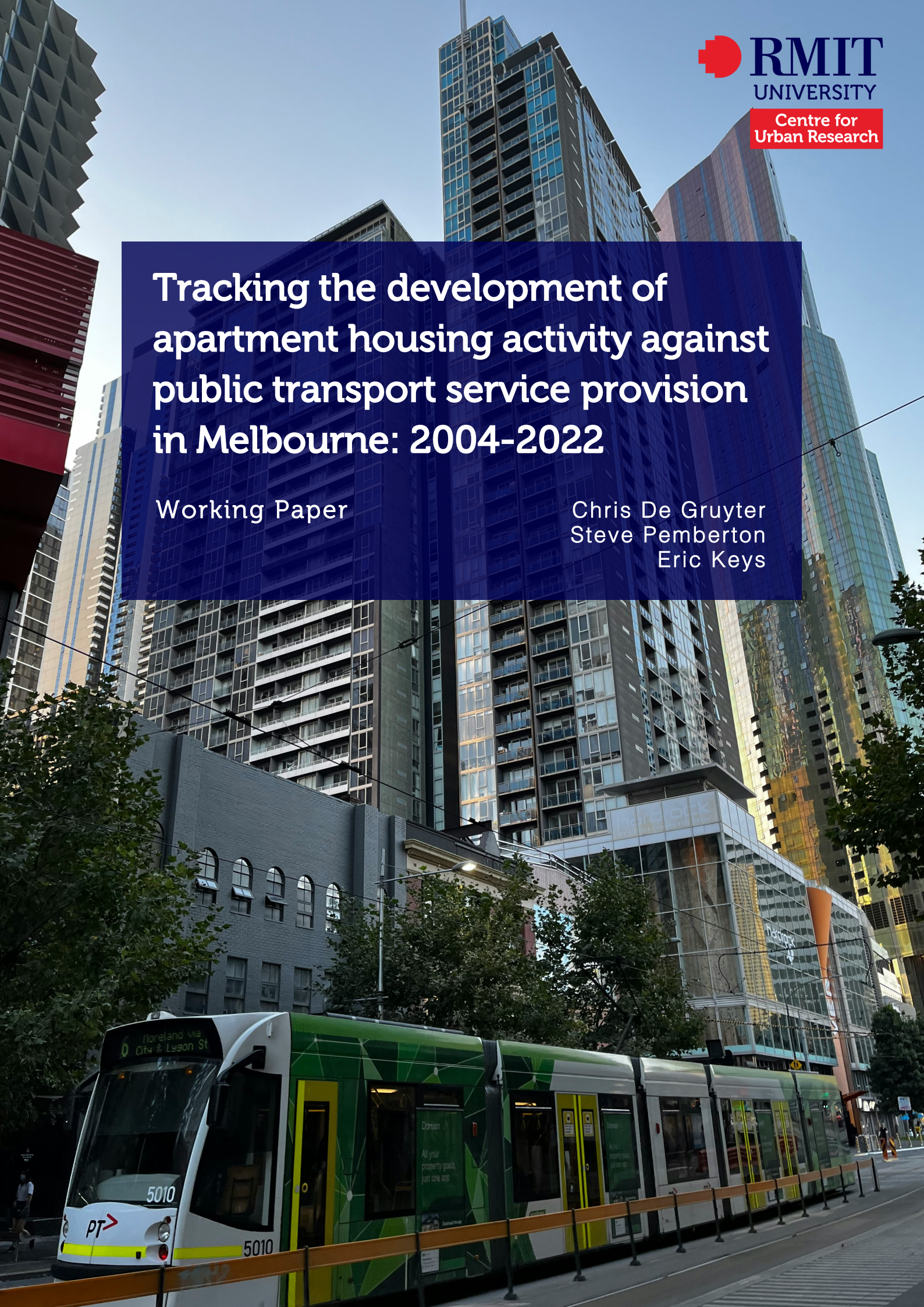

RMIT UNIVERSITY
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Tracking the development of apartment housing activity against public transport service provision in Melbourne: 2004-2022

Working Paper

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Acknowledgements

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Suggested citation

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Acknowledgement of country

We at RMIT University acknowledge the people of the Woi wurrung and Boon wurrung language groups of the eastern Kulin Nation on whose unceded lands we conduct our research, teaching and service. We respectfully acknowledge Ancestors and Elders past, present and emerging who have always been caring for Country. We pay our respects to Country, the lifeworld that sustains us all.

Contents

Executive summary

Despite wide-spread policy aspirations for integrating high-density housing with public transport in cities, what is achieved in practice is rarely measured. Furthermore, equity in public transport service provision has been given little attention in areas specific to high-density housing. This working paper tracks the development of high-density housing – namely apartments – against public transport service provision on an annual basis over a 19-year period (2003-04 to 2021-22) in Melbourne, Australia. A 'needs-gap' analysis is also undertaken to measure equity in public transport service provision in areas of apartment housing. Here, both horizontal equity, using public transport service supply per person, and vertical equity, using an index of socio-economic advantage and disadvantage, are measured.

Results show that considerable growth in apartment housing (88%) occurred in Melbourne over the 19-year period, outstripping population growth (32%) and modest changes in the number of annual public transport services provided (5%). However, when accounting for the progressive introduction of larger public transport vehicles in Melbourne, public transport service provision was found to have generally kept pace with population growth, indicating that horizontal equity is largely met in areas of apartment housing at a metropolitan level. However, considerable variation is found across individual local government areas and public transport lines/routes, whereby some areas and lines/routes have received a larger increase in public transport services relative to population growth, while others have received less. Little to no relationship was found between public transport supply and socio-economic advantage and disadvantage, implying that more advantaged areas with apartment housing do not necessarily receive a greater number of public transport services per person than less advantaged areas with apartment housing. In addition, evidence was found that apartment development is strongly attracted to areas well served by public transport but no evidence was found that public transport service levels have increased to better direct apartment development nor in response to the apartment development which has occurred. In the case of Melbourne, it appears that the policy intent to integration of transport and land-use provision is a one-way mechanism.

The research findings have implications for the development of future transport and land use policies. First, the provision of public transport services needs to be better aligned with, and more responsive to, the development of apartment housing. Here, continued monitoring of new apartment housing development and levels of public transport service provision is essential. Second, greater efforts need to be directed towards addressing inequities in public transport service provision at a local area and route/line level. Again, continued monitoring of equity in public transport service provision over time provides an important tool for understanding the extent to which this is being achieved.

Background

Integration of transport and land use planning has long been espoused as essential for enhancing sustainability, productivity and liveability of cities[1,2]. Development of high-density housing in areas of high quality public transport services is one example of integration[3,4], now reflected in transport and land use planning policies in various cities globally[5,6]. This consolidation policy is supported by previous research identifying various benefits from locating housing closer to public transport, such as reduced car ownership and use, and increased public transport use[7,8,9].

Despite wide-spread and now long-standing policy aspirations for integrating high-density housing with public transport, little is known about what is achieved in practice; rarely are any outcomes measured and reported[10,11]. Furthermore, equity in public transport service provision, while investigated in previous studies[12,13,14], has been given little attention in areas specific to high-density housing. In response, the research underlying this working paper aims to track the development of high-density housing – namely apartments – against public transport service provision over time, using Melbourne as a case study. This includes a 19-year longitudinal trend analysis (2003-04 to 2021-22), followed by a 'needs-gap' analysis to understand the extent to which equity in public transport service provision in areas of apartment housing development is being achieved.

Melbourne has experienced considerable growth in apartment housing along key public transport corridors in recent decades[15], contributing to increases in public transport ridership and passenger crowding. The Inner Melbourne region – generally within 5-10 km of Melbourne's central city – has grown from 265,000 to 427,000 people between 2001 to 2021, an increase of around 160%, compared to 46% for the remainder of metropolitan Melbourne[16]. Over the same period, the number of apartment dwellings in Inner Melbourne has increased from 55,000 to 122,000, around 220%, compared to 27% elsewhere in metropolitan Melbourne[16]. Around two-thirds (63%) of all dwellings within Inner Melbourne are now apartments[16].

Public transport use accounts for around 9% of all trips across metropolitan Melbourne, but around 16% of all trips in the Inner Melbourne region[17]. Public transport ridership in Melbourne reached an all-time high in 2018-19, increasing by more than 50% since 2003-04, with a total of 570 million trips (see Figure 1). However, like many cities, public transport ridership in Melbourne declined significantly with the COVID-19 pandemic, with ridership still recovering. As of November 2023, public transport ridership in Melbourne was around 80% of pre-pandemic levels[18].

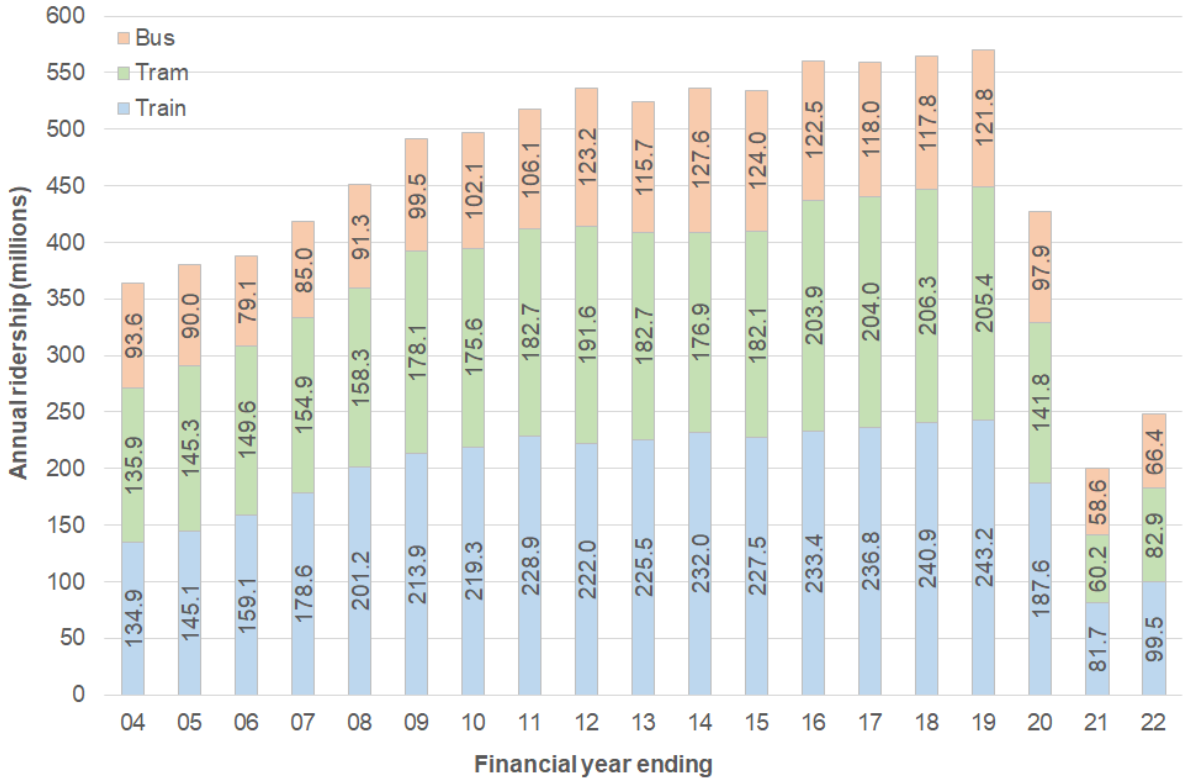


Figure 1: Annual public transport ridership in Melbourne by mode, 2003-04 to 2021-22.

In Melbourne, transport and land use policy has progressively shifted from one of suburban car-based development towards urban consolidation and transit-oriented development[19]. The current metropolitan planning strategy, Plan Melbourne 2017-2050, continues the policy objective for a more compact city by aspiring to locate 70% of new housing in established areas close to jobs and public transport. Here, apartment development is expected to play a major role[20]. In addition, Plan Melbourne 2017-2050 notes that greater housing choice, including apartments that are located close to public transport, can support equity and social cohesion goals[20].

More broadly, the Transport Integration Act 2010 requires the Victorian Department of Transport and Planning (DTP) to demonstrate an integrated approach to transport and land use planning[21]. Yet, a review by the Victorian Auditor-General's Office (VAGO) concluded that a considered response to urban consolidation is generally lacking in current transport plans[19]. It is also noted that Victoria has a permissive land use planning scheme in which apartment development is largely market driven, albeit with government review and approval. On the other hand, public transport is centrally controlled and planned by government, notwithstanding that services are operated by private sector actors.

The contribution of this research is an empirical understanding of the relationship between apartment housing development and public transport service provision over time, and the extent to which this has supported (or detracted from achieving) vertical and horizontal equity. This can help to assess whether the policy intent of public transport and land use integration is being achieved, and whether this has contributed to equity in public transport service provision.

This research also accounts for changes in public transport vehicle capacities. This is particularly relevant to tram (and some train) services in Melbourne where larger vehicle types have been progressively introduced over the last 20 years. On some tram routes, this has resulted in almost doubling passenger carrying capacity[22], thereby reducing crowding, facilitating ridership growth.

This working paper uses the term 'apartments' to refer to multiple self-contained dwellings located within the same building, regardless of housing tenure or management structure. In other countries, apartments may be known as flats, condominiums or multi-family housing.

Method

Compilation of apartment housing data

Annual data on construction of apartment housing developments (containing 10 or more dwellings), including their address location, was sourced from the Department of Transport and Planning (DTP)[23]. Data was available for each Australian financial year (1 July to 30 June) between 2003-04 and 2016-17, and for calendar years between 2017 and 2022. To provide consistency in the use of financial years, housing developments completed in calendar years from 2017 onwards were split equally between financial years straddled by the relevant calendar year. This was considered reasonable based on a separate analysis of monthly dwelling building approvals data[24] which showed that, for the financial years of 2011-12 to 2021-22, 47% of approvals were granted in January to June, and 53% in July to December.

The annual dataset excluded greenfield developments on Melbourne's urban fringe. However, a separate analysis of greenfield development activity[23] found only five multi-lot developments with a density of at least 100 lots/ha – typical of apartment developments – out of over 2,000 apartment housing developments (0.25%), suggesting that greenfield developments comprise a very small proportion of Melbourne's apartment developments. The annual dataset also excluded housing developments with less than 10 dwellings. A separate analysis of building permit activity[25] showed that around 6% of dwellings with a density of at least 100 dwellings/ha – typical for apartments – were for housing developments of less than 10 dwellings. This suggests that the number of dwellings drawn from the annual dataset may understate actual dwellings by around that amount.

Compilation of public transport service provision data

Annual data on numbers of scheduled train services by line was sourced from DTP[26] from 2003-04 to 2021-22. Line-level data was converted to station-level data based on information available from DTP. Route changes over the analysis period consisted only of adding new train stations and extending lines based on data from Vicsig[27], with no train stations closing during the analysis period. Vehicle capacity adjustments over the analysis period were based on separate information supplied by DTP.

Annual data on the number of scheduled tram services by route was also sourced from DTP[26] from 2003-04 to 2021-22. Route-level data was matched with individual tram stops, based on current stop locations specified in General Transit Feed Specification (GTFS) data, and adjusted for route changes over time. A total of 17 separate tram route changes over the analysis period were incorporated. Capacity adjustments over the analysis period were based on information supplied by Yarra Trams, showing the allocation of different tram classes to individual routes at each depot over time.

Annual data on the number of scheduled bus services by route was only available from DTP[26] from 2017-18 to 2021-22, so this information was instead drawn from GTFS data (by month) which was available from 2015-16 onwards. A comparison of the DTP and GTFS data for bus services showed that they either matched exactly, or were within 5% of each other, for 91% of route/month combinations. Using the GTFS data, the number of bus services on each route calling at each stop was determined. Capacity adjustment information was obtained from discussions with DTP and bus operators.

The data compilation process produced the following for each year: (1) number of scheduled services for any train station, tram stop or bus stop, and (2) capacity factors to be applied to determine the number of capacity-adjusted services.

Data analysis

The annual number of apartments and public transport services were calculated for selected areas, which could range from a single apartment building to a public transport line/route or local government area, or for metropolitan Melbourne as a whole (see Figure 2). Public transport services in a selected area were calculated by (1) identifying stations/stops within a 800 metre walk of apartments in the selected area, a distance consistent with transport policy[20], (2) finding the number of services for those stations/stops, and their capacity-adjusted numbers, and (3) aggregating the number of services for stations/stops on each line/route within the selected area, with and without capacity adjustments.

Using the compiled data, a longitudinal trend analysis was undertaken to track the development of apartment housing against public transport service provision from 2003-04 to 2021-22, with and without vehicle capacity adjustments. The analysis was undertaken for key public transport routes/lines, local government areas, and metropolitan Melbourne as a whole. A needs-gap analysis was also undertaken, requiring the compilation of two additional variables: population and an established Index of Relative Socio-economic Advantage and Disadvantage (IRSAD)[28], both sourced from the Australian Bureau of Statistics[16] for each of the selected areas. For the needs-gap analysis, horizontal equity was assessed by calculating the number of public transport services *per capita* over time in the selected areas, while vertical equity was assessed based on the relationship between IRSAD and the number of public transport services available in the selected areas.

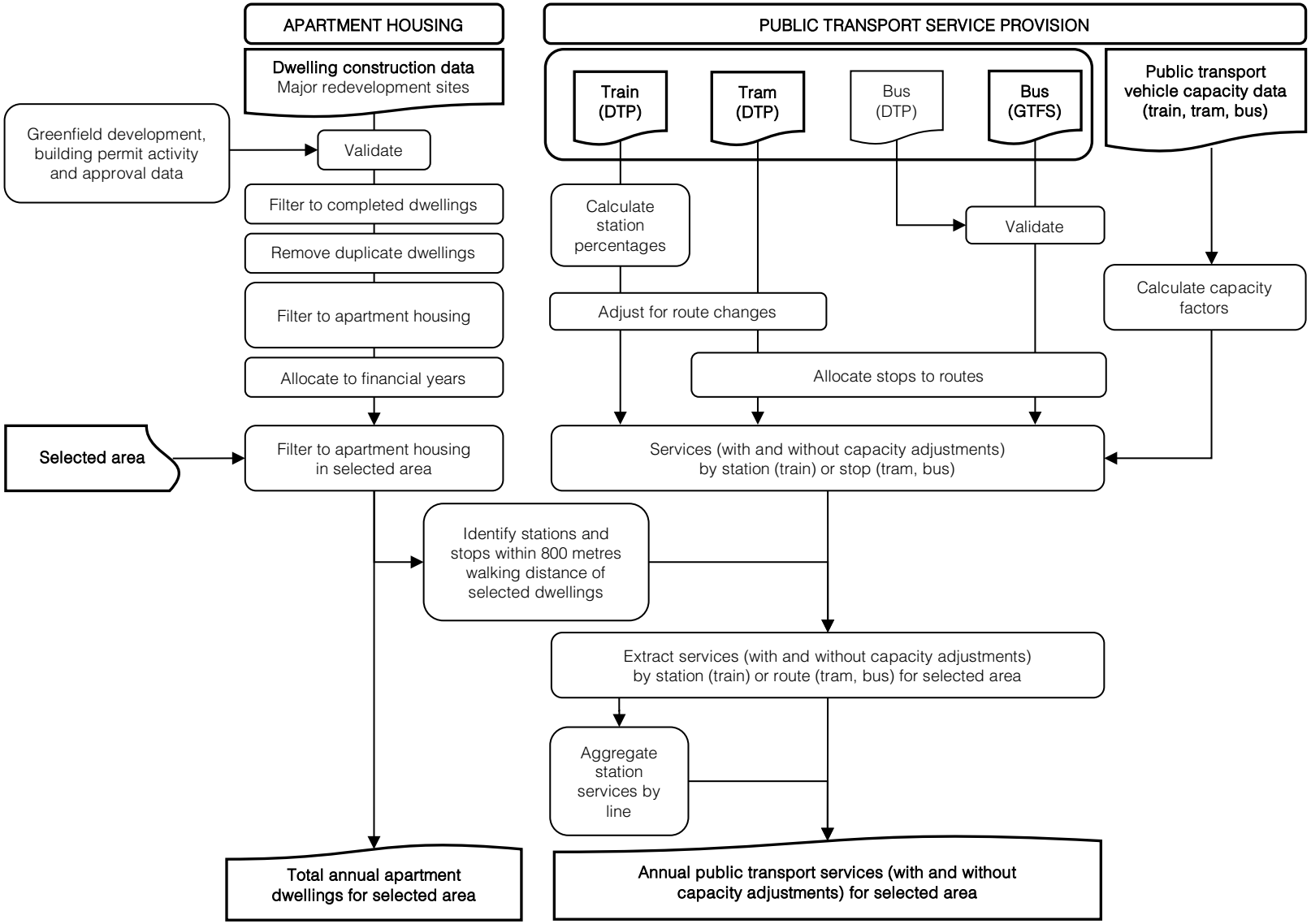


Figure 2: Process for calculating number of annual apartment dwellings and public transport services for selected area.
Note: DTP = Department of Transport and Planning, GTFS = General Transit Feed Specification.

Results

The results are presented in two main parts: the longitudinal trend analysis of apartment housing activity and public transport service provision (2003-04 to 2021-22), followed by the needs-gap analysis. Except for the needs-gap analysis for assessing vertical equity, the results focus on train and tram services only due to the lack of bus service provision data before 2015-16. However, where bus services are included (from 2015-16 onwards), the results are largely consistent with those for train and tram services only (from 2003-04 onwards). In addition, the analysis is based on the *number* of public transport services passing through each selected area and does not account for the *distance* covered by those services (i.e. service-km). This was intentional to reflect service provision from a resident's perspective (e.g. number of services operating within 800 metres), but results in a decrease in the number of tram services along routes that were merged. To address these issues, and to provide further detail on the results, several appendices are included in this working paper:

- Appendix 1 provides the main results of the longitudinal trend analysis where bus services are included, in addition to train and tram services, for the years 2015-16 to 2021-22
- Appendix 2 provides detailed results of the longitudinal trend analysis for individual areas (train and tram services only), and train lines and tram routes, for the years 2003-04 to 2021-22
- Appendix 3 provides detailed results of the longitudinal trend analysis for individual areas (train, tram and bus services), and selected bus routes, for the years 2015-16 to 2021-22
- Appendix 4 compares the results based on number of services against service-km for tram routes that were merged during the analysis period.

Longitudinal trend analysis

Figure 3 shows how apartment housing development across metropolitan Melbourne has tracked against total population (within 800 metres of apartment dwellings) and annual public transport service provision (also within 800 metres of apartment dwellings) between 2003-04 and 2021-22. The values are indexed to 2003-04 for ease of comparison, with public transport services including train and tram only due to the lack of bus service provision data before 2015-16.

The number of apartment dwellings across Melbourne has increased every year, growing by around 88% between 2003-04 and 2021-22, and outstripping growth in total population and public transport service provision. Total population grew by around 35% between 2003-04 until 2019-20, but dropped slightly in later years due to internal migration away from Melbourne and reduced international arrivals associated with the COVID-19 pandemic[29]. Annual train and tram service provision remained relatively stable over the analysis period, generally within ±5% of 2003-04 levels. However, when adjusted for changes in public transport vehicle capacities, annual public transport service provision increased by around 35%, surpassing total population growth by 2021-22.

Notwithstanding the changes in public transport vehicle capacities that have taken place, the results provide little evidence that the number of annual public transport services have changed in response to increases in apartment housing development. Rather, apartment development has been attracted towards areas that were already served by public transport. This is illustrated by Figure 4 which shows, at a local government area level, that more apartment dwellings were built between 2003-04 and 2021-22 in areas that already had a high level of public transport service provision in 2003-04.

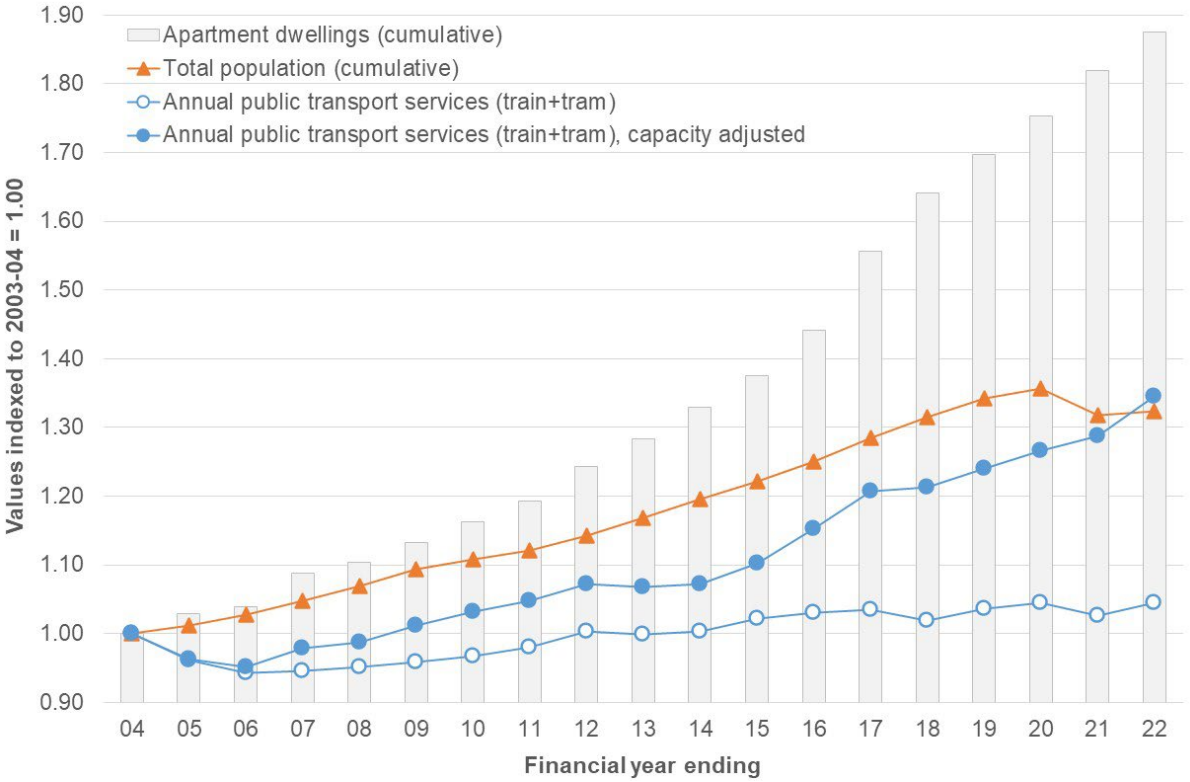


Figure 3: Trend analysis for metropolitan Melbourne of apartment housing development vs. total population and public transport services (train, tram) within 800 metres of apartment dwellings (2003-04 to 2021-22).

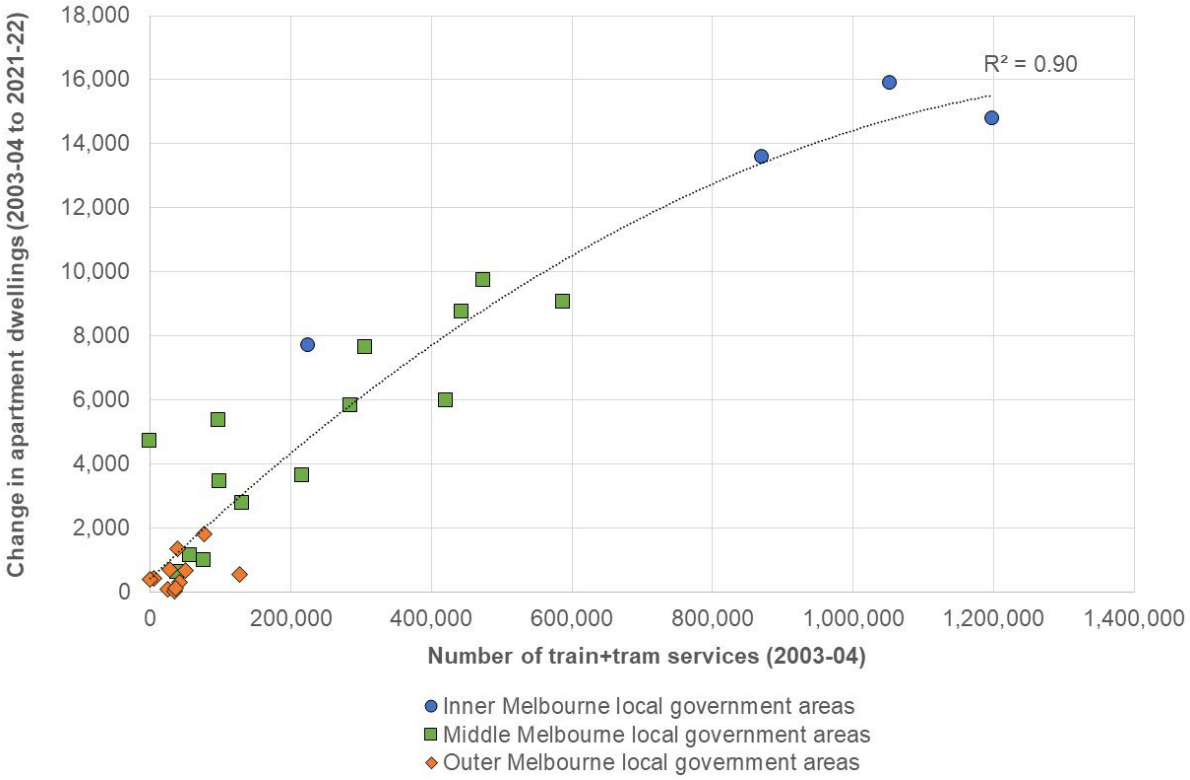


Figure 4: Annual public transport services (tram, train) in 2003-04 across local government areas within 800 metres of apartment dwellings vs. change in number of apartment dwellings (2003-04 to 2021-22). *Note:* excludes City of Melbourne as an outlier which had more than 76,000 new apartment dwellings.

Figure 5 shows the percentage change in apartment dwellings in each local government area in Melbourne against the percentage change in total population (within 800 metres of apartment dwellings) and capacity-adjusted annual public transport services (also within 800 metres of apartment dwellings) between 2003-04 and 2021-22. For ease of comparison, local government areas are grouped into inner Melbourne (generally within 10 km of Melbourne's CBD), middle Melbourne (10-20 km from Melbourne's CBD) and outer Melbourne (>20 km from Melbourne's CBD).

In inner Melbourne, growth in apartment dwellings between 2003-04 and 2021-22 exceeded the growth in total population and capacity-adjusted annual public transport services. Growth in public transport service provision in inner Melbourne has generally kept pace with population growth, except for the local government area of Melbourne. In middle Melbourne, while growth in apartment dwellings generally exceeded growth in total population, growth in public transport services mostly exceeded the growth in total population, and in some local government areas (6 out of 14) also exceeded the growth in apartment dwellings. In outer Melbourne, designated growth areas located on the urban fringe (Melton, Wyndham, Whittlesea, Hume, Casey) have experienced high levels of population growth which has mainly been directed towards lower-density (detached) housing. The growth in public transport services in these areas has also tended to exceed the relatively modest growth in apartment housing. Overall, the results shown in Figure 5 highlight inconsistencies in the growth of public transport services relative to the growth in population and apartment dwellings across local government areas in Melbourne.

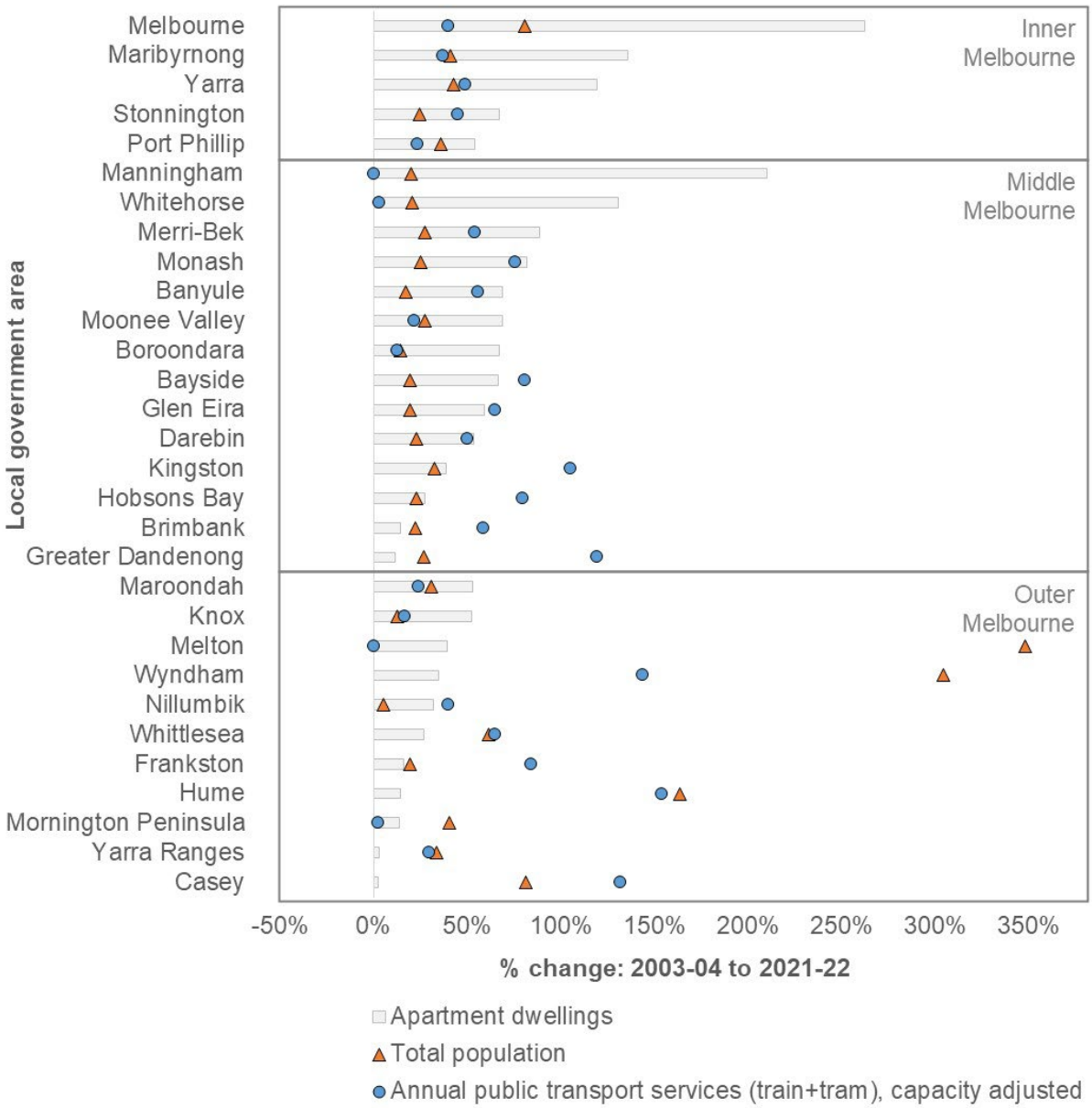


Figure 5: Change between 2003-04 and 2021-22 across local government areas in apartment dwellings, total population, and public transport services (train, tram) within 800 metres of apartment dwellings.

Figure 6 shows the same information as Figure 5, but at a public transport line/route level. In most cases, the growth in train services exceeds population growth, but not the growth in apartment dwellings, particularly for Footscray which experienced an increase in apartment dwellings of more than 1,000% between 2003-04 and 2021-22. Results for tram routes are more varied: some experienced a decrease in service provision, while others experienced a substantial increase exceeding the growth in apartment dwellings along the route.

