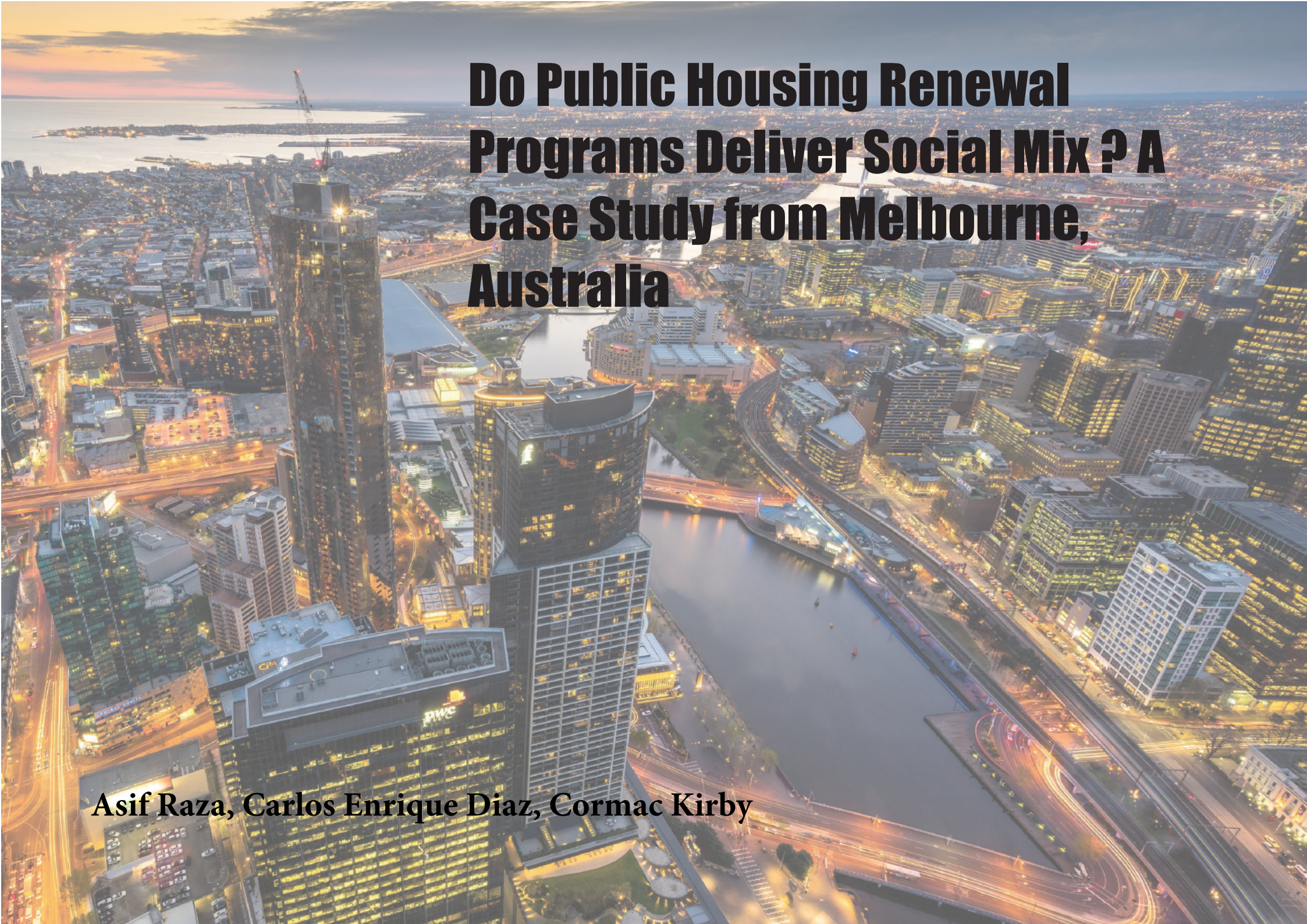

Do Public Housing Renewal Programs Deliver Social Mix ? A Case Study from Melbourne, Australia

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Overview.

Our community profile aims to provide critical evaluation on the impact of the new 'social mix' approach that has guided the re-development of social housing in Melbourne's Carlton (CHE) and Kensington (KHE) public housing estates. The social mix approach is currently being expanded across Melbourne with ten other public housing estates now facing similar renewals under the Public Housing Renewal Program (PHRP). Our team will take the role of planners working for the State Government of Victoria for the purpose of re-evaluating this Public Housing Renewal Program (PHRP). It has been acknowledged that the program needs to evaluate its predecessors in order to understand the impact of the two pilot projects in Carlton and Kensington. The high-rise social housing towers in Kensington and North Melbourne were recently put under heavy scrutiny following a targeted lockdown enforced on the estates after a breakdown of COVID19. This incident has caused many to re-assess the current plans for the provision of state social housing.

The PHRP forms the vast majority of the State of Victoria's current policy and approach to social housing provision in inner city Melbourne. Ten separate locations are set to undergo renewal under the plan, including estates in Ascot Vale, Prahran, Brighton, Kensington (walk-ups), North Melbourne, Hawthorn, Heidelberg West, Brunswick West, Northcote and Preston. All the estates listed are being transformed into social mix housing. Social mix housing is a relatively recent approach to emerge in the provision of social housing. Social mix involves providing social housing through an essentially a public-private partnership, sometimes including a sale or leasehold transfer of public land to a private developer who will then provide the same amount of social housing in a new private development which offers a "mix" of tenure type (social, public or private).

The two pilot projects for social mix in a Victorian context were the Lygon and Elgin Street estates in Carlton between 2006 and the current stages (8,9 and 10 in 2020/2021) and the Derby Street estate in Kensington since 2012. The newly formed Carlton and Kensington social mix communities form the background for the broader PHRP, being the only examples of inner-city social mix in the state. Demographic analysis able to illustrate the successes (or failures) of these earlier projects in Carlton and Kensington is crucial to making a recommendation on the viability of the PHRP going forward.

Executive Summary.

- Our team found mixed evidence of a social mix occurring within the Carlton and Kensington Estates between 2006, 2011 and 2016.

- There is primarily mixed evidence of the predicted changes in the physical structure of households, dwelling structure and landlord type.

- The Carlton and Kensington Estates are still substantially different demographically than their surrounding suburbs and Inner Melbourne.

- The difference between the population in the estates median incomes and the Inner Melbourne average is statistically significant.

- The estates themselves are different from one another, especially in terms of employment and income indicators.

- Our team argues the ABS made an irregular change to the statistical geography of the KHE in-between 2011-2016, which makes it harder to evaluate the social mix in place.

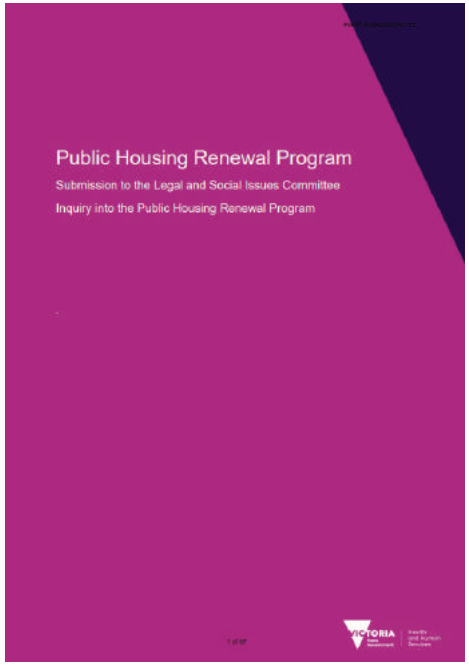
- Our team concludes more generally that the new social mix policy makes it increasingly difficult to demographically evaluate the disadvantages and changes to the population of public housing tenants within the CHE and KHE.

1. Background.

1.1 Policy Background.

Our community profile aims to analyse the governments intensions to deliver the social-mix objective through its $341 million Public Housing Renewal Program (PHRP). Stage one of the PHRP has been announced and will result in redevelopment of 1100 public housing properties in metropolitan Melbourne. The PHRP was supported within a larger policy matrix supporting new social mix developments in Victoria. Our goal will be to provide critical demographic analysis and context to this policy matrix. The following are key policy documents which support both future and past social mix developments in Victoria.

- Homes for Victorians (2017)
- Public Housing Renewal Program (2018)
- Managing Victoria's Public Housing Program (2017)
- Carlton Housing Precincts - Development Plan (2006)
- Planning and Development Committee Report (2003) for redevelopment of Kensington Housing Estate.



Source: Victoria's Public Housing Renewal Program Report, 2017.

Source: Victoria's Carlton Housing Precincts: Redevelopment Plan 2006, Progress Report 2018, Melbourne, Australia.

1.2 A Short History of the Carlton and Kensington Social Mix Public Housing Projects:

Quickly after the construction of the public housing blocks in Carlton and Kensington problems started to emerge with inadequacy of common areas and services, unsuitability of housing towers for families with children, elderly and people with disabilities. The debates around upgrading or improvement of the housing towers continued until the 1990s when the Victorian Government received funding from the federal Labour Government in 1990s under 'Better Cities Program' to redevelop Kensington and North Melbourne (Hulse et al. 2004). Subsequently, the Government established the "Kensington Estate Redevelopment Advisory Committee" (KERAC) in 1998 to chart a strategy for redevelopment of the estate.

The KERAC came up with the redevelopment strategy with recommendations included. The redevelopment of the estate was completed in four stages. In the fourth stage the government entered a Public Private Partnership (PPP) agreement through its "Estates Improvement Program" with 'Becton at Kensington Pty Ltd.' for construction of the project (Kelly and Porter, 2019; Hulse et al. 2004). The Kensington development project in this fourth phase was started in 2002 and completed in 2008 till when the private partner continued to manage the estate through Kensington Management Company (KMC). The KMC transferred the management of the estate in 2008 to a non-for-profit company named the 'Urban Communities Ltd'.

The 'Carlton Housing Redevelopment Project' shares rationale for redevelopment with Kensington Redevelopment Project. The redevelopment of two public housing sites, Lygon/Rathdowne precinct, and the Elgin/Nicholson Street precinct was justified on several counts. These justifications included aging stock, poor condition of built form, misalignment of need in relation in relation to bedroom configuration, community safety and the visual impact of the estate on the surrounding area (Kelly and Porter, 2019; Melbourne Planning Scheme, 2020). A Public Private Partnership (PPP) was replicated for execution of the plan. The project included demolition of the existing walk up housing (four-five storeys) and replacing them with a mix of public and private housing. The private partner this time was "Living Carlton Consortium" which will share $200 million out of the total $250 million of the project cost. The developer was to recuperate this cost with profit through sale of public land after building houses on them at approximately 73/27 private to public houses ratio (Kelly and Porter, 2019).

1.3 Literature Review: Social Mix in Australia

According to Cole and Goodchild (2001), the term 'social mix' relates to the mix of numerous overlapping characteristics of a population, such as: age, tenure, class, income, ethnicity, etc. To create a mix of these mentioned characteristics in housing policy, urban governance around the world is seeking to diversify the housing stock within public housing estates in order to change the social composition of neighbourhoods (Galster, 2007). The central idea is developed through the implementation of a mix of tenure types (public and private) within a public housing estate. The rational is that social mixing will occur and subsequently the community will have better conditions for positive socialization. This according to Musterd and Andersson (2005) will also reduce the stigmatization and minimize the risk for individual poorer inhabitants to become excluded from a neighbourhood environment.

In Australian social mix redevelopment projects, a ratio of 70% private to 30% public tenancy mix has been the default policy for many of the redevelopments (Coates & Shepherd, 2005). Yet, this formula lacks a 'strong evidential basis' (Pawson & Pinnegar, 2018, p. 317). There are multiple research studies that have demonstrated the limited degree to which mixing occurs between different types of tenure in the redevelopments (K. Arthurson, 2012; Galster, 2013; Manley et al., 2012).

The Victorian Government's Public Housing Renewal Program (PHRP) aims to redevelop 11 inner suburban public housing estates in Melbourne (Kelly & Porter, 2019). The redevelopment entails the relocation of residents, the demolition of the existing buildings and the redevelopment of each site by a private developer in partnership with a community housing provider (Kelly & Porter, 2019). There is significant need for evaluating the effectiveness of the policy in delivering housing, the impact of displacement on residents and the ideal achievement of 'social mix'. This community profile is intended to evaluate the claims of the PHRP and its underlying model to assess the current impact of the model on public housing residents of 'social mix' strategies in the Carlton and Kensington Housing estates.

2. Methodology of Analysis.

There are many possible indicators that could be used to evaluate social mix projects. The policies that have provided the impetus for the social mix developments often are vague and do not specify targets, indicators or expectations of the program. However, there appears one overriding rationale for providing a social mix, which is evident in the name, the projects both sought to "mix" or integrate the existing social housing into their broader suburbs and communities.

In response, our team has decided to investigate a number of ABS Census indicators across 2006, 2011 and 2016 in order to evaluate the currently completed social mix developments in Carlton and Kensington that in the PHRP. Our analysis will be divided between investigating evidence of the 'concrete' changes that have emerged from the social mix developments in Carlton and Kensington; and the demographic changes we can observe in the same time.

