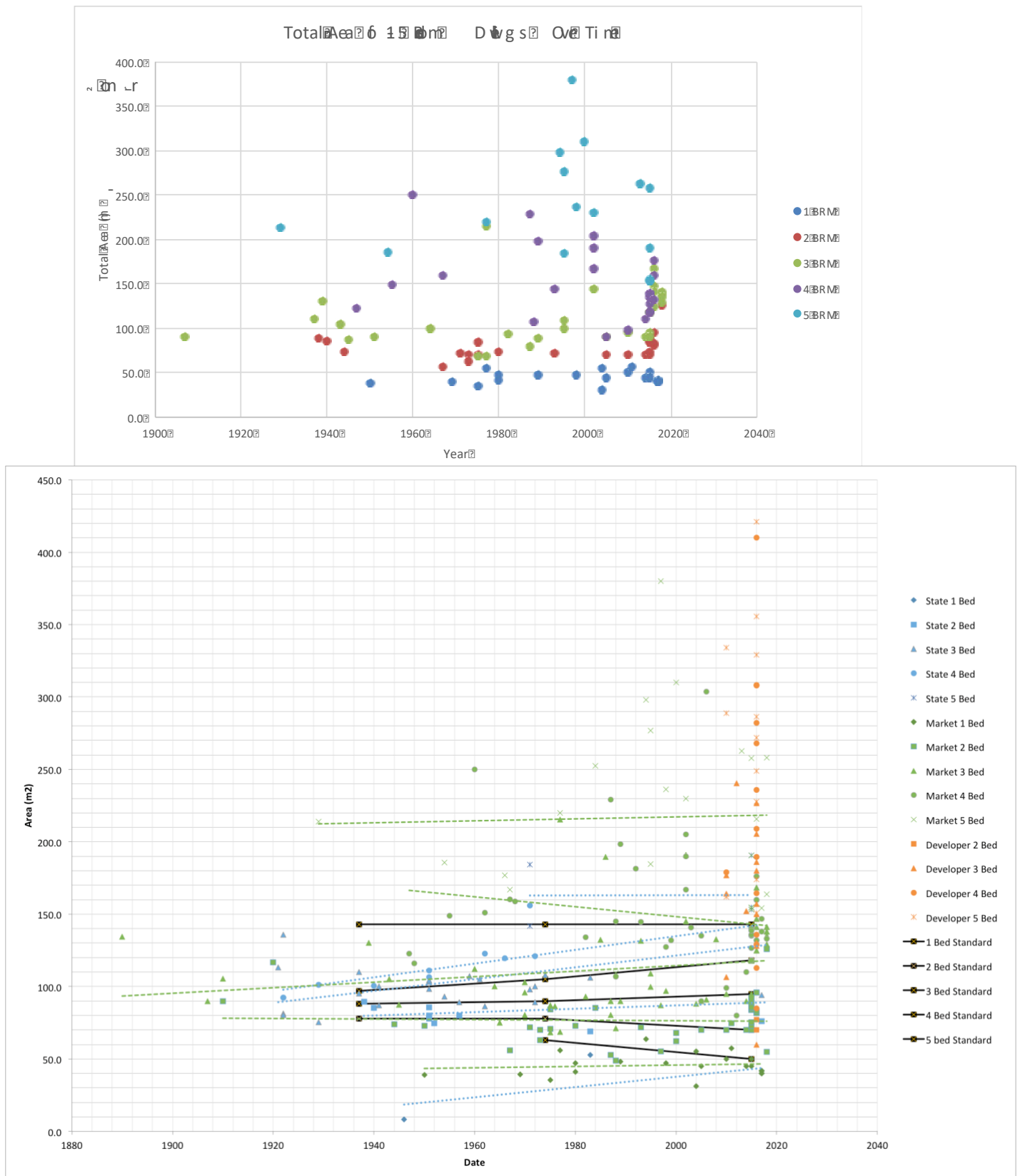


### Age of main applicant (%)



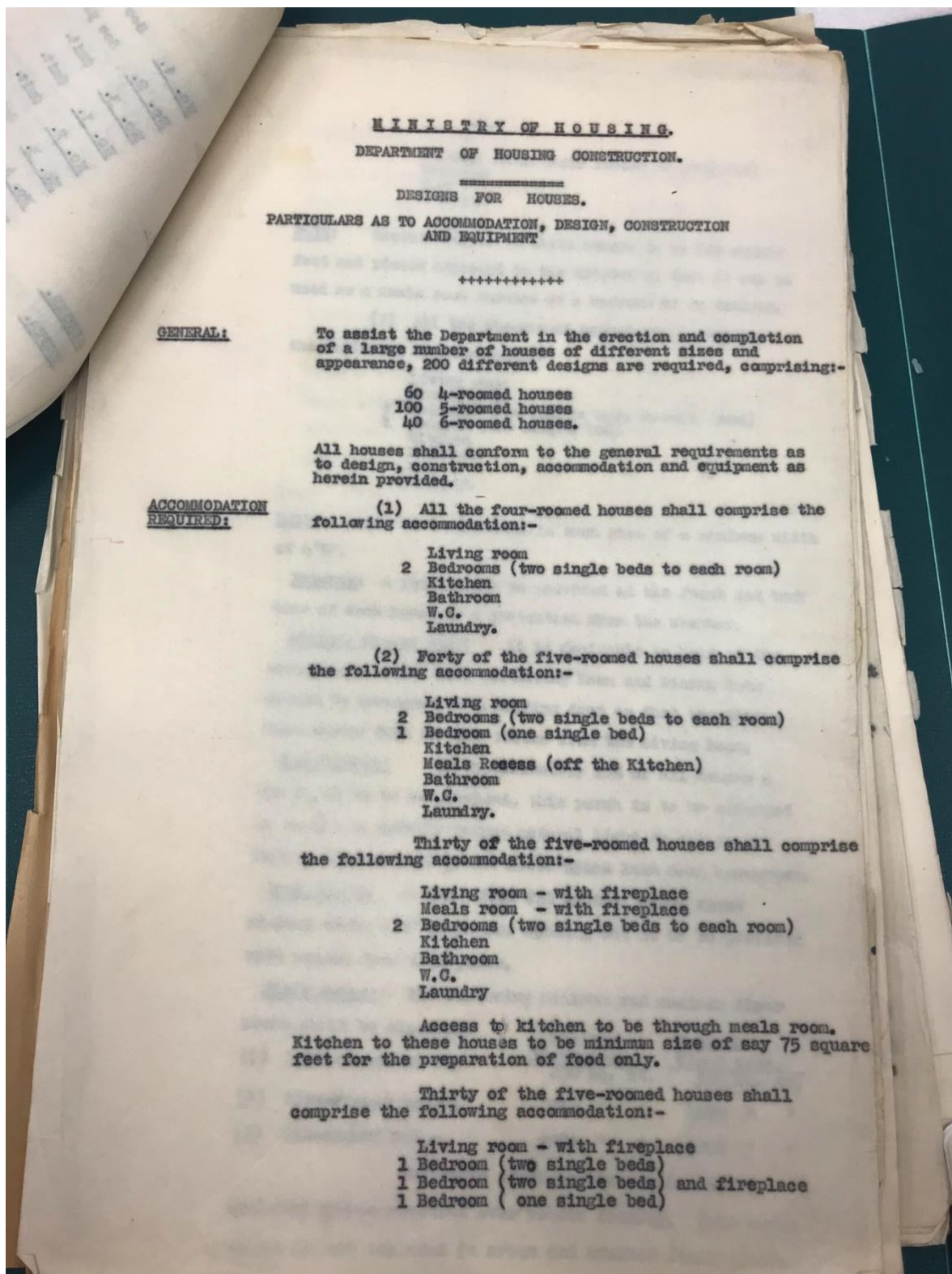
Bar Graphs showing Characteristics of Applicants on the NZ Social Housing Register

## Appendix C – Housing Data



Scatter Graphs plotting 1-5 bedroom Market dwelling total area overtime, along with Housing NZ Standards

1937 Architects Brief



Kitchen (with meals recess if possible)  
Bathroom  
W.C.  
Laundry.