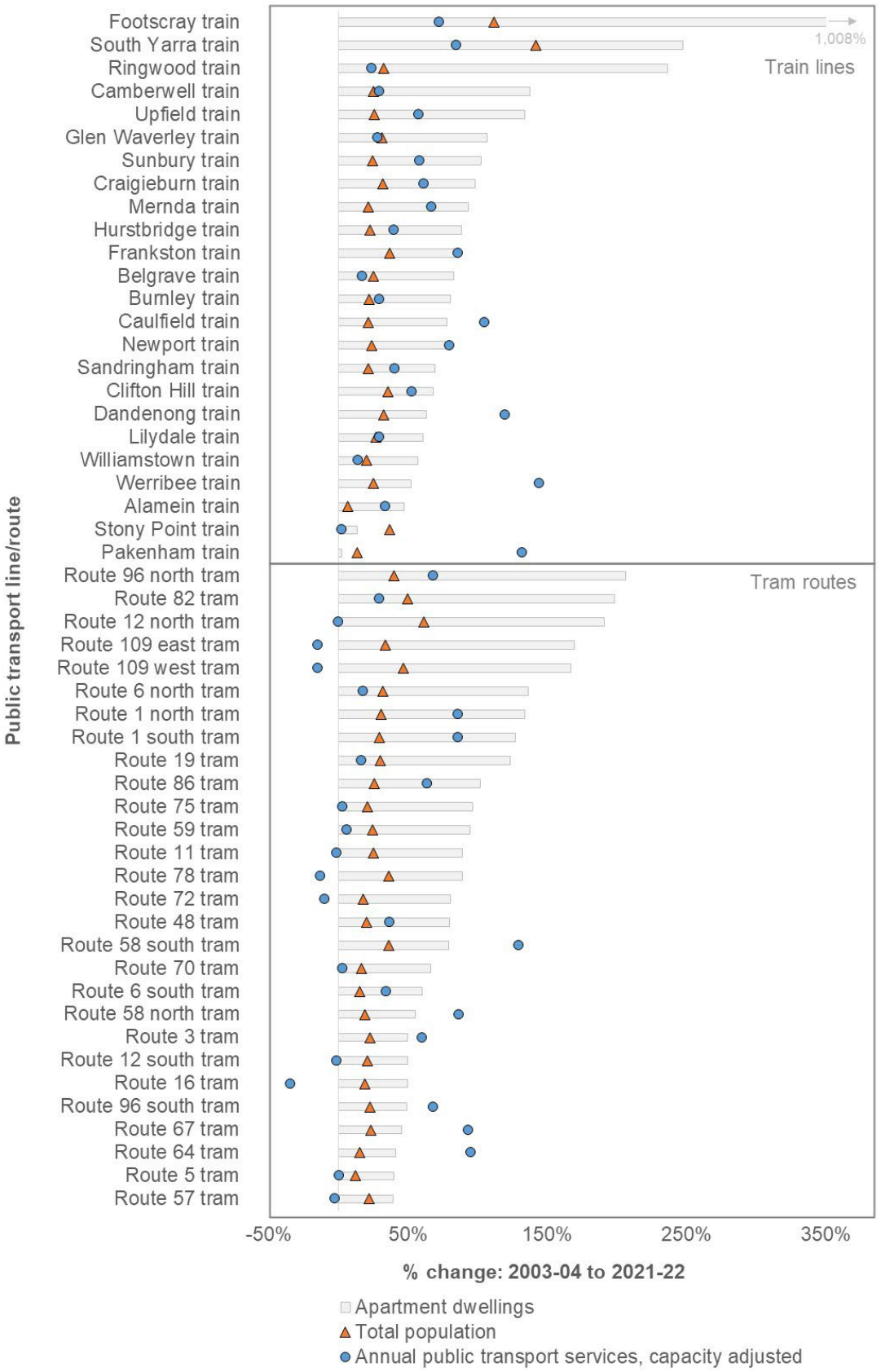


Figure 6: Change between 2003-04 and 2021-22 across public transport lines/routes in apartment dwellings, total population, and public transport services (train, tram) within 800 metres of apartment dwellings.

Needs-gap analysis

To assess the extent of horizontal equity in public transport service provision in metropolitan Melbourne, Figure 7 shows the number of annual public transport services provided per apartment dwelling and per person (within 800 metres of apartment dwellings) between 2003-04 and 2021-22. The number of annual public transport services per person has remained remarkably stable over time at around 1 service/person. In contrast, the number of annual public transport services per apartment dwelling has declined considerably from around 10 services/dwelling in 2003-04 to around 6-8 services/dwelling in 2021-22 (depending on whether vehicle capacity adjustments are incorporated).

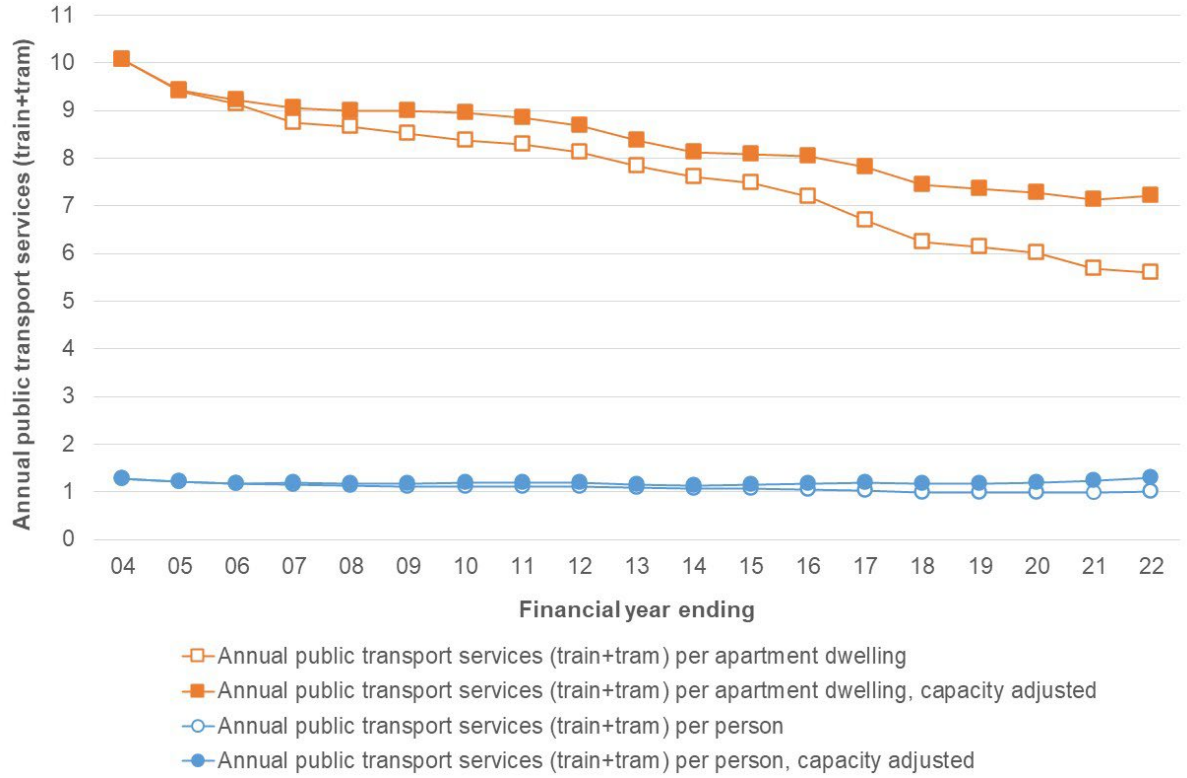


Figure 7: Annual public transport services (tram, train) per apartment dwelling and per person within 800 metres of apartment dwellings across metropolitan Melbourne (2003-04 to 2021-22).

Figure 8 shows the percentage change in apartment dwellings in each local government area in Melbourne against the percentage change in capacity-adjusted annual public transport services provided per apartment dwelling and per person (within 800 metres of apartment dwellings) between 2003-04 and 2021-22. Considerable variability exists across local government areas. In inner Melbourne, annual public transport services per apartment dwelling declined in all local government areas, with little increase (and in some cases, a decrease) in annual public transport services per person. In middle and outer Melbourne, results are more scattered with both positive and negative changes in annual public transport service provision per apartment dwelling and per person across local government areas.

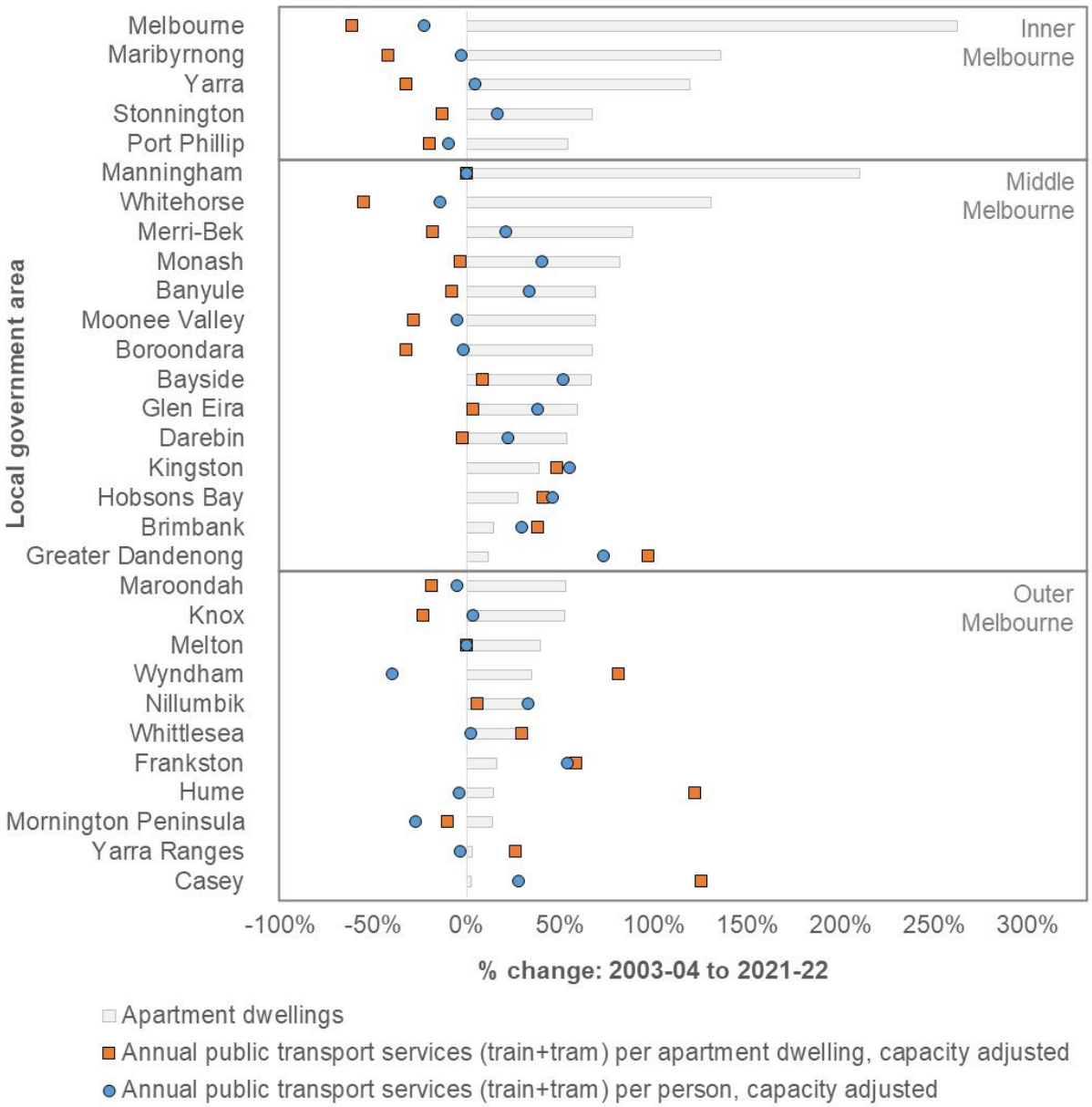


Figure 8: Change between 2003-04 and 2021-22 across local government areas in annual public transport services (train, tram) per apartment dwelling and per person within 800 metres of apartment dwellings.

Figure 9 shows the same information as Figure 8, but at a public transport line/route level. Along train lines, the number of services per apartment dwelling have generally declined, but on a per person basis, the number of services has increased on most lines (17 out of 24 lines between 2003-04 and 2021-22). Along tram routes, declines in the number of services per apartment dwelling have occurred in most cases, although the number of services per person have increased on around half of all routes (12 out of 28 routes between 2003-04 and 2021-22).

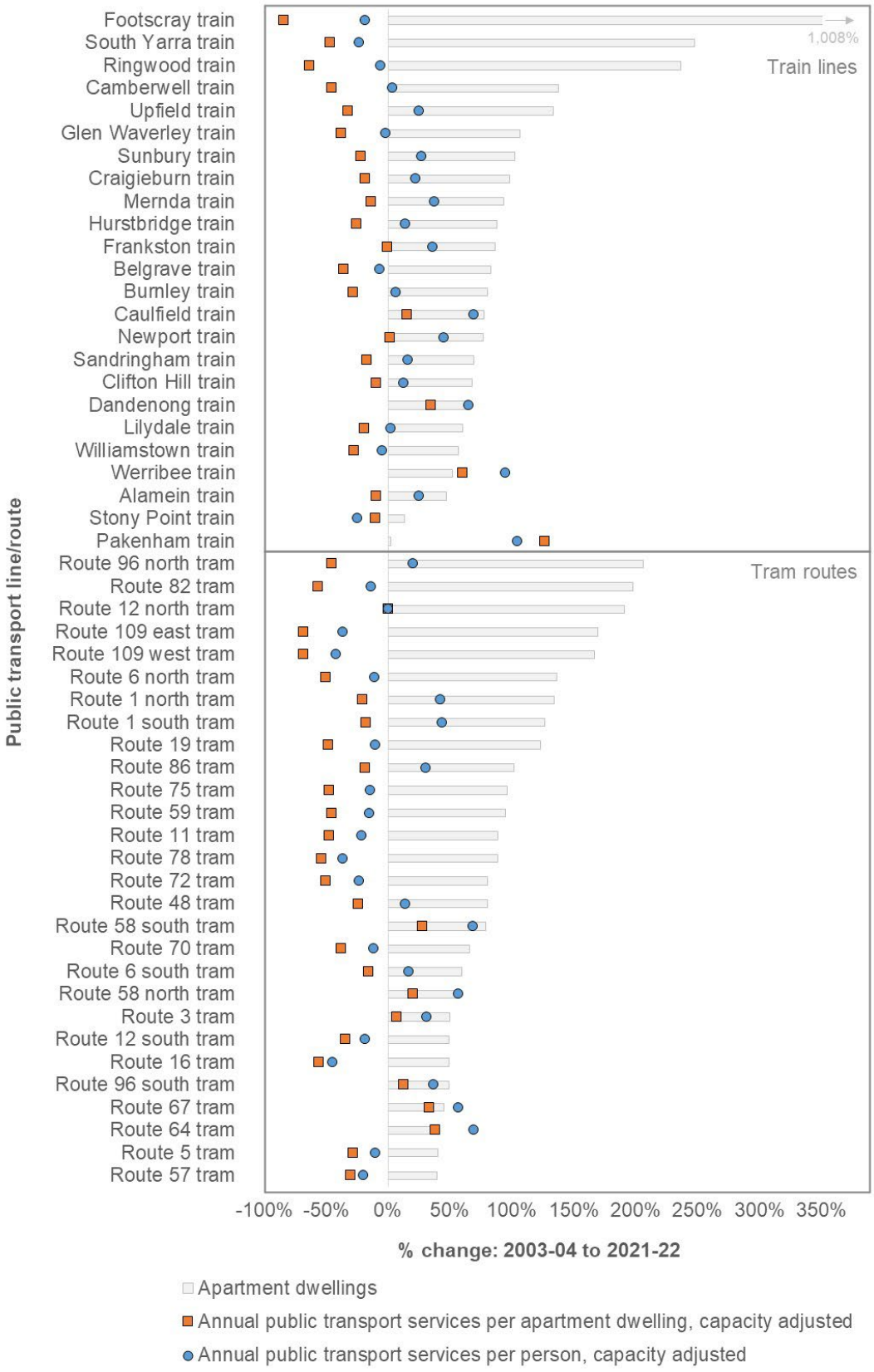


Figure 9: Change between 2003-04 and 2021-22 across lines/routes in annual public transport services (train, tram) per apartment dwelling and per person within 800 metres of apartment dwellings.

To assess the extent of vertical equity in public transport service provision, the number of annual public transport services in 2021-22 (within 800 metres of apartment dwellings) in each local government area and along each public transport line/route was compared against the population-weighted Index of Relative Socio-economic Advantage and Disadvantage (IRSAD) for each area/line/route. These results include services for all three modes of public transport in Melbourne: train, tram and bus.

Figure 10 shows that local government areas with a higher IRSAD tend to have a higher level of public transport service supply, although the relationship is relatively weak ($R^2 = 0.35$). While inner Melbourne local government areas tend to have a higher level of public transport supply and a higher IRSAD value, and the opposite is generally true for outer Melbourne, the results for middle Melbourne are more scattered. When public transport supply is considered on a per person basis, as shown in Figure 11, there is no clear relationship with the IRSAD value, indicating that more advantaged areas do not necessarily receive greater public transport supply per person than less advantaged areas. This implies that the socio-economic status of an area appears to have no influence on the allocation of public transport services on a per person basis. Similar results were found at a line/route level, indicating that lines/routes located in more advantaged areas do not necessarily offer more services per person than those in less advantaged areas.

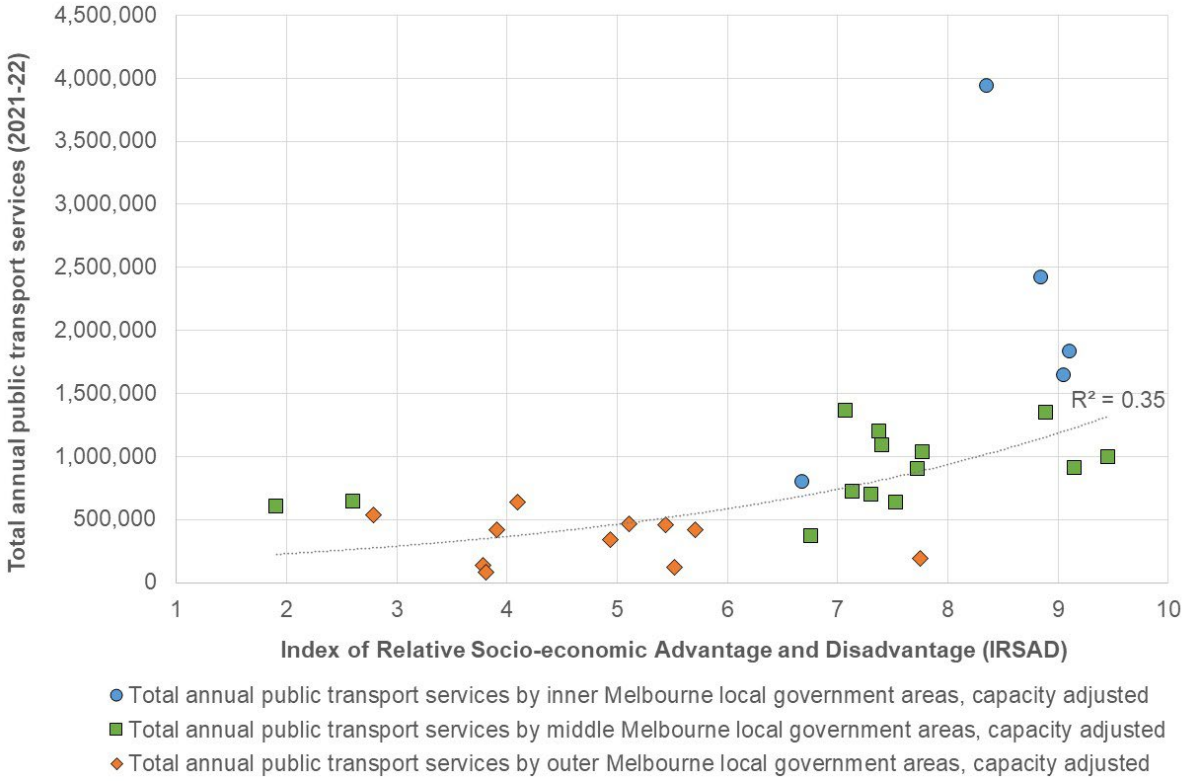


Figure 10: Total annual public transport services (train, tram, bus) by local government area (inner, middle, outer) within 800 metres of apartment dwellings (2021-22).

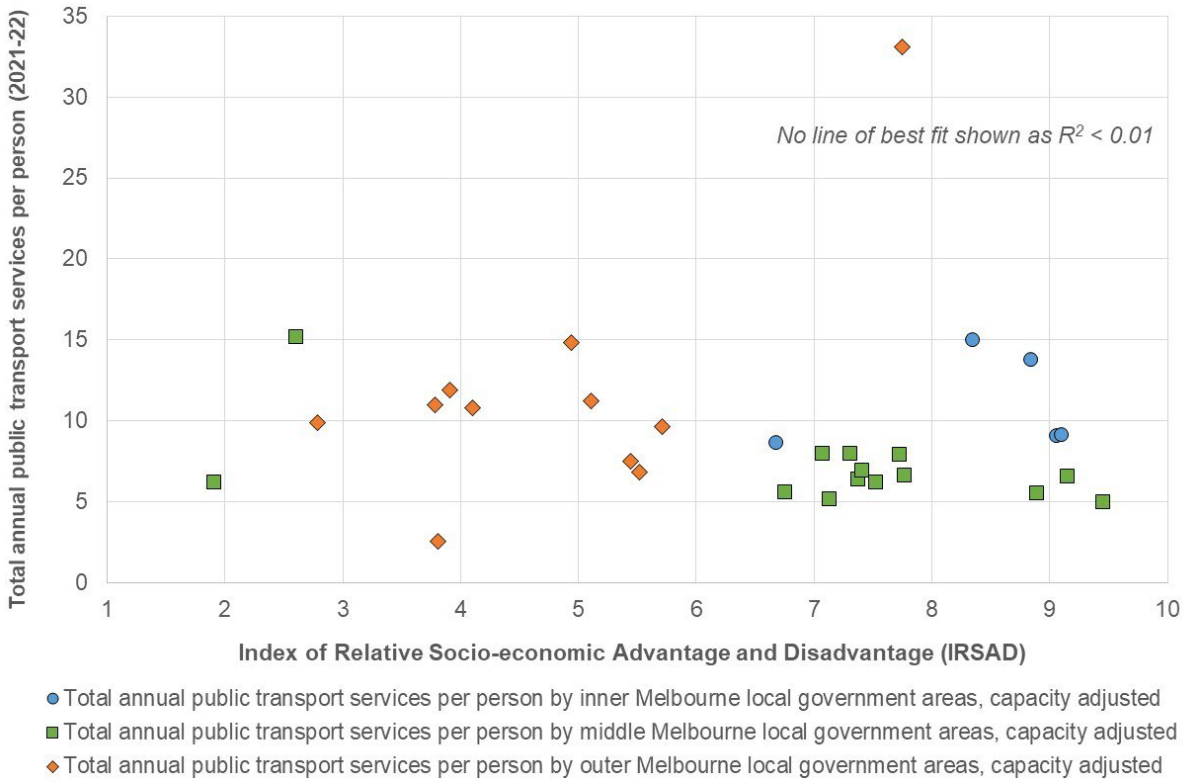


Figure 11: Total annual public transport services (train, tram, bus) per person by local government area (inner, middle, outer) within 800 metres of apartment dwellings (2021-22).

Implications

The research underlying this working paper has tracked the development of apartment housing against public transport service provision in Melbourne over a 19-year period (2003-04 to 2021-22). Little empirical evidence was found that public transport services have changed in response to increases in apartment housing development. Rather, urban consolidation has been attracted towards areas already served by public transport – an example of one-way integration only between public transport and land use. The findings are broadly consistent with previous research in Australian cities which has found declines in public transport services per capita over time[30]. It is also consistent with research in the United States, which has found that an increase in housing density does not necessarily assure an increase in public transport service provision[4].

When incorporating public transport vehicle capacity adjustments, public transport service provision within 800 metres of apartment housing was found to have generally kept pace with population growth. However, the move to larger public transport vehicles is partly due to the modernisation of Melbourne's tram fleet to low-floor, accessible vehicles, rather than in response to increases in apartment housing. Furthermore, considerable variation was found in the results across individual local government areas and public transport lines/routes, consistent with the extra capacity driven by a fleet modernisation agenda. This implies that horizontal equity, expressed by annual capacity-adjusted public transport services per person, is met in areas of apartment housing at a metropolitan level, but not always across individual local government areas or lines/routes. This issue has been raised in previous research[31,32], where studies undertaken at an aggregate (e.g. metropolitan) level have been found to mask differences between local areas. This highlights the importance of measuring equity at both the metropolitan and local level.

Little to no relationship was found between public transport service supply and the Index of Relative Socio-economic Advantage and Disadvantage (IRSAD), implying that more advantaged areas within 800 metres of apartment housing do not necessarily receive a greater number of public transport services per person than less advantaged areas within 800 metres of apartment housing. This finding contrasts previous studies[12,33,34] which tend to consider all residential areas, regardless of housing type, typically finding that residents living in outer suburbs have lower levels of public transport service supply combined with lower levels of socio-economic advantage, in contrast to those living in the inner suburbs. The results of the current research imply that vertical equity is less of an issue for those living within 800 metres of apartment housing, regardless of area type. However, under a progressive policy, there may be calls for less advantaged areas that have a greater need for public transport to receive a greater supply of services, relative to more advantaged areas.

The findings of this research also have broader implications for transport and land use policy. First, increases in public transport service provision need to be better aligned with, and more responsive to, the development of new apartment housing. Here, continued monitoring of new housing development and levels of public transport service provision is essential to inform planning, including the preparation of transport impact assessments that quantify public transport trip generation associated with new apartment housing. This is particularly important in the context of cities seeking to promote urban consolidation and limit outward growth on the fringe. Second, greater efforts need to be directed towards addressing inequities in public transport service provision at a local area and route/line level. Again, continued monitoring of equity in public transport service provision over time provides an important tool for understanding the extent to which this is being achieved.

While this research has contributed to understanding the relationship between apartment housing development and public transport service provision in Melbourne, and the extent to which this has supported equity, it is also subject to some limitations. First, data on bus services was only available from 2015-16 onwards, limiting the interpretation of results for earlier years. Second, the extent to which apartment housing influences public transport service provision over time could not be assessed due to a lack of data on other factors that may influence public transport service provision (e.g. ridership, crowding, political and investment decisions). Future research should seek to understand the relative contribution of these factors to public transport service provision over time. In addition, broader questions remain about whether the public transport response (or the lack of response) to housing development in Melbourne has been adequate to fulfil broader policy objectives of sustainable development such as the 15/20-minute city. Future research should seek to explore these issues in greater detail, both from a resident and planning agency perspective.

Appendix 1: Longitudinal trend analysis (train, tram and bus), 2015-16 to 2021-22

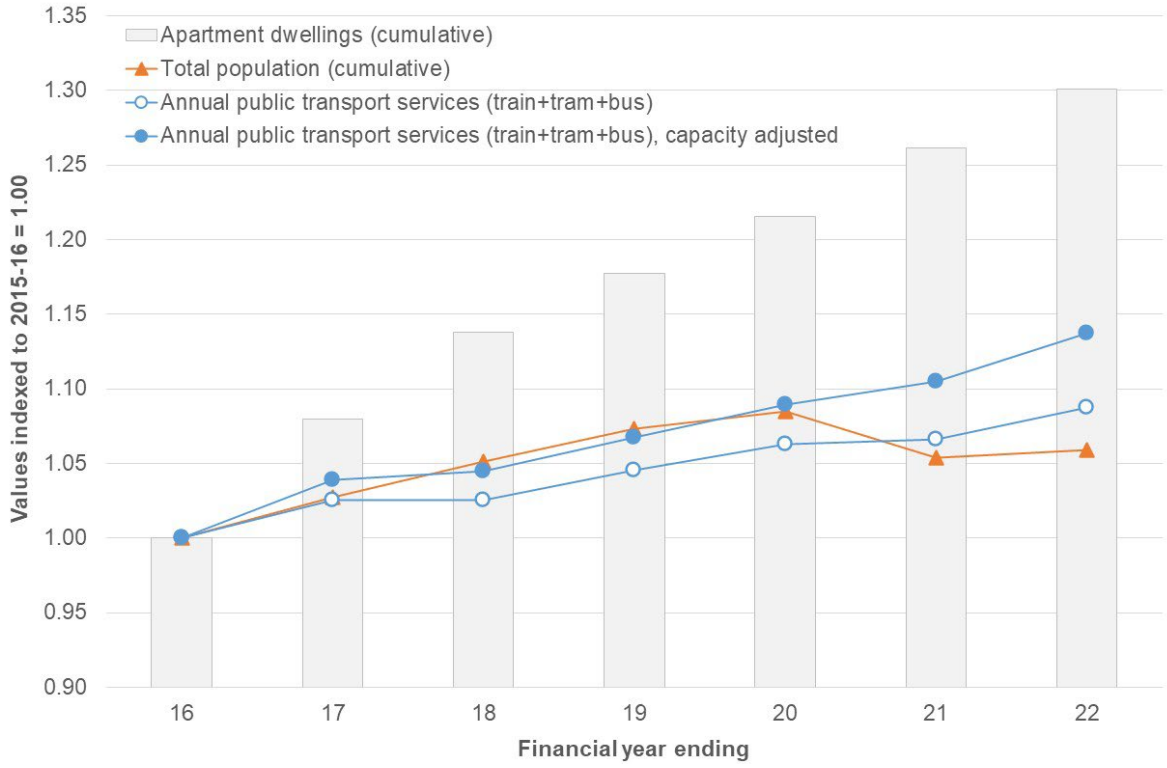


Figure A1: Trend analysis for metropolitan Melbourne of apartment housing development vs. total population and public transport services (train, tram, bus) within 800 metres of apartment dwellings (2015-16 to 2021-22).

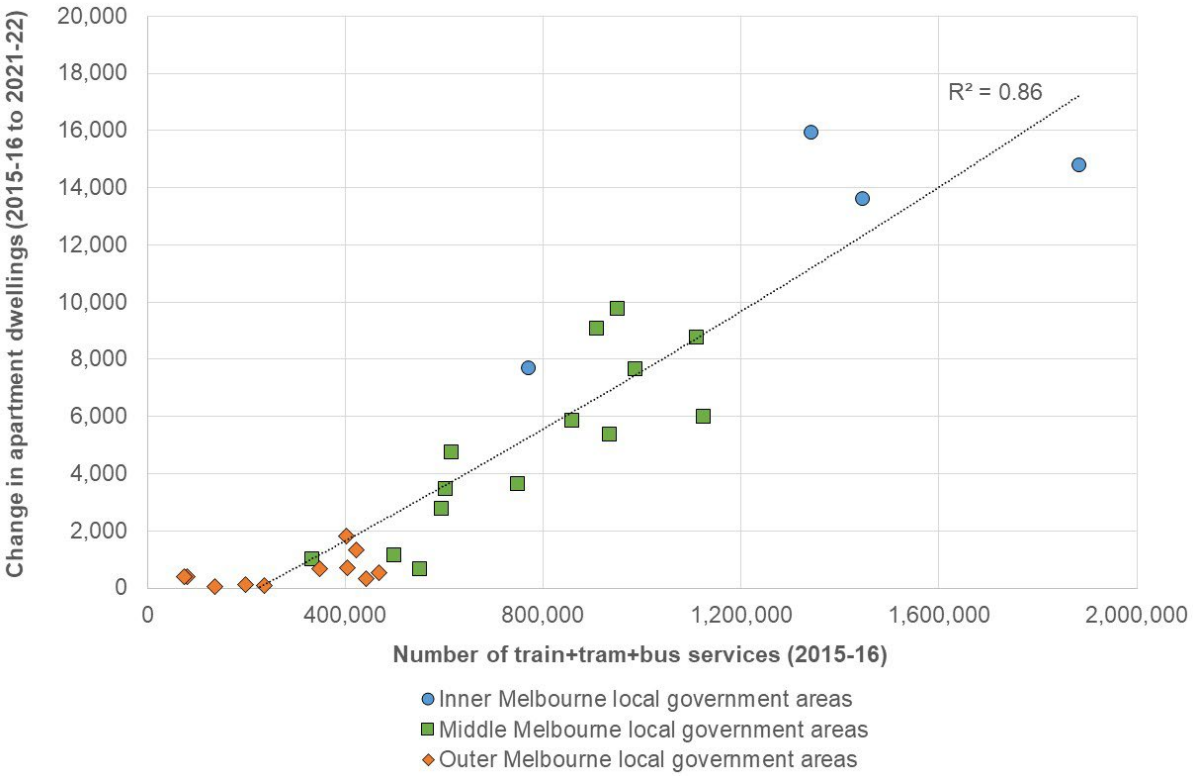


Figure A2: Annual public transport services (tram, train, bus) in 2015-16 across local government areas within 800 metres of apartment dwellings vs. change in number of apartment dwellings (2015-16 to 2021-22).

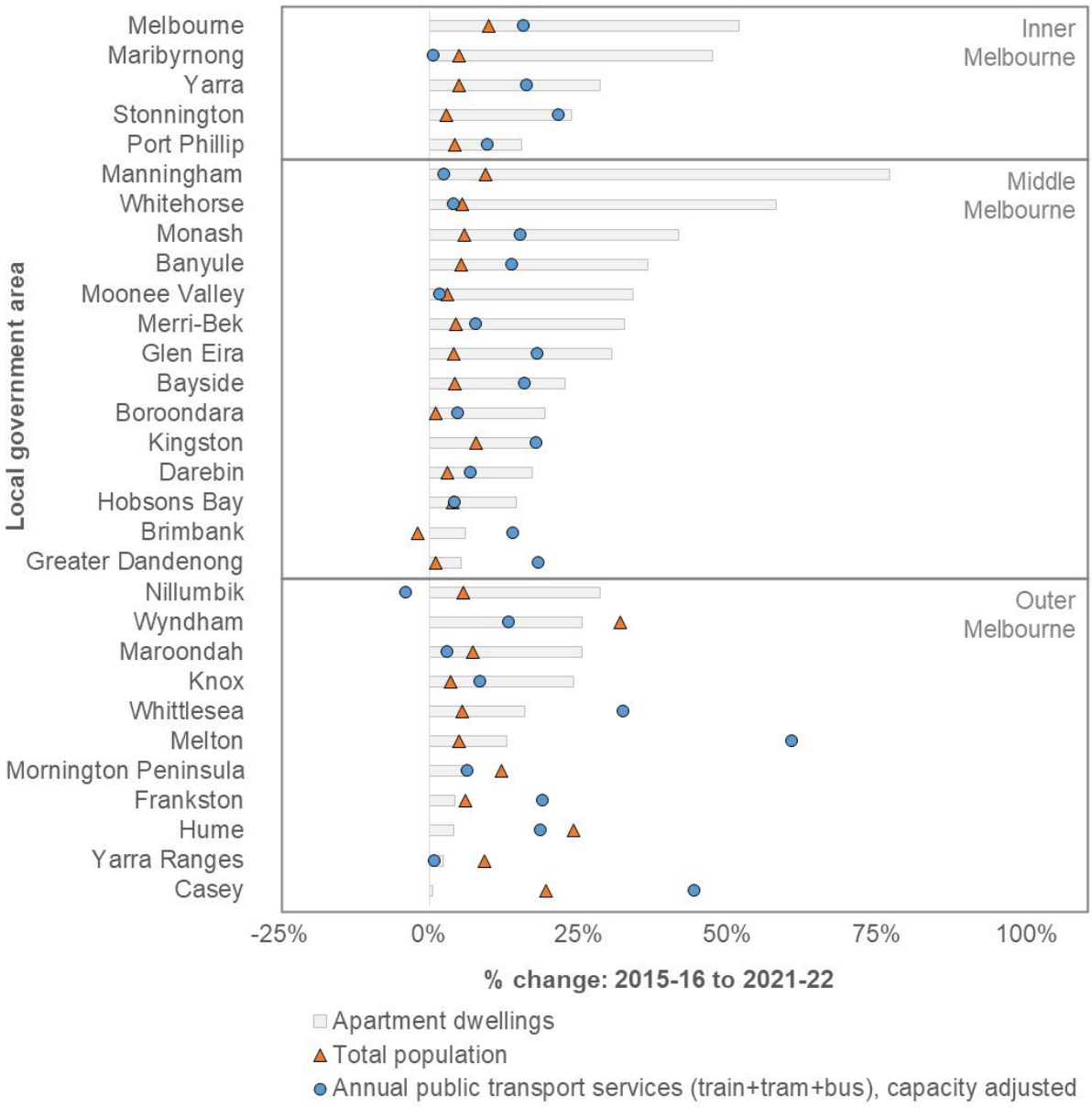


Figure A3: Change between 2015-15 and 2021-22 across local government areas in apartment dwellings, total population, and public transport services (train, tram, bus) within 800 metres of apartment dwellings.