These indicators will be split across the following two sections of our Results Section

Has A Social Mix Occured?
- Total Households (No.)
- Total Population (No.)
- Number of People in Household (NPRD)
- Landlord Type (LLDD)
- Bedrooms (BEDD)
- Dwelling Structure (STRD)
- Tenure Type (TEND)
- MVD Observations (MVD1 & MVD5)

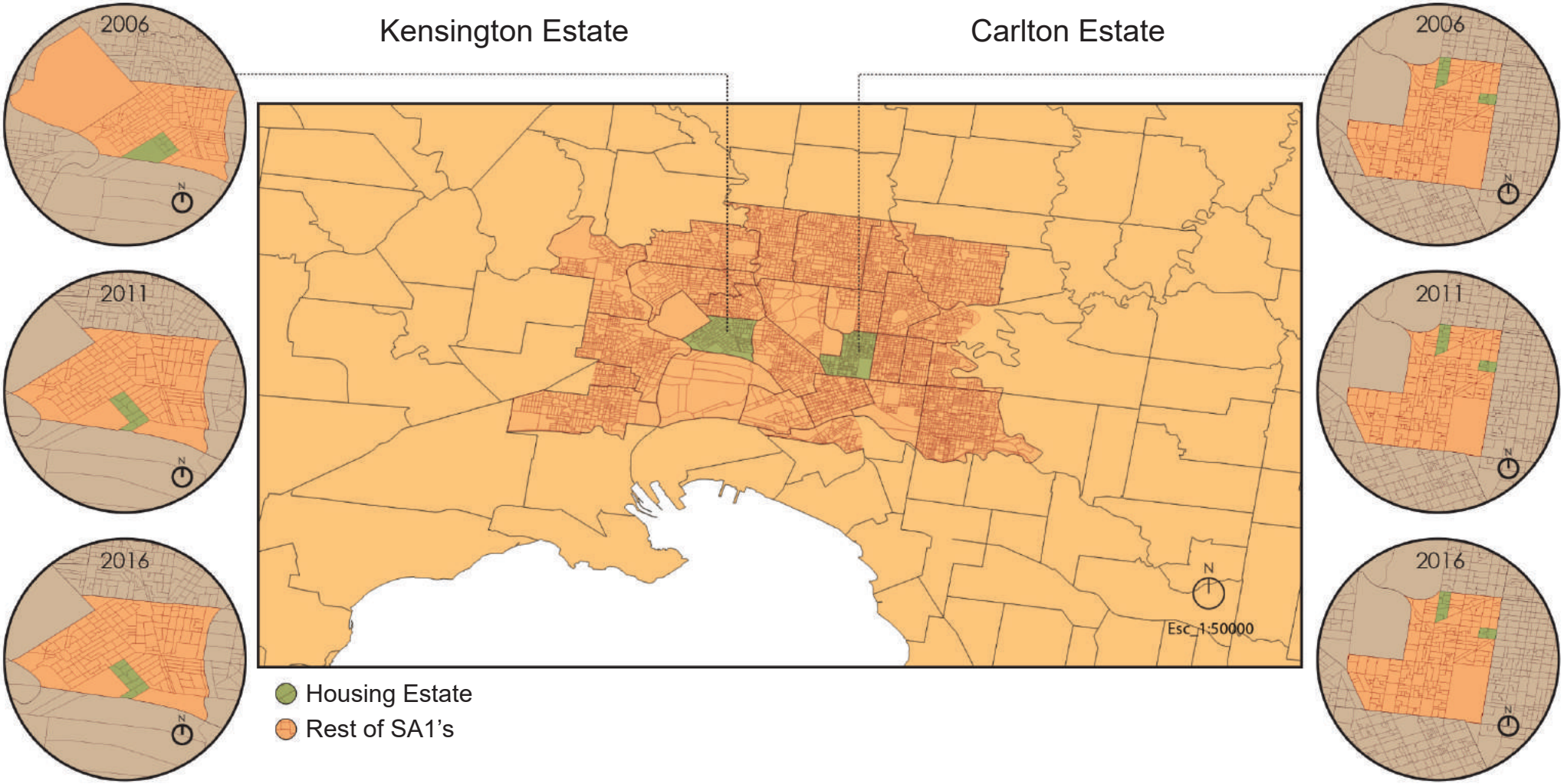
What Can We Observe from the Carlton and Kensington Social Mix Projects
- Age (AGEP)
- Sex (SEX)
- Ancestry (ANCP)
- Education (HSCP)
- English Proficiency (ENGP)
- Citizenship Status (CITP)
- Need for Assistance (ASSNP)
- Employment Status (LFSP)
- Hours Worked (HRSP)
- Income (INCP)

Our team will analyse these indicators across several geographies for comparison in order to make our evaluation of the social mix program in the Carlton and Kensington estates. Including measuring these estates against their surrounding suburbs and a broader geography - 'Inner Melbourne' (our proxy for the twenty-nine suburbs which lie within three kilometres of the estates).

Our team will also provide an analysis of the median incomes across the estates and compare them to these surrounding geographies. Furthermore, we will be undertaking a statistical difference of means test between the median incomes of the estates and our Inner Melbourne

Our team expects to find that there is evidence of social mix occurring in the Carlton and Kensington Estates from the policy papers and literature review we have reviewed. We expect that the type of tenancy, residents and dwelling typology within the estates is changing. We also anticipate that the demography is changing and possibly becoming more like the suburbs which surround the public housing estates due to the new privately leased apartments within the estate locations. We expect that the median incomes in the esates may also becoming more like the Inner Melbourne medians.

3.Geographical Longitudinal Analysis



Source: Authors' analysis of ABS 2006, 2011 and 2016.

3.1 Geographies (2006).

To begin our analyses of the social-mix developments in the Carlton and Kensington public housing estates we had to undertake extensive geographical work within the ABS Census Table-Builder program. Unlike in a typical community profile, our units of analysis could not be a pre-defined census geography, given our primary units of geographical analysis were the public housing estates. Instead of collecting demographic data on an LGA, or suburb or SA1, our analysis required the construction of several custom geographies to identify these estates within the census.

- Carlton Housing Estate
- Kensington Housing Estate
- Carlton - Rest of Suburb
- Kensington - Rest of Suburb

We began by identifying the ABS geographical units which aligned with the public housing estates over 2006, 2011 and 2016. This was challenging with the ABS geographical units changing between every wave. In 2006, the ABS geographical units were CCDs (Census Collection Districts), which cleanly fit over the Carlton and Kensington Estates (pictured to the right).

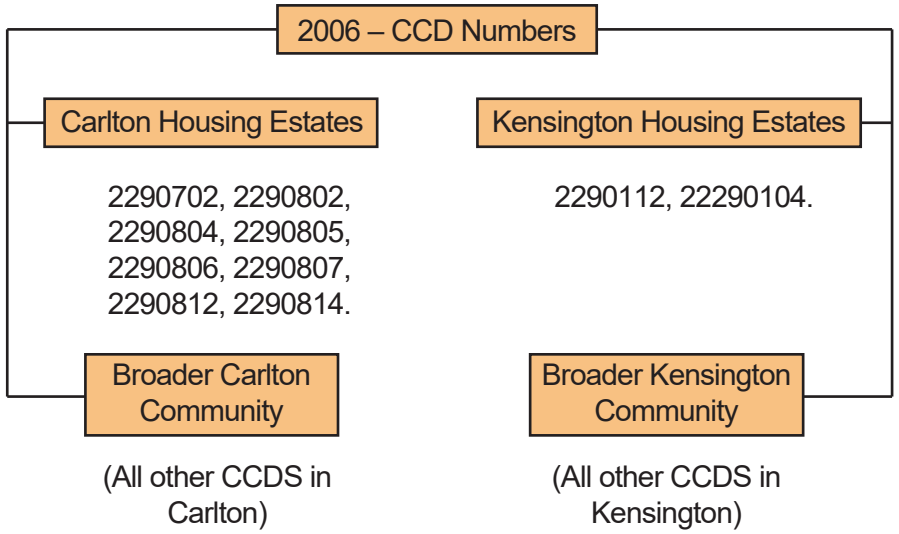
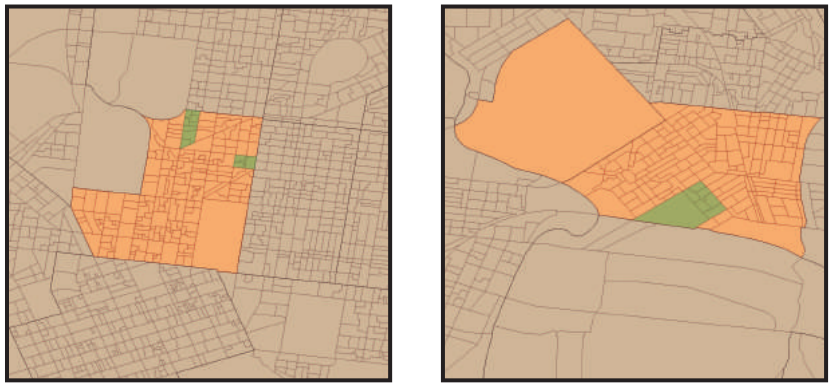


Figure 3.1: Geographic Boundaries Analysis, Carlton and Kensington Estate (2006).



Notes: Housing states (green), Other CCDS (orange).
Source: Authors' analysis of ABS 2006, 2011 and 2016.

3.2 Geographies (2011-2016).

In 2011 and 2016, the smallest level of geographic analysis in the ABS Census changed from CCDs to SA1s (Statistical Area – 1). In 2011, the new SA1s were still cleanly aligned with the boundaries of the Carlton and Kensington Estates. Yet by 2016 in Kensington, at the southern boundary of the estate, one of our SA1 boundaries shifted suddenly encompassing two residential streets. This SA1 boundary change troubled our analysis from the beginning and led us to speculate on the reasoning behind the ABS's inclusion of two relatively-wealthy residential streets in a geographical Census unit formerly focused on a high-rise public housing estate.

Following the identification of the respective CCDs and SA1s that aligned with the Carlton and Kensington public housing estate's location between 2006, 2011 and 2016 – these units (in the table below) were compiled into composite custom geographies in the ABS Table-Builder for analysis. These estates form the geographical units we will call 'Carlton Housing Estate' (CHE) and 'Kensington Housing Estate' (KHE).

With the estates identified we began compiling our comparative geographies. We believed that in order to evaluate whether a social mix was occurring, we would have to understand the geography surrounding the two estates. Consequently, we chose to analyse the suburbs that the estates were located within (Carlton and Kensington) and a broader geography which we could compare these distinct geographies against. These units of analysis became the geographical units we will call 'Carlton - Rest of Suburb' (CRS), 'Kensington – Rest of Suburb' (KRS) and 'Inner Melbourne' (IM). CRS and KRS are composed of all the SA1s or CCDs in Carlton or Kensington which do not feature a section of the public housing estates in 2006, 2011 and 2016.

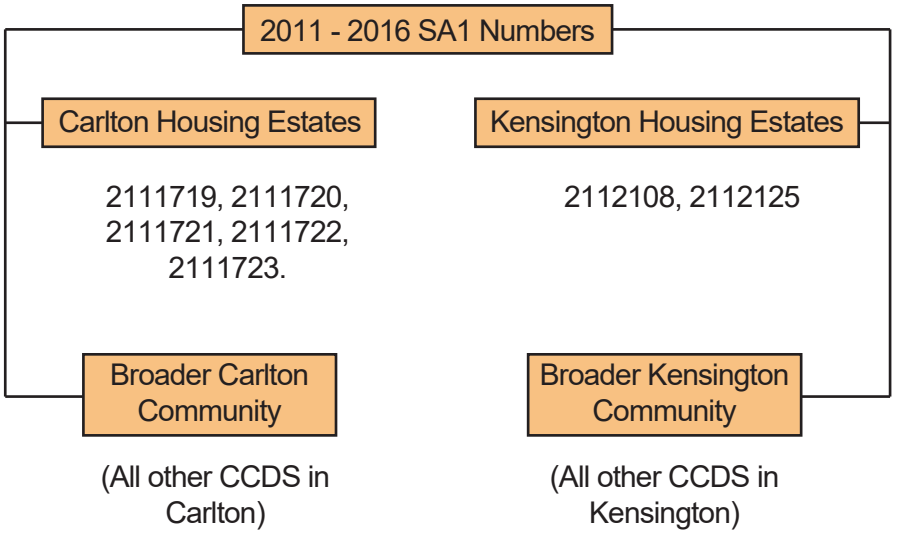
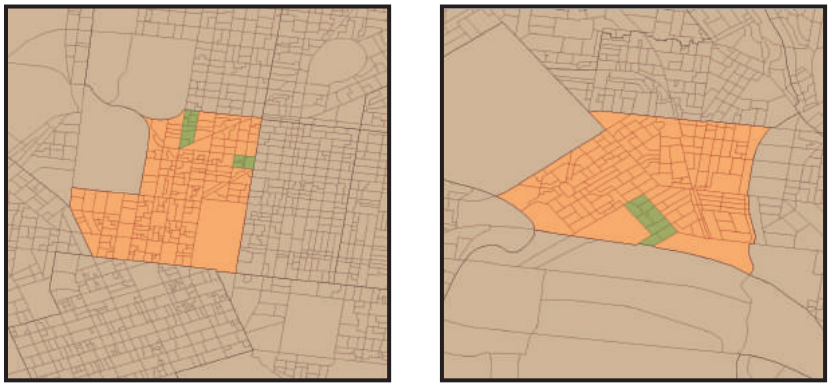


Figure 3.2: Geographic Boundaries Analysis, Carlton and Kensington Estate (2011-2016).



Notes: Housing states (green), Other SA1s (orange).
Source: Authors' analysis of ABS 2006, 2011 and 2016.

3.3 Geographies (Inner Melbourne).

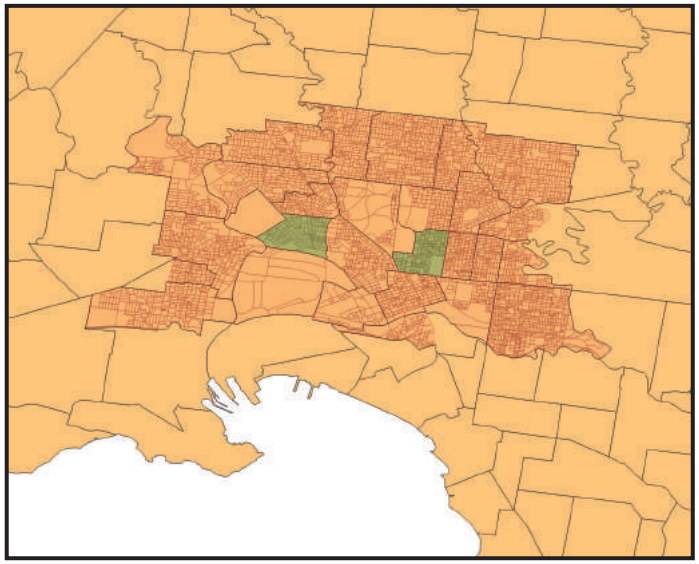
Our broader geography 'IM' was formed through an iterative, and lengthy process. We first decided we wanted to compare the estates and their surrounding suburbs within their broader geography. We first drew a three-kilometre radius map on Nearmaps.com out from both the CHE and the KHE, and after began to identify every SA1 or CCD which fell within these three kilometres across the 2006, 2011 and 2016 ABS census waves. Using ABS Maps and the ABS Table-Builder program we built six distinct geographies encompassing every SA1 which fell within those three-kilometres spanning out from the two estates in each census year, these all featured two-to-three hundred SA1s (see Appendix).

However, this we later decided was a fool's errand. After running our first analyses we realised that though we were able to compare the three-kilometre geographies to their respective estates and surrounding suburbs, they were not comparable to one another. There was an irreconcilable difference, the three-kilometre radius from the CHE featured the Melbourne CBD (a very distinct demographic unit) and the three-kilometre radius from the KHE did not. After discussion, we decided these three-kilometre radius geographies, though time-consuming, did not serve the original desired purpose of our broader geographical unit – to offer a comparison between both sets of estates and their surrounding suburbs.

We instead consolidated both three-kilometre radius geographies into one composite geography 'IM', composed of every suburb which featured in both the three-kilometre radius out from the CHE and the KHE. The suburbs are listed above:

Abbotsford, Ascot Vale, Brunswick, Brunswick East, Brunswick West, Carlton, Carlton North, Clifton Hill, Collingwood, Docklands, East Melbourne, Fitzroy, Fitzroy North, Flemington, Footscray, Kensington, Maribrynong, Melbourne, Moonee Ponds, North Melbourne, Northcote, Parkville, Princes Hill, Richmond , Seddon, Southbank,Travancore,West Melbourne, Yarraville.