**NOTE:** Second bedroom to these houses to be 120 square feet and placed adjacent to the kitchen so that it can be used as a meals room instead of a bedroom if so desired.

(3) All the six-roomed houses shall comprise the following accommodation:-

Kitchen with Living room  
Dining room  
2 Bedrooms (two single beds to each room)  
1 Bedroom (one single bed)  
Kitchen  
Bathroom  
W.C.  
Laundry.

**HALL:** A Hall to be provided in each plan of a minimum width of 4'9".

**Porches:** A porch shall be provided at the front and back door of each house as a protection from the weather.

**Living, Dining room:** It is desirable in half of the six-roomed houses that the Living Room and Dining Room should be connected with sliding door or that the Dining Room should form an open recess from the Living Room.

**Sun Porches:** To approximately 10% of all houses a sun porch is to be provided, this porch is to be arranged so as not to greatly reduce natural light to any room. This is in addition to the floor space laid down hereunder.

**Fuel Store:** A small fuel and general store space minimum width 2'8" with door opening out is to be provided with access from back porch.

**Floor Areas:-** The following minimum and maximum floor areas shall be observed:

	Minimum floor area.	Maximum floor area.
(1) Four-roomed houses	850 sq. ft.	950 sq. ft.
(2) Five-roomed houses	950 " "	1050 " "
(3) Six-roomed houses	1050 " "	1200 " "

The above areas are based on totally enclosed spaces measured over wooden framing. (The brick veneer is not included in areas and exclude front porch.)



-3-

Minimum Room Areas:

Living rooms	...	180 sq. ft.
Dining rooms	...	120 sq. ft.
First double bedrooms	...	140 sq. ft.
Second double Bedrooms	...	100 " "
Single bedrooms	...	65 " "
Kitchens (Kitchen provide space to allow family sitting at meals	...	110 " "
Kitchen with meals recess	...	75 " "
Meals recess	...	5'6" wide and 4'6" deep minimum.
Bathrooms	...	36 " "
Sun Porches	...	50 " "

Note: Bedroom areas exclusive of wardrobes.

TYPE PLANS:

It is desirable that there should be one key plan for approximately every ten houses with a different front elevation to each house. The difference to the elevations can be obtained with changes in the roof, position and type of windows and also by changing the shape of the front rooms and the position of the entrance. The number of different elevations possible for the same plan depends on the shape of the plan. It is possible to get a greater number of changes from a square plan than from a "L" shaped plan. A change in the position of the entrance will not be considered sufficient change to have two elevations of identically the same form and windows but finished in different materials.

Aspect: The houses are to be planned for:-

North, south, east and west aspect; the key plans to be fairly evenly divided to suit these various aspects.

Plan References: The different type plans should be numbered "1", "2", "3" in pencil.

Items to be avoided: In the design of the houses it is desirable to avoid:-

- (a) Emphasis of elevational detail instead of carefully studied working parts and massing;
- (b) Elaborating on detail that may prove to be a passing fad that will detract from the permanent value of the property.

- (c) Excessive hallways and corridors in plan;
- (d) Giving choice plan location to kitchen and bathrooms at the expense of bedrooms and living rooms.
- (e) The use of many different materials or finishes.
- (f) Unnecessary extravagance that will tend to defeat the fundamental purposes and aims of the housing work.

standards:

The following standards should be observed:-

1. Kitchens, Bedrooms, and living rooms to be provided with cross-ventilation wherever possible;
2. Ample cupboard space should be provided as set out under "Equipment;"
3. Particular attention should be paid in planning sleeping rooms, so that beds will be properly located without interfering with cross-ventilation and that the dressing table is placed adjoining a window and not in front of it.
4. The rooms should be designed so as to provide suitable space for the principal pieces of furniture.  
The location of the beds and dressing table should be shown on the plan for the sketch plans and linen tracings;
5. Kitchens facing afternoon sun must have cross ventilation;
6. Kitchen and meals recess must not have only south aspect.
7. Living room must have mid-day and afternoon sun.
8. Bedrooms to face morning sun.
9. In three bedroom plans, the small bedroom may face south.
10. Bathroom may face south.
11. Not more than one room to face side of section.
12. Back porch to face N, N.W., S, S.E., or E. if possible.
13. The houses should be planned with a view to leaving sufficient space on one side of the house to permit



-5-

garages to be erected at the rear of the sections. Average width of sections 50 feet.

FINISH AND FINISH. All porches are to be lined with board and batten at 10" crs. Brick veneer is not to be taken into porches. Brick work is not to be taken up gables. The gables can be finished in lath and plaster, board and batten or weatherboards.

Generally lath and plaster will not be allowed except to brick veneer house gables as mentioned above.

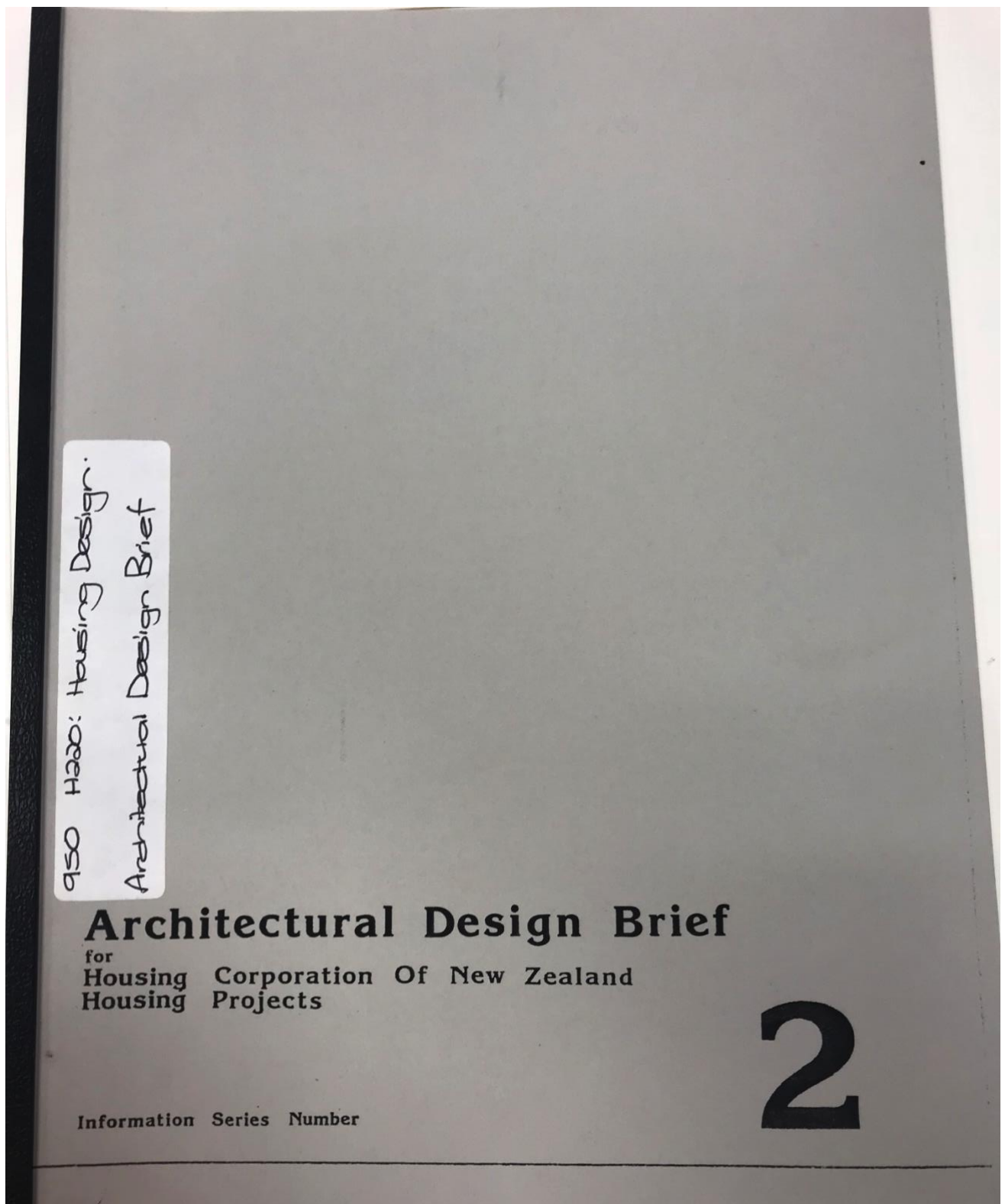
Board and batten will not be allowed generally but may be used in small portions between window sill and eaves and to form panels between windows.