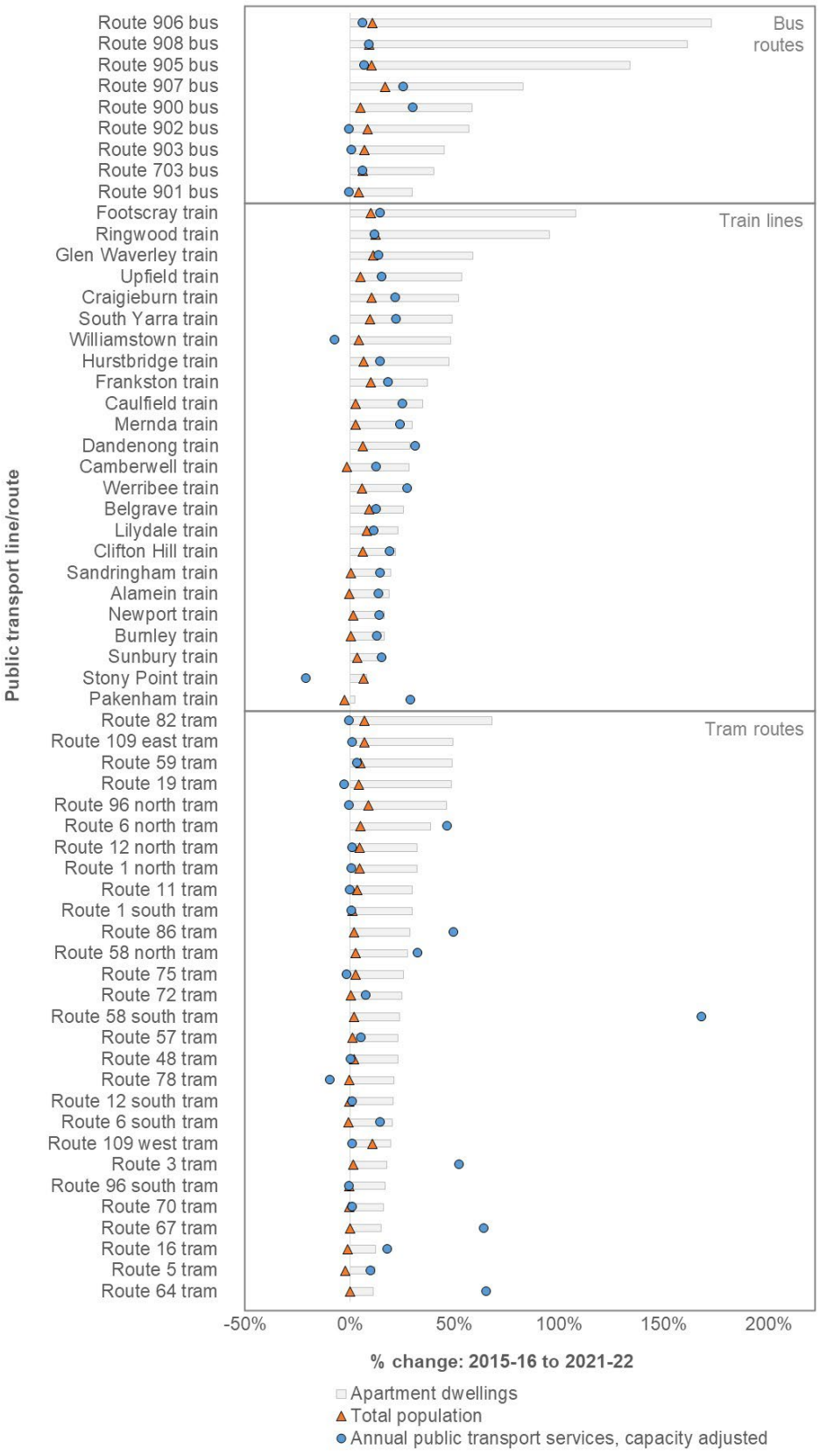


Figure A4: Change between 2015-16 and 2021-22 across public transport lines/routes in apartment dwellings, total population, and public transport services (train, tram, bus) within 800 metres of apartment dwellings.

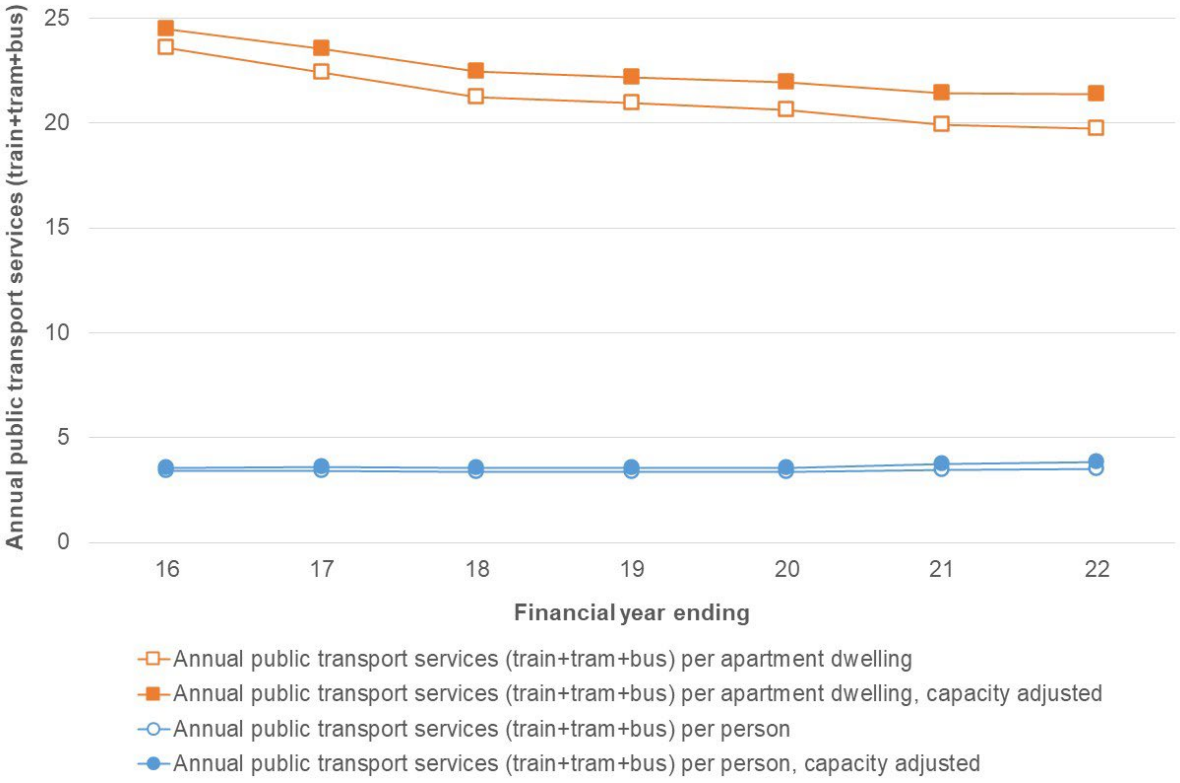


Figure A5: Annual public transport services (tram, train, bus) per apartment dwelling and per person within 800 metres of apartment dwellings across metropolitan Melbourne (2015-16 to 2021-22).

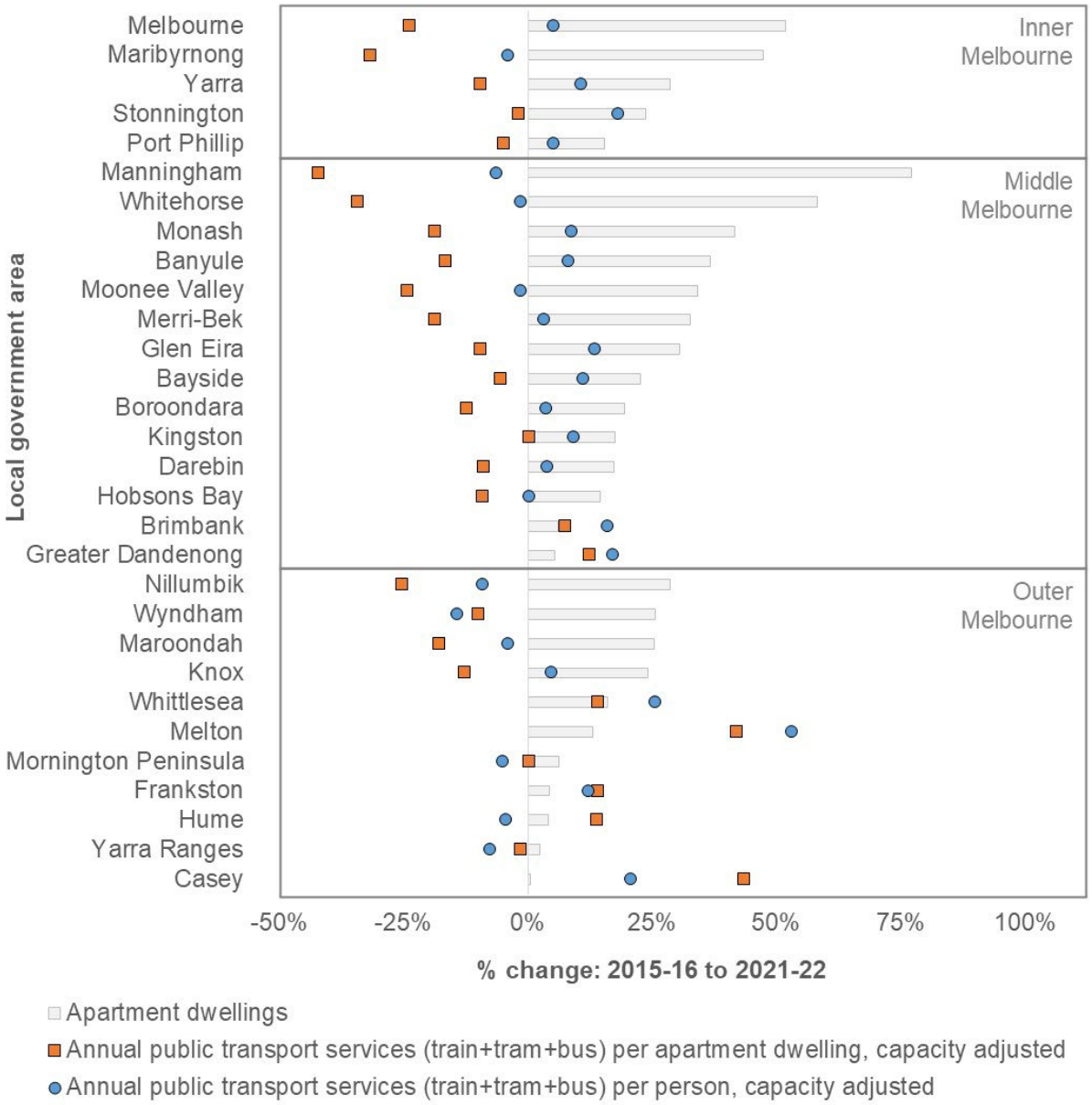


Figure A6: Change between 2015-16 and 2021-22 across local government areas in annual public transport services (train, tram, bus) per apartment dwelling and per person within 800 metres of apartment dwellings.

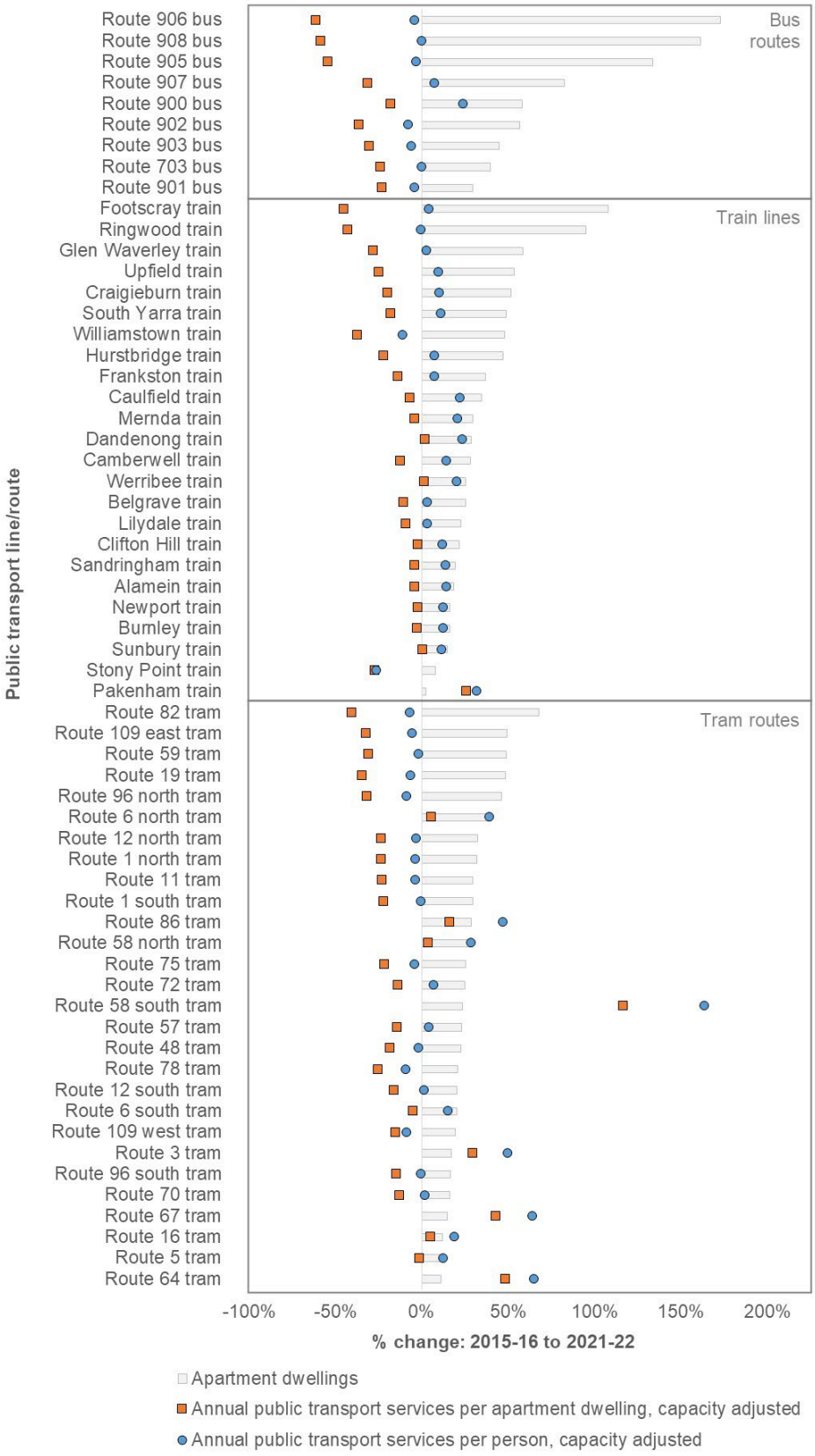


Figure A7: Change between 2015-16 and 2021-22 across lines/routes in annual public transport services (train, tram, bus) per apartment dwelling and per person within 800 metres of apartment dwellings.

Appendix 2: Results by area (train & tram only), train line and tram route, 2003-04 to 2021-22

This Appendix shows results for Greater Melbourne as a whole, for Local Government Areas within Greater Melbourne, and for train lines and tram routes within Greater Melbourne, by year from 2003-04.

The information shown covers changes in apartments, population and public transport services (train and tram only). Bus services are not included as their numbers are not available for the full range of years since 2003-04. See Appendix 3 for results that include bus routes, but only from 2015-16.

Two indicators are shown for public transport services:

- 'annual services' - the raw number of services each year, and
- 'annual services, capacity adjusted' - the number of services adjusted to account for changes in the passenger carrying capacity, which is particularly relevant for tram (and some train) services in Melbourne where larger vehicle types have been progressively introduced on some routes.

For Greater Melbourne and Local Government Areas, services are train and tram services for the relevant financial year. For train lines and tram routes, they are train or tram services respectively.

The values shown on the charts are aligned so that they are all indexed to 100 in the starting year.

The charts and maps show apartments constructed from 2003-04.

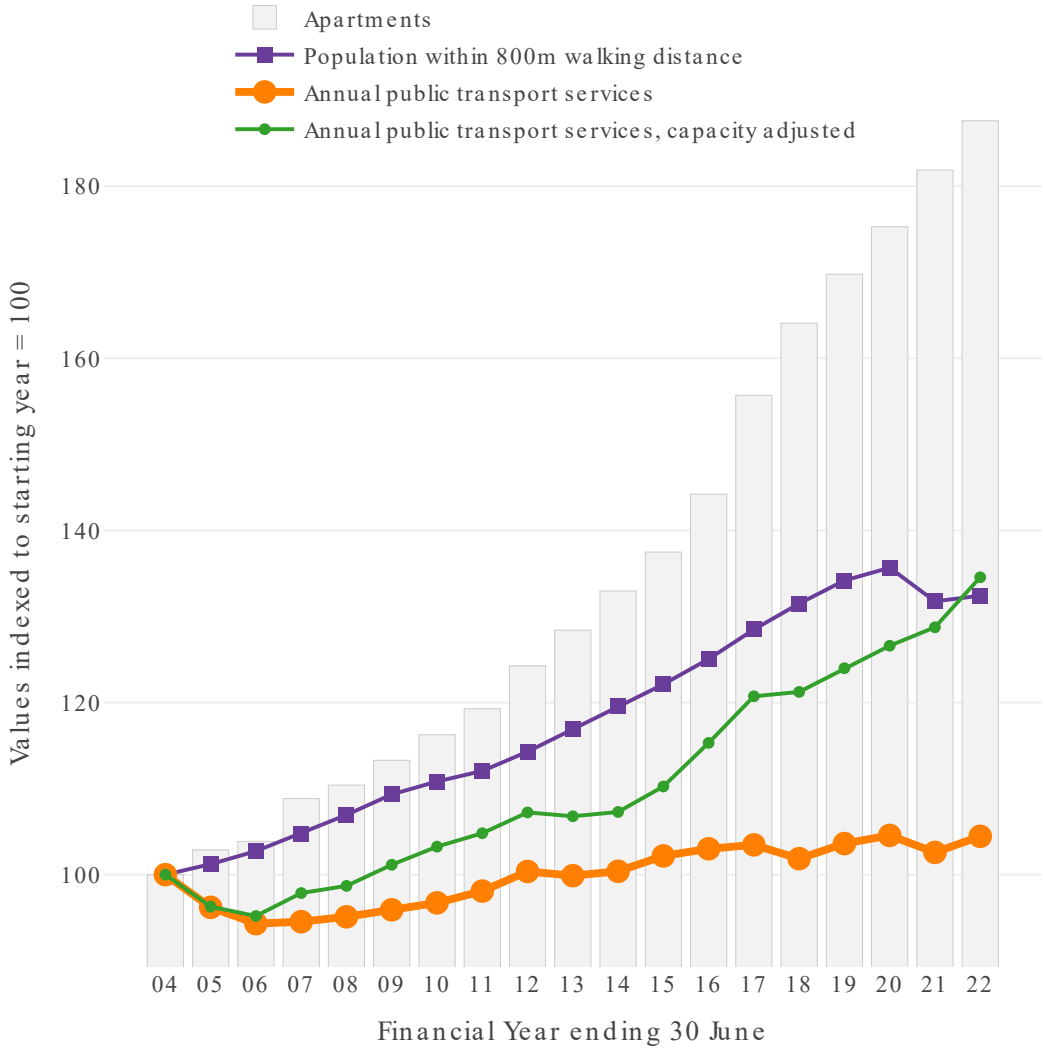
The '800m walkable catchments' shown on the maps are:

- for Greater Melbourne and Local Government Areas, places within 800m walking distance of the public transport stops that are walkable from the apartments in those areas; and
- for train lines and tram routes, places within 800m walking distance of the stations or stops that make up the train line or tram route, where those stations or stops have apartments within their catchments.

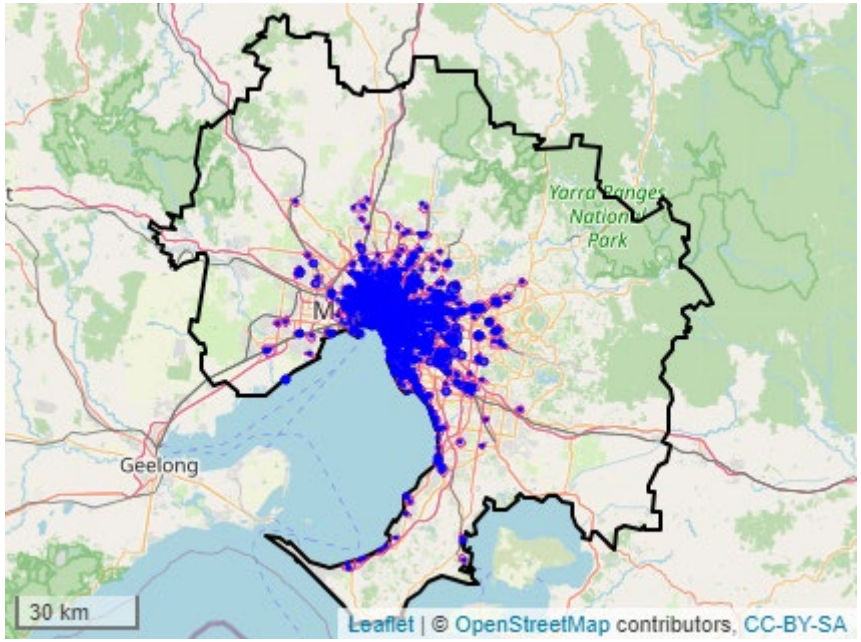
'Population' is the population of the walkable catchment.

Results for train lines and tram routes exclude stations and stops within the Melbourne Local Government Area (to avoid the large apartment numbers in that area overshadowing results along the full extent of the line or route). Train 'lines' are segments of full lines, split at junctions. The number of services for each segment is the maximum number of services at any station within that segment.

Greater Melbourne

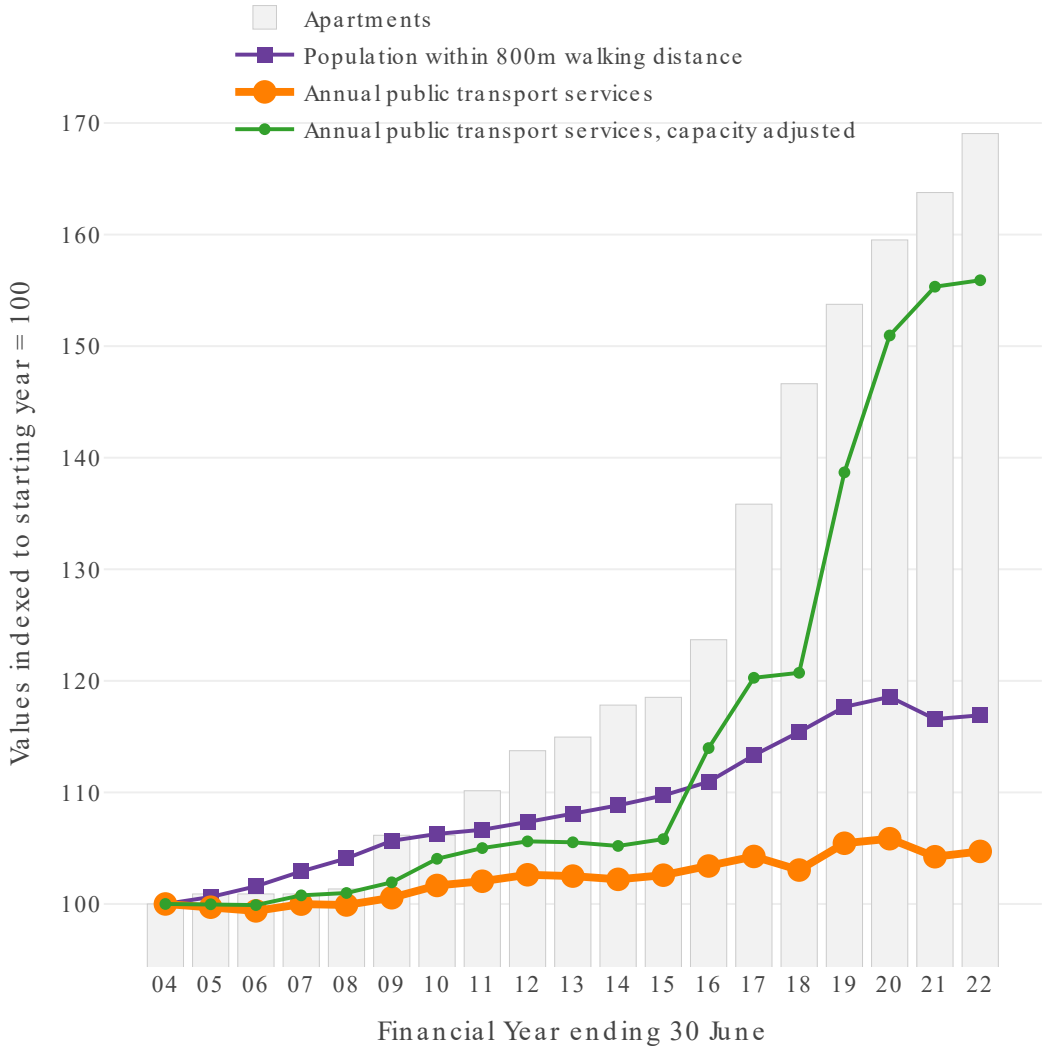


Change in apartments	+ 87.6 %
Change in population	+ 32.4 %
Change in public transport services	+ 4.5 %
Change in public transport services, capacity adjusted	+ 34.6 %

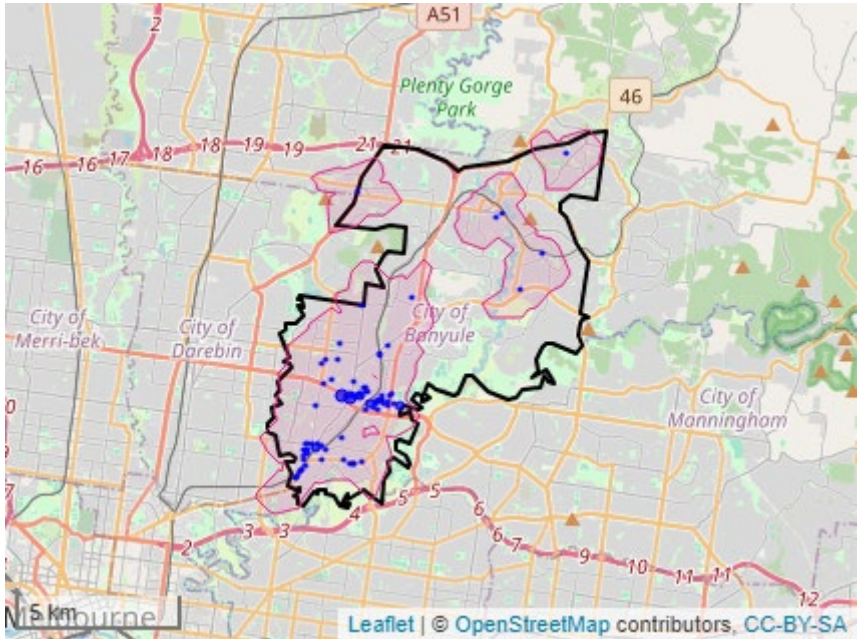


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Greater Melbourne

Local Government Area: Banyule

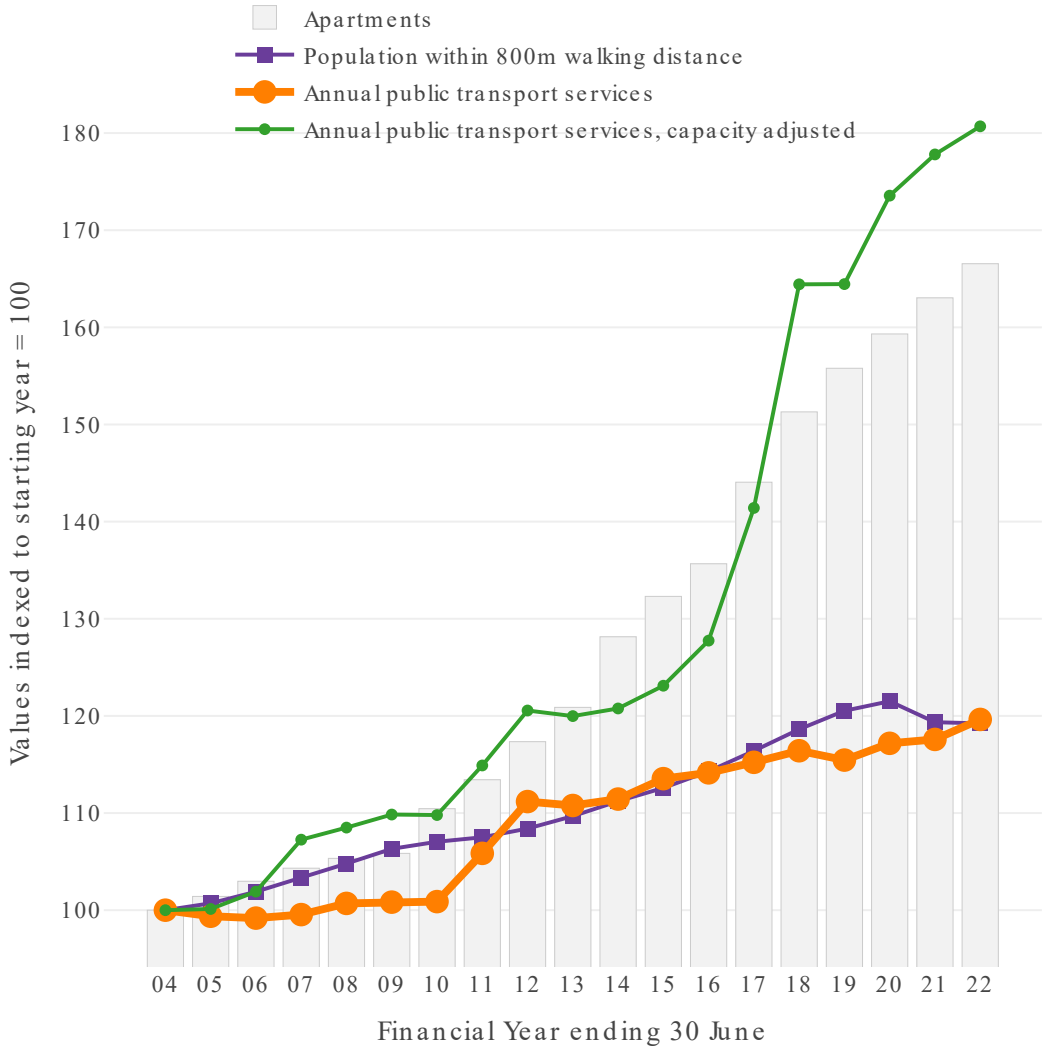


Change in apartments	+ 69.1 %
Change in population	+ 16.9 %
Change in public transport services	+ 4.7 %
Change in public transport services, capacity adjusted	+ 55.9 %

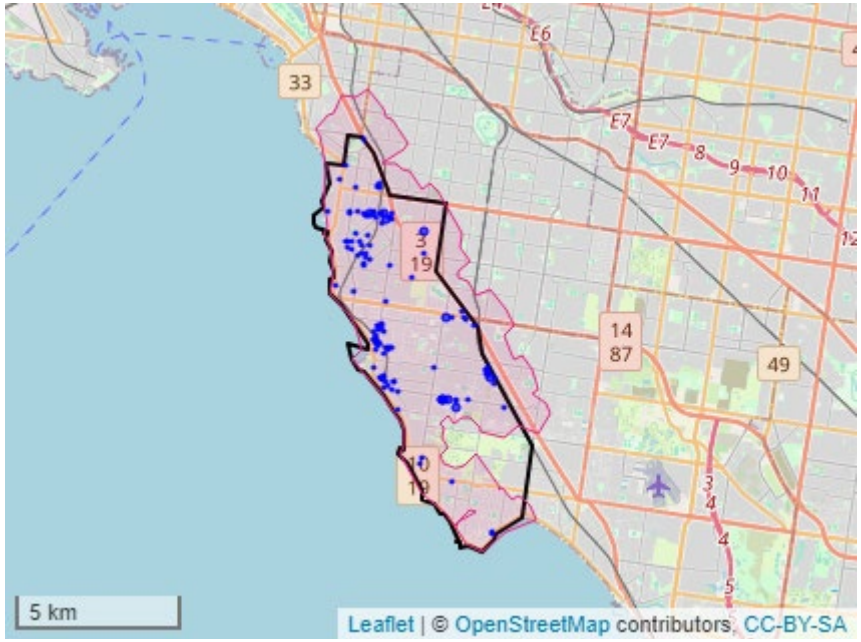


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Banyule

Local Government Area: Bayside

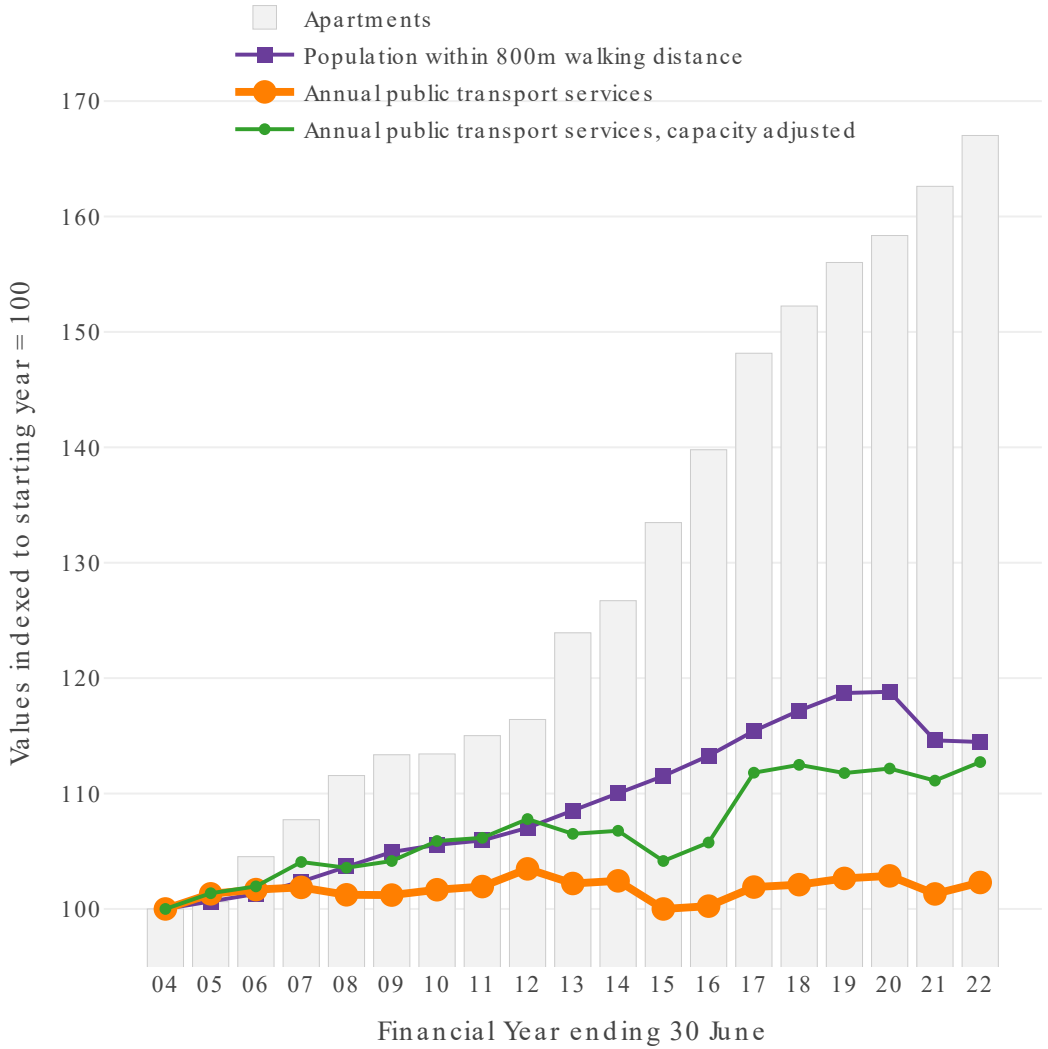


Change in apartments	+ 66.5 %
Change in population	+ 19.2 %
Change in public transport services	+ 19.6 %
Change in public transport services, capacity adjusted	+ 80.7 %