Figure 3.3: Three-Kilometre Radius Geographic Analysis.



Notes: - Housing states (green), Other CCDS (orange).
-These suburbs stayed consistent across the three Census years.

Source: Authors' analysis of ABS 2006, 2011 and 2016.

3.4 Scoping Section

This report has purposefully not included some indicators which may typically be associated with a Community Profile piece. For brevity, we made the decision to not include the following: an analysis of housing affordability indicators; journey-to-work characteristics; and population projections.

These decisions were made on the basis of two factors. Firstly, we believed that the effort required to compose and identify our geographies made a detailed and thorough inspection of indicators that were non-crucial to our analyses was unfeasible. Secondly, we believed some indicators were difficult to comment on and analyse given the nature of our population.

Housing affordability indicators were deemed non-crucial to our report because large sections of the population our report is focused on are public housing tenants. Of course, that does not mean that housing affordability is not a concern to our social mix population. However, having a large number of public housing or community housing tenants does change the importance of housing-affordability when compared to another community profile which might focus on a population more susceptible to private-market dynamics.

Population projections were deemed non-crucial to our report given that we believe there are substantial difficulties in truly understanding the demographic data emerging from these social-mix developments. These populations appear to be in flux, likely due to the restructuring of the estates that occurred during our study period (2006-2016). Currently, we believe it would be misleading to try and project our population into the future after observing the large demographic changes between 2006 and 2011, and 2011 and 2016, which do not follow any type of linear trend.

Journey-to-work characteristics, on the other hand, were an unfortunate casualty of our research. The effort required to produce this data over three census waves and over five separate geographies was deemed unfeasible given our constraints. We hope this research can be completed in the future.

4. Has Social Mix occurred? - Findings and Trends.

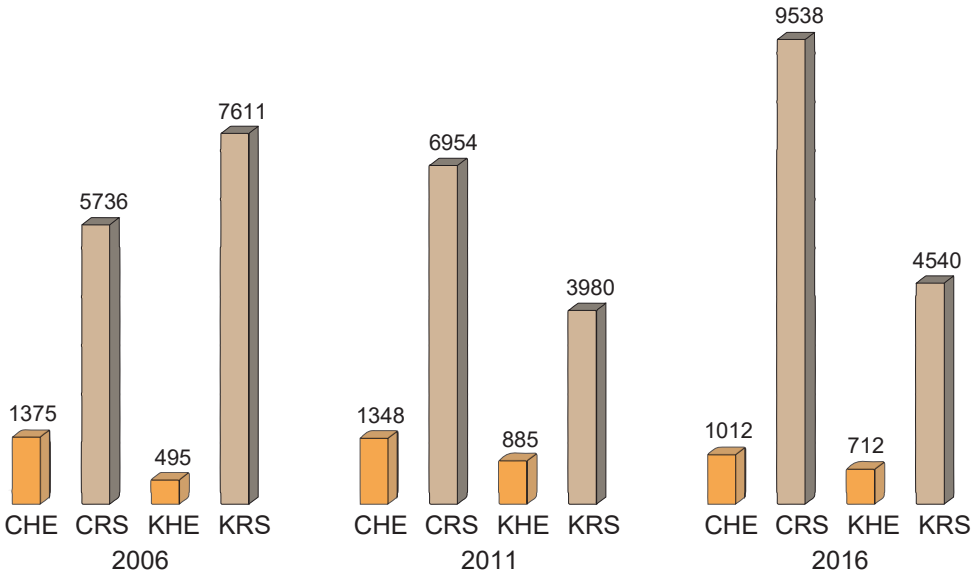
Based on the limitations established in the geographies and chapters of the scope section, the community profile generates a longitudinal study to observe the changes in a retrospective way to the cohort studies of the Carlton and Kensington estates under the question: Has there been a social mix? It is proposed to analyze the following indicators: number of households in relation with population, number of people in the household, type of landlord, number of bedrooms, structure of the house, type of tenure and observations of MVD; The data presented will be supported based on the ABS census of 2006, 2011 and 2016.

4.1 Number of Households in Relation with Population.

From a broad perspective, the limits of Inner Melbourne contained 138,795 households with a population of 298,848 in 2006. However, an increase in households (156,310 in 2011 and 195,141 in 2016) and in population (339,261 in 2011 and 423,694 in 2016) within of the Inner Melbourne boundaries represented an index of development and concentration that influenced changes within the Carlton and Kensington estates that may lead to justify a possible social mix.

When analyzing the estates of Carlton and Kensington, variations are evidenced through the statistical data of the censuses between the housing estates and the rest of the suburb. In the case of Carlton, the housing estate had a total of 1,375 households with a population of 2,408 in 2006. In addition, in 2011 there was a decrease of 1.96% (1,348) in households and 0.91% (2,386) in population. Likewise, in 2016 a decrease of 24.93% (1,012) was reflected in households with a population increase of 3.9% (2,479). However, the rest of Carlton presented a different behavior, the 5,736 households in 2006 had an increase of 21.23% (6,954) in 2011 and 37.16% (9,538) in 2016. In terms of population, a total of 13,433 people in 2006 had a decrease of 3.55% (12,956) in 2011 and an increase of 39.93% (18,129) in 2016.

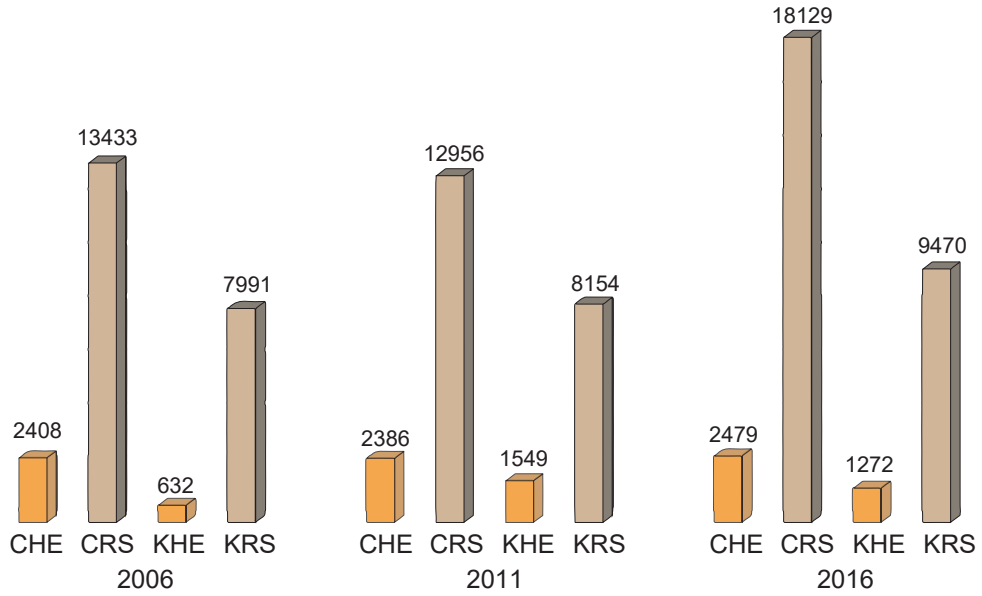
Figure 4.1: Number of Households of Carlton and Kensington Estate (2006 - 2016).



Source: Authors' analysis of ABS 2006, 2011 and 2016.

In the case of Kensington, the housing estate had a total of 495 households with a population of 632 people in 2006. Unlike Carlton, in 2011 there was an increase of 78.79% (885) in households and of 145.09% (1,549) in population. Furthermore, in 2016 there was a decrease of 19.55% (712) in households as well as the population in 17.88% (1,272). However, the rest of Kensington presented a similar behavior to the rest of Carlton, a total of 3,492 households in 2006 had an increase of 13.97% (3,980) in 2011 and 17.04% (4,540) in 2016. Regarding population, a total of 7,991 people in 2006 had an increase of 2.04% (8,154) in 2011 and 16.14% (9,470) in 2016.

Figure 4.2: Population of Carlton and Kensington Estate (2006 - 2016).



Notes: Carlton and Kensington Housing Estate (CHE & KHE).
Carlton and Kensington Rest of Suburb (CRS & KRS).

Source: Authors' analysis of ABS 2006, 2011 and 2016.

4.2 Number of People in a Household.

In the analysis of the Carlton and Kensington estates, the statistical data reflected variations in the indicator of the number of people in the households. The justification is aligned with the similarity in the selection of dwellings with respect to the mixed-use characteristic described in the objectives of the social mixing policy.

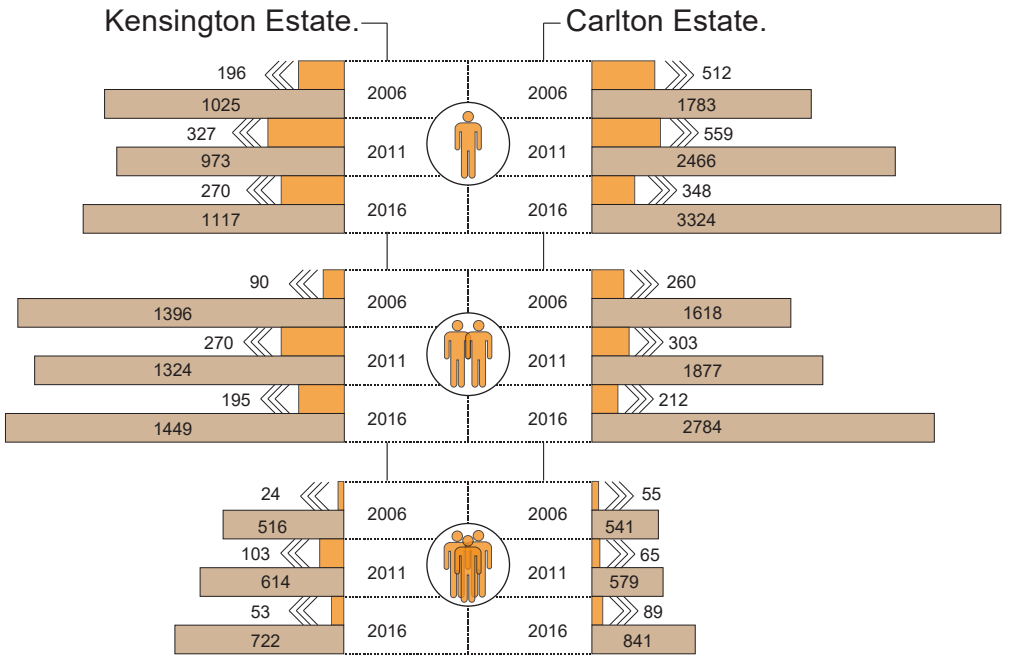
In the case of Carlton, there is a trend of preference for the categories of residents of one and two people in a dwelling. In the housing estate, 512 persons in the category of one person and 260 persons for two persons residing in housing, increased by 9.18% (559) and 16.04% (303) respectively between 2006 and 2011. However, between 2011 and 2016, the same categories decreased by 37.75% (348) and 30.03% (212).

Comparing it with the rest of the suburb, 1,783 people in the category of one person and 1,618 people for two people living in a dwelling increased by 38.31% (2,466) and 16.01% (1,877) respectively between the 2006 and 2011. Unlike the housing estate, they increased by 34.79% (3,324) and 48.32% (2,784) respectively between 2011 and 2016.

In the case of Kensington, there is a trend of preference for the categories of residents of one, two and three people in a dwelling. In the state of housing, 196 people in the category of one person, 90 people for two people and 24 people for three people resident in housing, increased 66.84% (327), 200% (270) and 329.17% (103) respectively between 2006 and 2011. However, between 2011 and 2016, the same categories decreased by 17.43% (270), 27.78% (195) and 48.54% (53) respectively.

Comparing it with the rest of the suburb, 1,025 people in the category of one person and 1,396 people for two people resident in housing decreased by 5.07% (973) and 5.16% (1,324) respectively, while 516 people for three people residents in housing increased by 18.99% (614) between 2006 and 2011. Unlike the housing estate and similar to the rest of Carlton, between 2011 and 2016 they increased 14.80% (1,117), 8.63% (1,449) and 17.59% (722) respectively.

Figure 4.3: Number of People in a Household at Carlton and Kensington Estate.



Notes: Carlton and Kensington Housing Estate.
Carlton and Kensington Rest of Suburb.

Source: Authors' analysis of ABS 2006, 2011 and 2016.

4.3 Number of Bedroom in Private Dwelling

The number of bedrooms is linked to a similar interpretation of the social mix due to the variety of availability for the composition of residences related to the number of bedrooms that are being introduced in housing developments in the estates of Carlton and Kensington. In the case of Carlton, there are variations in the categories of one, two, three and four bedrooms.

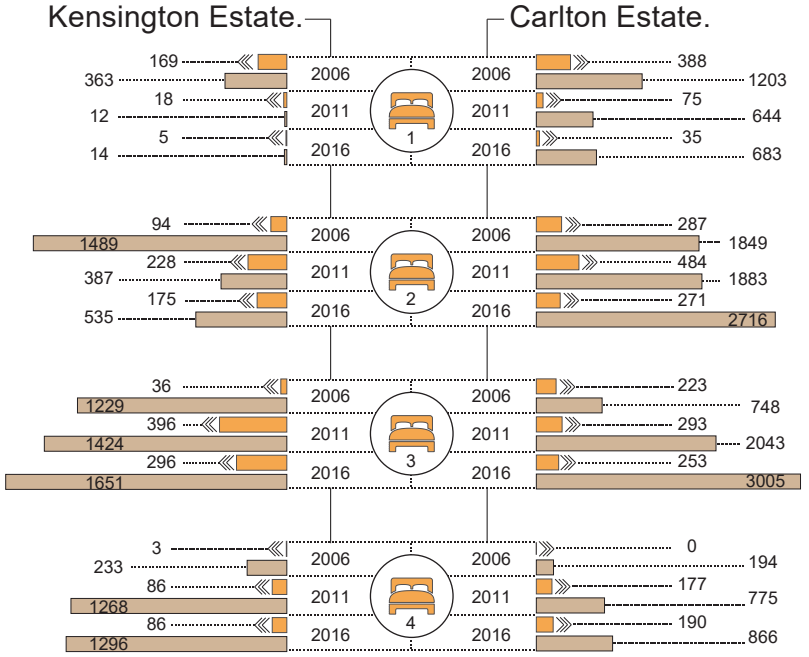
Relative to Carlton Housing Status, the one-bedroom category with 388 homes in 2006 decreased by 80.67% (75) in 2011 and 53.33% (35) in 2016. Regarding the categories of two and three bedrooms, started with 287 and 233 homes each in 2006, followed by an increase of 68.64% (484) and 31.39% (293) respectively. In 2016, they had a decrease of 44.01% (271) and 13.65% (253) each. Likewise, the 4-bedroom category, with 0 homes in 2006, increased to 177 in 2011 and 190 in 2016.