Except for the above restrictions, weatherboards, brickwork and plaster can be used as the architect thinks fit. The percentage of brick and weatherboard houses is given as a guide only. If so desired brick or plaster and weatherboards may be used in the same house. It is the wish of the Department to develop in these small houses sound and rational design without any one house having a marked stylistic character such as Spanish, English cottage or exaggerated modernistic. Original thought in planning based on the basic principles of the use and purpose to which the different rooms will be used is the line of approach that will produce the best solutions. From such plans and using the materials with directness and understanding of their purpose the elevations will have interest and character which will ensure against obsolescence as compared with stereotype planning and stylistic nicknack or merely novel elevations.

NOTE: There are several standard detail sheets showing interior fittings, type of windows, front doors, exterior chimneys and eaves and gable finish which are to be used when designing.



1970's (estimated) Architects Design Brief



6.

### 3.0 INTERIOR LAYOUT

#### 3.1 General

Dwellings should provide the opportunity for residents to enjoy privacy.

Internal stairs and passageways are to be designed for safety and ease of moving large items of furniture.

Rooms should appear reasonable in size and allow for a variety of furniture arrangements.

Acute angles on plan are to be avoided in habitable rooms.

Avoid protruding elements, particularly on circulation routes.

#### 3.2 Guidelines for Size of Units\*

	Maximum No. of Tenants	1 Storey	2 Storey
1 bedroom	2	63	-
2 bedroom	4	78	88
3 bedroom	6	90	100
4 bedroom	8	105	115

\*Measured over plates; does not include porches or verandahs.

#### 3.3 Stairs

Provide two handrails (one at 900 mm and the other at 650 mm above mid-point of tread) to all internal stairs.

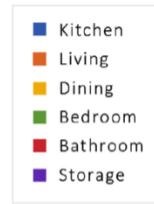
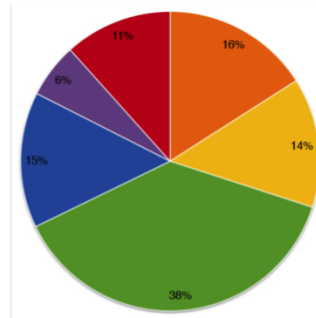
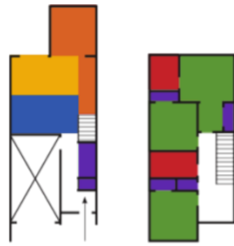
Thresholds shall have no step.