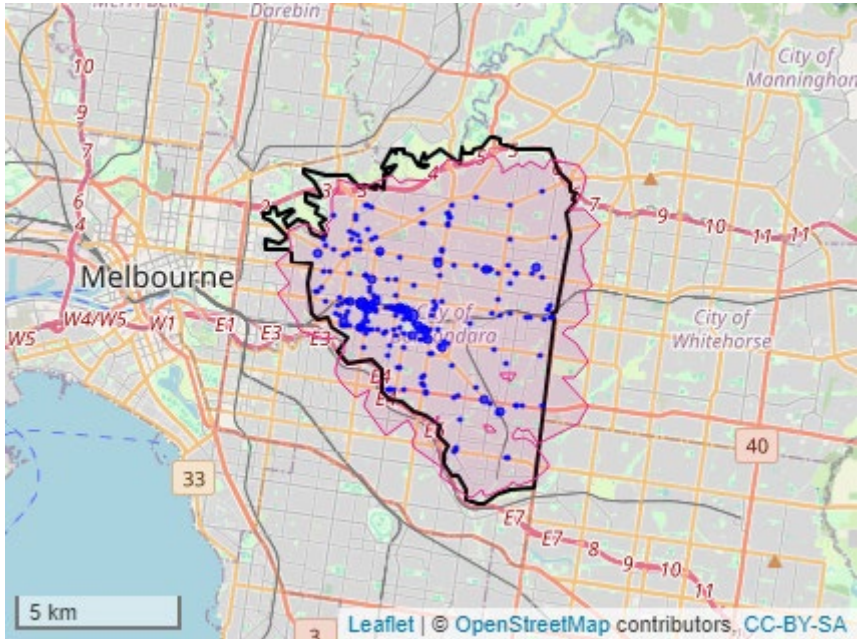


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Bayside

Local Government Area: Boroondara

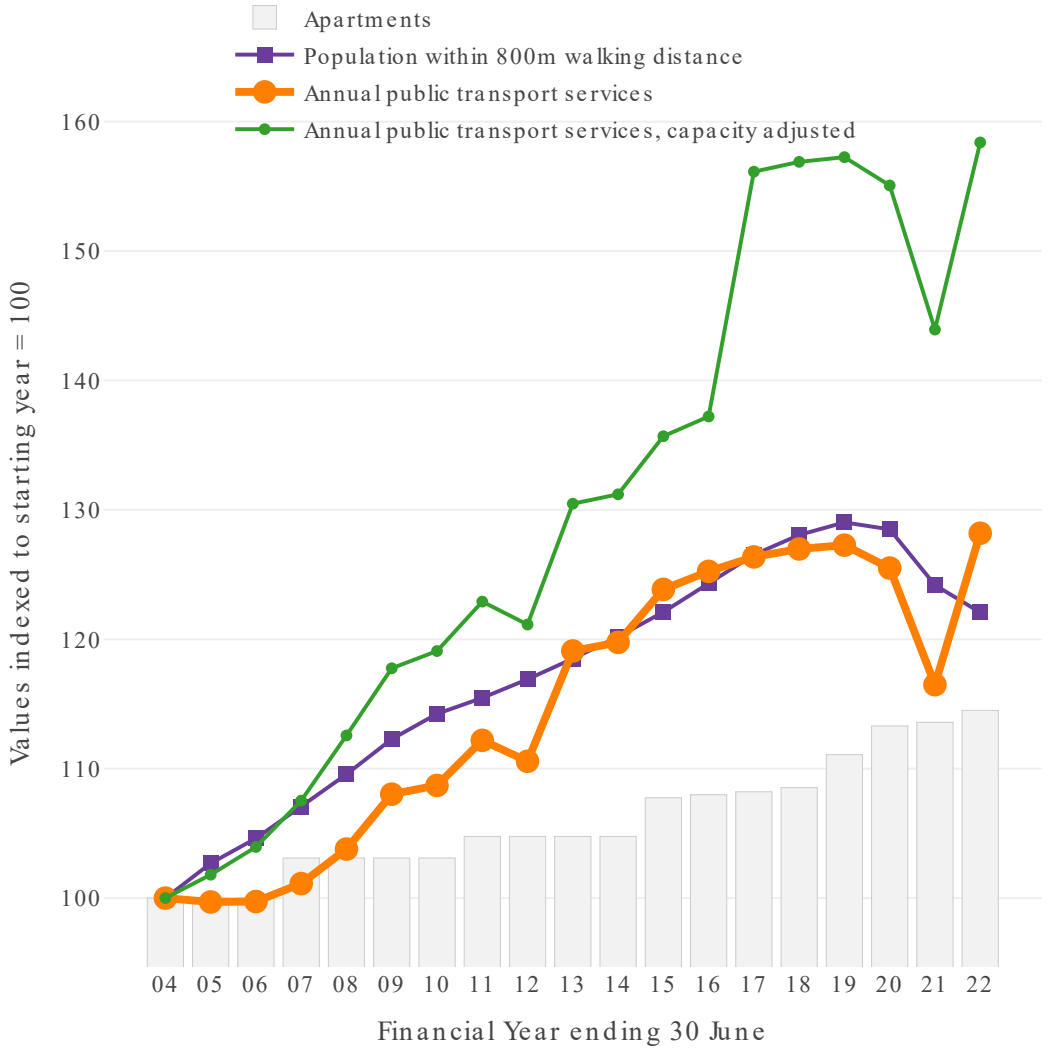


Change in apartments	+ 67.0 %
Change in population	+ 14.5 %
Change in public transport services	+ 2.3 %
Change in public transport services, capacity adjusted	+ 12.7 %

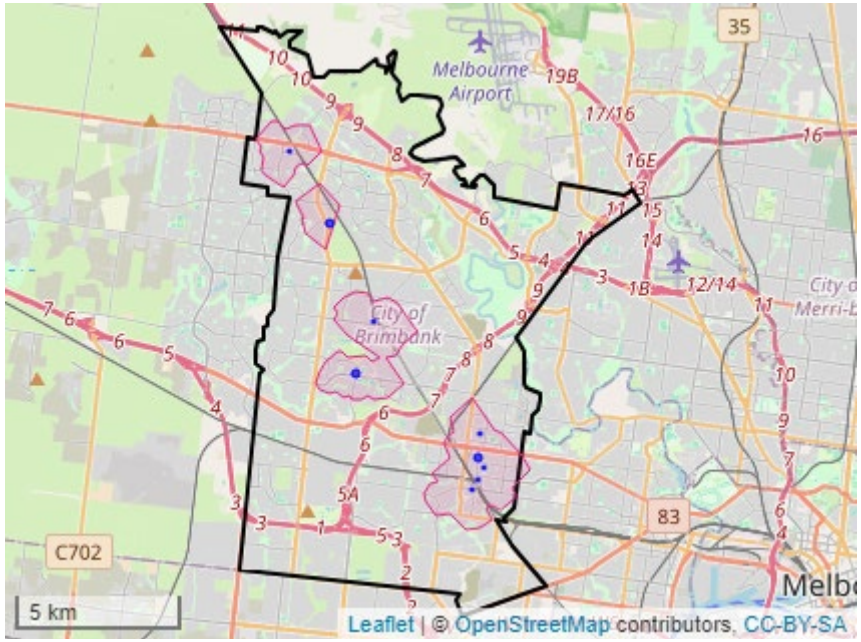


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Boroondara

Local Government Area: Brimbank

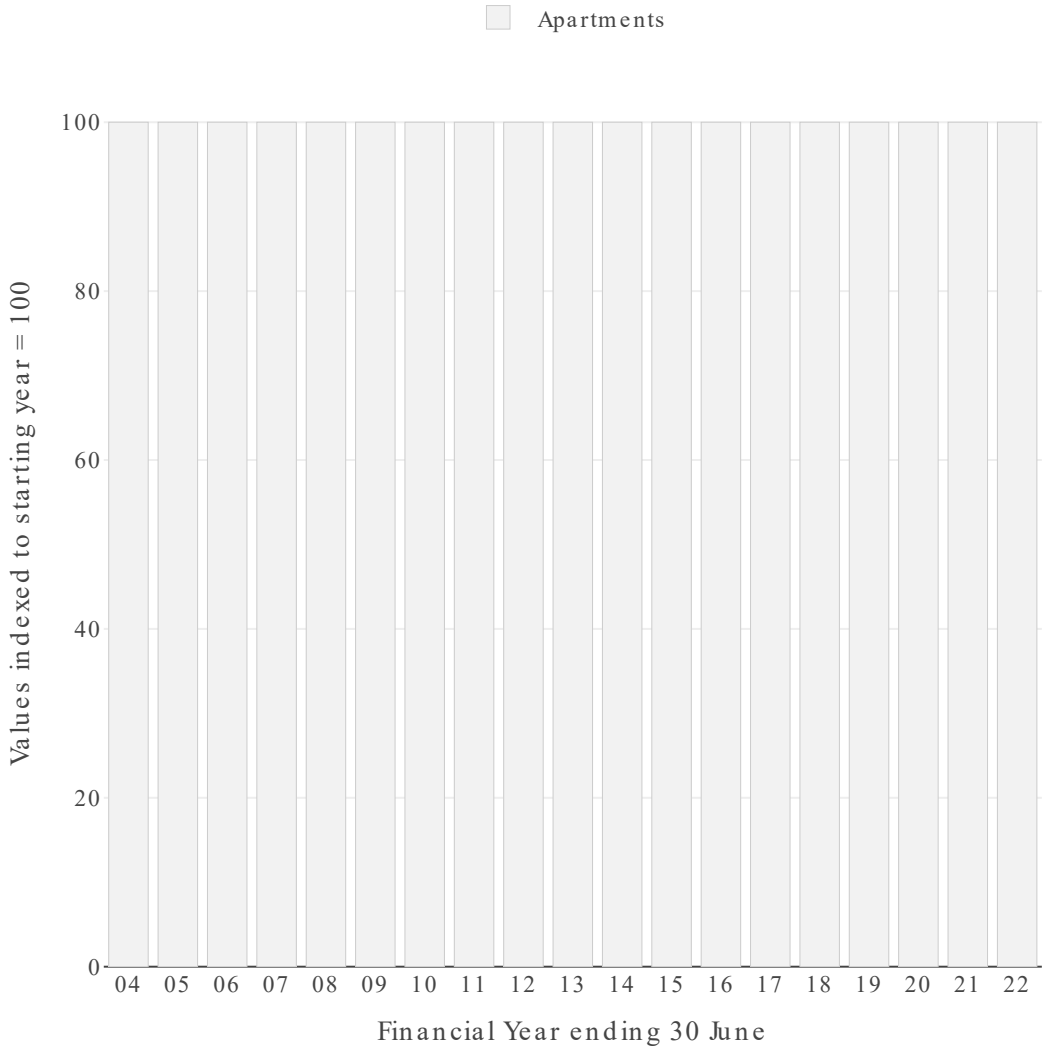


Change in apartments	+ 14.5 %
Change in population	+ 22.1 %
Change in public transport services	+ 28.2 %
Change in public transport services, capacity adjusted	+ 58.4 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Brimbank

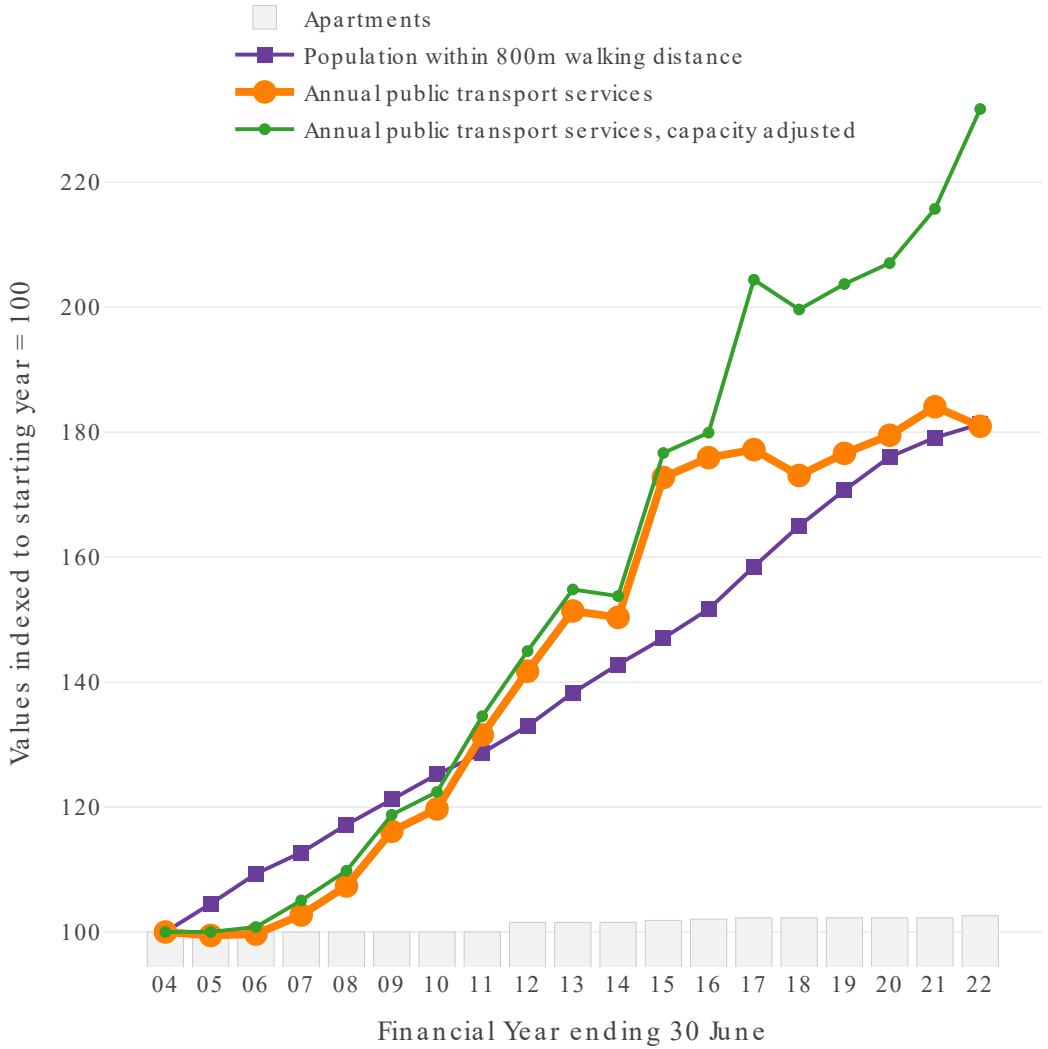
Local Government Area: Cardinia



Change in apartments	0.0 %
Change in population	-
Change in public transport services	-
Change in public transport services, capacity adjusted	-

Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Cardinia

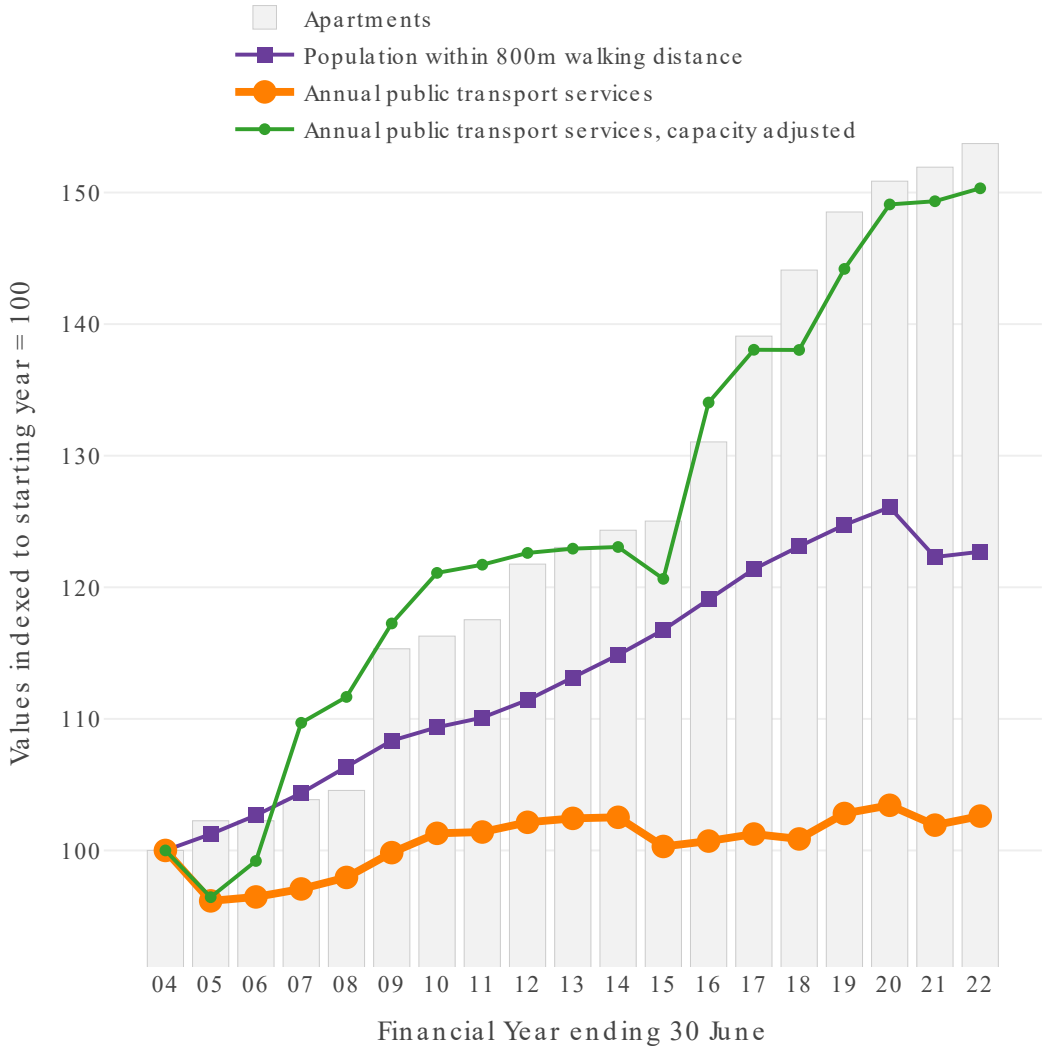
Local Government Area: Casey



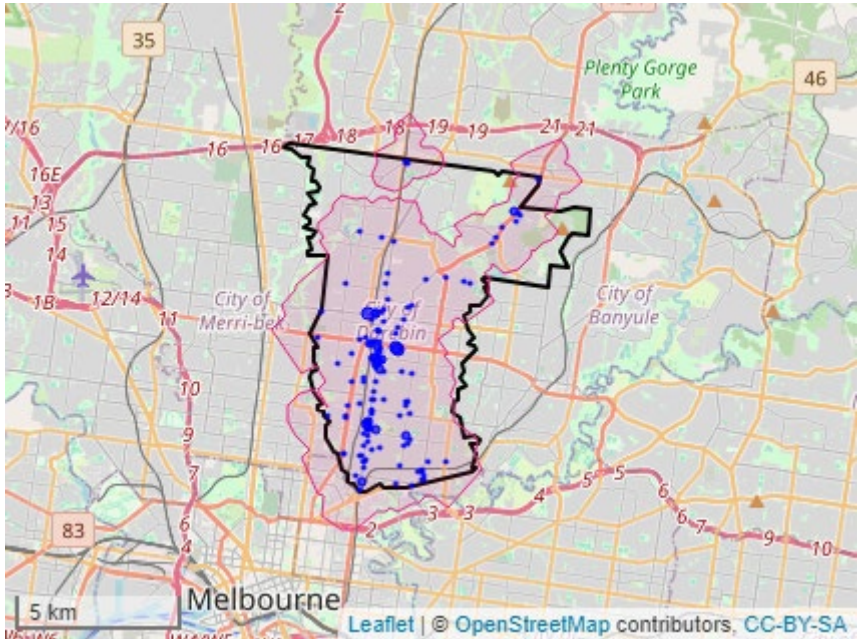
Change in apartments	+ 2.6 %
Change in population	+ 81.3 %
Change in public transport services	+ 80.9 %
Change in public transport services, capacity adjusted	+ 131.7 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Casey

Local Government Area: Darebin

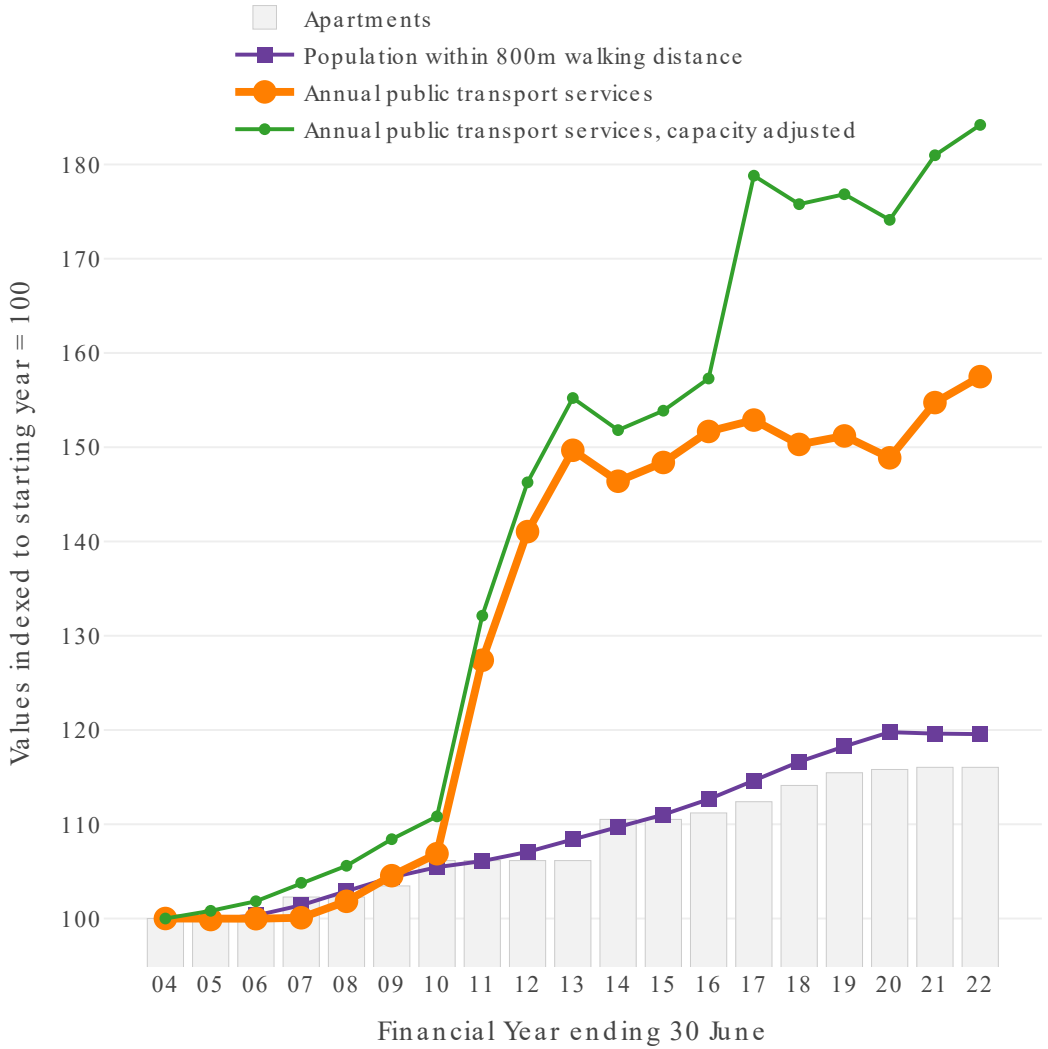


Change in apartments	+ 53.7 %
Change in population	+ 22.7 %
Change in public transport services	+ 2.6 %
Change in public transport services, capacity adjusted	+ 50.3 %

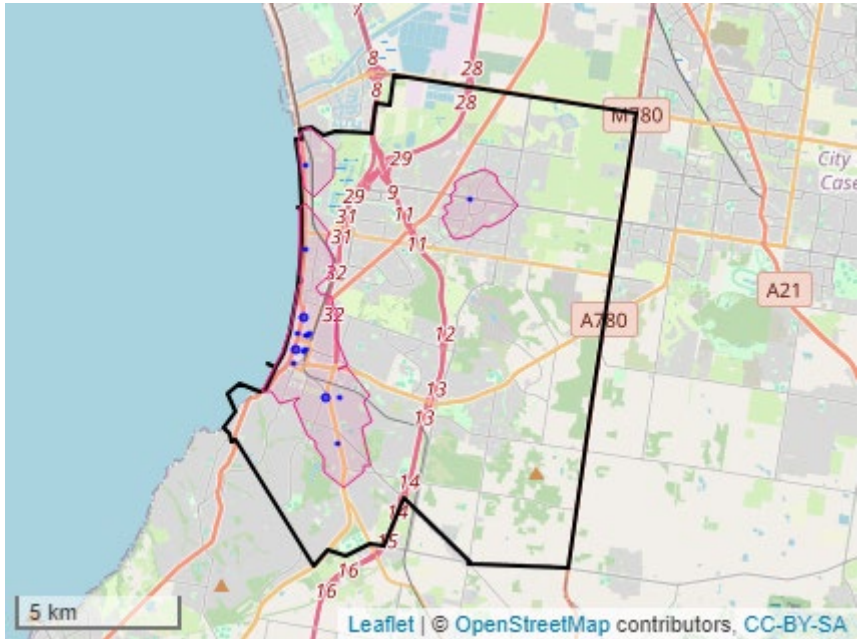


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Darebin

Local Government Area: Frankston

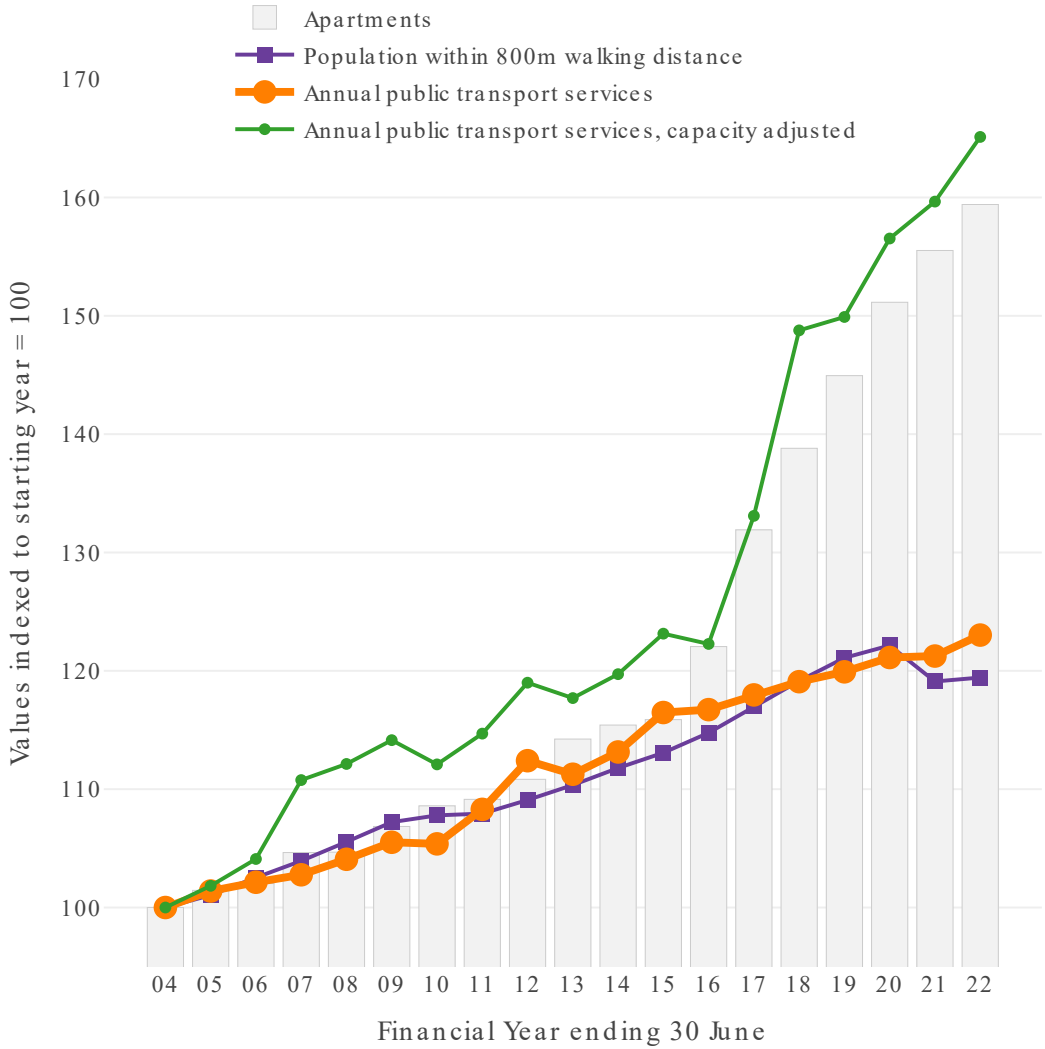


Change in apartments	+ 16.0 %
Change in population	+ 19.6 %
Change in public transport services	+ 57.5 %
Change in public transport services, capacity adjusted	+ 84.2 %

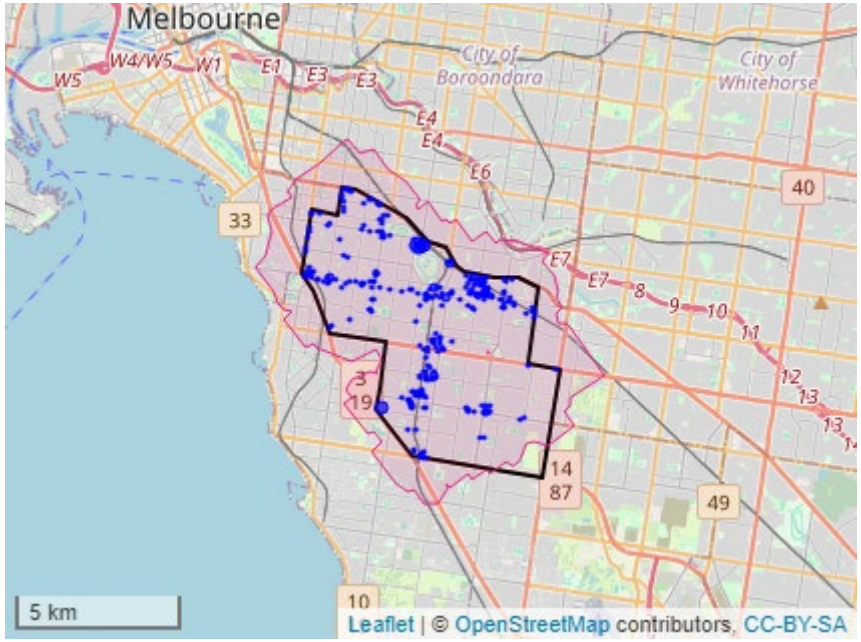


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Frankston

Local Government Area: Glen Eira

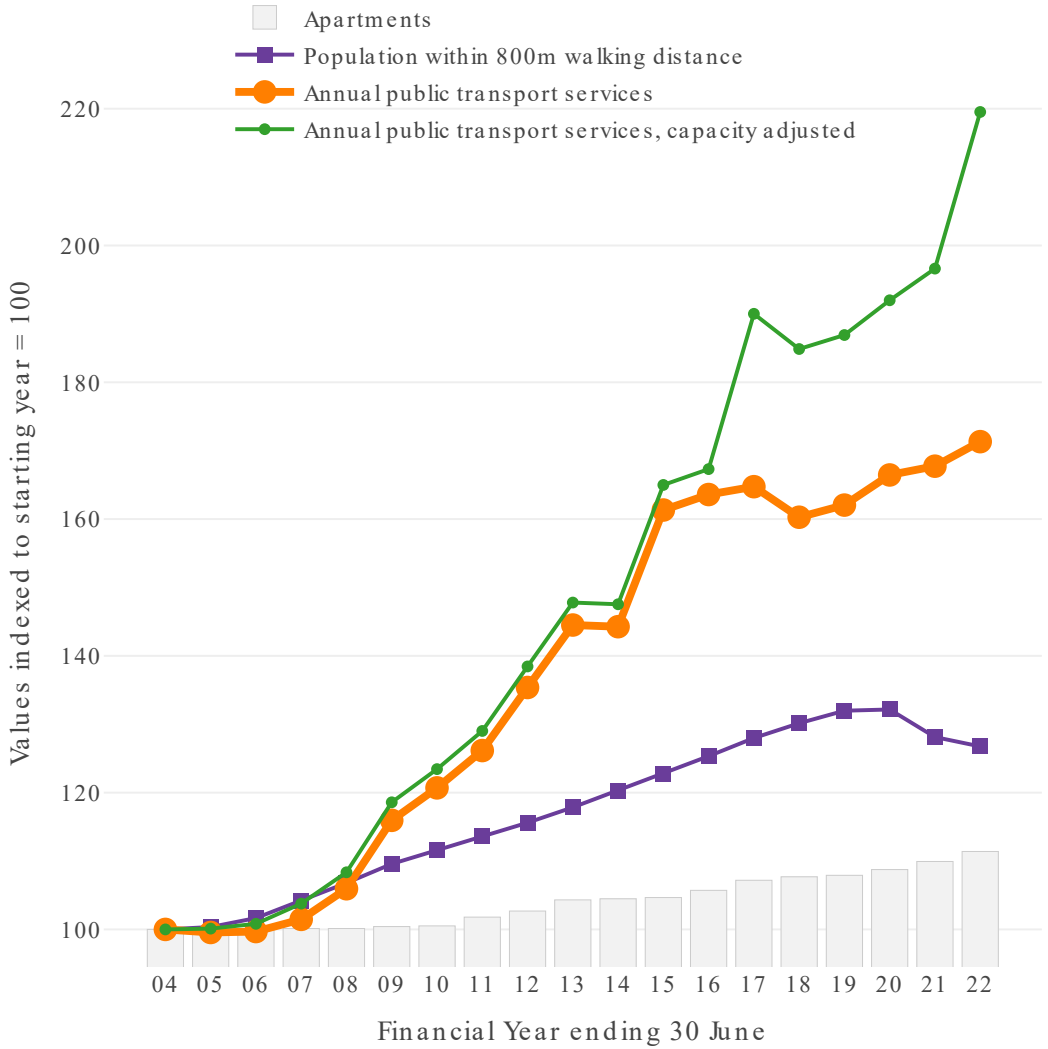


Change in apartments	+ 59.4 %
Change in population	+ 19.4 %
Change in public transport services	+ 23.0 %
Change in public transport services, capacity adjusted	+ 65.1 %

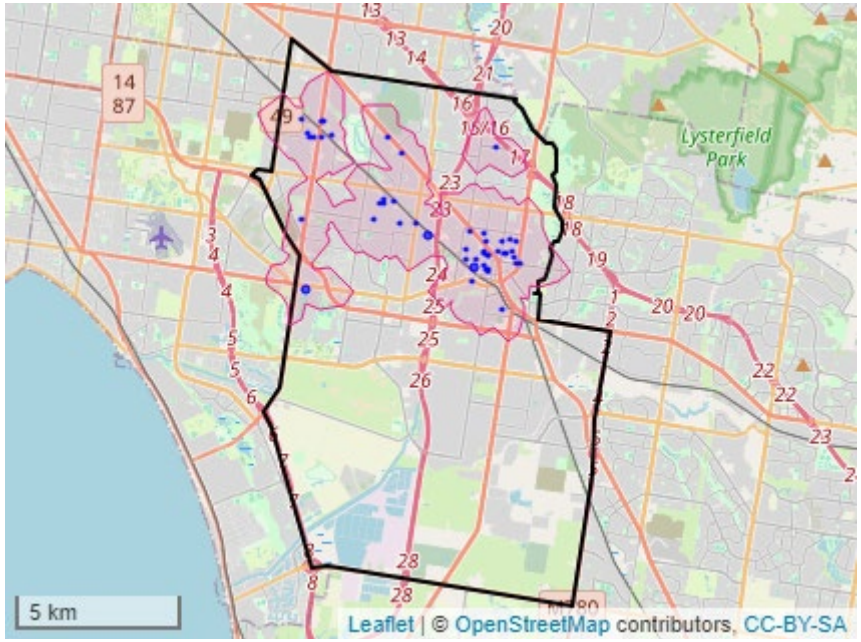


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Glen Eira

Local Government Area: Greater Dandenong

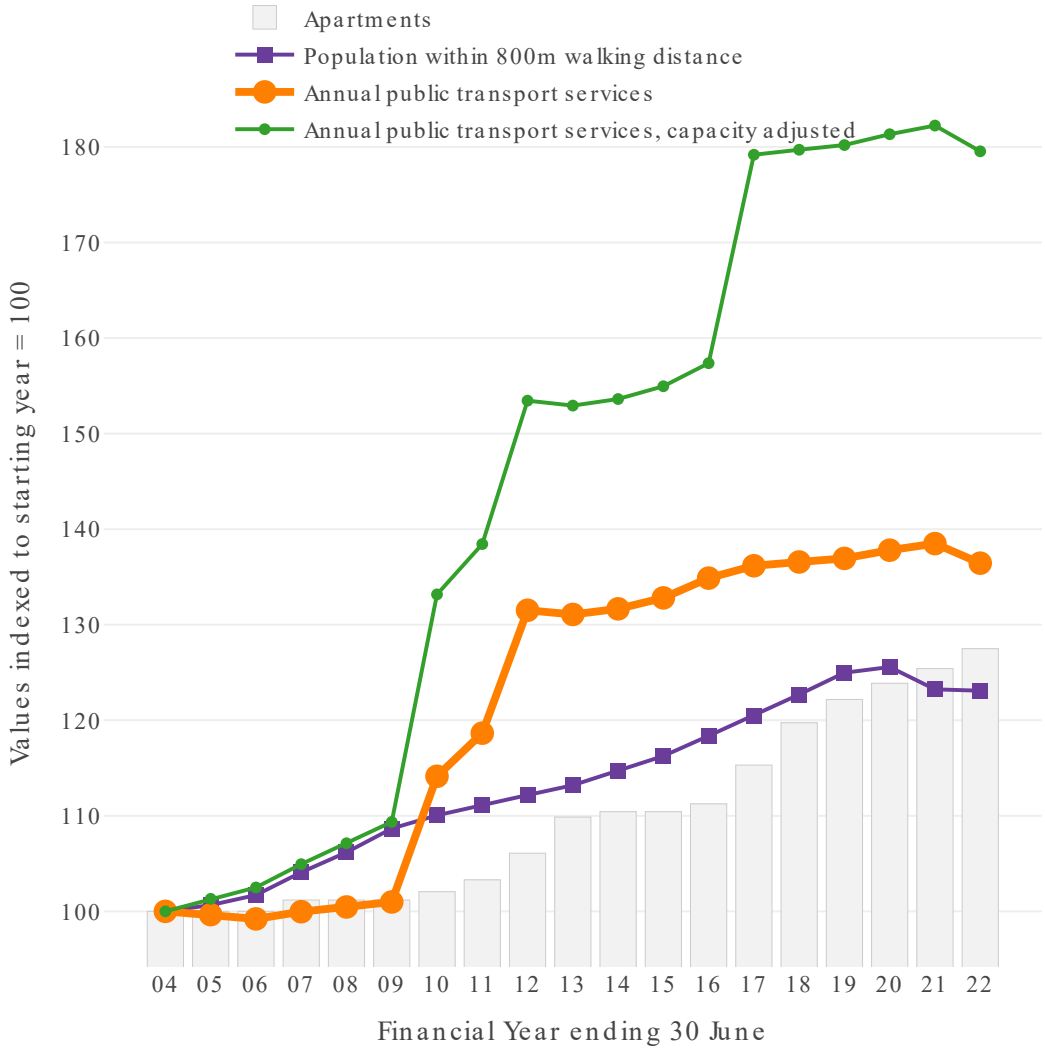


Change in apartments	+ 11.4 %
Change in population	+ 26.8 %
Change in public transport services	+ 71.3 %
Change in public transport services, capacity adjusted	+ 119.5 %