If compared to the rest of the state, the one-bedroom category with 1203 homes in 2006 decreased by 46.47% (644) in 2011 and increased by 6.06% (683) in 2016. Interestingly, the category of two, three and four bedrooms with 1849, 748 and 194 homes each in 2006, had an increase of 1.84% (1883), 173.13% (2043) and 299.48% (775) each in 2011. Likewise, in 2016 they had an increase of 44.24% (2716), 47.09% (3005) and 11.74 % (866) respectively.

In the case of Kensington, the housing condition shows that the one-bedroom category, similar to Carlton's housing condition, with 169 homes in 2006 decreased by 89.35% (18) in 2011 and by 72.22% (5) in 2016. Regarding the two and three bedroom categories, they started with 94 and 36 homes each in 2006, followed by an increase of 142.55% (228) and 1000% (396) respectively. In 2016, they had a decrease of 23.25% (175) and 25.25% (296). Likewise, the four-bedroom category with 3 homes in 2006 had an increase of 86 homes in 2011 and maintained the same number in 2016.

When comparing with the rest of the state, the one and two-bedroom category with 363 and 1489 homes in 2006, decreased 96.69% (12) and 74.01% (387) in 2011. Likewise, it increased 16.67% (14) and 38.24% (535) in 2016. In addition, the category of three and four bedrooms with 1229 and 233 homes each in 2006, had an increase of 15.87% (1424) and 444.21% (1268) in 2011 followed by an increase of 15.94% (1651) and 2, 21% (1296) in 2016 respectively.

Figure 4.4: Number of Bedroom in Private Dwelling at Carlton and Kensington Estate.



Notes: Carlton and Kensington Housing Estate.
Carlton and Kensington Rest of Suburb.

Source: Authors' analysis of ABS 2006, 2011 and 2016.

4.4 Landlord Type in Relation with Tenure Type.

By associating the indicators of landlord and tenure type, it is possible to observe a clear variance between the public and private tenancy and a perspective of housing affordability. According to Coates and Shepherd (2005), the social mix development projects aim for a ratio of 30% public to 70% private tenancy mix.

In the case of Carlton, the housing estate landlord type “Real estate agent” category which represents private tenancy, had 102 households in 2006 with an increase of 172.55% (278) in 2011 and a decrease of 56.12% (122) in 2016. In the other hand, the “State or territory housing authority” category which represents private tenancy, had 485 households in 2006 with a decrease of 7.42% (449) in 2011 and an increase of 8.91% (489) in 2016. Moreover, it is evidence a concentration in the tenure type “Rent” category with 954 households in 2006, decreasing by 1.36% (941) in 2011 and 27.74% (680) in 2016. Compared with the “Fully owned” category, with 15 households in 2006 increasing by 126.67% (34) in 2011 and decreasing by 41.18% (20) in 2016.

While comparing it with the rest of the suburb, the “Real estate agent” category had 2,183 households in 2006 with an increase of 25.74% (2745) in 2011 and 43.02% (3,926) in 2016. In the other hand, the “State or territory housing authority” category had 289 households in 2006 with an increase of 23.18% (356) in 2011 and 34.55% (479) in 2016. Furthermore, regarding the “Rent” category in the rest of the suburb, there was 3,374 households in 2006, increasing by 24.87% (4,213) in 2011 and 40.14% (5,904) in 2016. Similar to the “Fully owned” category, there was 566 households in 2006, with an increase of 27.39% (721) in 2011 and 15.40% (832) in 2016.

Figure 4.5: Trending Landlord Type, Carlton Estate.

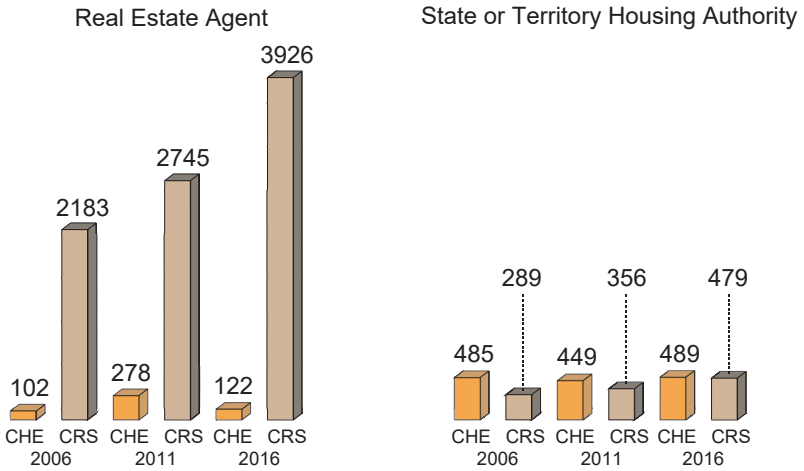
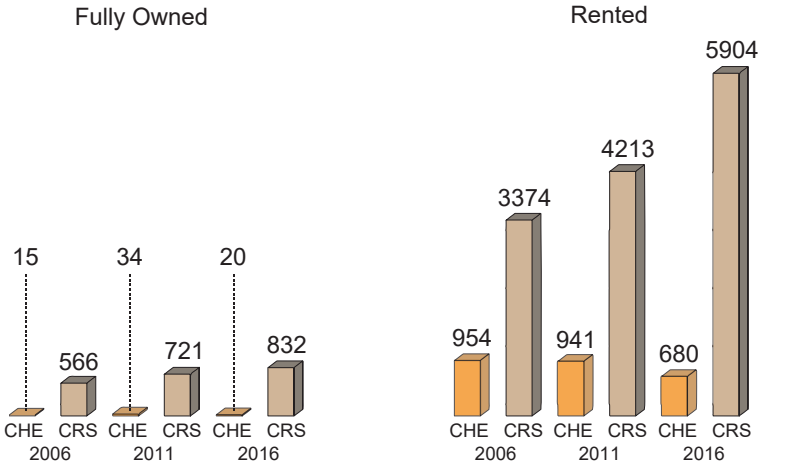


Figure 4.6: Trending Tenure Type, Carlton Estate.



Notes: Carlton Housing Estate (CHE).
Carlton Rest of Suburb (CRS).

Source: Authors’ analysis of ABS 2006, 2011 and 2016.

In the case of Kensington, the housing estate landlord type “Real estate agent” category had a similar behaviour that the Carlton housing estate, having 77 households in 2006 with an increase of 196.1% (228) in 2011 and a decrease of 44.74% (126) in 2016. In the other hand, the “State or territory housing authority” category, had 203 households in 2006 with an increase of 44.83% (294) in 2011 and a decrease of 5.78% (277) in 2016. Moreover, the tenure type “Rent” category had 285 households in 2006, increasing by 95.79% (558) in 2011 and decreasing by 21.68% (437) in 2016. Compared with the “Fully owned” category, with 3 households in 2006 increasing by 1166.67% (38) in 2011 and decreasing by 10.53% (34) in 2016.

While comparing it with the rest of the suburb, the “Real estate agent” category had 1,032 households in 2006 with a decrease of 2.03% (1,011) in 2011 and an increase of 34.03% (1,355) in 2016. In the other hand, the “State or territory housing authority” category had 195 households in 2006 with a decrease of 4.62% (186) in 2011 and an increase of 18.82% (221) in 2016. Furthermore, regarding the “Rent” category in the rest of the suburb, there was 1,531 households in 2006, decreasing by 0.59% (1,522) in 2011 and increasing by 24.05% (1,888) in 2016. However, the “Fully owned” category had 560 households in 2006, with an increase of 8.93% (610) in 2011 and 14.26% (697) in 2016.

Figure 4.8: Trending Landlord Type, Kensington Estate.

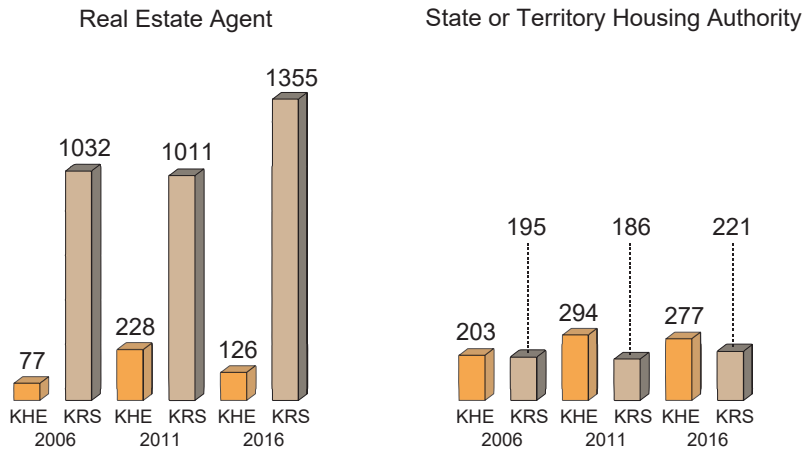
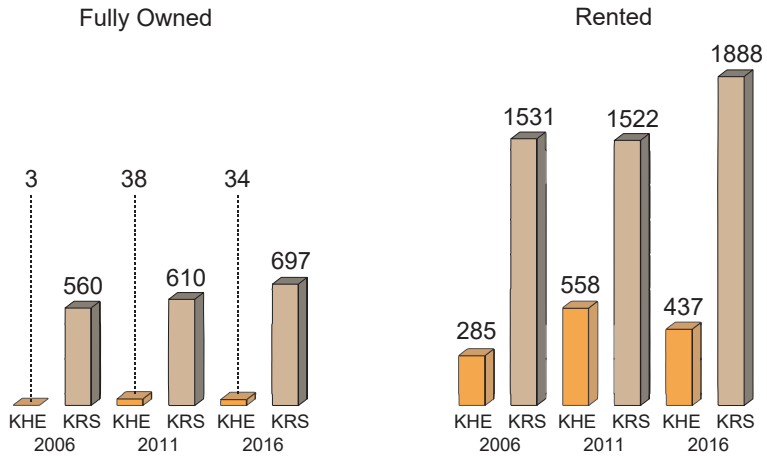


Figure .4.9: Trending Tenure Type, Kensington Estate.



Notes: Kensington Housing Estate (KHE).
Kensington Rest of Suburb (KRS).

Source: Authors’ analysis of ABS 2006, 2011 and 2016.

4.5 Dwelling Structure

Following the indicator of dwelling structure, the identification of trending housing composition can determine how the social mix policy is being implemented and replicated in the Carlton and Kensington estates.

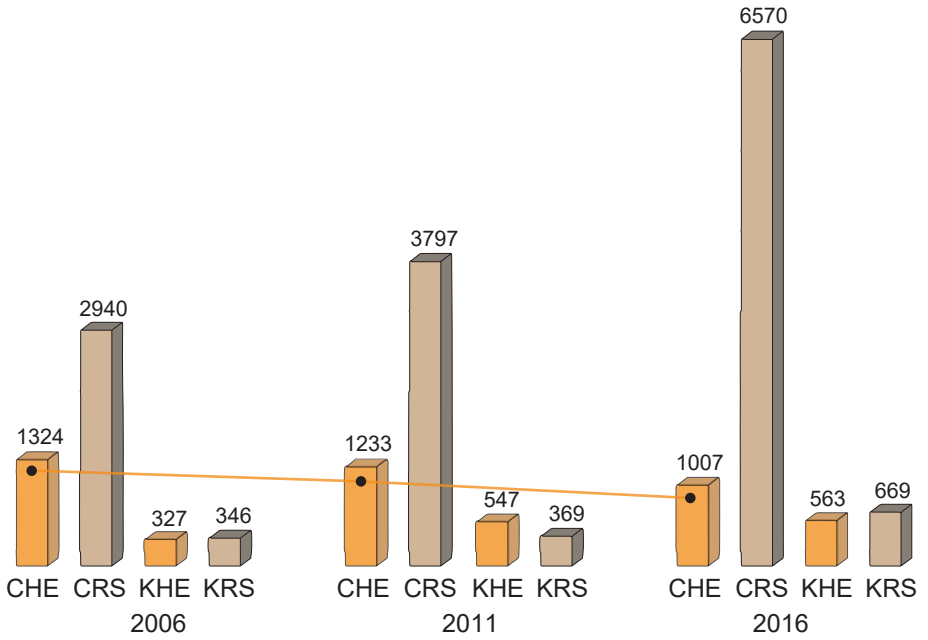
In the case of Carlton, the housing estate highlight the category “Flat, unit or apartment in a four or more story block” with noticeable quantity variations, such as 1,324 dwelling structures in 2006 with a decrease of 6.87% (1,233) in 2011 and 18.33% (1,007) in 2016.

While comparing it with the rest of the suburb, the same category with 2,940 dwellings in 2006, increased by 29.15% (3,797) in 2011 and 73.03% (6,570) in 2016. It is evidenced that the concentration of “Flat, unit or apartment in a four or more story block” is higher in the rest of the suburb that in the Carlton housing state.

In the case of Kensington, the housing estate under the same category had a different quantity variations, 327 dwelling structures in 2006 had an increase of 67.28% (547) in 2011 and 2.93% (563) in 2016.

While comparing it with the rest of the suburb, the same category with 346 dwellings in 2006, increased by 6.65% (369) in 2011 and 81.3% (669) in 2016. It is evidenced that the concentration of “Flat, unit or apartment in a four or more story block” is reflected in the Kensington housing state and in the rest of the suburb.

Figure 4.10: Flat, Unit or Apartment in a Four or More Storey Block at Carlton and Kensington Estate.



Notes: Carlton and Kensington Housing Estate (CHE & KHE).
Carlton and Kensington Rest of Suburb (CRS & KRS).

Source: Authors’ analysis of ABS 2006, 2011 and 2016.

4.6 Five Year Household Mobility Indicator.

Following the indicator of household mobility, it is important to analyse the behaviour of residents of the Carlton and Kensington estates under a period of 5 years if they have moved to settle in a different location. Such mobility indicator can give a perspective of efficiency around the number of people leaving the estates with the actual social mix policy taking place.

In the case of Carlton, the housing estate had recorded 534 address changed in 2006 with an increase of 11.80% (597) in 2011 and a decrease of 30.15% (417) in 2016.