# HOUSING PLAN STUDY

TYPICAL 2015/2016 DWELLINGS

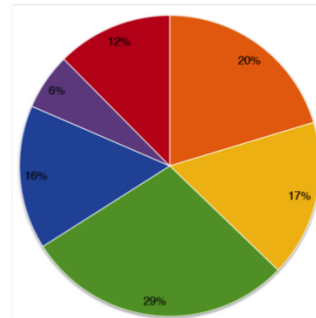
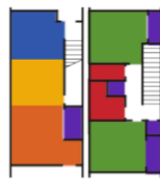
## STATE

Total Area: 117.8 m<sup>2</sup>



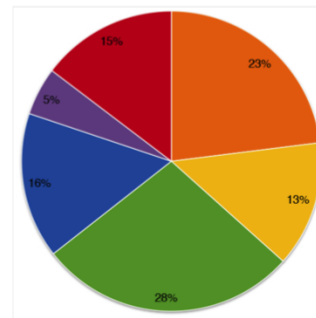
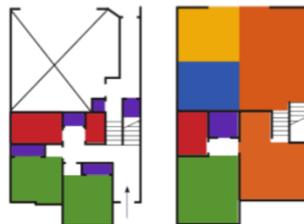
## KIWIBUILD

Total Area: 100.0 m<sup>2</sup>



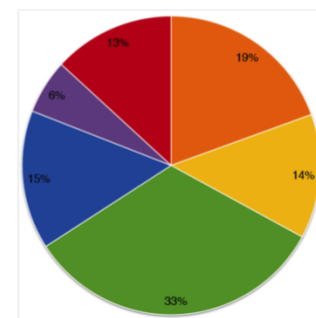
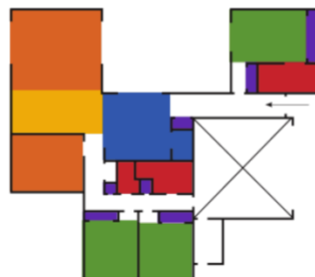
## MARKET

Total Area: 168.2 m<sup>2</sup>



## DESIGN & BUILD

Total Area: 180.0 m<sup>2</sup>



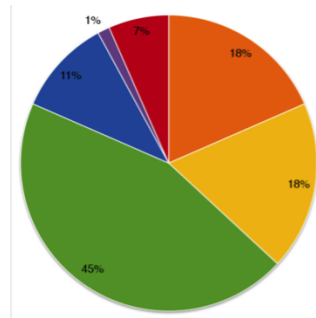
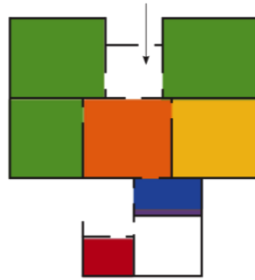
Plan Studies at relative scale of current State, Kiwibuild, Market and Design & Build dwellings. State, Market and Design & Build homes are 3 bedroom, while Kiwibuild is 2 bedroom as that was the only Kiwibuild floor plan that was accessible. A typical Kiwibuild home is also 3 bedroom.

# STATE HOUSING PLAN STUDY

## TYPICAL 3 BEDROOM HOMES

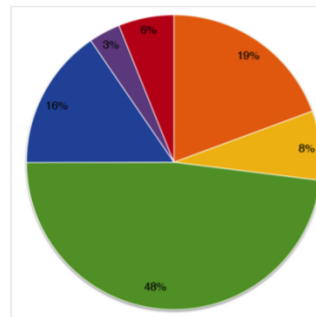
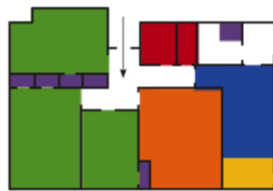
**1922**

Total Area: 80.2 m<sup>2</sup>



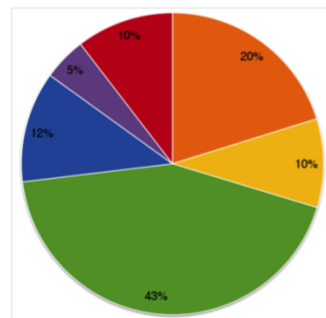
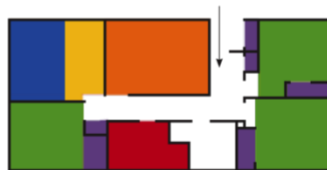
**1951**