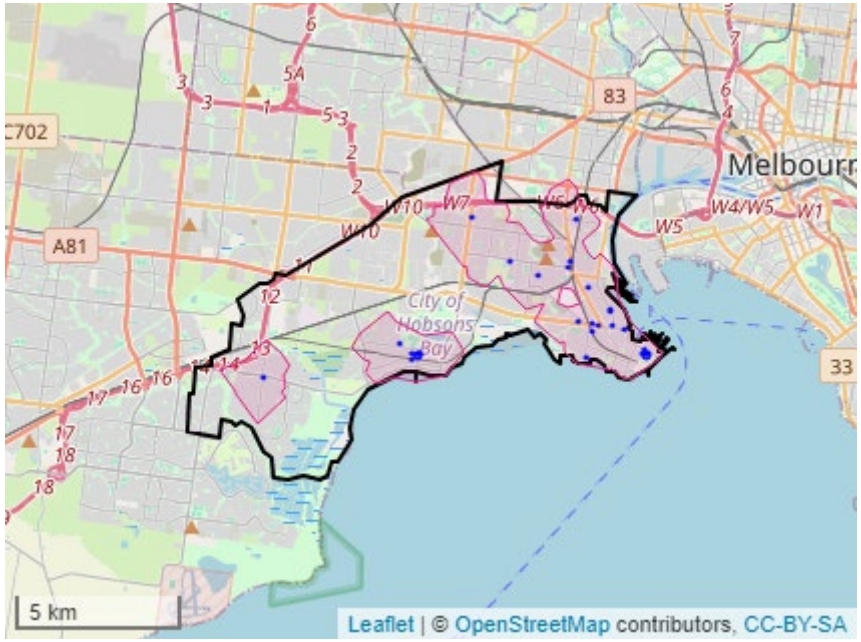


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Greater Dandenong

Local Government Area: Hobsons Bay

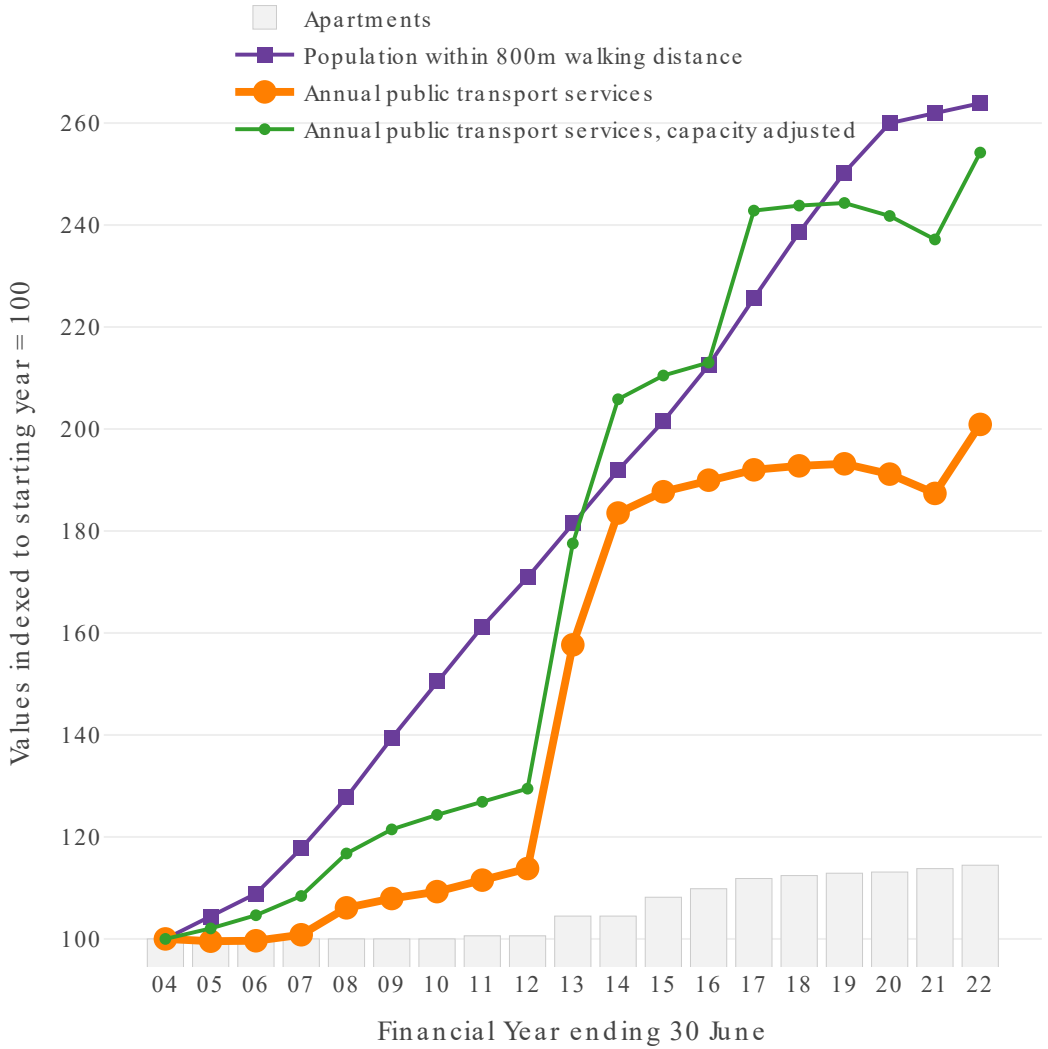


Change in apartments	+ 27.5 %
Change in population	+ 23.1 %
Change in public transport services	+ 36.4 %
Change in public transport services, capacity adjusted	+ 79.5 %

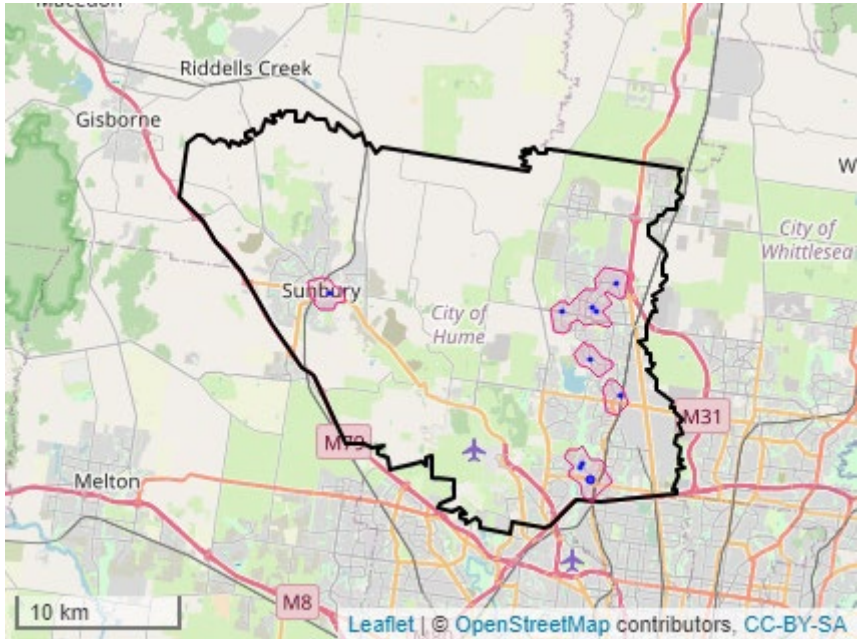


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Hobsons Bay

Local Government Area: Hume

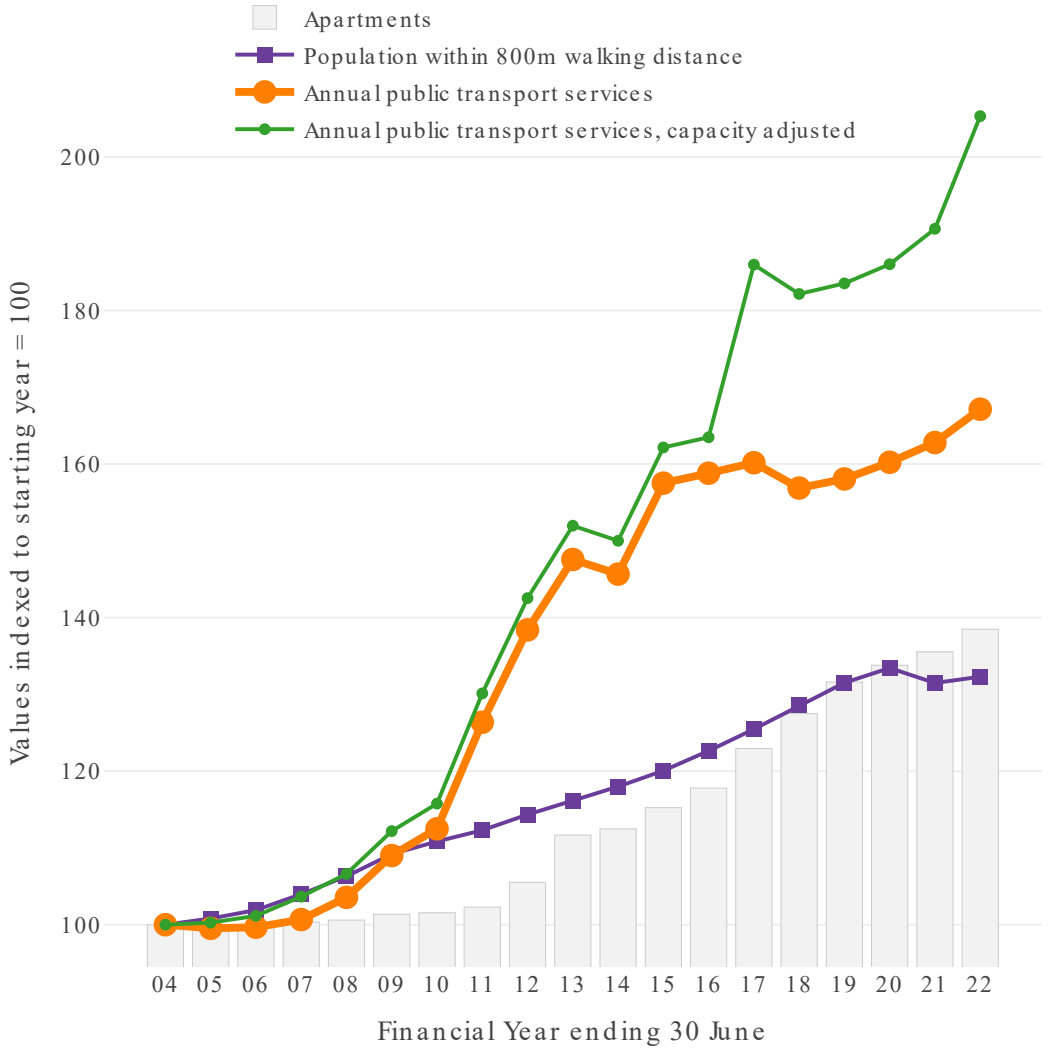


Change in apartments	+ 14.5 %
Change in population	+ 163.9 %
Change in public transport services	+ 100.9 %
Change in public transport services, capacity adjusted	+ 154.2 %

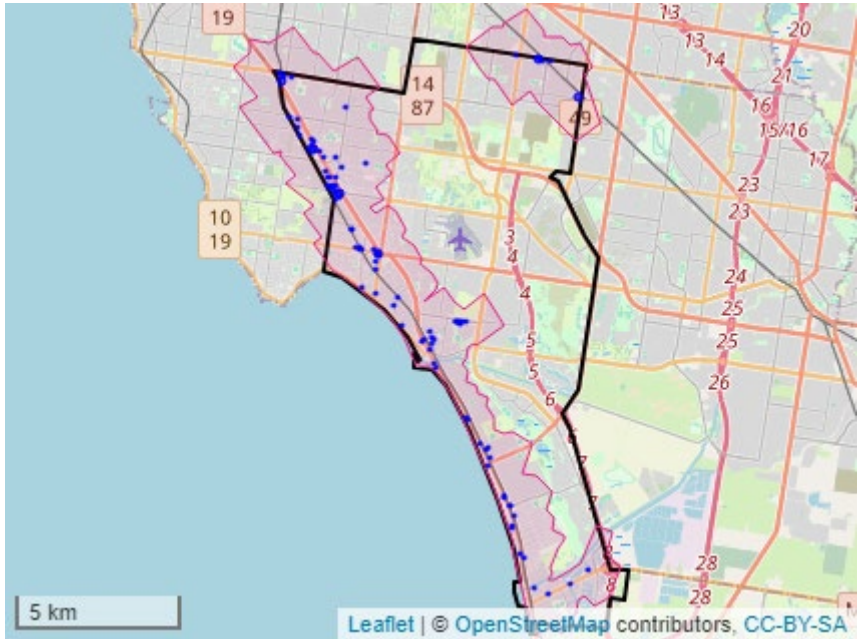


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Hume

Local Government Area: Kingston

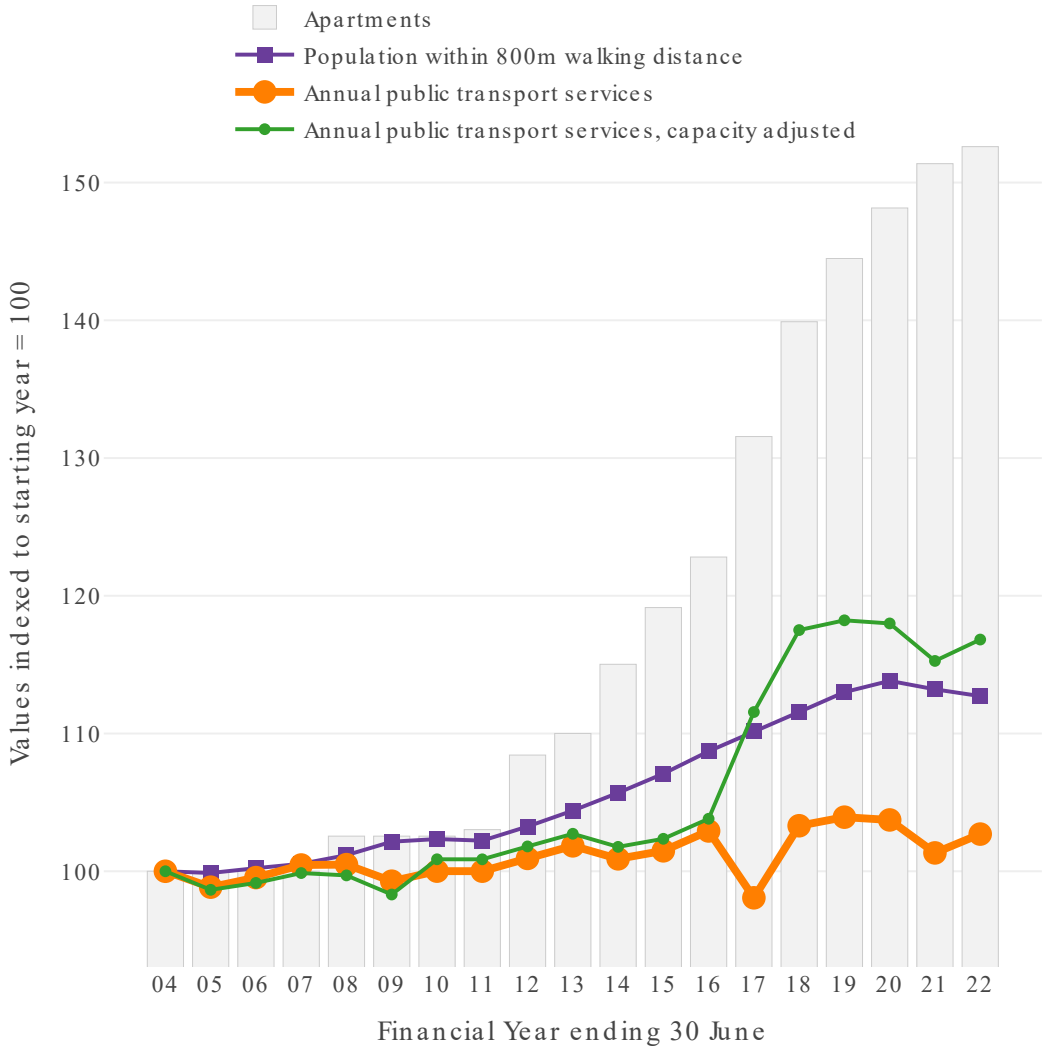


Change in apartments	+ 38.5 %
Change in population	+ 32.3 %
Change in public transport services	+ 67.1 %
Change in public transport services, capacity adjusted	+ 105.3 %

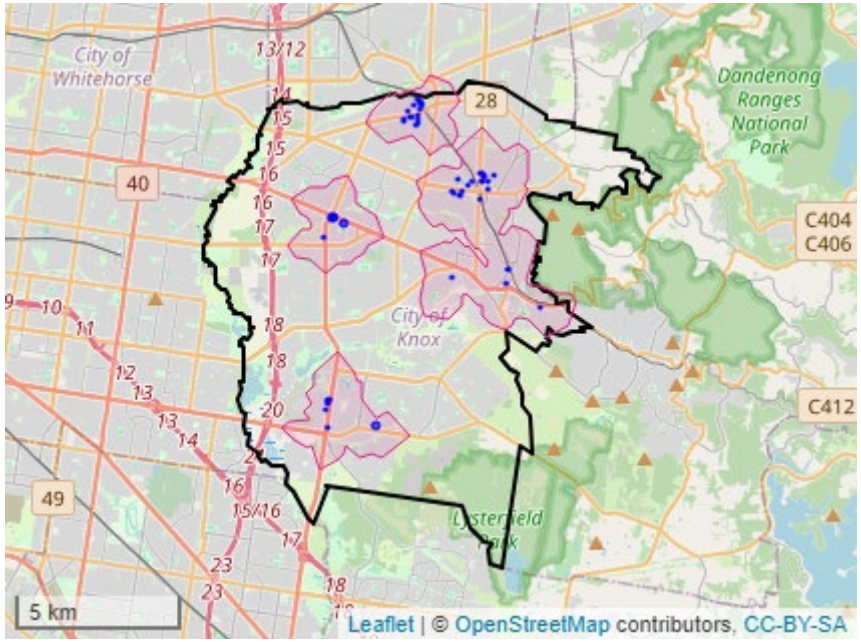


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Kingston

Local Government Area: Knox

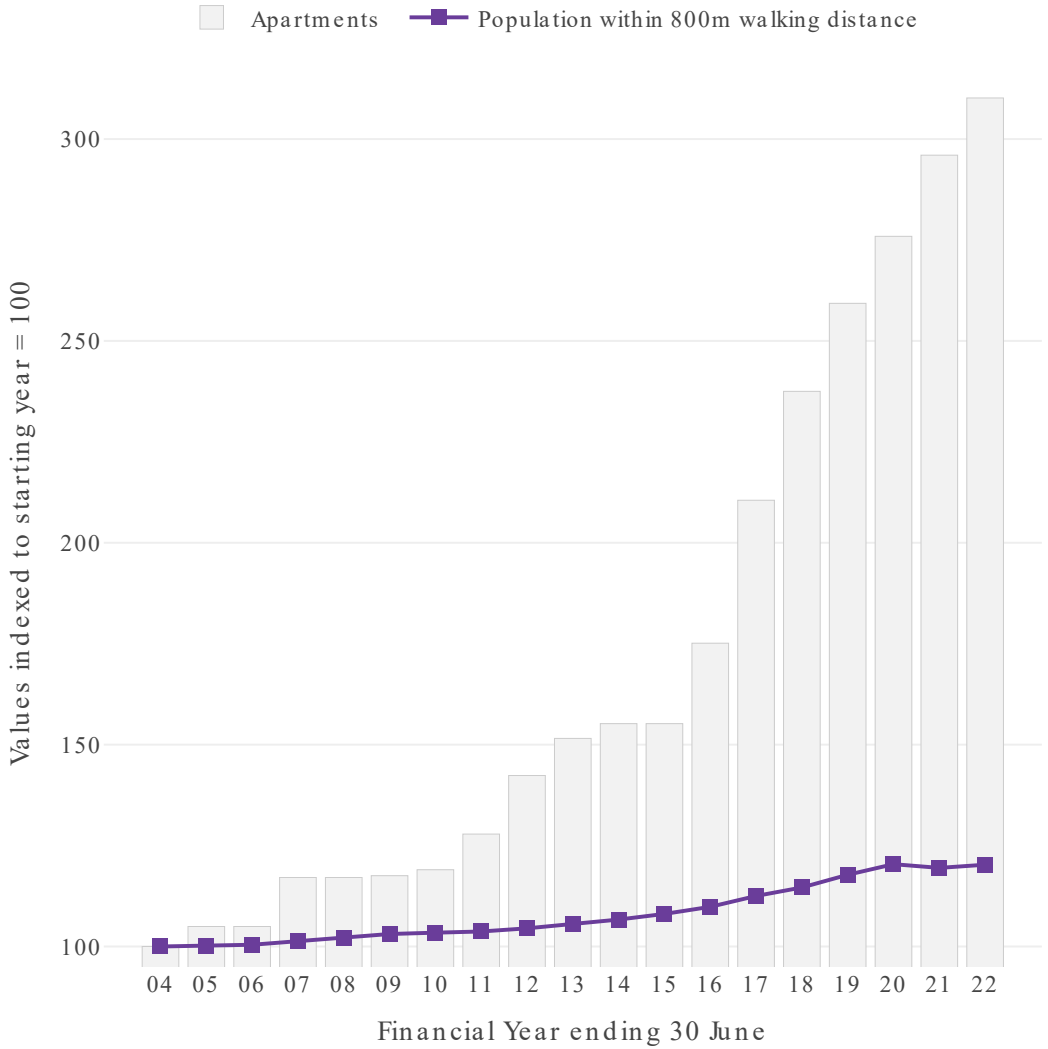


Change in apartments	+ 52.6 %
Change in population	+ 12.7 %
Change in public transport services	+ 2.7 %
Change in public transport services, capacity adjusted	+ 16.8 %

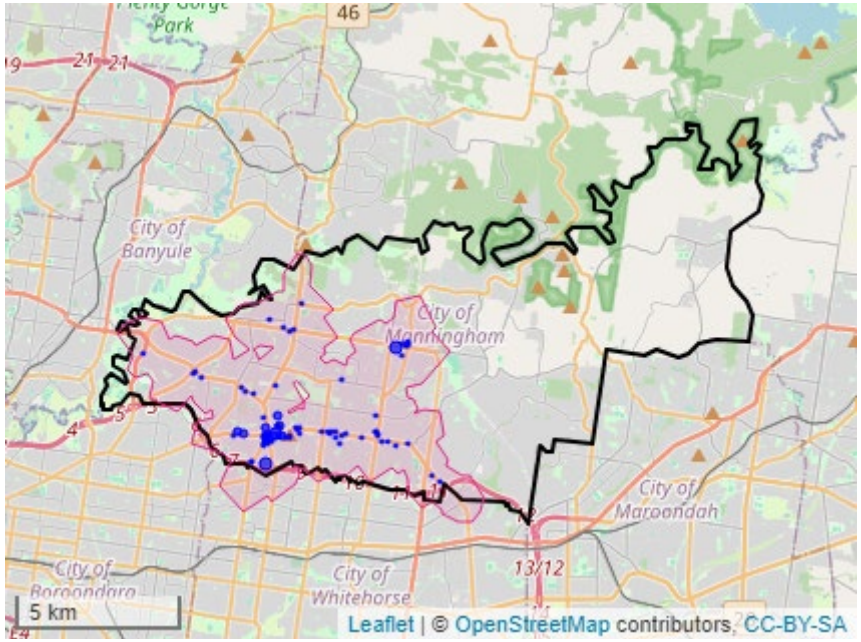


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Knox

Local Government Area: Manningham

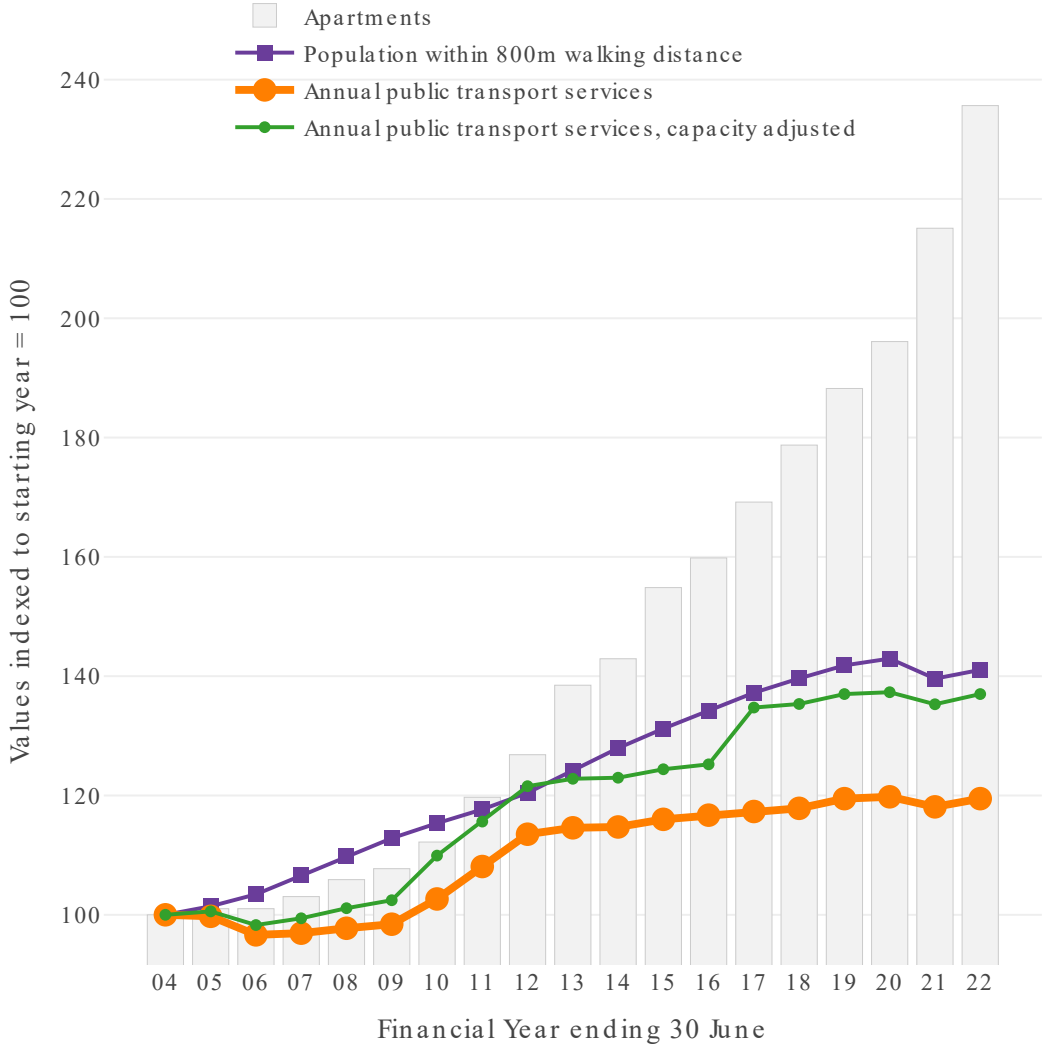


Change in apartments	+ 210.2 %
Change in population	+ 20.3 %
Change in public transport services	-
Change in public transport services, capacity adjusted	-

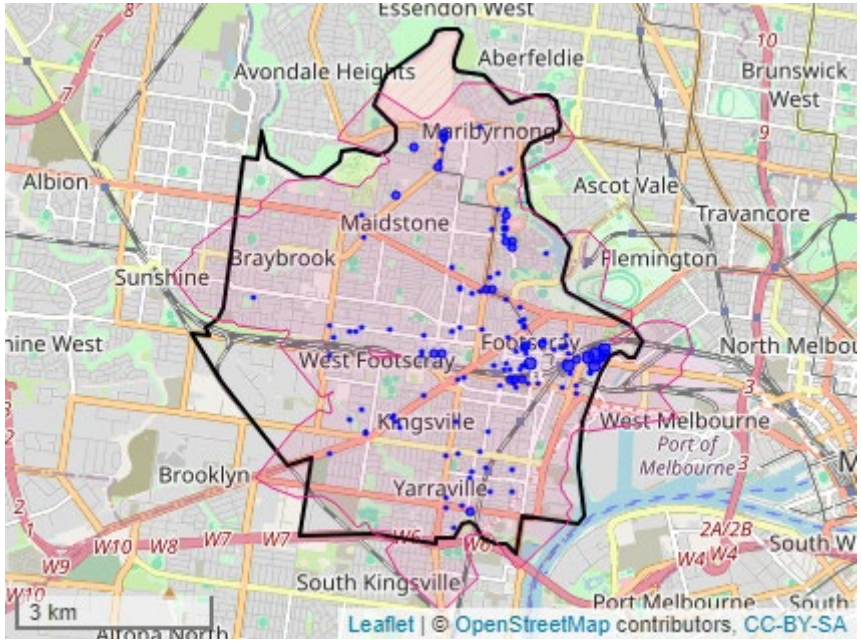


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Manningham

Local Government Area: Maribyrnong

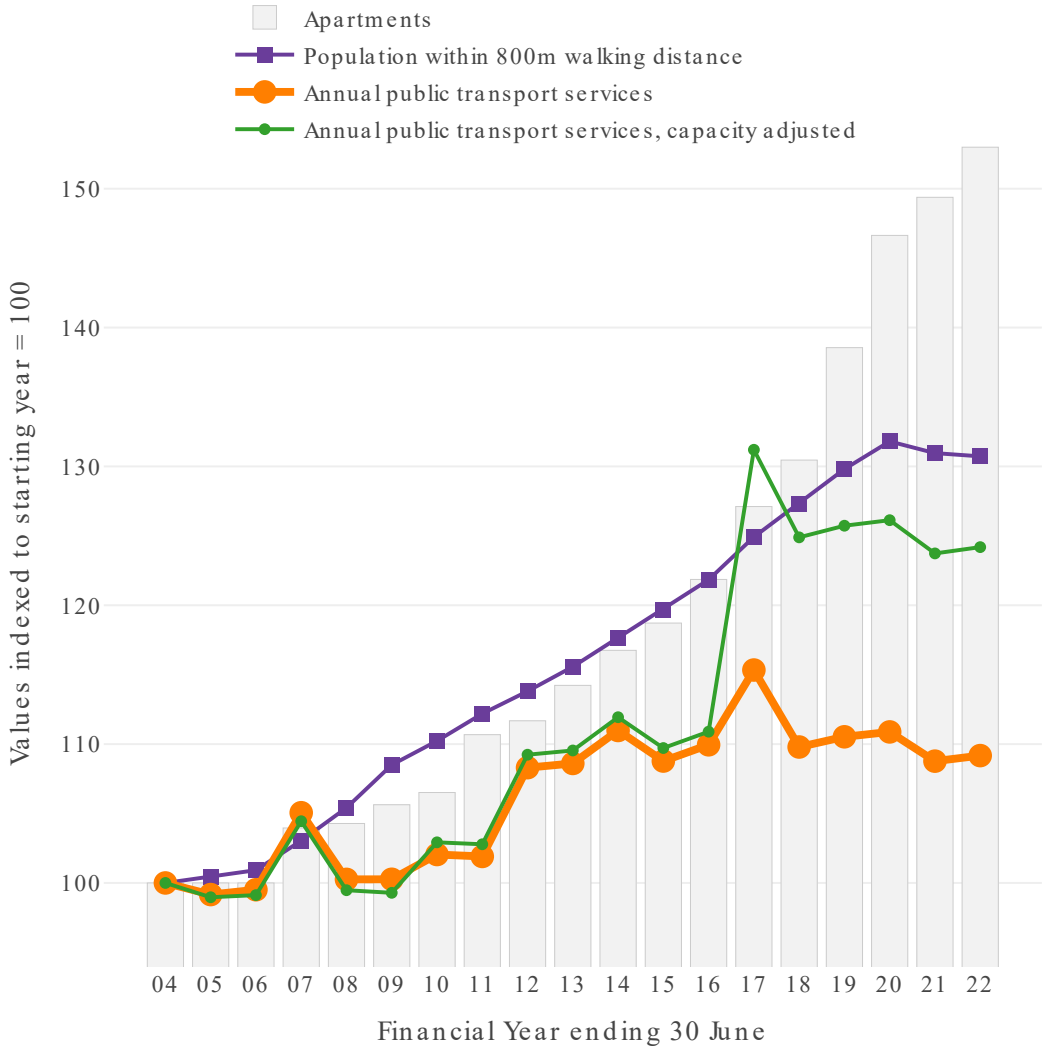


Change in apartments	+ 135.6 %
Change in population	+ 41.1 %
Change in public transport services	+ 19.5 %
Change in public transport services, capacity adjusted	+ 37.0 %