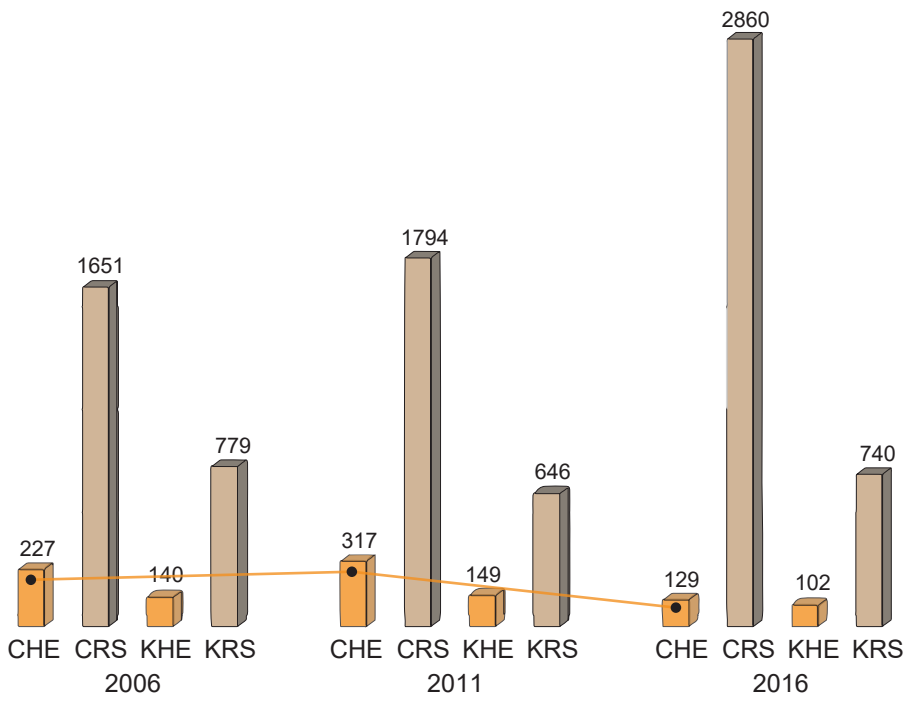
While comparing it with the rest of the suburb it has recorded 3,147 address changed in 2006, with an increase of 22.18% (3,845) in 2011 and 53.78% (5,913) in 2016. It is evidenced that the residents who have changed their address is higher in the rest of the suburb that in the Carlton housing state.

In the case of Kensington it had a similar outcome, the housing estate had recorded 211 address changed in 2006 with an increase of 118.96% (462) in 2011 and a decrease of 39.83% (278) in 2016.

While comparing it with the rest of the suburb it has recorded 1,935 address changed in 2006, with a decrease of 10.13% (1,739) in 2011 and an increase of 21.22% (2,108) in 2016.

Overall, the data has showed that Carlton and Kensington housing estates have reduced their resident to change their address compared to the rest of their suburbs.

Figure 4.11: Five Year Household Mobility in Carlton and Kensington Estate.



Notes: Carlton and Kensington Housing Estate (CHE & KHE).
Carlton and Kensington Rest of Suburb (CRS & KRS).

Source: Authors' analysis of ABS 2006, 2011 and 2016.

5. What Can We Observe? - Findings and Trends.

Based on the limitations established in the geographies and chapters of the scope section, the community profile generates a longitudinal study to observe the changes in a retrospective way the Carlton and Kensington estates under the question: What can we observe demographically? It is proposed to analyze the following indicators: age, sex, ancestry, education, English proficiency, citizenship status, need for assistance, labour force status, hours worked and income; The data presented will be supported based on the ABS census of 2006, 2011 and 2016.

5.1 Age.

When observing the Carlton and Kensington Housing Estates we can observe a broad over-representation of children compared to the rest of the suburb and Inner Melbourne. Particularly in the CHE, there is a consistent over-representation over 2006, 2011 and 2016 in the 0-5, 5-9 and 10-14 age brackets. There was also a broad over-representation of older people in both estates. In the KHE especially, the proportion of population over 50 reaches 30% (2006) and 27% (2016), while the rest of the suburb never reaches over 20% in the 10 year period. In terms of other populations, both the CHE and the rest of Carlton have an abnormally large amount of people aged 20-24, fluctuating 25% and 30% respectively. In contrast, overall the KHE and the rest of Kensington has a much more balanced population pyramid between all the age-ranges than rest of the suburb. There two largest proportion of population changes in the estates over the 10 years were in the CHE where 15-19 year olds dropped 5% (15% - 9%), and in the KHE where 30-34 year olds increased by 5% (8% to 13%) between 2006 and 2016. However, over the 10 year period there are no major fluctuations in either of the estates.

Figure 5.1: Age Pyramid from Carlton Estate (2006 - 2016).

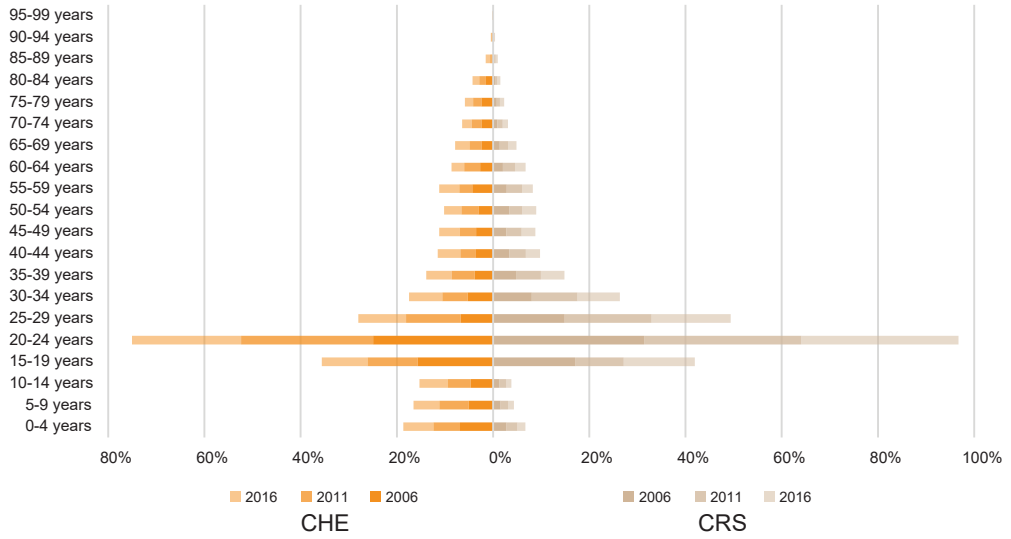
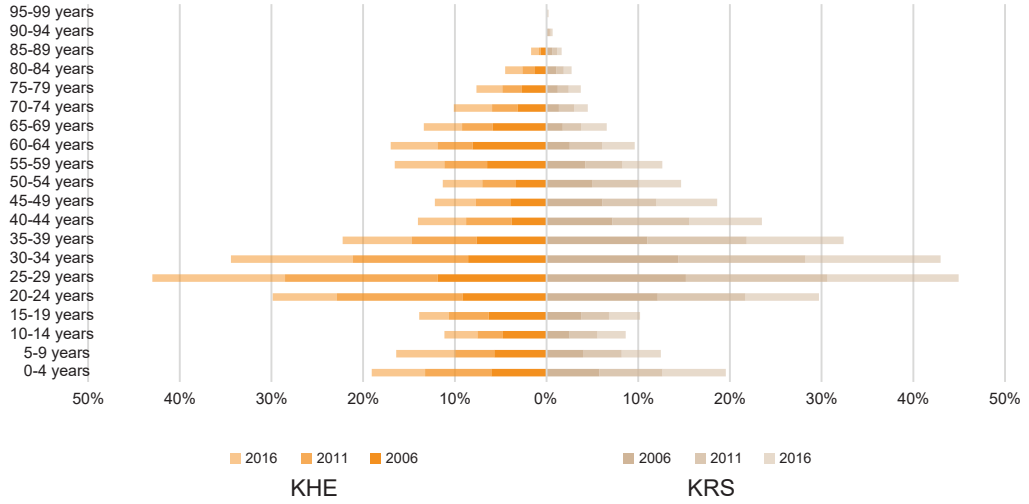


Figure 5.2: Age Pyramid from Kensington Estate (2006 - 2016).



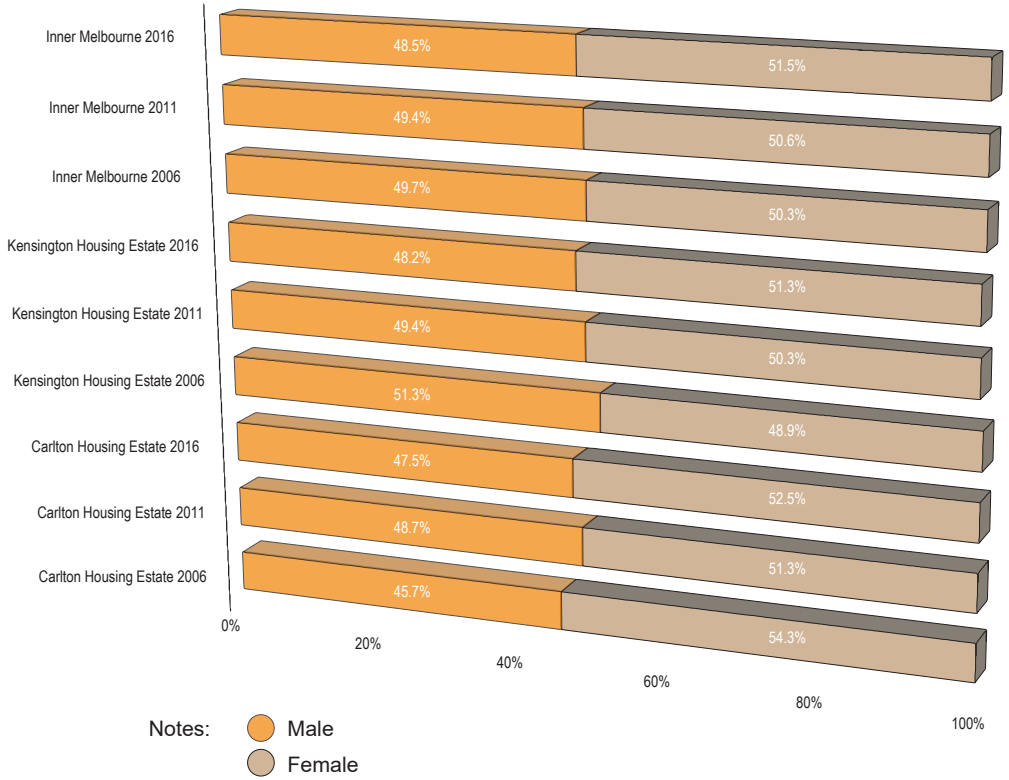
Notes: Carlton and Kensington Housing Estate (CHE & KHE). Carlton and Kensington Rest of Suburb (CRS & KRS).

Source: Authors' analysis of ABS 2006, 2011 and 2016.

5.2 Sex.

When observing sex in the the Carlton and Kensington Housing Estates both geographies have different results. The Carlton Housing Estate has a very high proportion of females with the proportion of population that is female increasing from 52% to 54% over the 10 year period. In the case of Kensington Housing estate, the proportion of female population in the estate increased over time. It was 48.7% in 2006 which risen to 50.3% in 2011 that further rose to 51.3% in the year 2016. The proportion of females remained much higher in Carlton Housing estate than the inner Melbourne in all three censuses i.e 2006, 2011 and 2016. However, in case of the Kensington Housing estate, the proportion of female population (48.7%) was lower than the inner Melbourne (50.3%) in 2006, remained lower in 2011 and 2016 but narrowed the gap a great deal.

Figure 5.3: Population Percentage According to Sex (2006 - 2016).



Source: Authors' analysis of ABS 2006, 2011 and 2016.

5.3 Ancestry.

When observing ancestry in the Carlton and Kensington Housing estates there is an over-representation of several ancestral groups over 2006, 2011 and 2016 compared with their rest of suburbs. Both estates consistently featured a much larger proportion of population with Sub-Saharan ancestry (23% and 18% - 2016) than their parent suburbs (2% and 1% - 2016) or Inner Melbourne (not shown on graph 1.5% - 2016). Consistently over the period, there was also a substantially bigger proportion of people with North African and Middle Eastern ancestry in both estates. In the CHE it can be observed the proportion of people with Southern and Eastern European ancestry population is decreasing, while the proportion of people with Oceanian (including Australian) and North-West European ancestry is stable or increasing. In the KHE it can be observed the proportion of people with Oceanian (including Australian) and North-East Asian ancestry is decreasing. However, the decrease in the proportion of people with Oceanian ancestry is consistent with the rest of Kensington. Other populations in both estates are mostly consistent with the rest of their suburbs and the Inner Melbourne region.

Figure 5.4: Ancestry: Carlton Housing Estate and Rest of Suburb , (2006 - 2016).

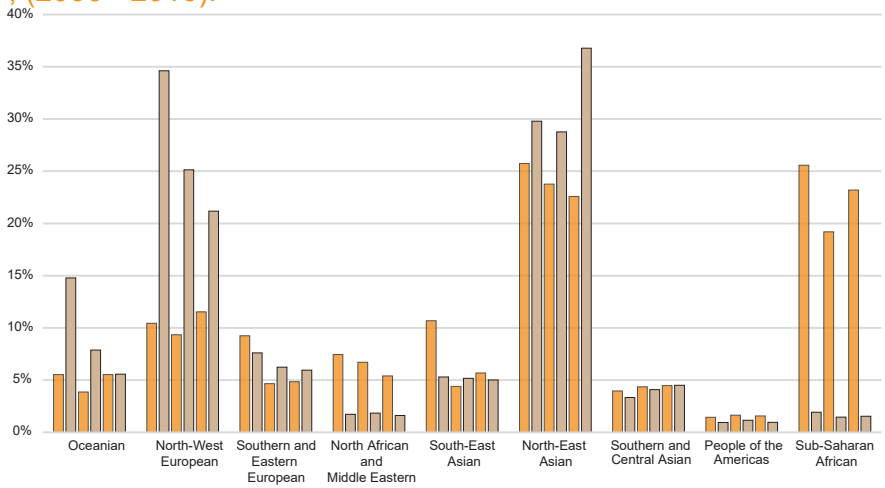
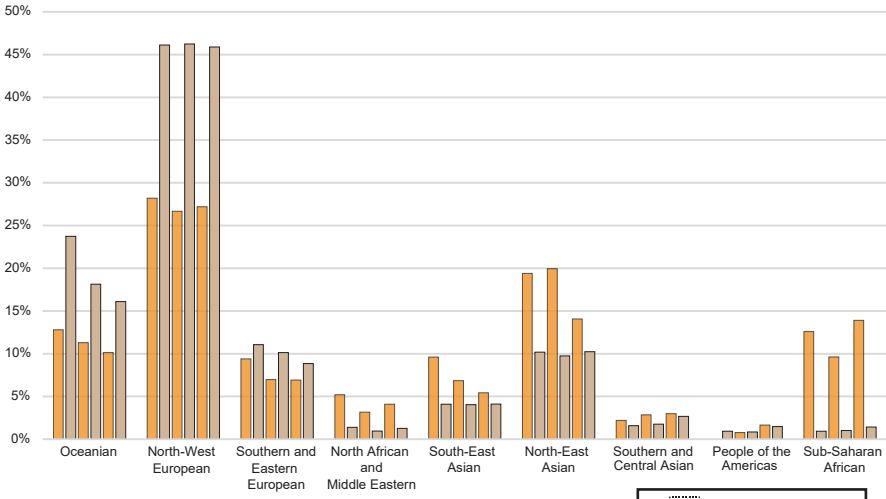
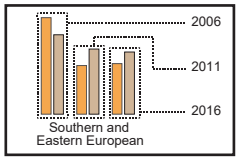


Figure 5.5: Ancestry Classification in Kensington Estate, (2006 - 2016).