Total Area: 103.7 m<sup>2</sup>



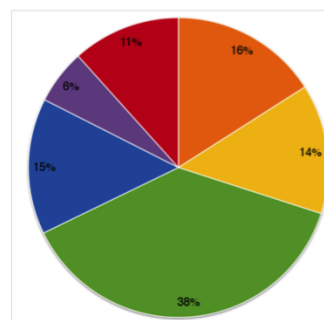
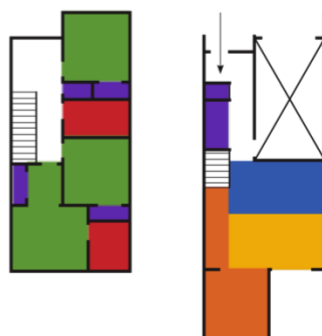
**1983**

Total Area: 106.2 m<sup>2</sup>



**2015**

Total Area: 117.8 m<sup>2</sup>



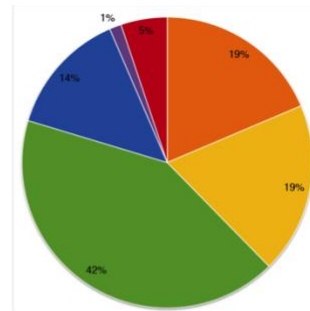
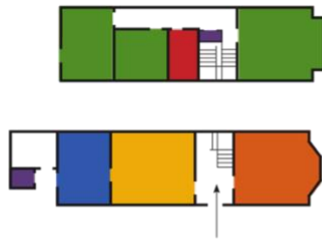
Plan Studies at relative scale of typical state dwellings overtime

# MARKET HOUSING PLAN STUDY

## TYPICAL 3 BEDROOM HOMES

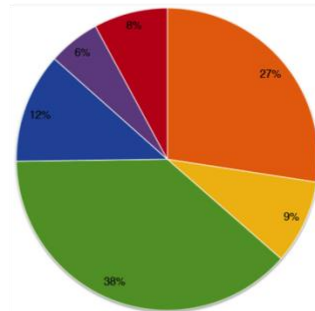
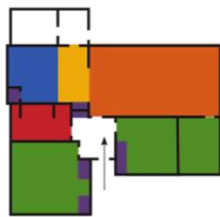
**1910**

Total Area: 105.6 m<sup>2</sup>



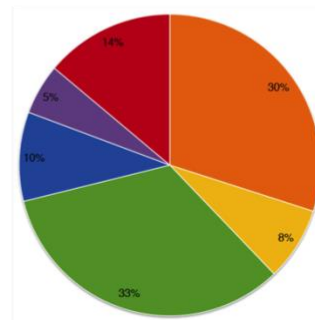
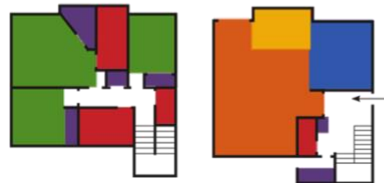
**1945**

Total Area: 87.3 m<sup>2</sup>



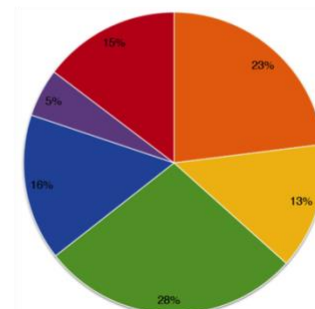
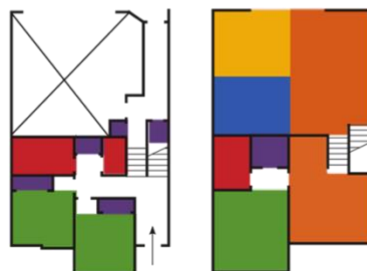
**1986**

Total Area: 189.4 m<sup>2</sup>



**2016**

Total Area: 168.2 m<sup>2</sup>



*Plan Studies at relative scale of typical market dwellings overtime*