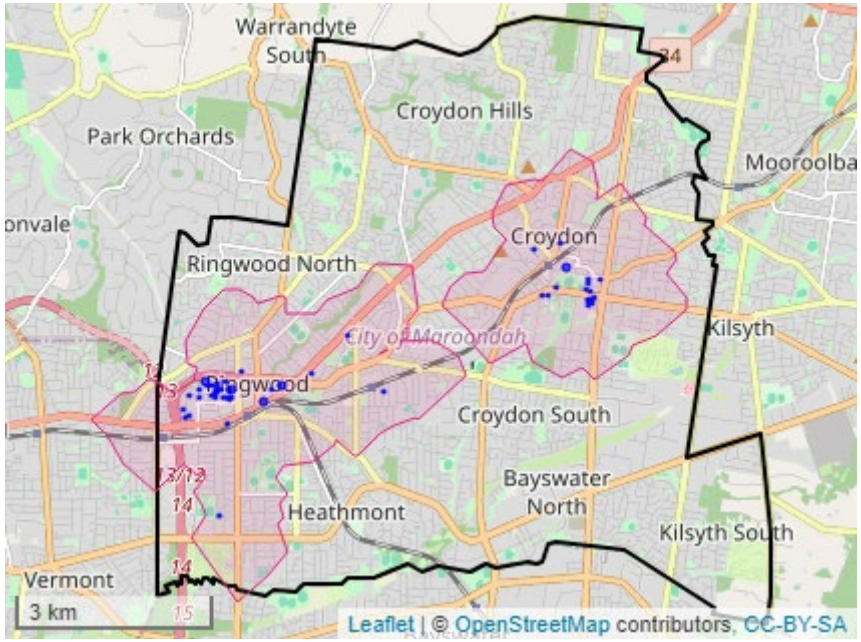


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Maribyrnong

Local Government Area: Maroondah

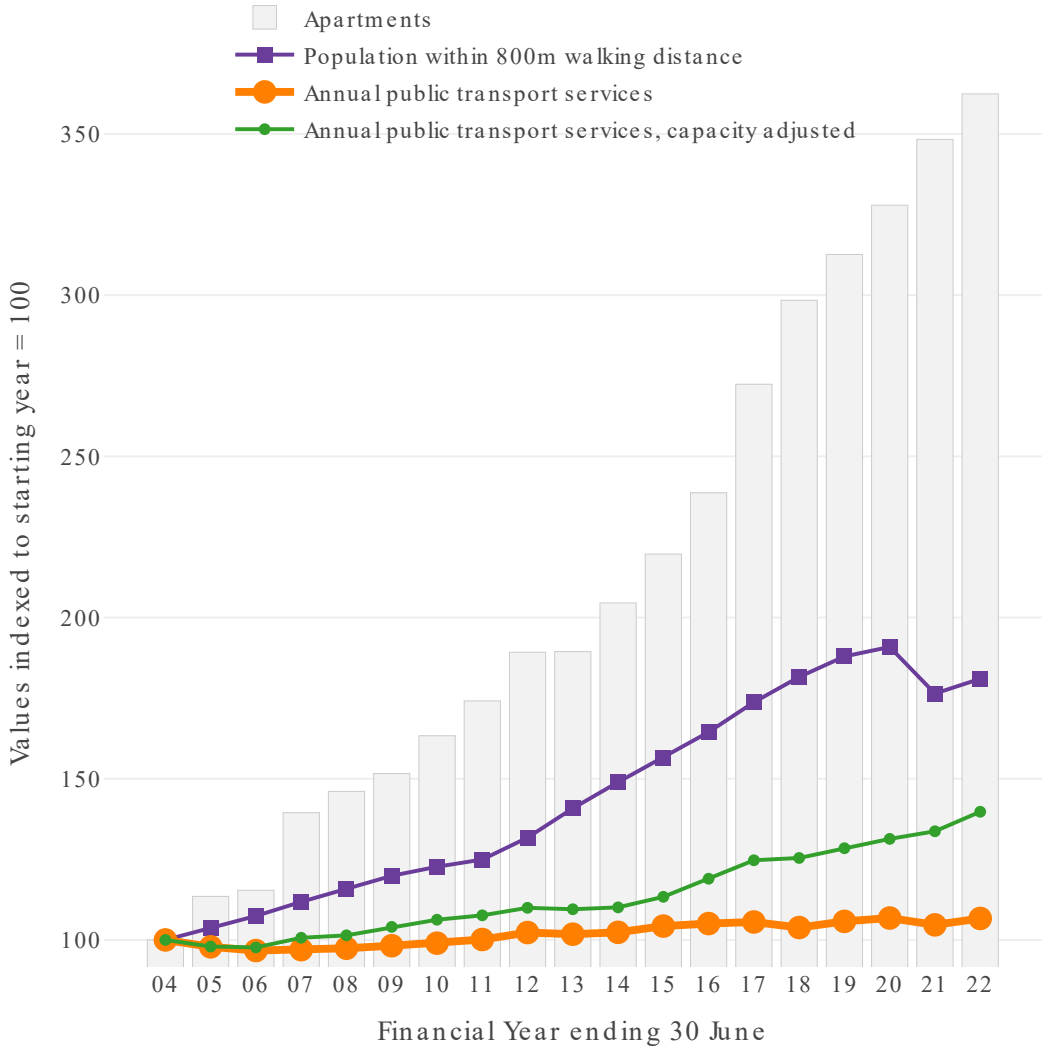


Change in apartments	+ 53.0 %
Change in population	+ 30.7 %
Change in public transport services	+ 9.2 %
Change in public transport services, capacity adjusted	+ 24.2 %

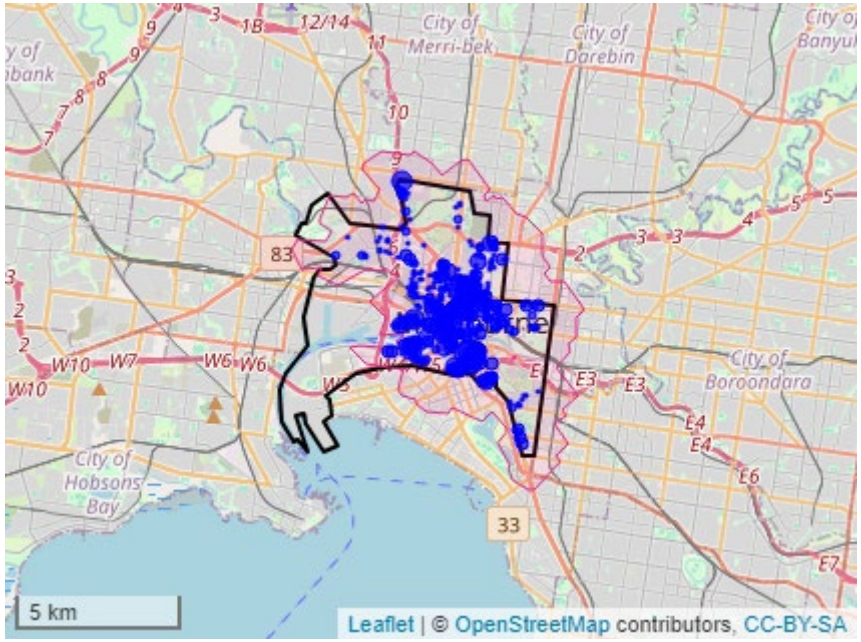


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Maroondah

Local Government Area: Melbourne

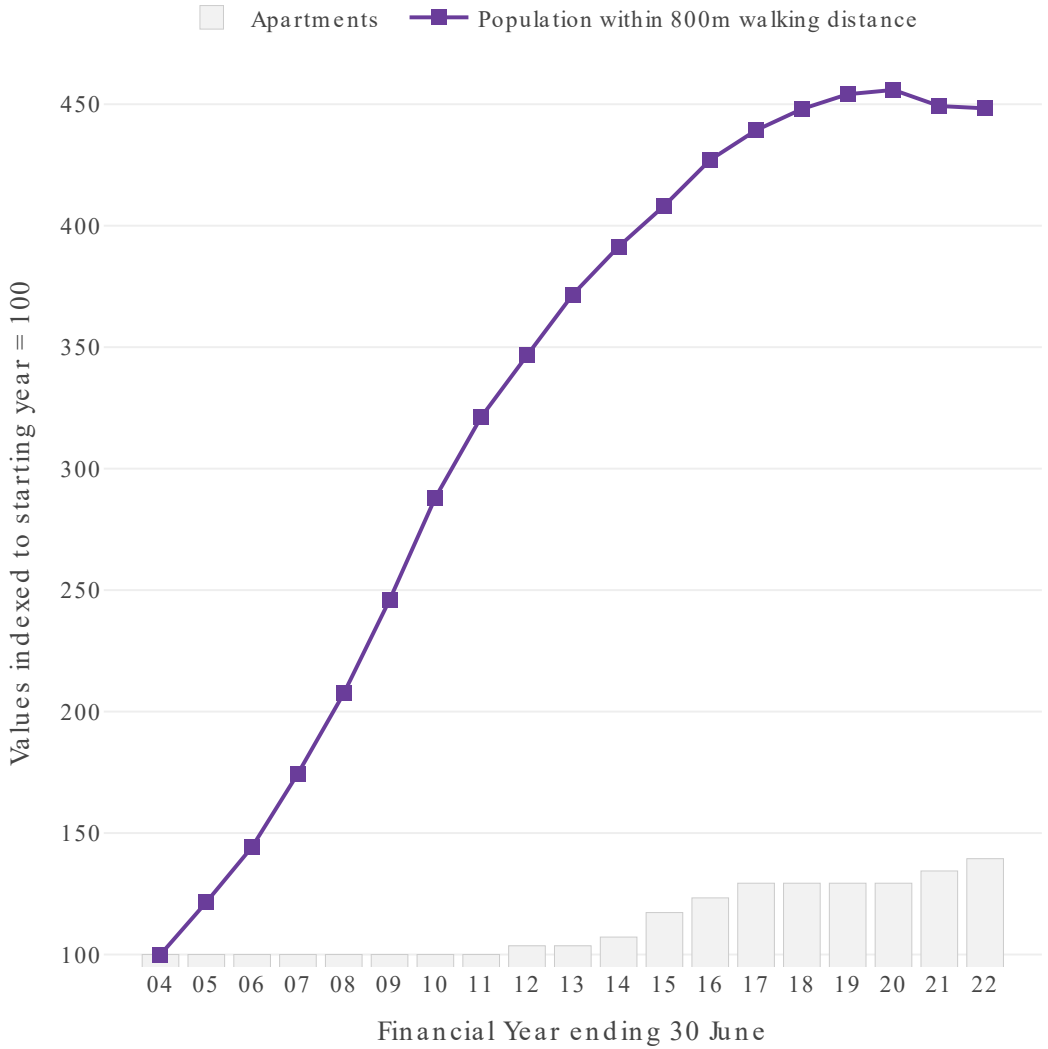


Change in apartments	+ 262.4 %
Change in population	+ 81.0 %
Change in public transport services	+ 6.7 %
Change in public transport services, capacity adjusted	+ 39.8 %

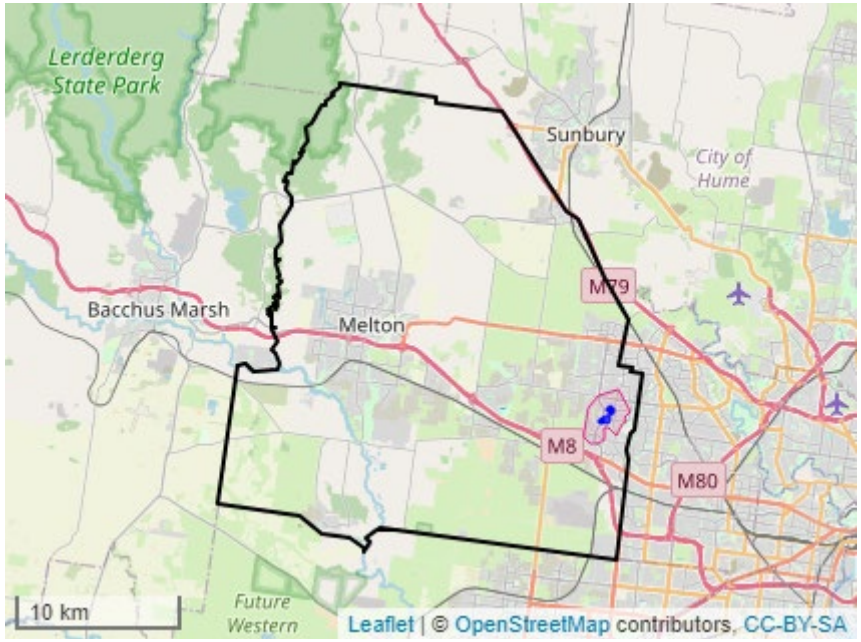


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Melbourne

Local Government Area: Melton

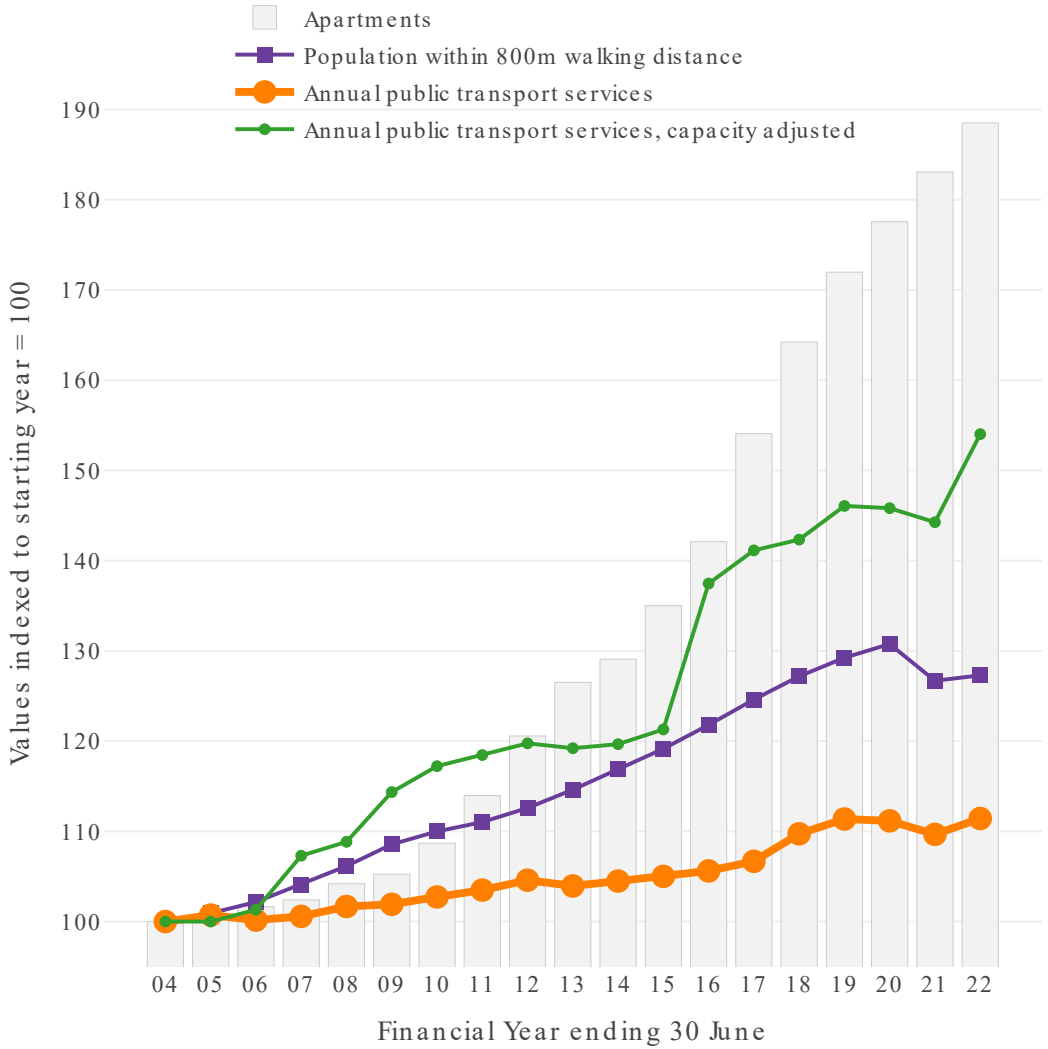


Change in apartments	+ 39.4 %
Change in population	+ 348.3 %
Change in public transport services	-
Change in public transport services, capacity adjusted	-

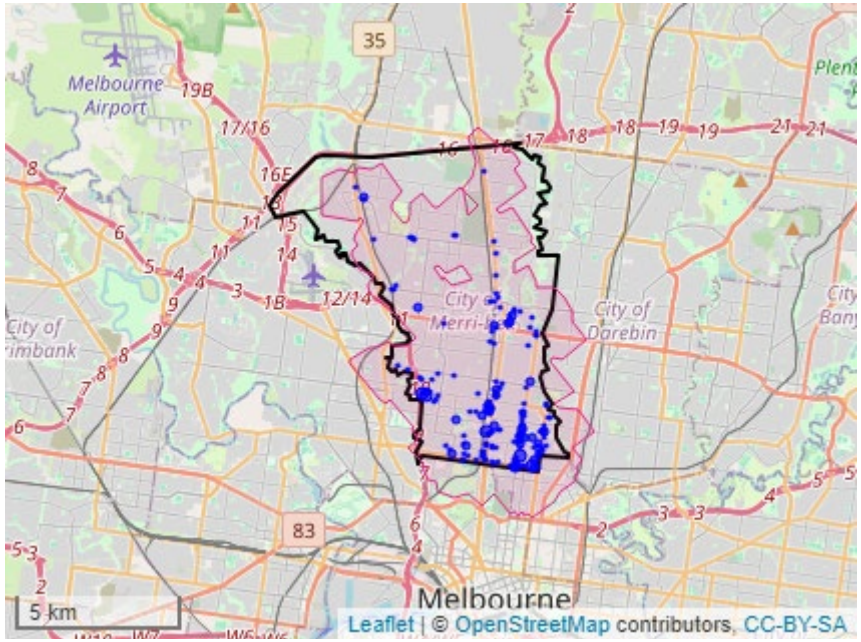


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Melton

Local Government Area: Merri-bek

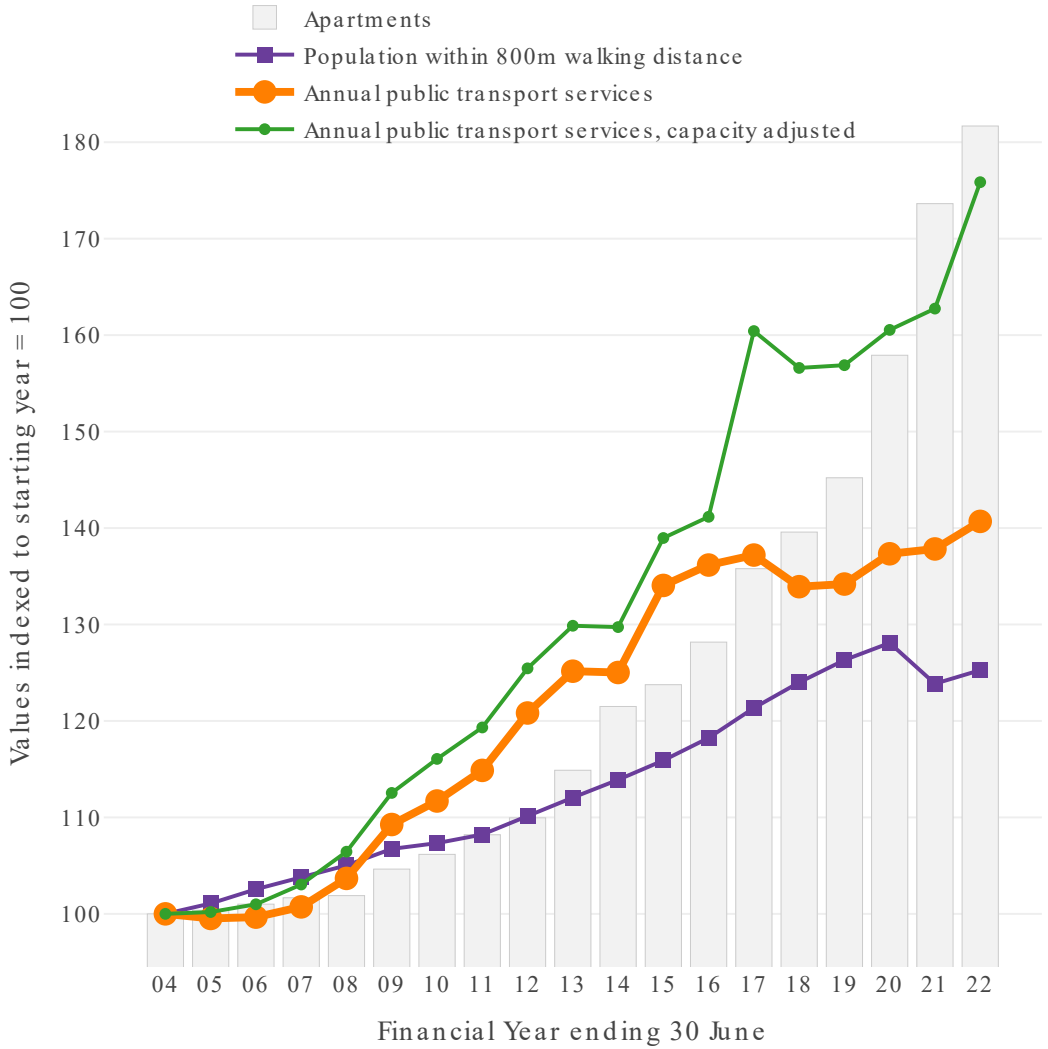


Change in apartments	+ 88.5 %
Change in population	+ 27.3 %
Change in public transport services	+ 11.4 %
Change in public transport services, capacity adjusted	+ 54.0 %

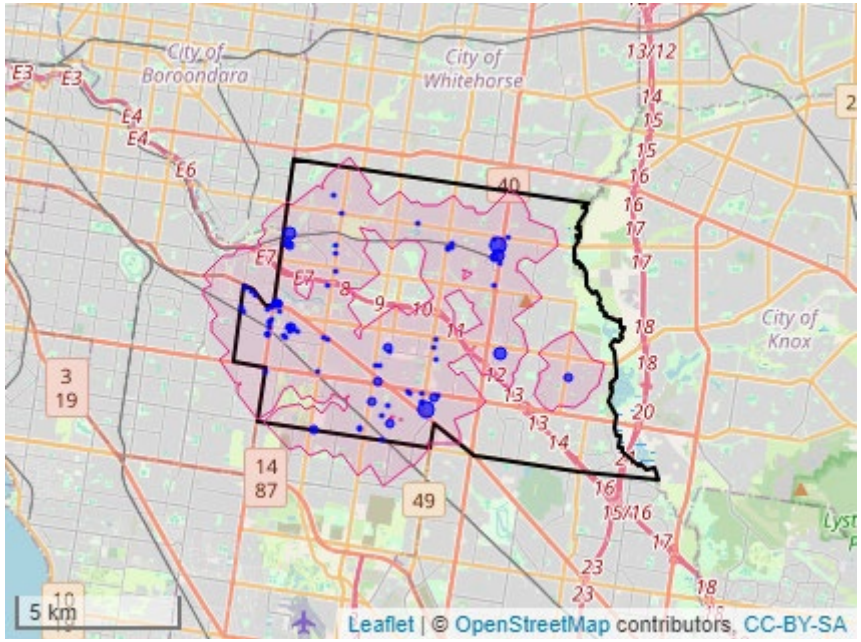


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Merri-bek

Local Government Area: Monash

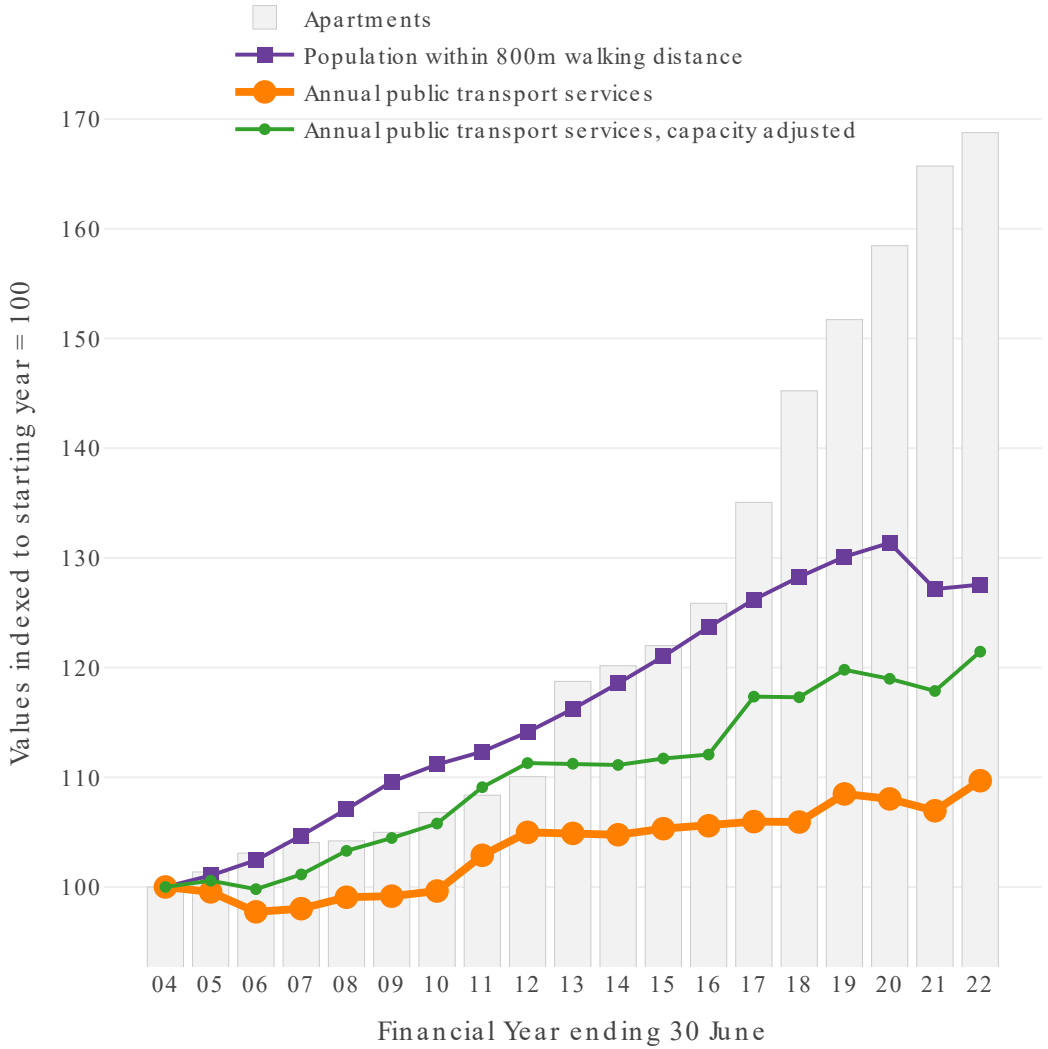


Change in apartments	+ 81.7 %
Change in population	+ 25.3 %
Change in public transport services	+ 40.7 %
Change in public transport services, capacity adjusted	+ 75.9 %

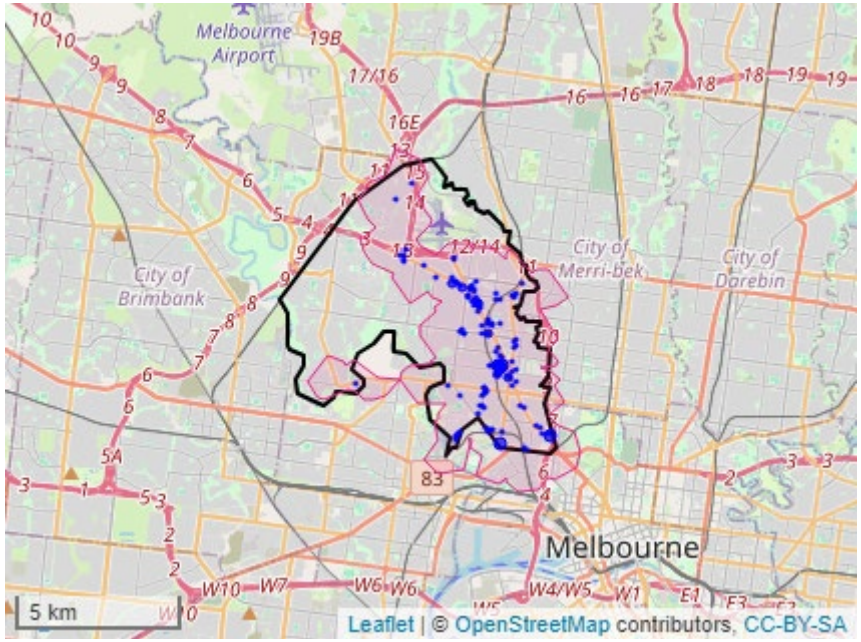


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Monash

Local Government Area: Moonee Valley

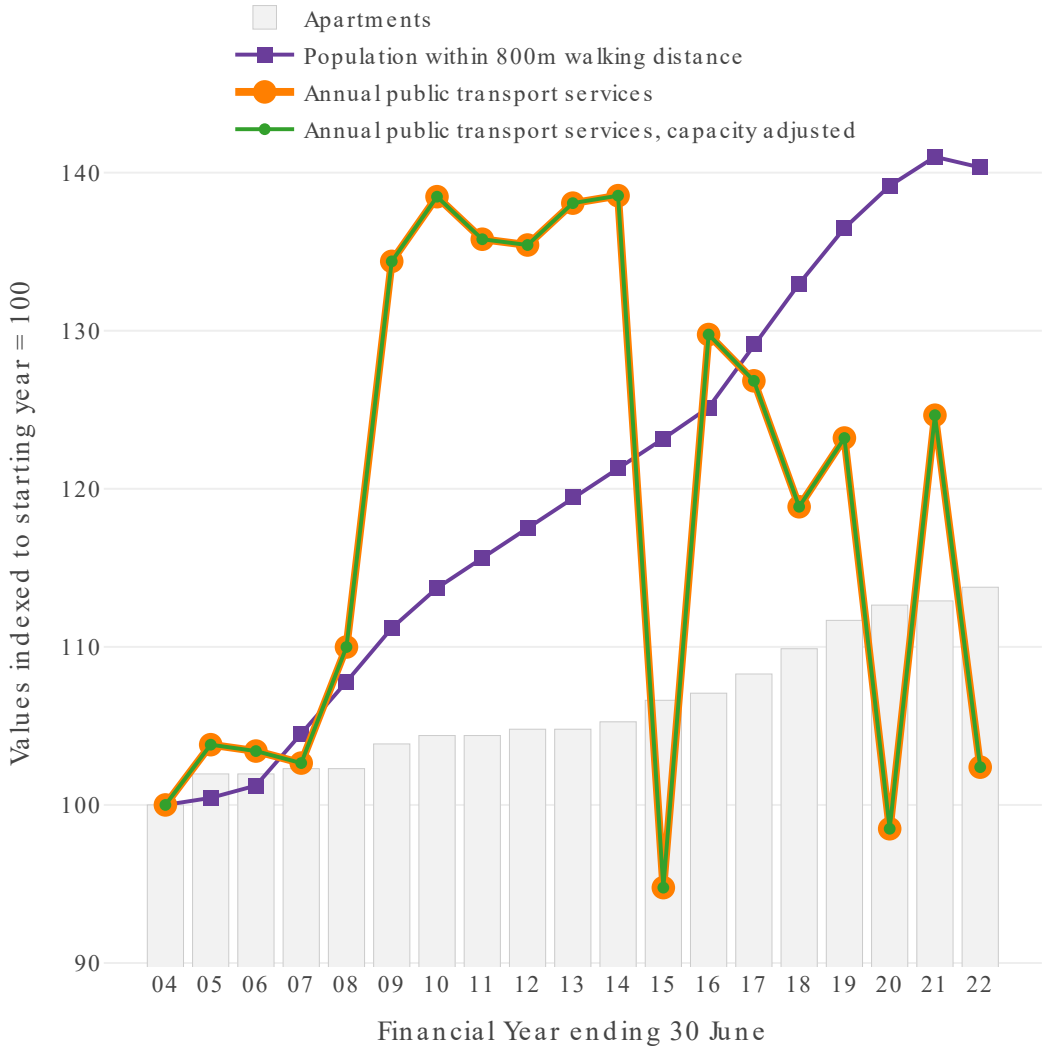


Change in apartments	+ 68.8 %
Change in population	+ 27.6 %
Change in public transport services	+ 9.7 %
Change in public transport services, capacity adjusted	+ 21.5 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Moonee Valley

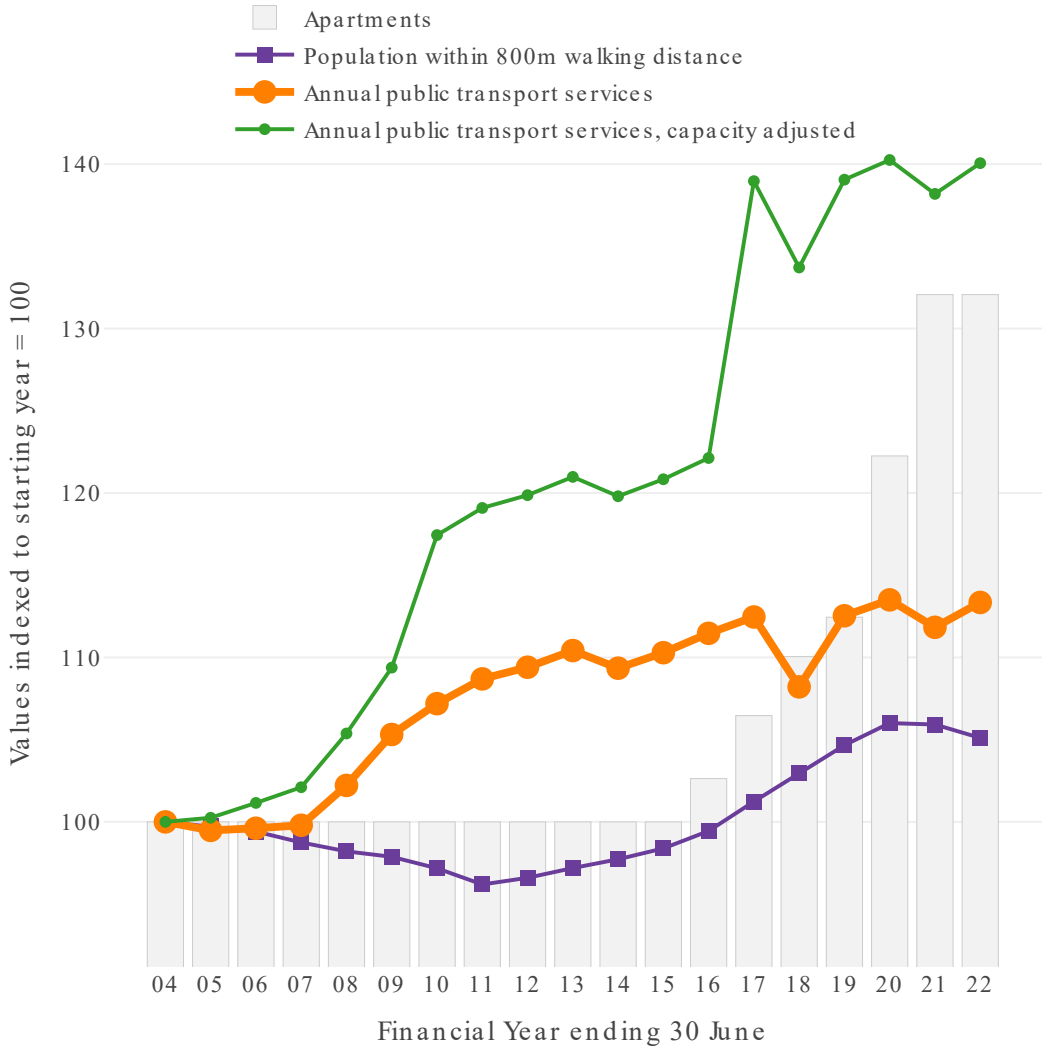
Local Government Area: Mornington Peninsula



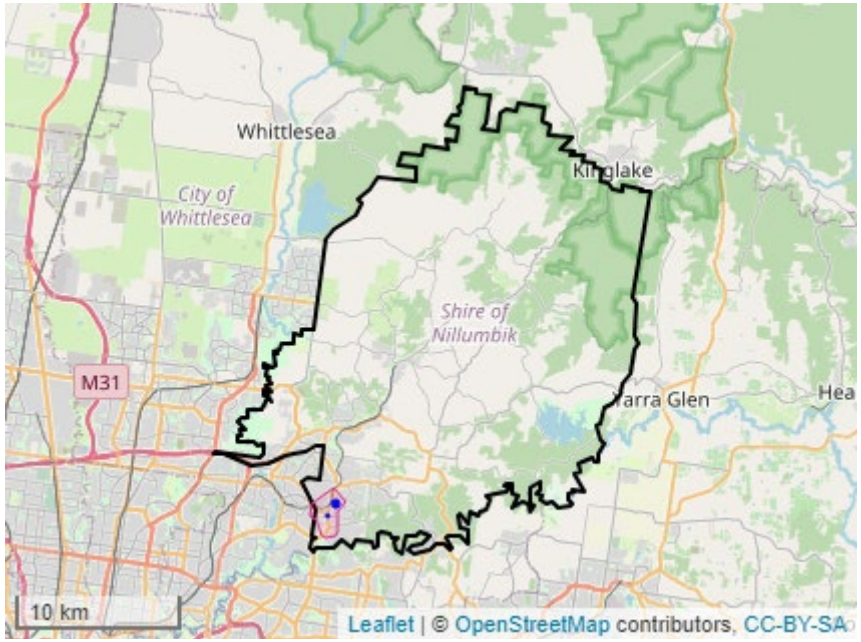
Change in apartments	+ 13.8 %
Change in population	+ 40.3 %
Change in public transport services	+ 2.4 %
Change in public transport services, capacity adjusted	+ 2.4 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Mornington Peninsula