Notes: Carlton and Kensington Housing Estate.
Carlton and Kensington Rest of Suburb.



Source: Authors' analysis of ABS 2006, 2011 and 2016.

5.4 Education.

For education, the Carlton and Kensington Housing Estates will be compared with Inner Melbourne to place the estates in context of the broader population.

When observing the Carlton and Kensington Housing estates over the 2006, 2011 and 2016 period the proportion of population that have completed schooling above year 10 is decreasing. In 2006, the proportion of the population that stated they had completed Year 10 and higher was at 11% and 19% of the CHE and KHE respectively. Meanwhile, in 2016 these figures had dropped to 9% (CHE) and 11% (KHE) respectively. Furthermore, the proportion of population with year 12 education is markedly lower in the CHE compared to the rest of Carlton suburb (not shown on graph). However, the proportion of population that did not attend school in the Carlton Housing Estate is decreasing over time.

In terms of higher education, the CHE has stayed relatively stable, while the KHE has seen some changes in the 2011 to 2016 period. The CHE has seen almost all levels of higher education remain within two percentage points apart from the proportion of people with advanced diplomas which has increased by 3% between 2011 and 2016. Meanwhile, in the KHE has seen more change. The proportion of people in the KHE with Certificate level and Diploma level education has increased (by 2% and 3%), while the proportion of people with a Bachelors degree has decreased (by 11%). However, in the same period the proportion of people in the KHE with a post-graduate degree has increased by 4%.

Figure 5.6: Secondary Studies at Carlton and Kensington Estate.

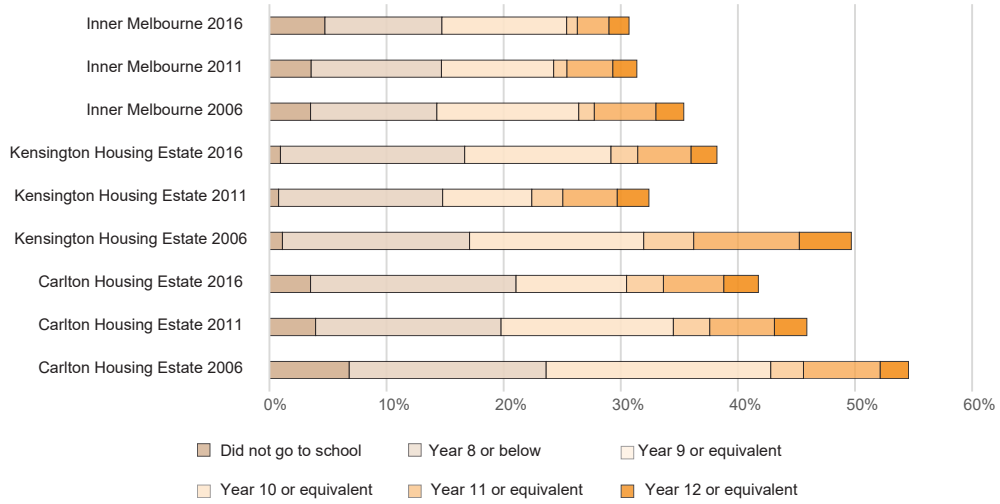
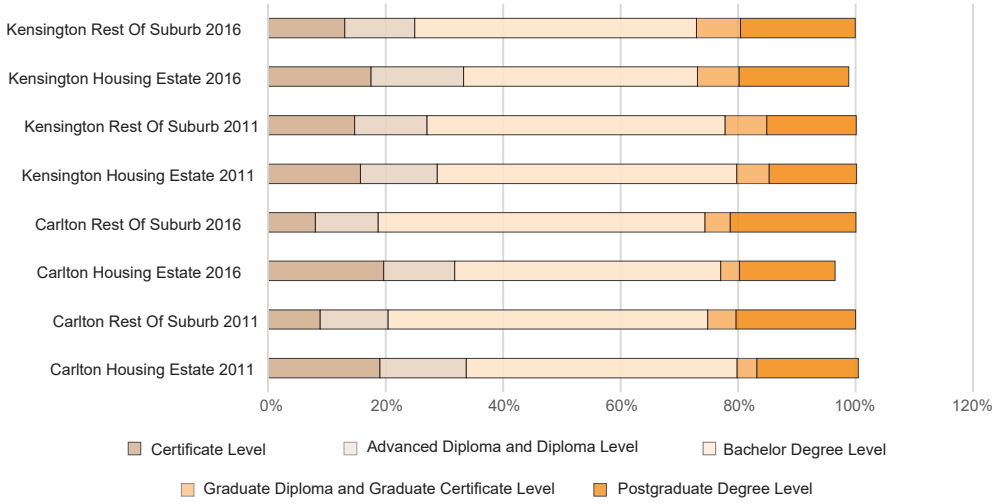


Figure 5.7: Tertiary Studies at Carlton and Kensington Estate.



Source: Authors' analysis of ABS 2006, 2011 and 2016.

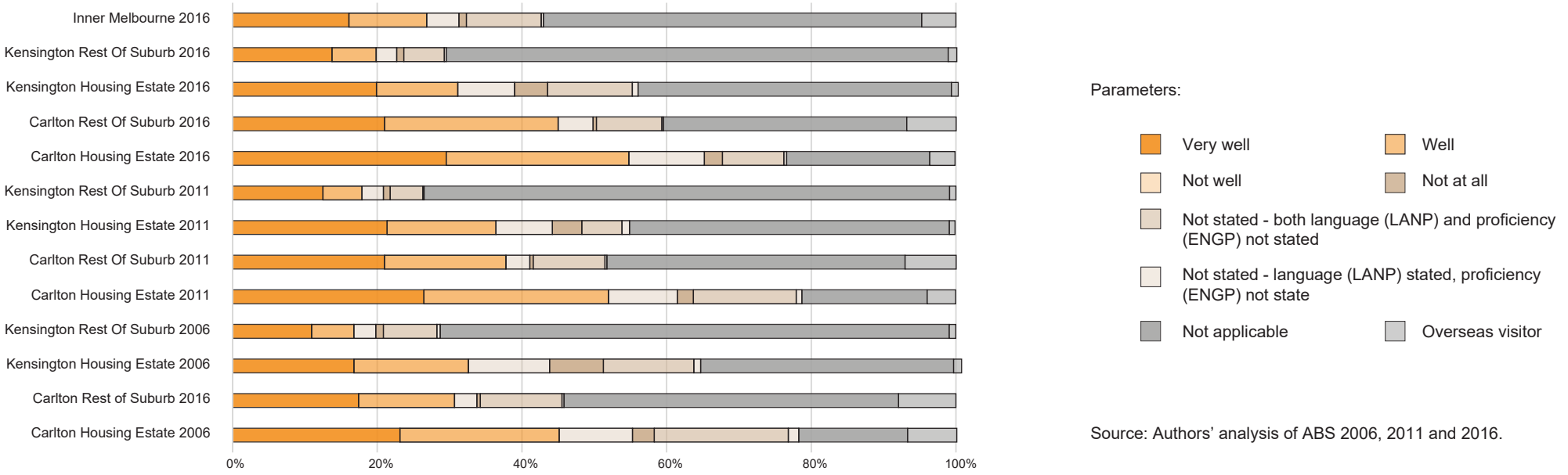
5.5 English Proficiency.

Both the Carlton and Kensington Housing Esates are less proficient in English than their surrounding suburbs or Inner Melbourne (not shown on graph). The proportion of the population who cannot speak English in the CHE has remained consistent over the 10 year period at around 3%. In the KHE, the proportion of the population who cannot speak English has decreased from 7% in 2006 to 4% in 2016. Meanwhile, in Inner Melbourne and in the rest of the Carlton and Kensington suburbs the proportion of the population who cannot speak English at all has remained around 1%.

The 'very well' statistic can be misleading here, as it appears that the Carlton and Kensington estates have higher proportion of the population who speak English very well compared to their surrounding suburbs or Inner Melbourne.

However, the proportion of the population who answered non-applicable to the English Proficiency section in the ABS Census has remained much higher in the rest of Carlton and Kensington (sometimes over 50%), and Inner Melbourne than the CHE and the KHE. It is likely that this proportion of the population can mostly speak English well and therefore believe the question to be non-applicable. It is worth noting however that the proportion of people who did answer 'very well' to the ABS Census has increased between 2006 and 2016 in the CHE from 23% to 29% and the KHE from 17% to 20%.

Figure 5.8: English Proficiency Analysis.

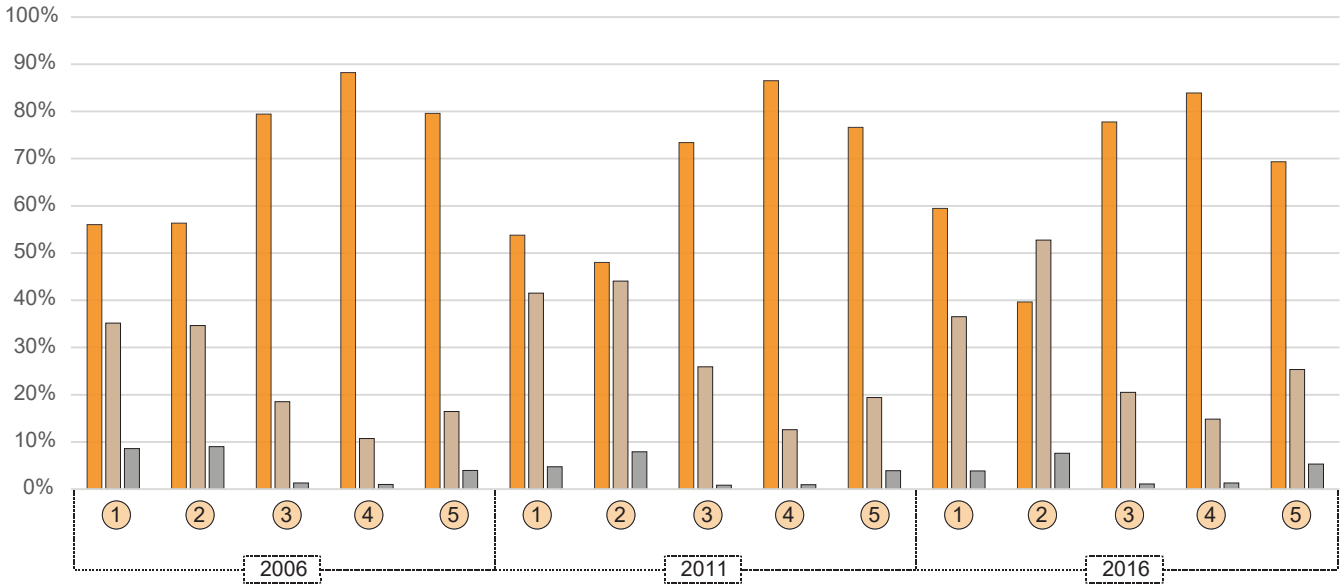


Source: Authors' analysis of ABS 2006, 2011 and 2016.

5.6 Citizenship Status .

Both the Carlton and Kensington Housing Estates currently contain a larger proportion of population who are Australian citizens than the Inner Melbourne region in 2016 (not on chart - 69%). The proportion of the population who are Australian citizens is currently higher in the CHE (59%) than the rest of Carlton (40%). While the proportion of the population who are Australian citizens is lower in the KHE (78%) than the rest of the suburb (84%). However, over time both the CHE and the KHE have remained more stable (only changing within three percentage points) than their surrounding suburbs or Inner Melbourne (not on graph 80% to 69%) where the proportion of the population who are Australian citizens have all been steadily decreasing since 2006.

Figure 5.9: Citizenship Status.



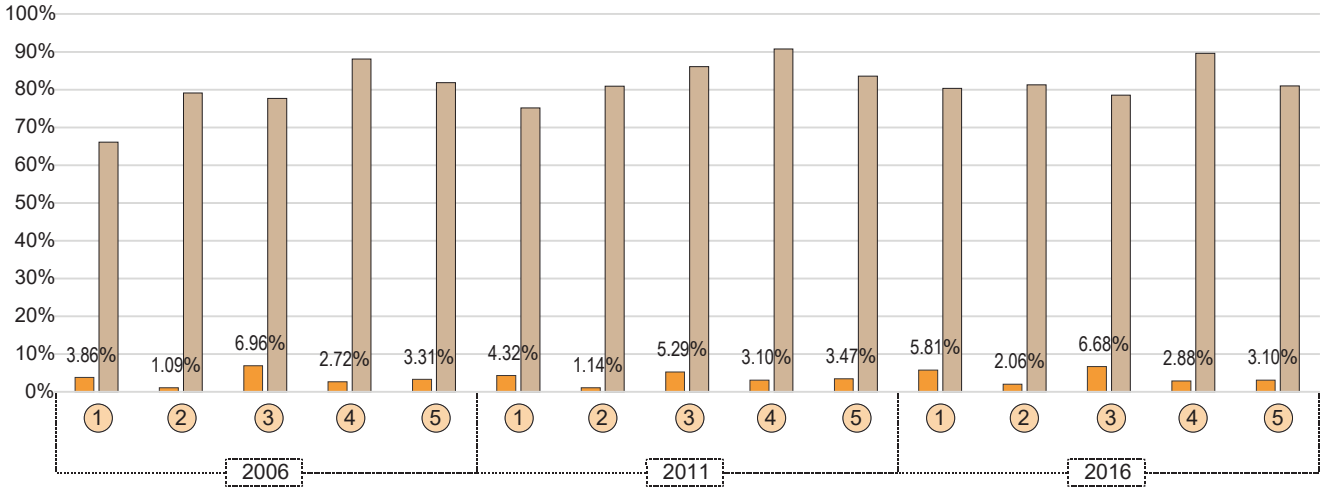
Notes: 1) Carlton Housing Estate.
2) Carlton Rest of Suburb.
3) Kensington Housing Estate.
4) Kensington Rest of Suburb.
5) Inner Melbourne.

Source: Authors' analysis of ABS 2006, 2011 and 2016.

5.7 Need For Assistance

In both the Carlton and Kensington Housing Estates a greater percentage of residents need assistance for core activities of life in comparison to their surrounding suburbs and Inner Melbourne. This situation has persisted over time across three censuses and worsened in case of the CHE, yet has remained stable in the KHE. In the CHE in 2006, 5.6% of population required assistance during the 2006 census, which rose to 6.7% in 2016. However, for the inner Melbourne average stood at 3.9% and 3.7% during those years (2006 and 2016 respectively. However, even more people require assistance in the KHE. Of the total residents at Kensington Housing estate, 8.2 % required assistance in 2006, 5.8% in 2011 and 7.8% in 2016, while this figure stood at 3.0%, 3.3% and 3.1% for rest of the Kensington suburb during 2006, 2011 and 2016 census respectively.

Figure 5.10: Need For Assistance Analysis.



Parameters:

- Has need for assistance with core activities.
- Does not have need for assistance with core activities.

Notes:
1) Carlton Housing Estate.
2) Carlton Rest of Suburb.
3) Kensington Housing Estate.
4) Kensington Rest of Suburb.
5) Inner Melbourne.

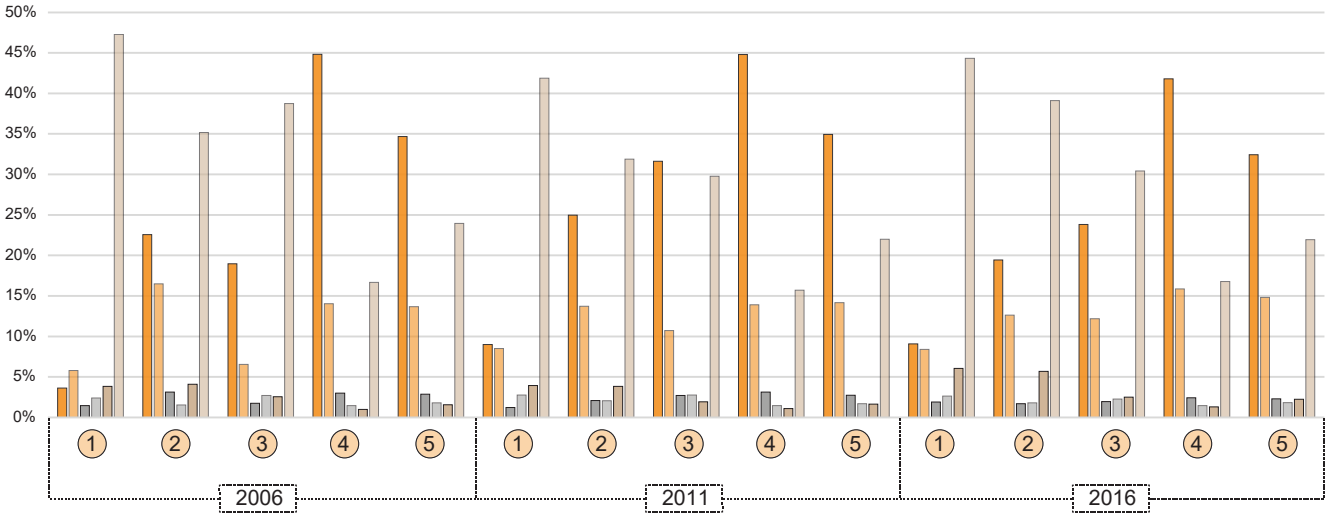
Source: Authors' analysis of ABS 2006, 2011 and 2016.

5.8 Labour Force Status.

Both the Carlton and Kensington Estates feature a smaller proportion of people in the labour-force than their surrounding suburbs or Inner Melbourne. However, while the CHE has a smaller proportion of the population in the labour force than the rest of Carlton, the KHE has a larger proportion of the population in the labour force than the rest of Carlton. Both the CHE and the KHE have seen a overall increase in the number of people employed over the 10 year period from 2006 to 2016. In particular, the CHE has seen the proportion of people working full-time rise from 3% in 2006 to 9% in 2016. Interesting, the rest of Carlton has seen a decline in proportion of people in the labour force, falling from 43% to 34% between 2006 and 2016.

Both estates also recorded an increase in the proportion of people working part time between 2006 and 2016, with the CHE up from 5% to 8% and KHE up from 6% to 12%. This was not consistent with their surrounding suburbs, with the rest of Carlton decreasing from 16% to 12% while the rest of Kensington remained stable around 14%.

Figure 5.11: Labour Force Analysis.



Notes: 1) Carlton Housing Estate.
2) Carlton Rest of Suburb.
3) Kensington Housing Estate.
4) Kensington Rest of Suburb.
5) Inner Melbourne.

Source: Authors' analysis of ABS 2006, 2011 and 2016.

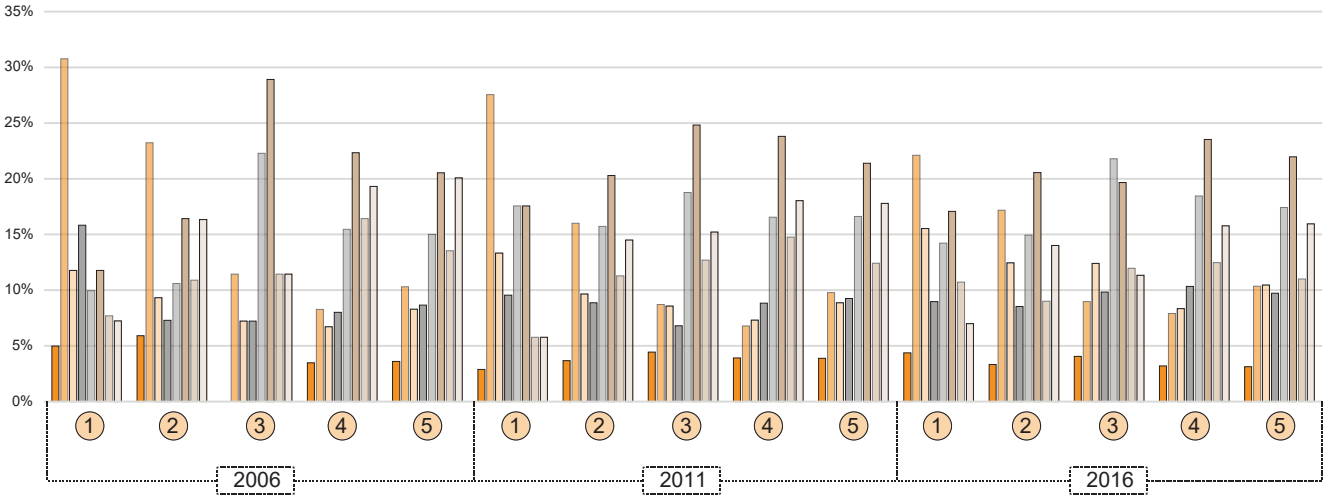
5.9 Hours Worked.

In terms of hours worked, the Carlton and Kensington Housing Estates present differently. The Carlton Housing Estate is more underemployed than the rest of Carlton across the three censuses with a much larger proportion of the population in the CHE working 1-15 and 16-24 hours between 2006 and 2016 (41% to 37% vs. 30% to 29%). Furthermore, the largest proportion of the population in the CHE across the three censuses was in the 1-15 hour range, However, the KHE is more level with the rest of Kensington, with only a marginally larger population being underemployed during the period (18% to 21% vs. 18% to 15%). Crucially, in the KHE the largest proportion of the population worked 40 hours in 2006 and 2011.

Before marginally dropping to 35-39 hours in 2016. However, in 2011 and 2016 more and more of the KHE population are working 16-24 and 25-34 hours per week.

Overall however, unlike many other indicators there is a clear distinction between the CHE and KHE. The population in KHE works substantially more hours than the CHE and has remained this way over time.

Figure 5.12: Hours Worked Analysis.



Parameters:

- None
- 1-15 hours
- 16-24 hours
- 25-34 hours
- 35-39 hours
- 40 hours
- 41-48 hours
- 49 hours and over

Notes: 1) Carlton Housing Estate.
2) Carlton Rest of Suburb.
3) Kensington Housing Estate.
4) Kensington Rest of Suburb.
5) Inner Melbourne.

Source: Authors' analysis of ABS 2006, 2011 and 2016.

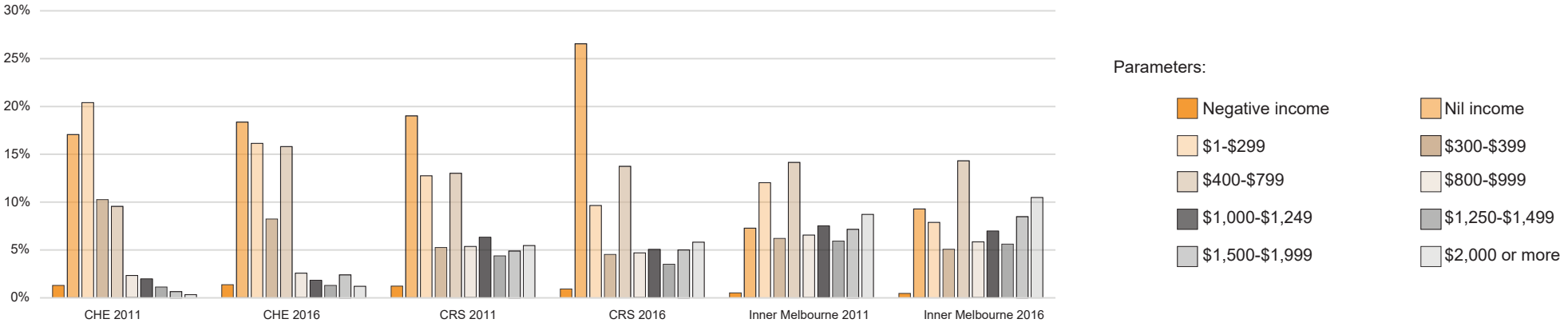
5.10 Income

Both the Carlton and Kensington Housing Estates feature a much smaller proportion of people at the higher end of the income ranges ($1000+ a week) than their surrounding suburbs or Inner Melbourne between 2006 and 2016. The median income (per week) of the CHE has increased between 2011 and 2016 (from $196 to $250) see Appendix) with a large increase in the people in the income range $400 to $799 (9% to 15%). Likewise for the CHE there has been a drop in the proportion of the population earning in the lowest income range $1-$299 (20% to 16%). The rest of Carlton meanwise has significantly changed, with the amount of residents with nil income increasing rapidly from 19% to 26% between 2011 and 2016.

Geography (Year)	Mean of the Median
Housing Estates (CHE and KHE combined)	$380
Inner Melbourne (781 SA1s combined)	$759.40
Housing Estates (CHE and KHE combined)	$405
Inner Melbourne (781 SA1s combined)	$853

Source: Authors analysis of ABS (2016), ABS (2011) and ABS (2006).

Figure 5.13: Carlton Housing Estate/Carlton compared with Inner Melbourne Income Ranges 2011-2016 (INCP)

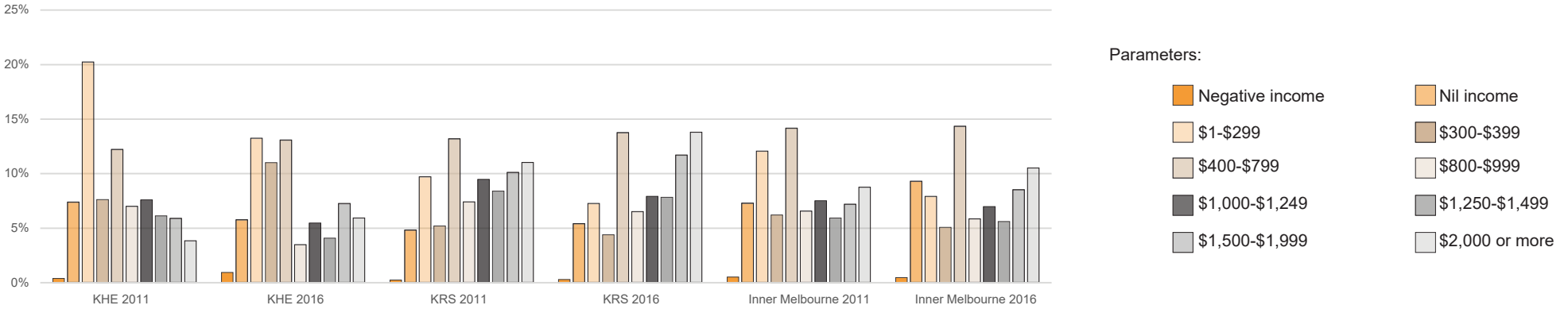


Source: Authors analysis of ABS (2016), ABS (2011) and ABS (2006).

The KHE seems to show a 'hollowing out' of the middle income ranges between 2011 and 2016. Between the five years the proportion of the population in the lower ranges ($1-$799) and the higer ranges ($1500+) have increased, while the proportion in the middle band incomes ($800-$1499) has decreased. Both estates appear to share a similar difference from their surrounding suburbs in terms of proportion of the population in the higher income bands (around a 7% difference in 2016).

The residents of the housing estates earn significantly lower individual income than their corresponding suburbs and the inner Melbourne residents. Also, the disadvantage persists over time. For example, the median income of residents at CHE was $196.5 weekly in comparison to $269.5 for rest of the suburb and $562 for inner Melbourne. This income rose to $250 in 2011 and $282 in 2016 for CHE but for rest of the Carlton suburb, the value rose to $401.44% and $528 in the years 2011 and 2016 respectively.

Figure 5.14: Kensington Housing Estate/Kensington compared with Inner Melbourne Income Ranges 2011-2016 (INCP)



Source: Authors analysis of ABS (2016), ABS (2011) and ABS (2006).

6. Discussion of Results.

Our data first and foremost demonstrates that demographically analysing these new social mix public housing estates is incredibly difficult. Since 2012 on both estates there has been a different population (private tenants) enter these geographies, in Carlton there has been private tenants since 2009. However, even finding evidence of the existence of this new population is fraught with difficulty. The key indicator of the existence of this social mix: Landlord Type did not demonstrate what we expected, with the 'Real Estate Agent' type only marginally increasing over the 2006 to 2016 period, and not increasing at all between 2011 and 2016 in either the CHE or the KHE. Similarly, the landlord type 'State or Territory Housing Authority' marginally increased, instead of the expected decrease in both estates. This may be possibly explained by the nature of the indicator, between 2006 and 2011 an average of only 66% of residents in the CHE responded to the LLDD indicator and only 59% of KHE residents responded. However, we cannot avoid that the ABS Census does not demonstrate the trends in landlord type that we expected given the changes that have occured on the estates.

Population and household-wise, over the 2006 to 2016 period the CHE remained relatively stable, while the KHE saw a significant increase in the number of people and households. Over-time we also saw a reduction in one-bedroom units and a slight increase in three-bedroom and four-bedroom units, another unexpected result given the complaints social mix developments are reducing housing stock size on the estates (Darcy & Rogers 2019). Furthermore, the number of people in a household indicator and the dwelling structure indicator gives us little indication that there has been a substantial change in the housing stock in the estates. Though perhaps the reduction in the amount of people living in four or more storey flats in the CHE gives us some evidence of a change in housing stock. Yet despite this statistic, we have found little evidence in the ABS Census emblematic of the physical changes expected in the social mix developments.