Local Government Area: Nillumbik

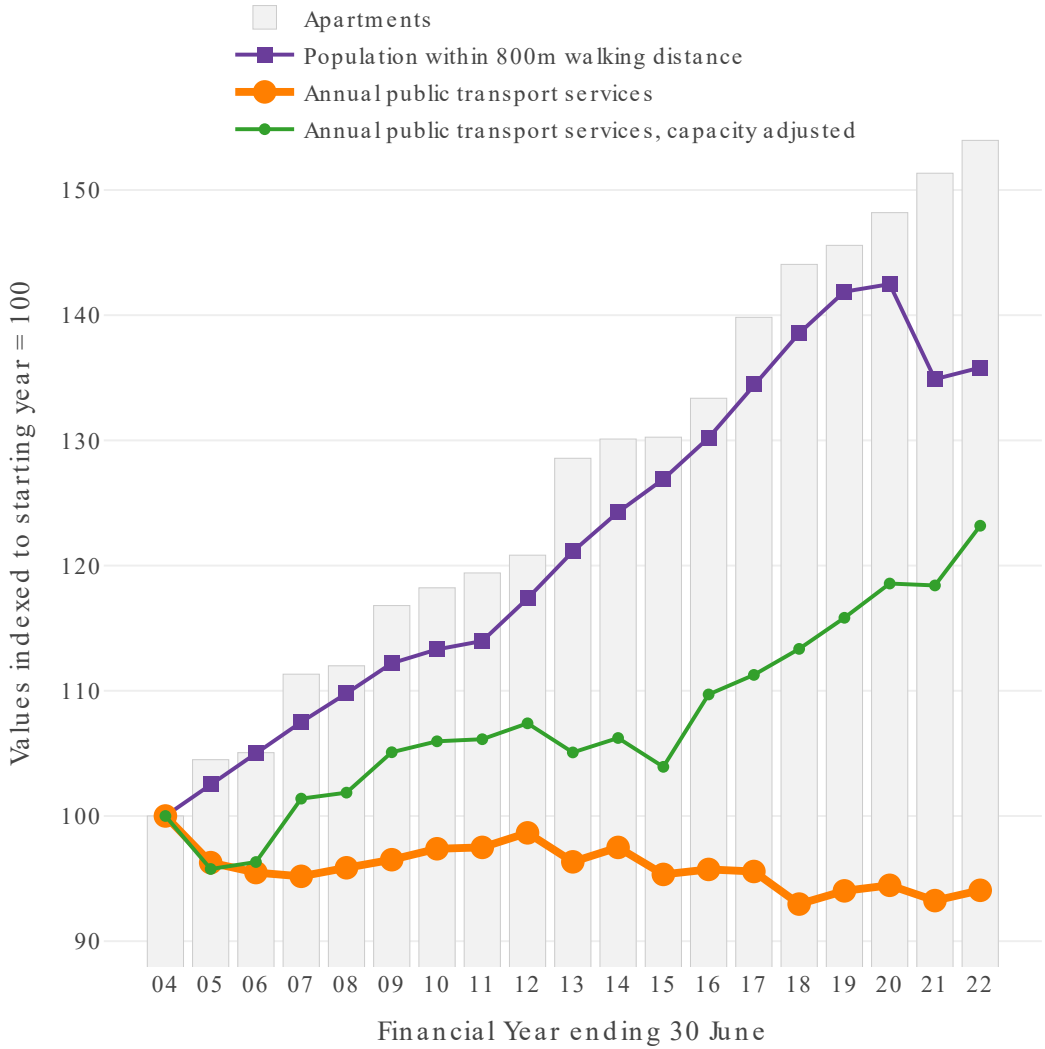


Change in apartments	+ 32.1 %
Change in population	+ 5.1 %
Change in public transport services	+ 13.3 %
Change in public transport services, capacity adjusted	+ 40.1 %

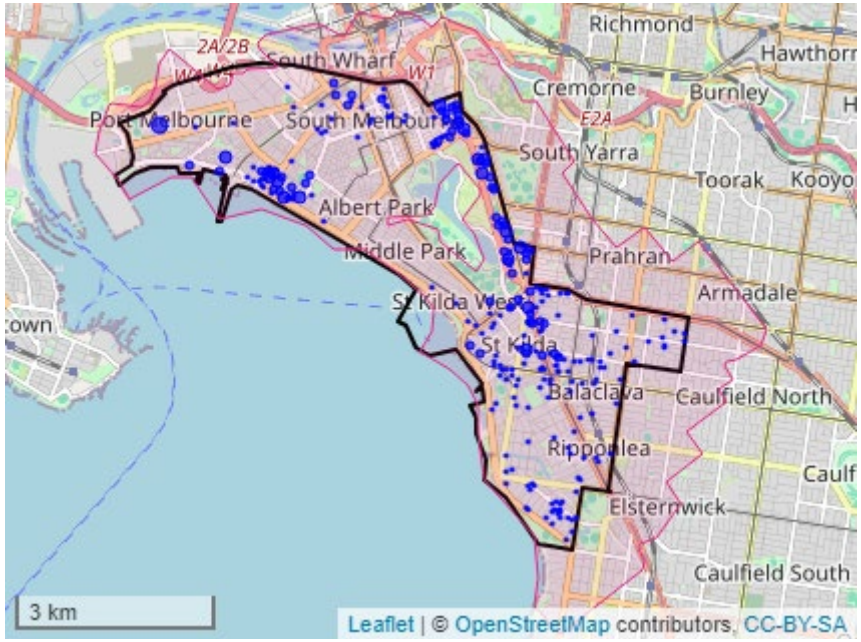


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Nillumbik

Local Government Area: Port Phillip

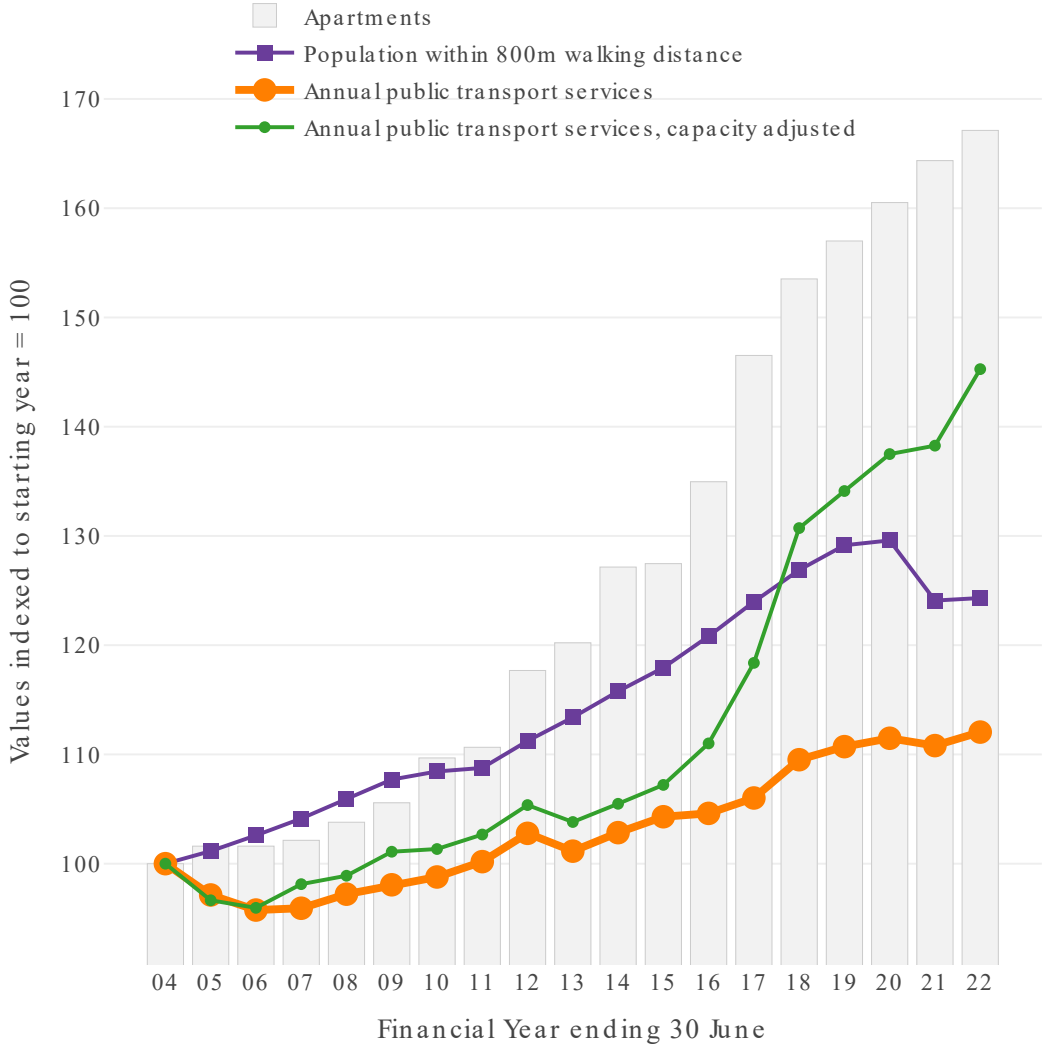


Change in apartments	+ 54.0 %
Change in population	+ 35.8 %
Change in public transport services	- 5.9 %
Change in public transport services, capacity adjusted	+ 23.2 %

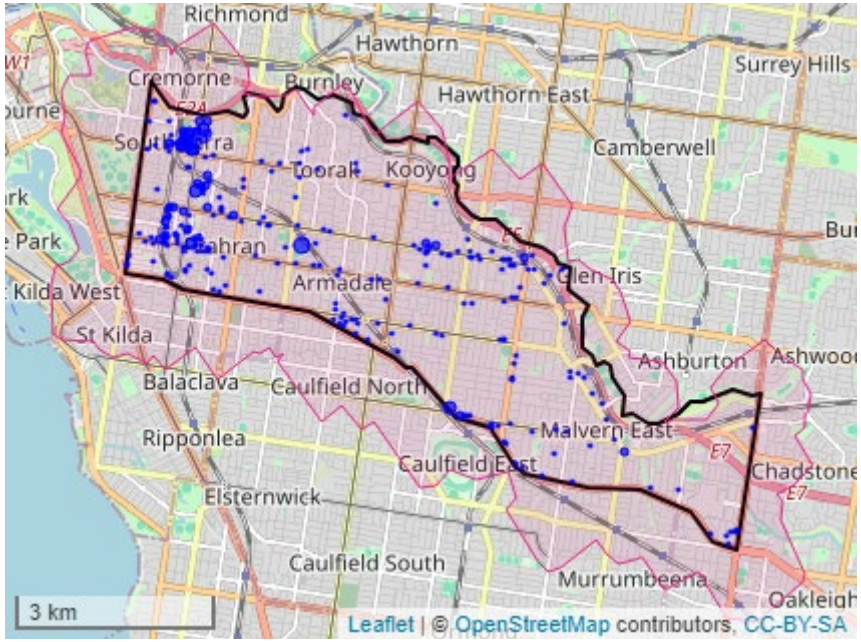


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Port Phillip

Local Government Area: Stonnington

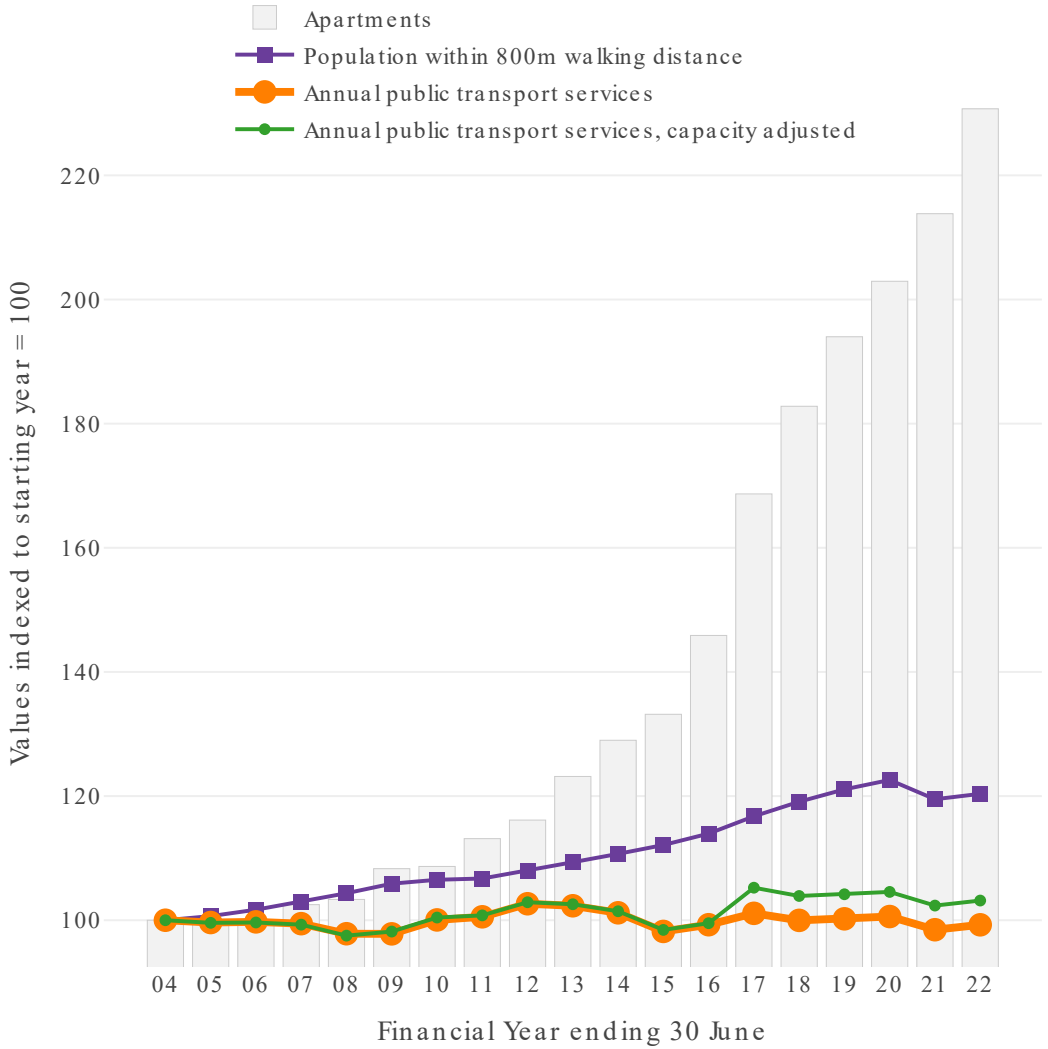


Change in apartments	+ 67.1 %
Change in population	+ 24.3 %
Change in public transport services	+ 12.0 %
Change in public transport services, capacity adjusted	+ 45.3 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Stonnington

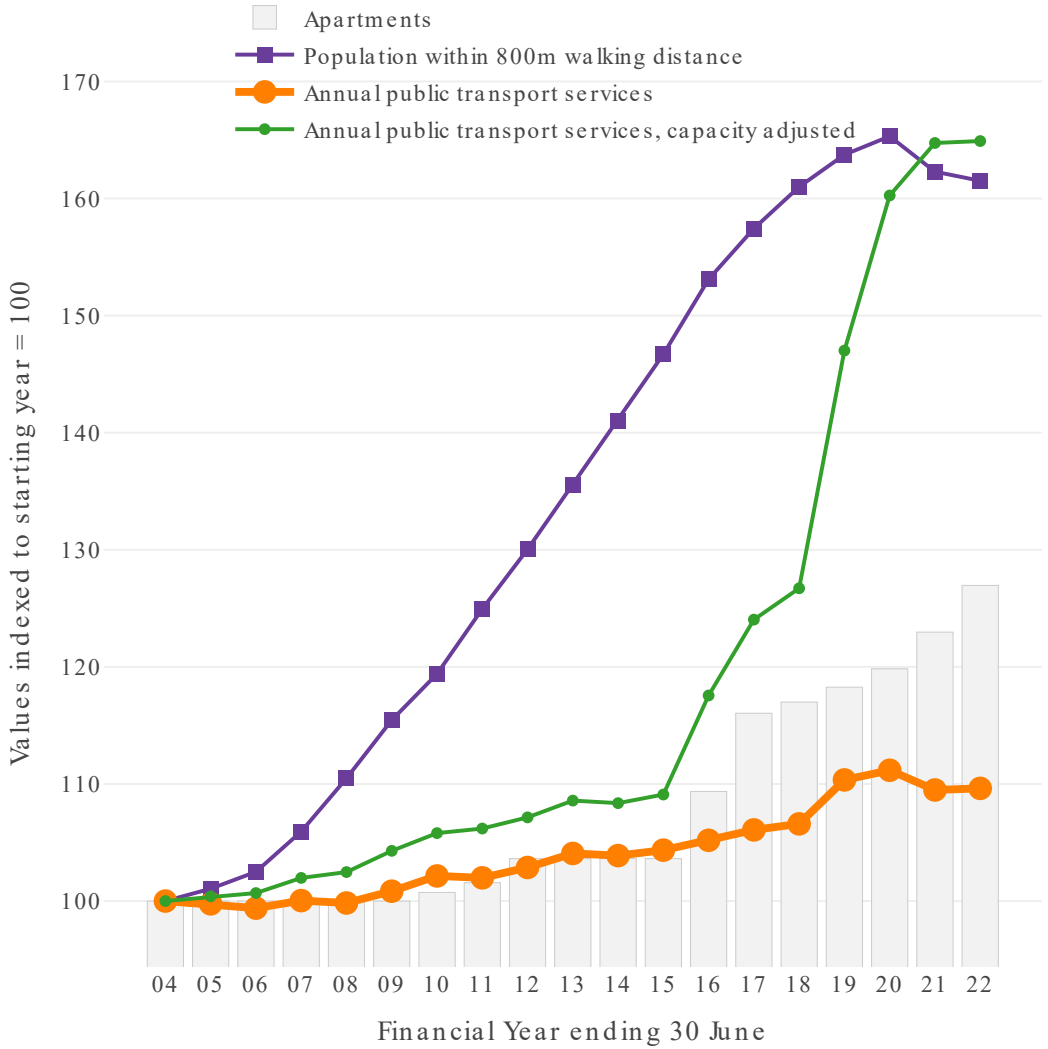
Local Government Area: Whitehorse



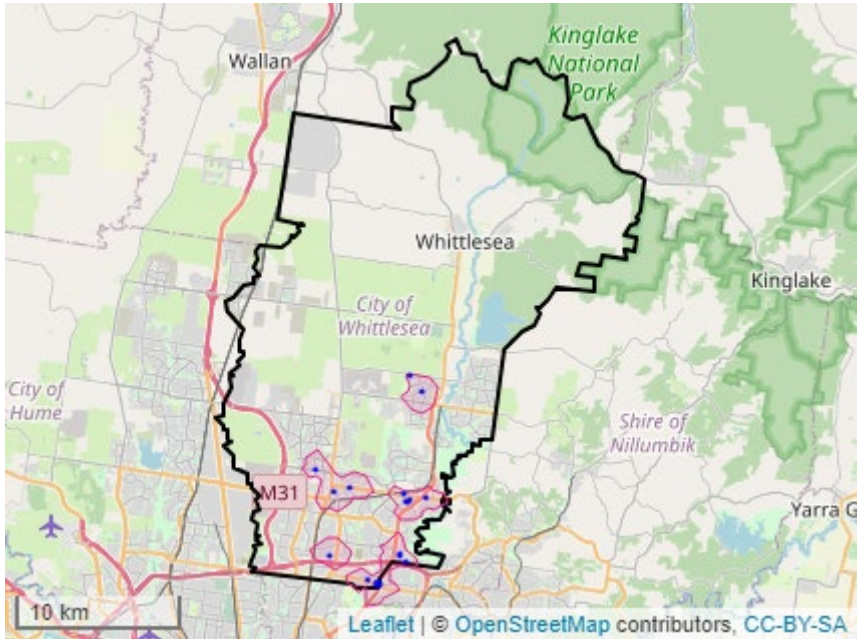
Change in apartments	+ 130.7 %
Change in population	+ 20.4 %
Change in public transport services	- 0.7 %
Change in public transport services, capacity adjusted	+ 3.2 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Whitehorse

Local Government Area: Whittlesea

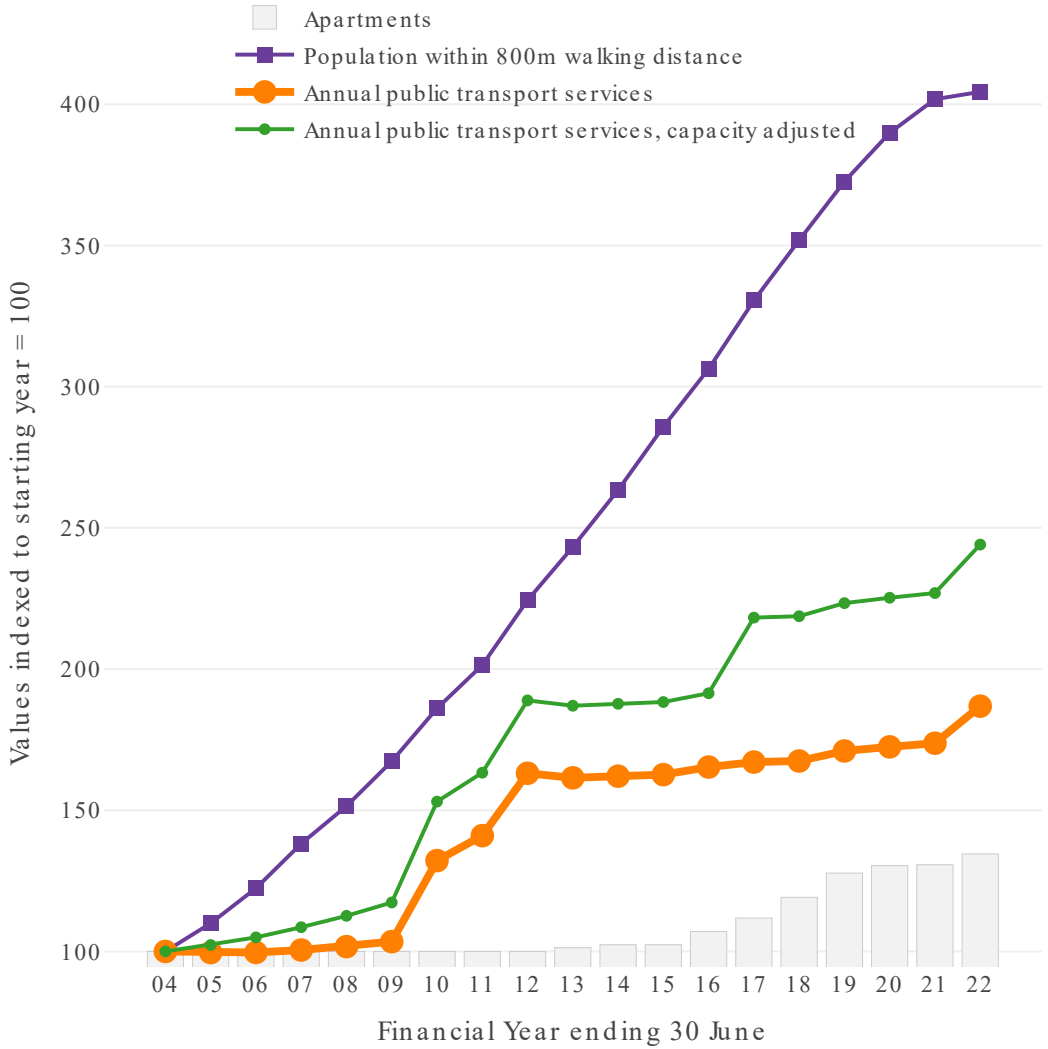


Change in apartments	+ 27.0 %
Change in population	+ 61.5 %
Change in public transport services	+ 9.6 %
Change in public transport services, capacity adjusted	+ 64.9 %

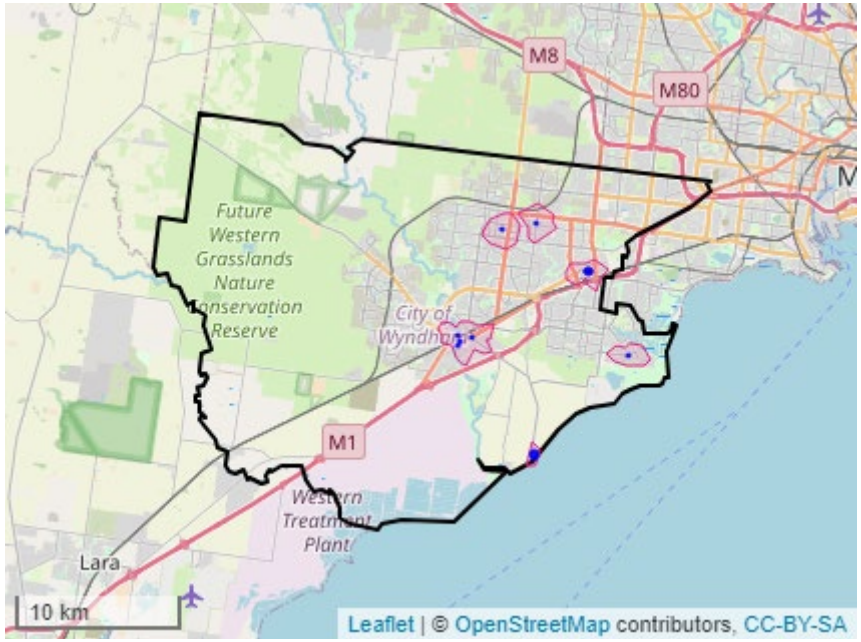


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Whittlesea

Local Government Area: Wyndham

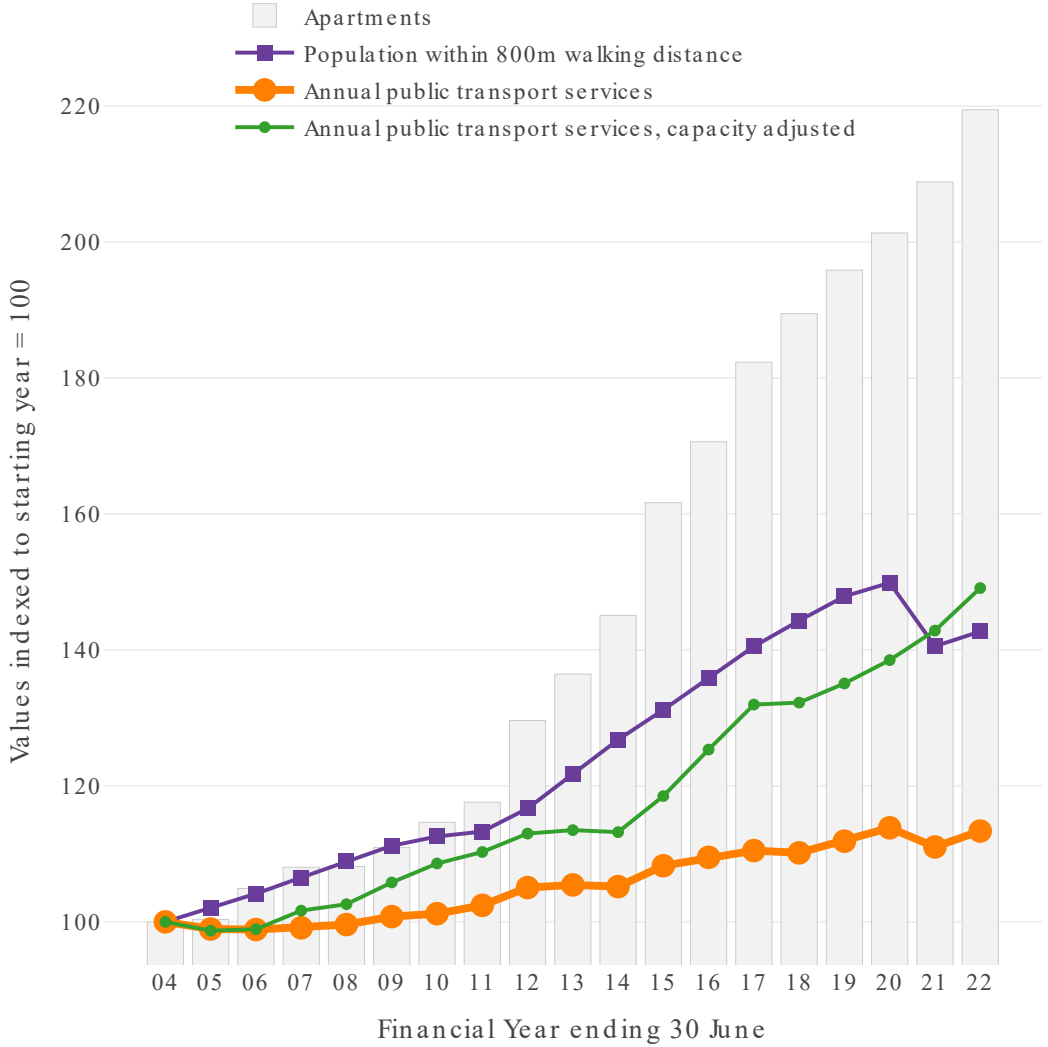


Change in apartments	+ 34.5 %
Change in population	+ 304.4 %
Change in public transport services	+ 86.9 %
Change in public transport services, capacity adjusted	+ 144.1 %

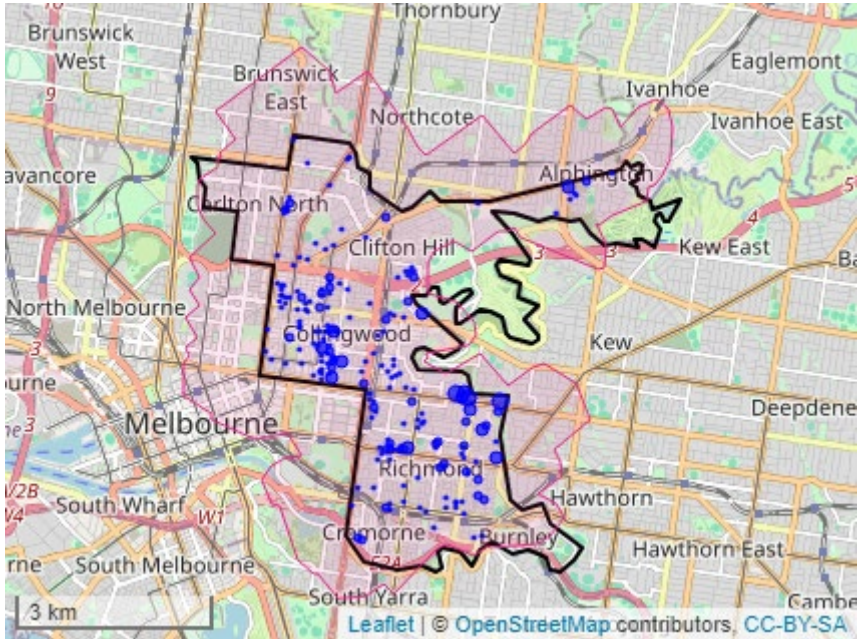


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Wyndham

Local Government Area: Yarra

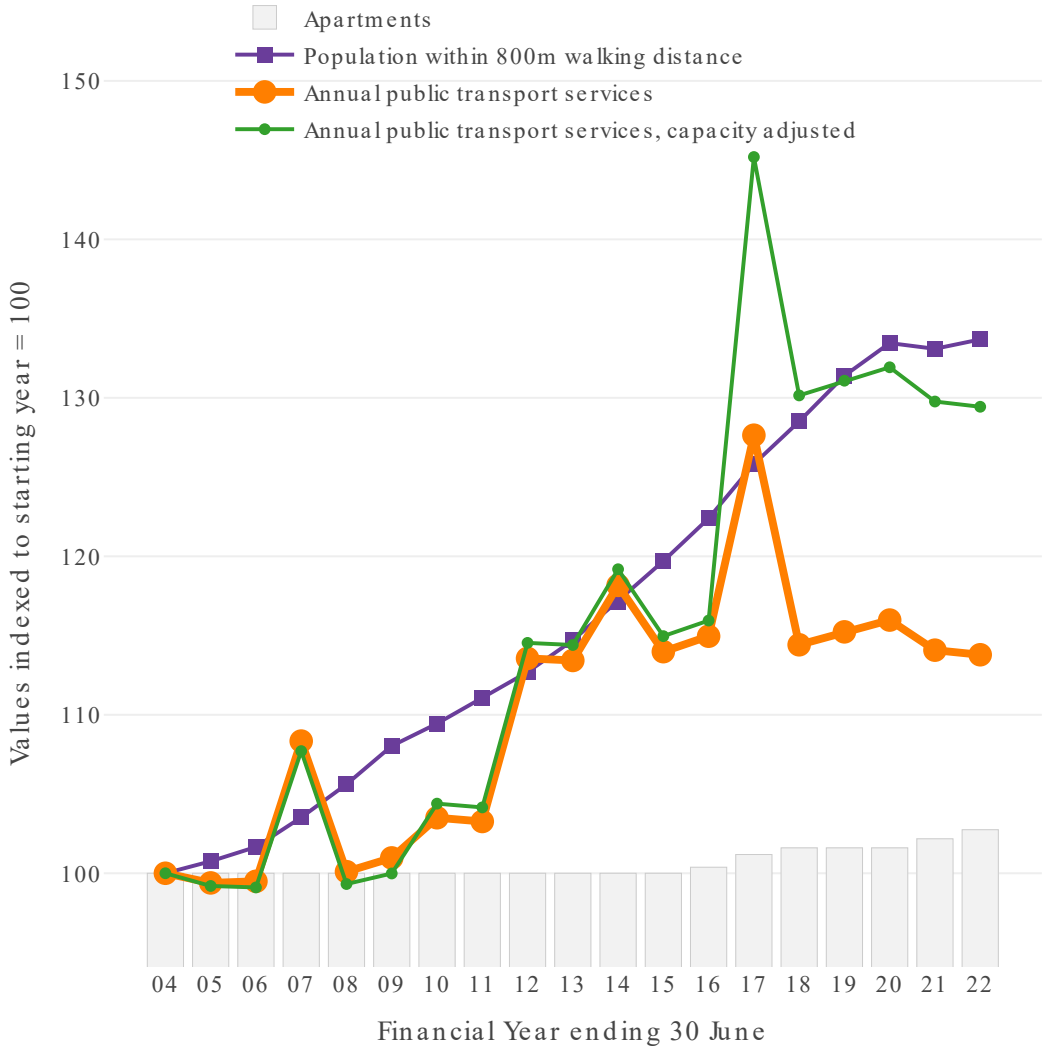


Change in apartments	+ 119.5 %
Change in population	+ 42.7 %
Change in public transport services	+ 13.4 %
Change in public transport services, capacity adjusted	+ 49.1 %

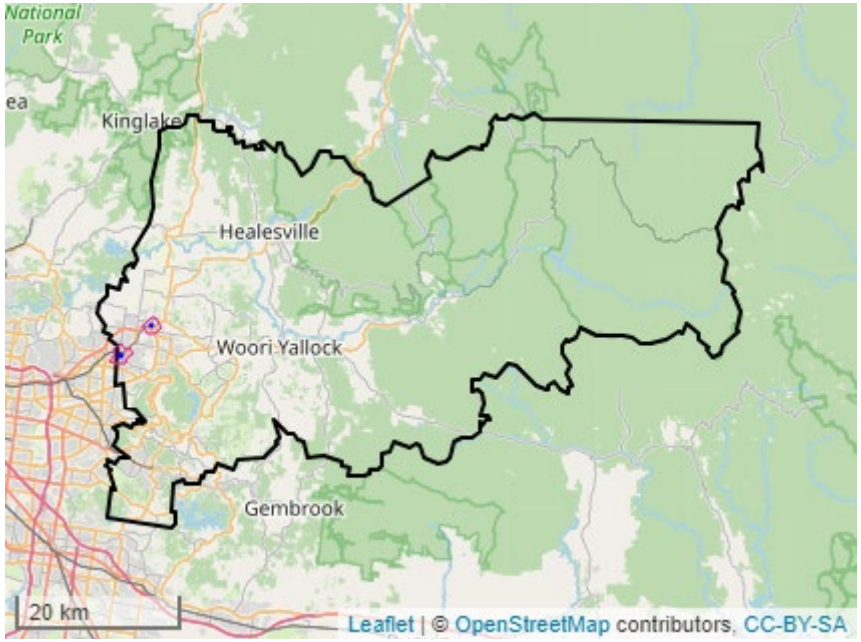


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Yarra

Local Government Area: Yarra Ranges

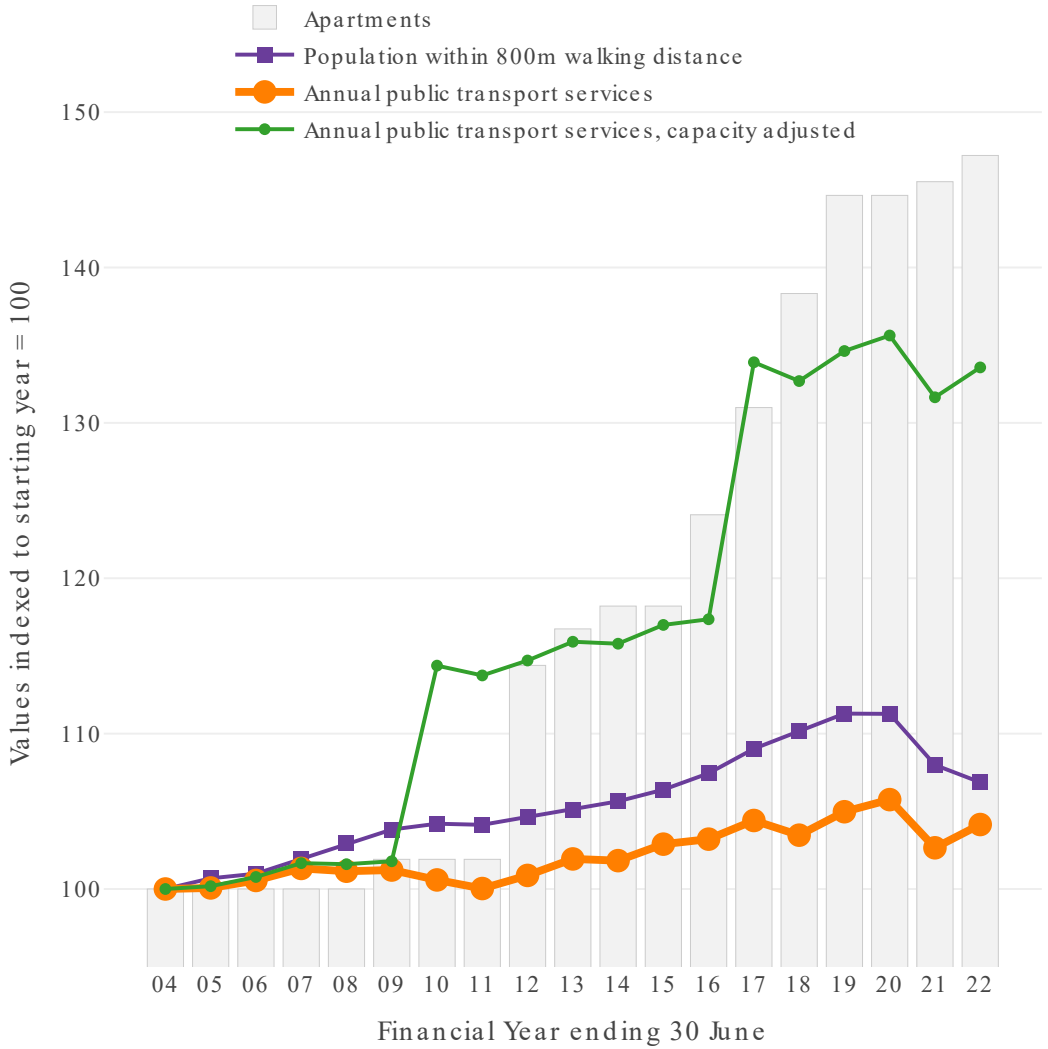


Change in apartments	+ 2.7 %
Change in population	+ 33.7 %
Change in public transport services	+ 13.8 %
Change in public transport services, capacity adjusted	+ 29.4 %