In terms of the demographic trends we can observe, it is clear some aspects of the populations in the CHE and the KHE are changing. Evidence of these changes are demonstrable in the indicators concerning employment and income. Between 2011 and 2016, both estates have seen an increase in the proportion of their population that falls within the highest income bands. Meanwhile between 2006 and 2016, both estates also saw a greater proportion of people working full-time. These positive changes may be a result of a different population emerging in the estates or it may also be a result of the existing population in the estates receiving different incomes and forms of employment.

However, moving away from the question of the impact or evaluation of a social mix, our data does hold some potency. Regardless of the social mix developments, the CHE and the KHE have been shown to contain markedly different populations than their surrounding suburbs and Inner Melbourne. Both housing estates present very differently from the other geographies in the indicators that concern need for assistance, inability to speak English, ancestry and the proportion of people in the workforce. Our statistical test further demonstrates this difference (See APPENDIX). After running a difference of means test, we determined that whether the mean of the median incomes of the housing estates were significantly statistically different from the mean of the median incomes of the suburbs within our Inner Melbourne geography between 2011 and 2016. We found that the substantial difference in incomes was maintained and statistically significant over out testing period.

Furthermore, our data also demonstrates that the Carlton and Kensington Housing Estates are different geographies. Especially in terms of income and employment, the population in the KHE works more and earns substantially more than the CHE. Also in terms of pure population, the age make-up and sex make-up of the estates varies hugely, with a greater proportion of the CHE being female and a greater proportion of the KHE being over 50. Language skills also divide the two estates with a greater proportion of people in the CHE than the KHE stating they can speak English ‘Very well’ and ‘Well’, and a greater proportion of people in the KHE stating their English proficiency is ‘Not at all’.

7. Conclusion.

Overall, there is lack of clearly defined evidence in our report that enables us to critically evaluate the results of the new social mix developments in the Carlton and Kensington Housing Estates. However, our data still creates an opportunity for reflection on the recent policies of the PHRP which will further encourage social mix developments on other public housing estates in the near future. We believe that policies like the PHRP will make informed, statistical and demographic analysis of public housing estates more difficult in the future.

Prior to 2006, the ABS geographical units that contained the Carlton and Kensington public housing estates would only contain populations living in those public housing estates. If funding was needed for the the estate residents, statistical and demographic analysis could be easily conducted by independent researchers to prove and find an area of disadvantage (education, income etc.). However, with a 'mix' of populations now in these geographies the disadvantages these geographies face are much less easily observed. With a social mix, in our study for example, increases in income in the estates and the greater proportion of people in full-time work in the CHE and KHE now cannot be determined to be a change in the behaviour and circumstances of the populations, or purely a change in actual populations. The result of social mix in this instance is a kind of statistical 'masking'. With socially-mixed populations in these geographies, changes in demographics will much less obviously be changes determined by the public housing residents or the new private tenants. If the geographies record better English proficiency in future years, or further increase their labour force participation, we will be less able to ascertain whether this was a result of decreases in social-disadvantage faced by public housing residents or increases of a population with more social-advantage, the private tenants.

In our report, this statistical ambiguity created by social mix was further exaggerated by the change to the KHE's southern most SA1.

The decision by the ABS to include two wealthy residential streets of in the Kensington SA1 that was formerly solely a public housing block also made the task of separating the two populations of private and public tenants more difficult. Further changes to ABS SA1s must be discouraged to make sure they do not skew distinct populations by blending their distinct geographies into the surroundings. Moreover, some of the 'jumpy' nature of our results, particularly the indicators of population, households, landlord type and tenure type in the KHE may be due to this change between 2011 and 2016.

Our results demonstrate that there is still a substantial difference between the populations living in the CHE and the KHE and their surrounding suburbs and Inner Melbourne, especially in regards to income, employment, ancestry, need for assistance and English proficiency . While their incomes are beginning to edge closer to their surrounding populations. The difference between the means of their median incomes and Inner Melbourne was tested by our team as statistically significant and is still quite large. If social mix policies are predicated on a kind of 'levelling out' where public housing populations become more like their surrounding populations - in the future we predict it will be impossible to test whether these projected equivalencies (if they do occur) are a result of social mix policies or just the social mix itself. On another note, it is foreseeable possibly that in the future demographic analysis or statistical analysis could easily be co-opted in order to justify social mix policy. If public housing populations are continually diluted and are not statically and geographically defined by the ABS - any increases in social-advantage demonstrated in these areas could merely be new more-privileged populations entering the estates. And furthermore, if it was changes enacted and driven by public housing residents, it would be impossible to tell.

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Appendix 1. Statistical Test - Significance of Income between Carlton and Kensington Housing Estates and Inner Melbourne.

A) Statistical significance of Income difference between Housing estates (Carlton and Kensington) and the inner Melbourne, 2011

Name of Suburb	No. of SA1s	Mmedian personal weekly income ($), 2011
Abbotsford	11	858
Ascot Vale	32	710
Brunswick	56	685
Brunswick East	19	740
Brunswick West	31	651
Carlton	34	366
Carlton North	23	848
Clifton Hill	14	960
Collingwood	14	743
Docklands	15	1060
East Melbourne	15	1164
Fitzroy	23	788
Fitzroy north	27	838
Flemington	23	550
Footscray	34	487
Kensington	26	921
Maribrynong	27	701
Melbourne	42	698
Moonee Ponds	32	763
North Melbourne	39	613
Northcote	53	736
Parkville	16	327
Princes Hill	23	811
Richmond	64	927
Seddon	19	782
Southbank	31	983
Travancore	4	748
West Melbourne	2	798
Yarraville	32	767
	781	Mean of Medina Incomes 759.41
		Standard Deviation 182.95

Source: Authors analysis of ABS (2016), ABS (2011) and ABS (2006).

There are 781 SA1s in 29 suburbs of custom inner Melbourne geography, whereas the number of SA1s in both housing estates (Carlton and Kensington) are 10. This statistical test assesses if the difference in median personal incomes for these two geographies is statistically significant.

Mean of the Median incomes in Inner Melbourne = X= 759.4 $
Standard deviation among the median incomes = s = 182.95 $
Sample size = n = 781
The mean of median incomes in housing estates = 380$

Five step Hypothesis testing:

1) Making assumptions and meeting test requirements.

The level of measurement is interval ratio, and the sample is random i.e all the SA1s withing the suburbs falling within the 3 Km of the housing estates.

2) Stating the Null Hypothesis:

Ho= μ ≤ $380
H1= μ > $380

We want to test if the mean income of the population from which the sample of 781 SA1s is drawn has mean income equal to the housing estates or it is statistically greater than the $380.

3) Selecting the sampling distribution and establishing the critical region.

Sampling distribution: one sample t distribution
α = 0.05, one tailed test
df = N-1= 781-1= 780
t critical = 1.645

4) Computing the test statistic:

t (obtained) = X-μ/s/ √(N-1)
= 759.4-380/182.5/ √780
t (obtained) = 58.04

5) Interpreting the results and Making a Decision.

Since t (obtained) > t (critical), we reject the Null hypothesis that μ≤ $380 rather the μ> $380, which means that the difference of income between Housing estates and the Inner Melbourne is statistically significant in the year 2011.

B) Statistical significance of Income difference between Housing estates (Carlton and Kensington) and the inner Melbourne, 2016.

Name of Suburb	No. of SA1s	Mmedian personal weekly income ($), 2016
Abbotsford	11	1068
Ascot Vale	32	824
Brunswick	56	817
Brunswick East	19	916
Brunswick West	31	742
Carlton	34	336
Carlton North	23	991
Clifton Hill	14	1127
Collingwood	14	969
Docklands	15	970
East Melbourne	15	1341
Fitzroy	23	925
Fitzroy north	27	1001
Flemington	23	604
Footscray	34	623
Kensington	26	1012
Maribrynong	27	779
Melbourne	42	532
Moonee Ponds	32	860
North Melbourne	39	586
Northcote	53	879
Parkville	16	437
Princes Hill	23	889
Richmond	64	1082
Seddon	19	936
Southbank	31	979
Travancore	4	751
West Melbourne	2	852
Yarraville	32	924
	Total No. of SA1s 781	Mean of the Median Personal weekly incomes 853.52
		Standard Deviation 215.82

Source: Authors analysis of ABS (2016), ABS (2011) and ABS (2006).

There are 781 SA1s in 29 suburbs of custom inner Melbourne geography, whereas the number of SA1s in both housing estates (Carlton and Kensington) are 10. This statistical test assesses if the difference in median personal incomes for these two geographies is statistically significant.

Mean of the Median incomes in Inner Melbourne = X= 853.5 $
Standard deviation among the median incomes = s = 215.8 $
Sample size = n = 781
The mean of median incomes in housing estates = 405$

Five step Hypothesis testing:

1) Making assumptions and meeting test requirements.

The level of measurement is interval ratio, and the sample is random i.e all the SA1s withing the suburbs falling within the 3 Km of the housing estates.

2) Stating the Null Hypothesis:

Ho= $\mu \leq \$405$
H1= $\mu > \$405$
We want to test if the mean income of the population from which the sample of 781 SA1s is drawn has mean income equal to the housing estates or it is statistically greater than the $405.

3) Selecting the sampling distribution and establishing the critical region.

Sampling distribution: one sample t distribution
$\alpha = 0.05$, one tailed test
df = N-1= 781-1= 780
t critical = 1.645

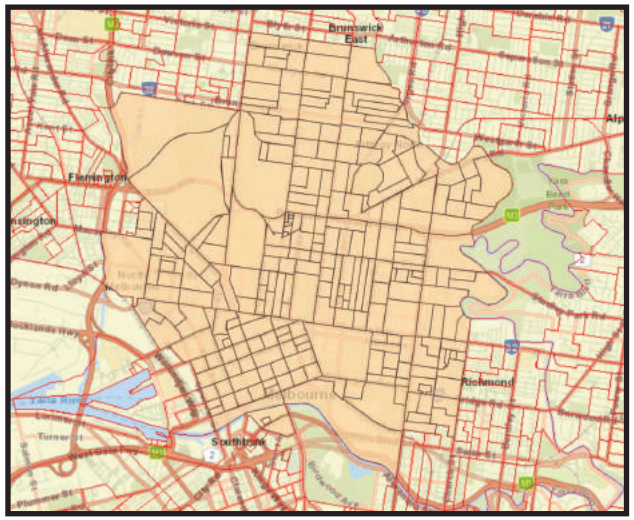
4) Computing the test statistic:

t (obtained) = $X-\mu/s/\sqrt{(N-1)}$
= $853.5-405/215.8/\sqrt{780}$
t (obtained) = 58.04

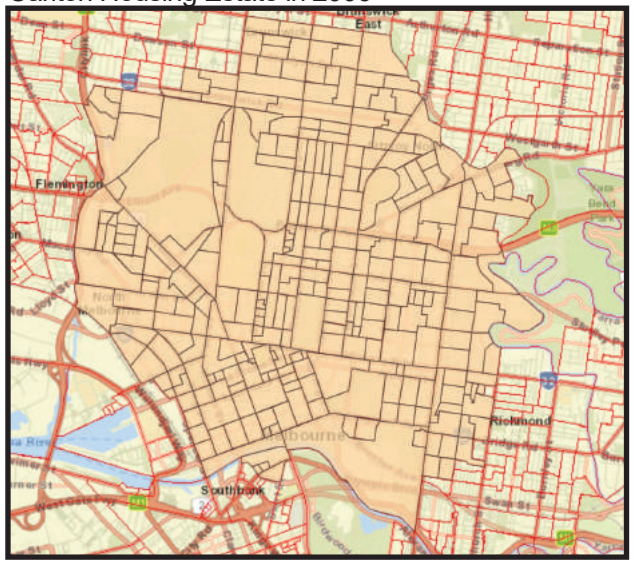
5) Interpreting the results and Making a Decision.

Since t (obtained) > t (critical), we reject the Null hypothesis that $\mu \leq \$405$ rather the $\mu > \$405$, which means that the difference of income between Housing estates and the Inner Melbourne is statistically significant.

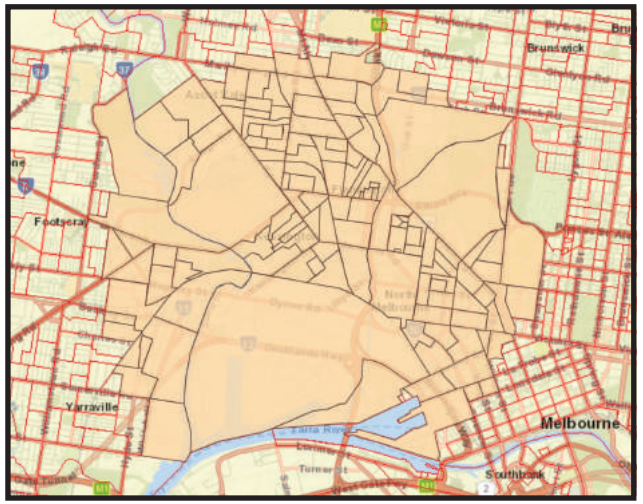
Appendix 2. 3km Radius Maps from Carlton and Kensington Housing Estates - Foundational geographies for later 'Inner Melbourne'



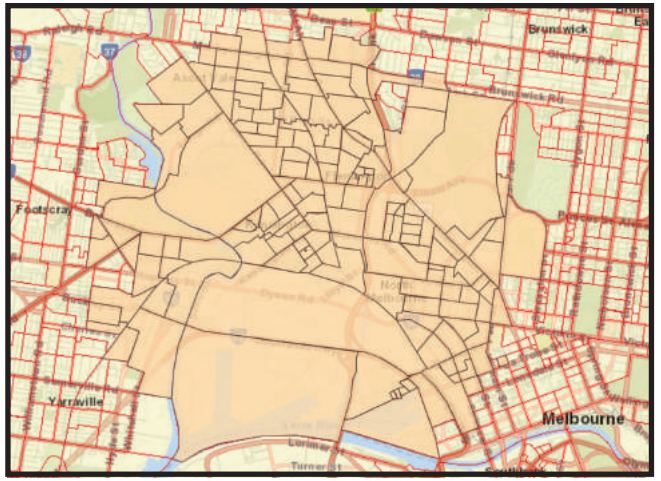
3km Radius Map of CCDs (262) surrounding the Carlton Housing Estate in 2006



3km Radius Map of SA1s (301) surrounding the Carlton Housing Estate in 2016



3km Radius Map of CCDs (135) surrounding the Kensington Housing Estate in 2016



3km Radius Map of SA1s (165) surrounding the Kensington Housing Estate in 2016

Source: ABS 2006, 2011 and 2016.