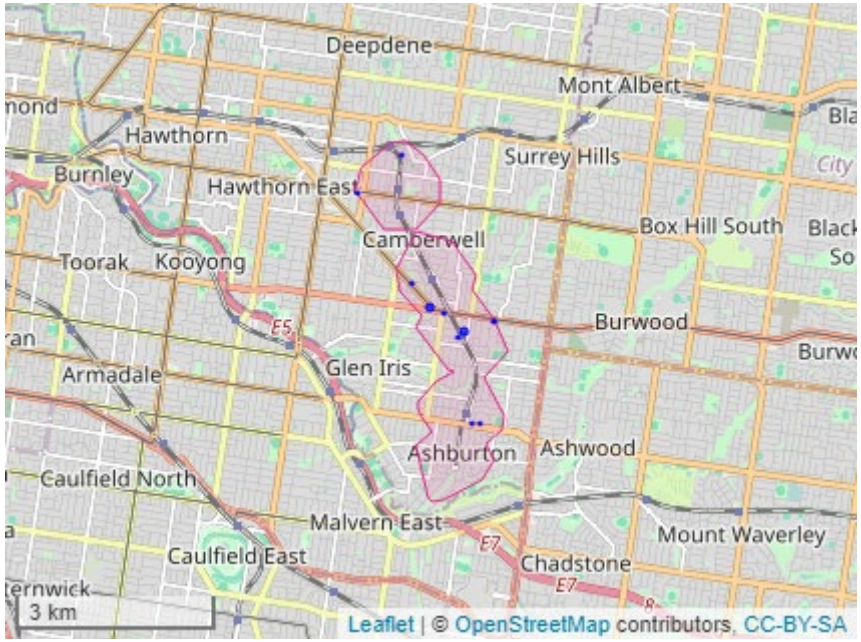


Apartments constructed 2003-04 to 2021-22
800m walkable catchments
Yarra Ranges

Train line: Alamein (Riversdale to Alamein)

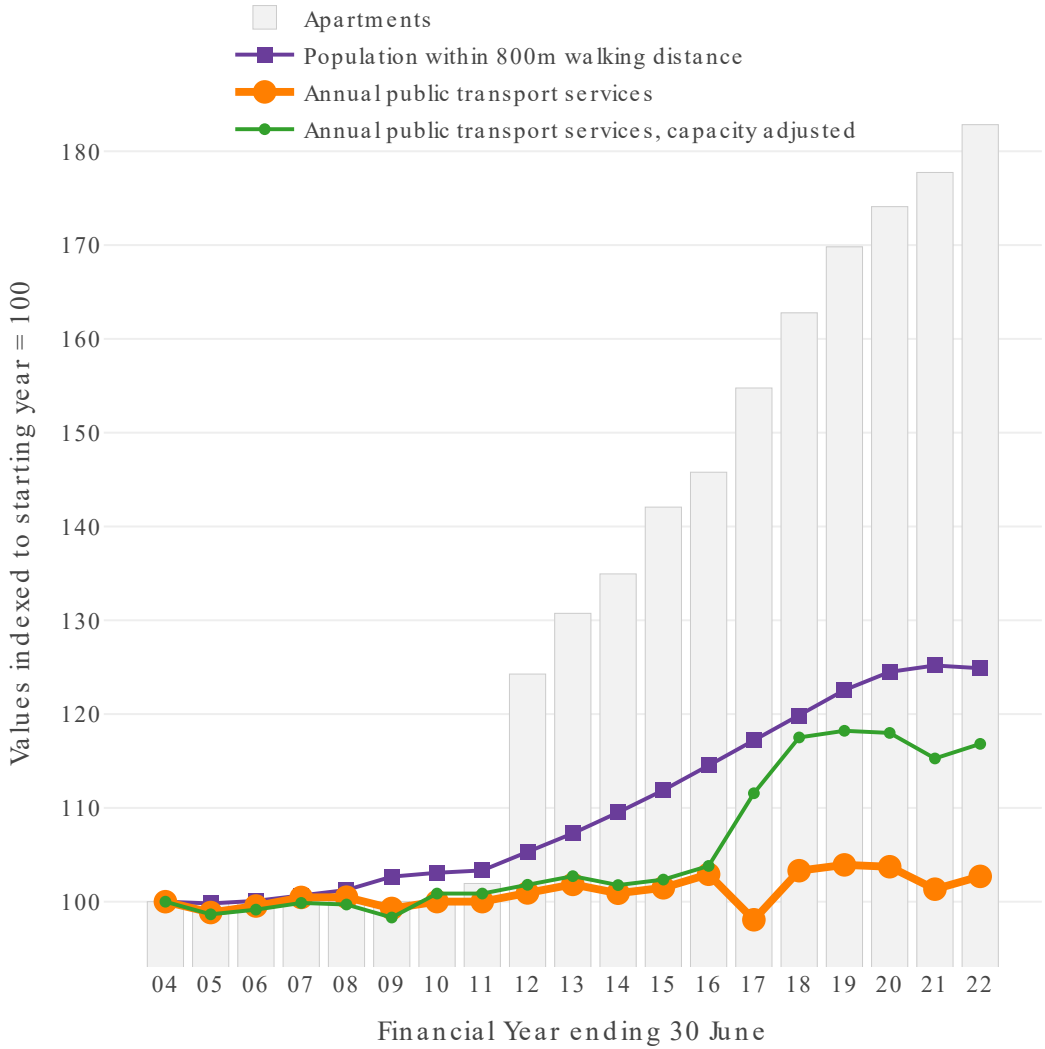


Change in apartments	+ 47.2 %
Change in population	+ 6.9 %
Change in public transport services	+ 4.1 %
Change in public transport services, capacity adjusted	+ 33.6 %

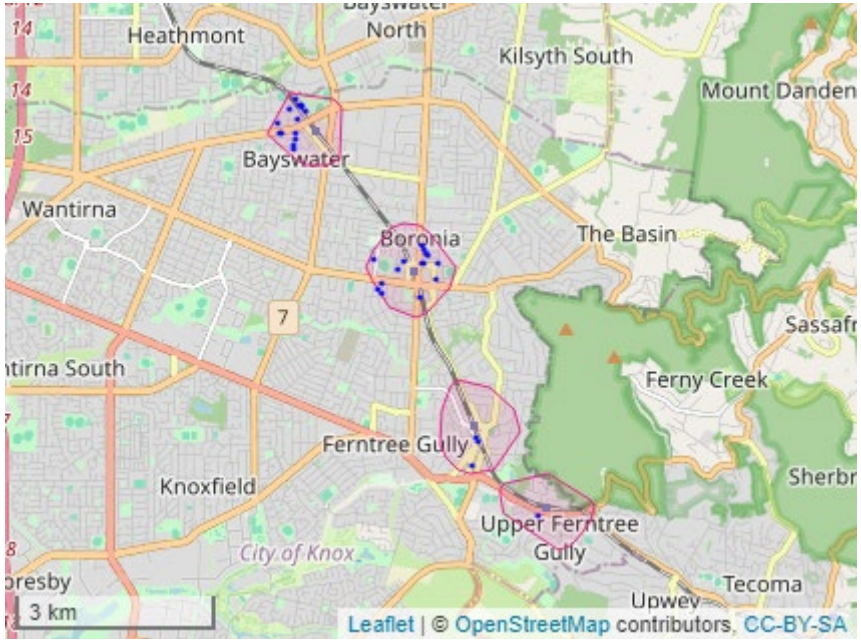


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Belgrave (Heathmont to Belgrave)

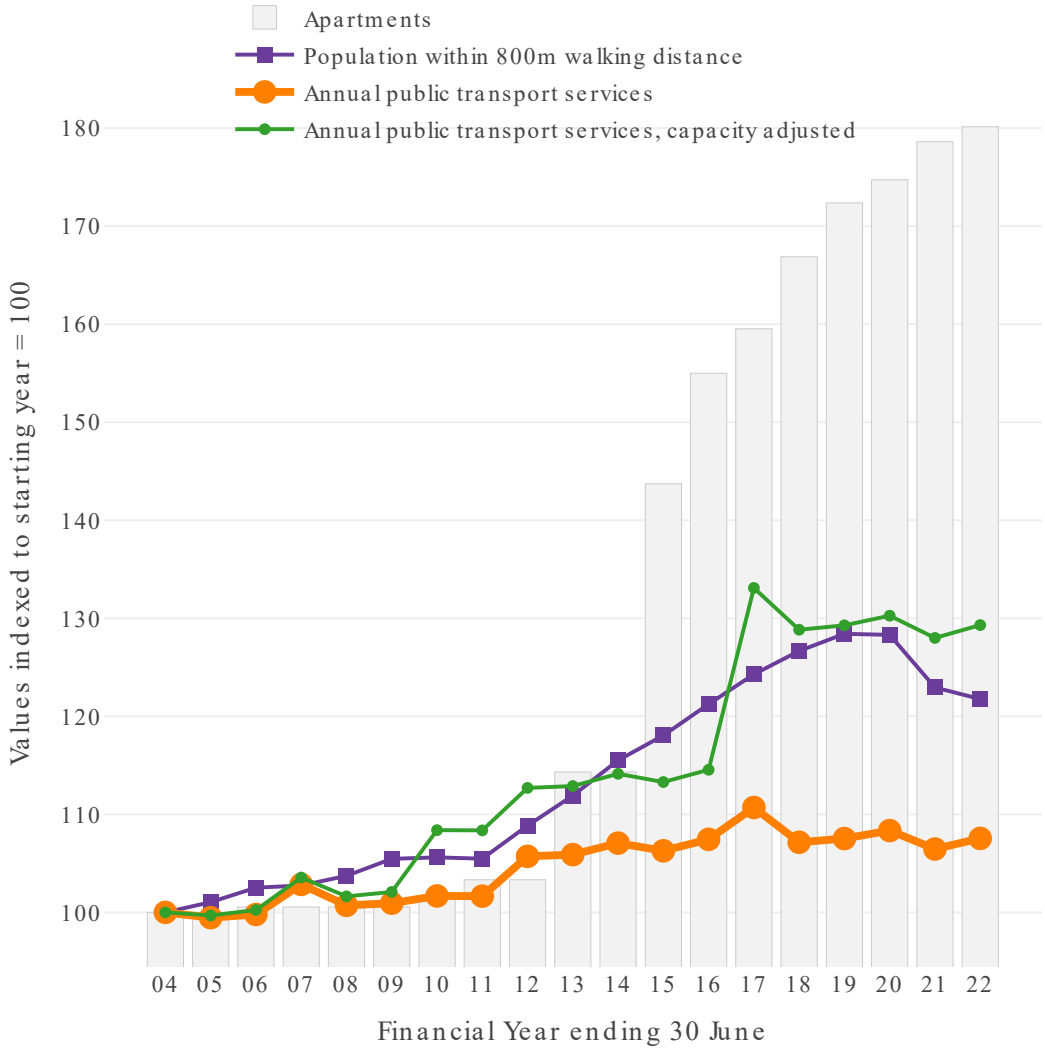


Change in apartments	+ 82.8 %
Change in population	+ 24.9 %
Change in public transport services	+ 2.7 %
Change in public transport services, capacity adjusted	+ 16.8 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

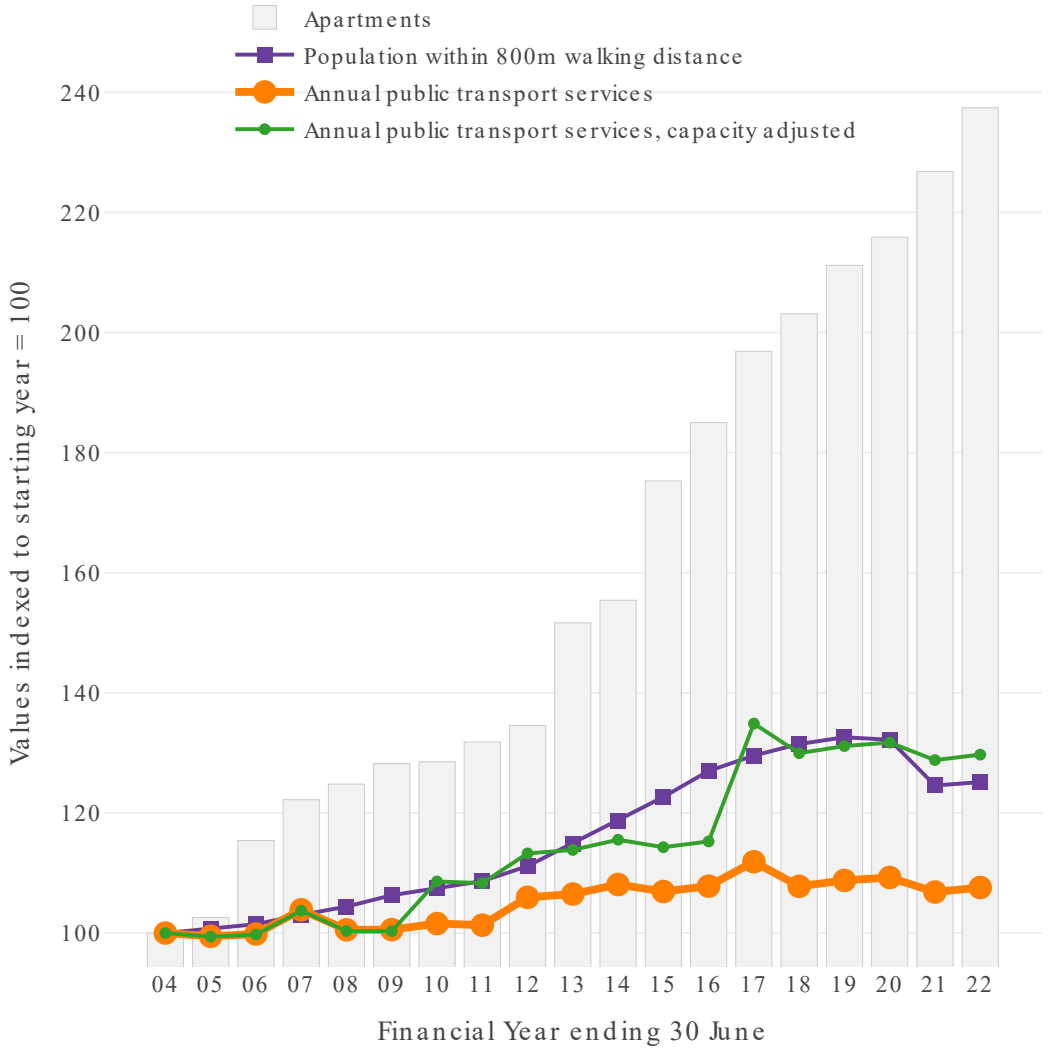
Train line: Burnley (East Richmond, Burnley)



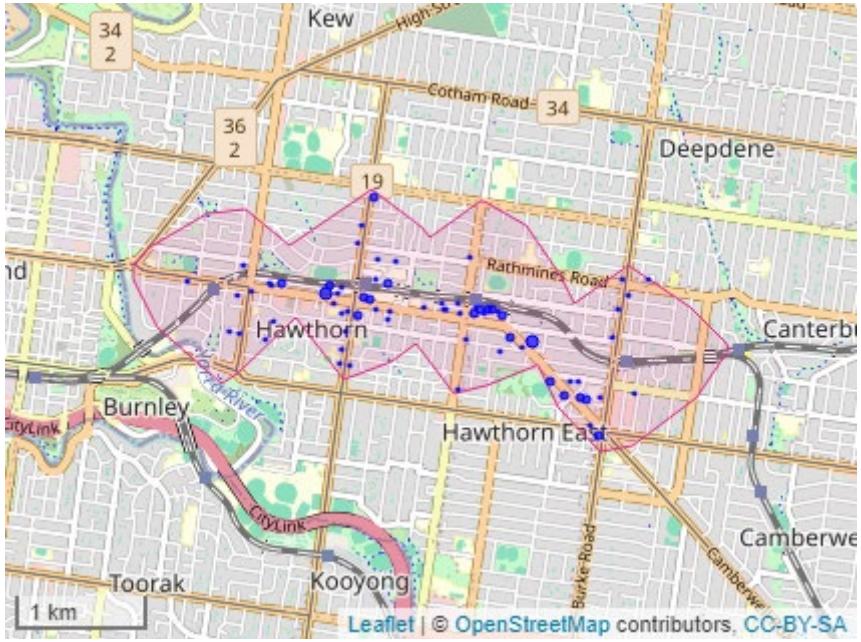
Change in apartments	+ 80.1 %
Change in population	+ 21.8 %
Change in public transport services	+ 7.6 %
Change in public transport services, capacity adjusted	+ 29.3 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Camberwell (Hawthorn to Camberwell)

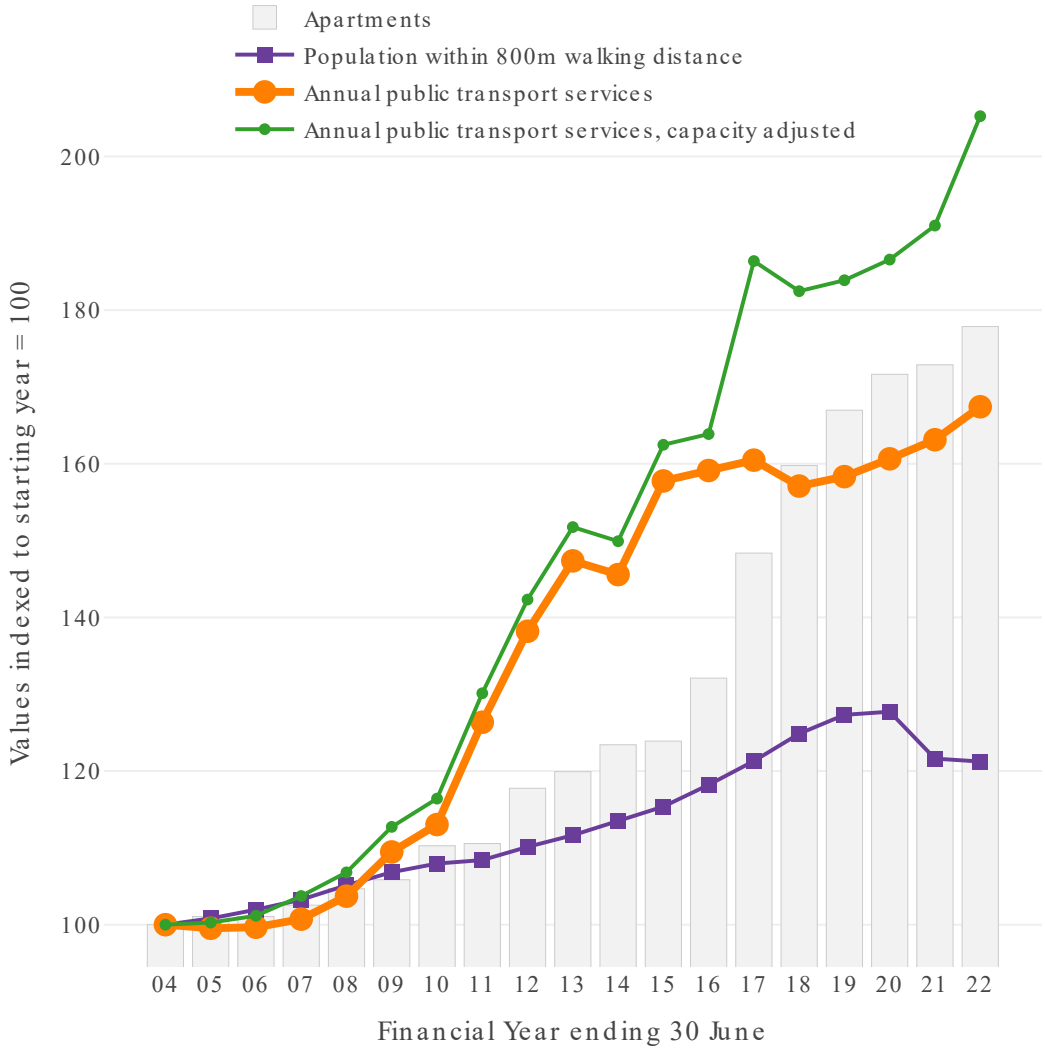


Change in apartments	+ 137.4 %
Change in population	+ 25.1 %
Change in public transport services	+ 7.6 %
Change in public transport services, capacity adjusted	+ 29.7 %

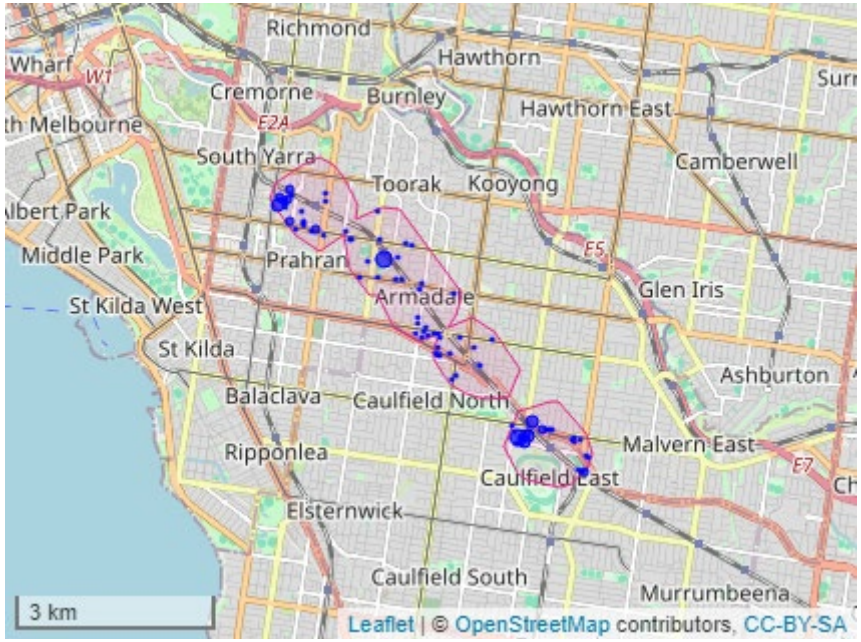


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Caulfield (Hawksburn to Caulfield)

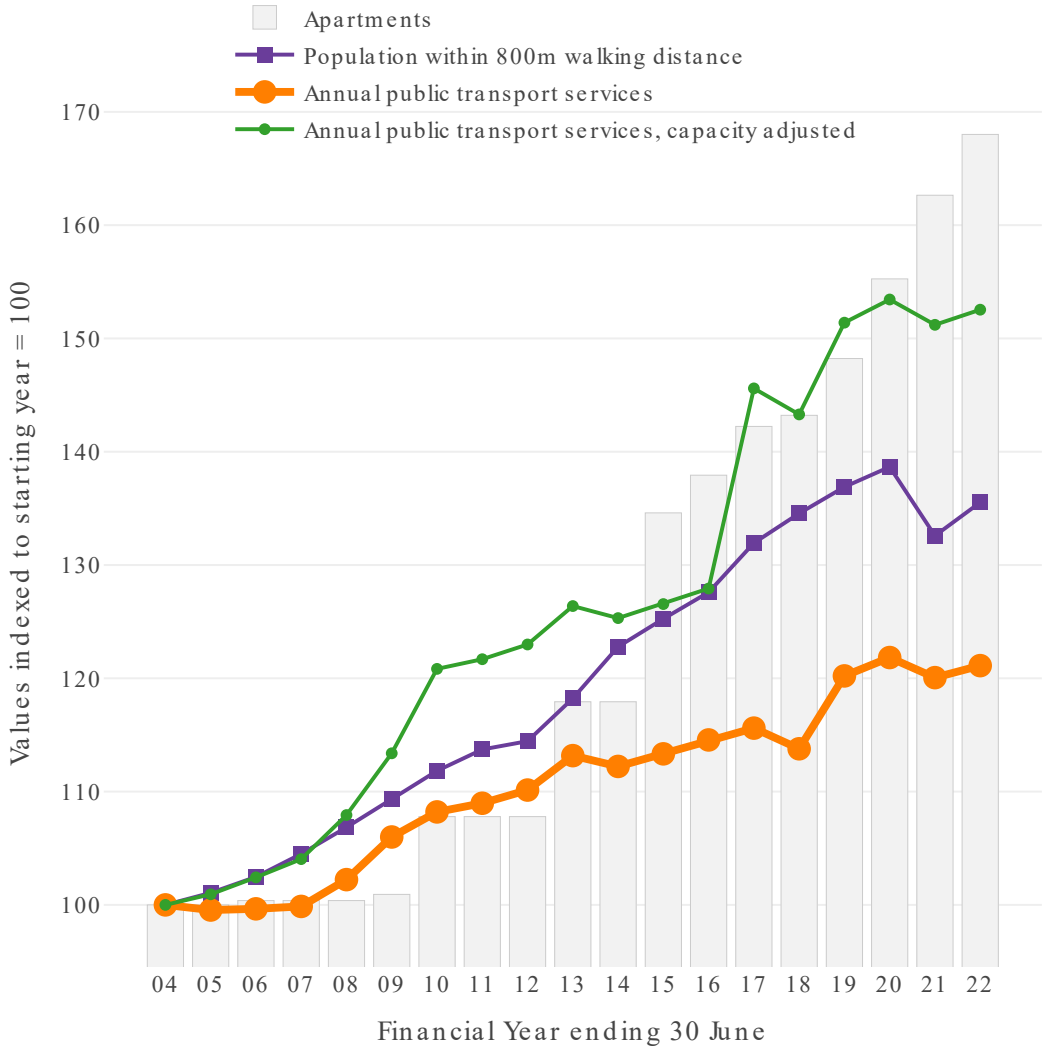


Change in apartments	+ 77.9 %
Change in population	+ 21.2 %
Change in public transport services	+ 67.4 %
Change in public transport services, capacity adjusted	+ 105.2 %

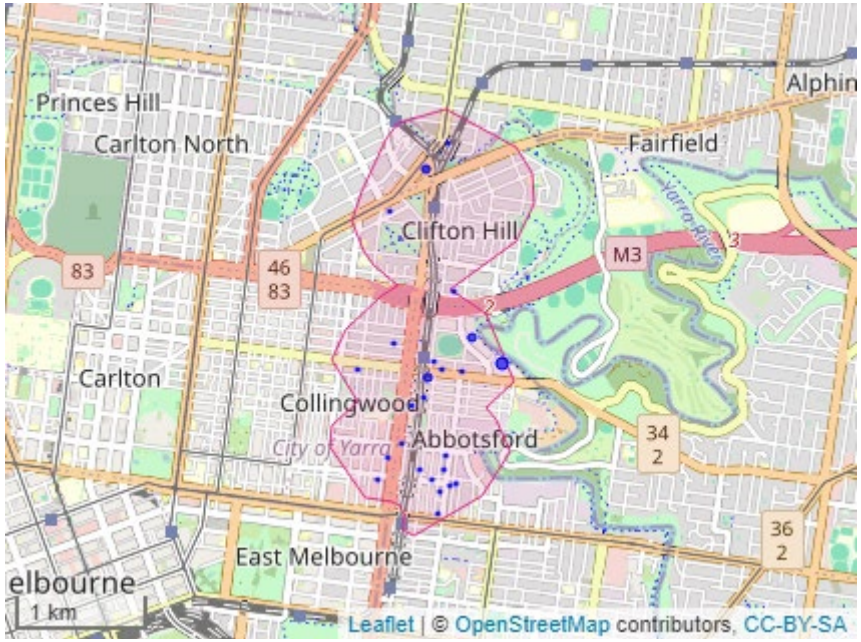


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Clifton Hill (Collingwood to Clifton Hill)

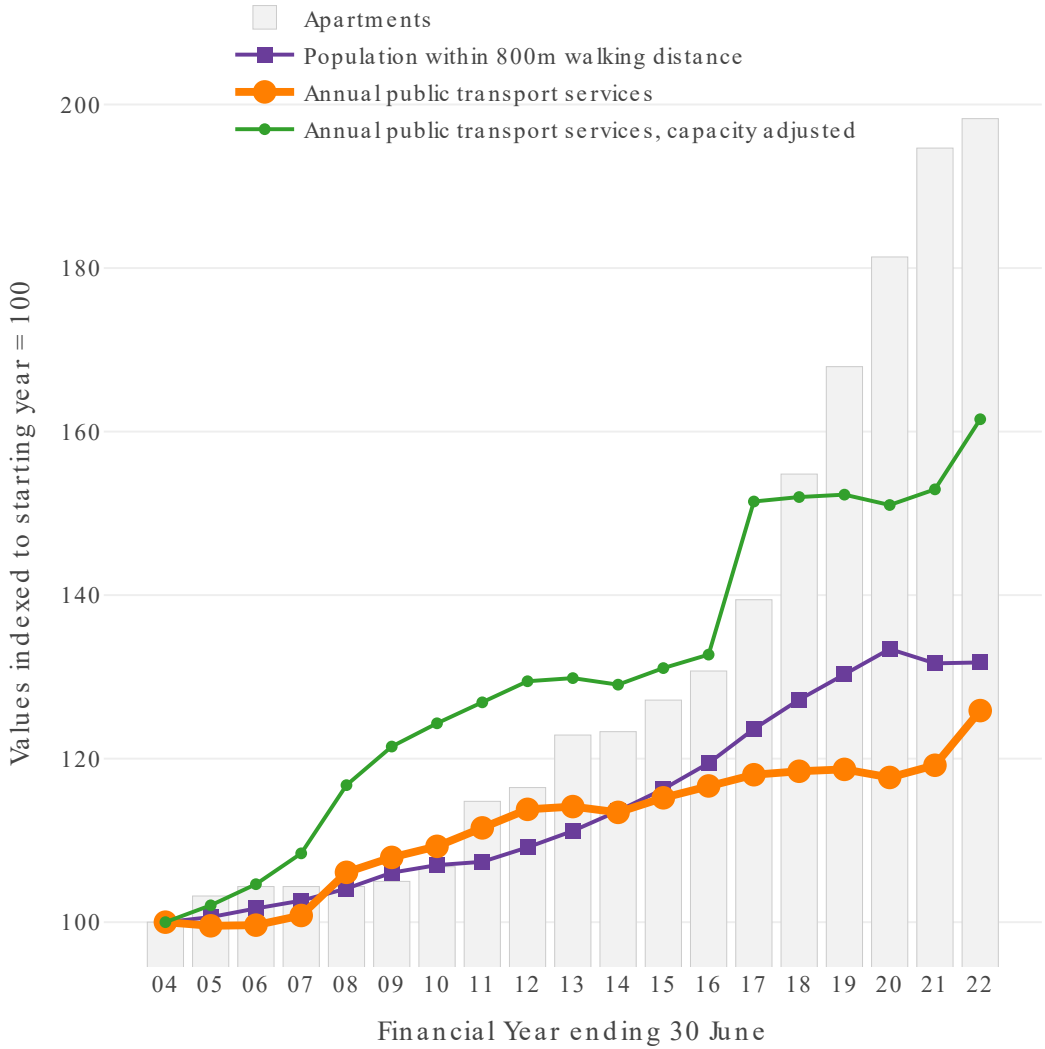


Change in apartments	+ 68.0 %
Change in population	+ 35.5 %
Change in public transport services	+ 21.1 %
Change in public transport services, capacity adjusted	+ 52.5 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

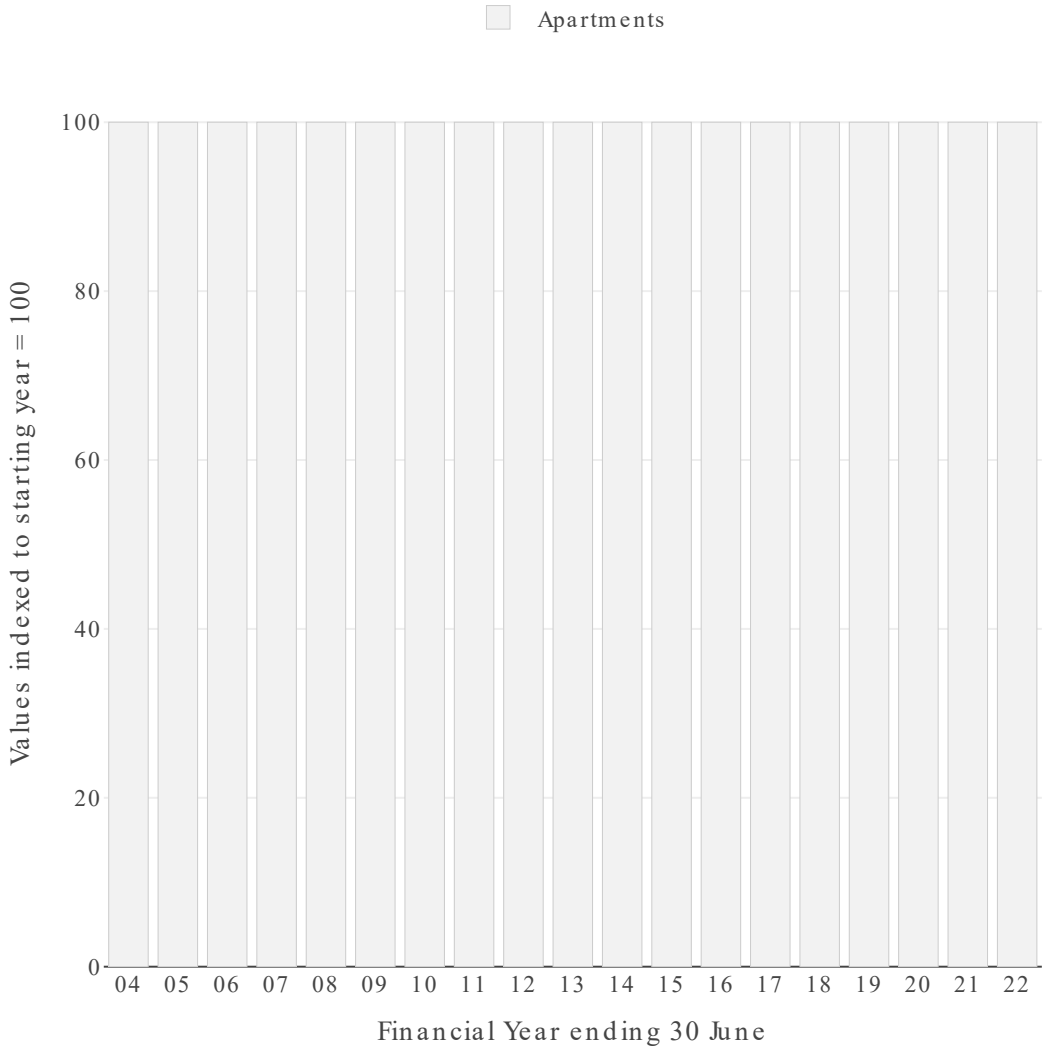
Train line: Craigieburn (Ascot Vale to Craigieburn)



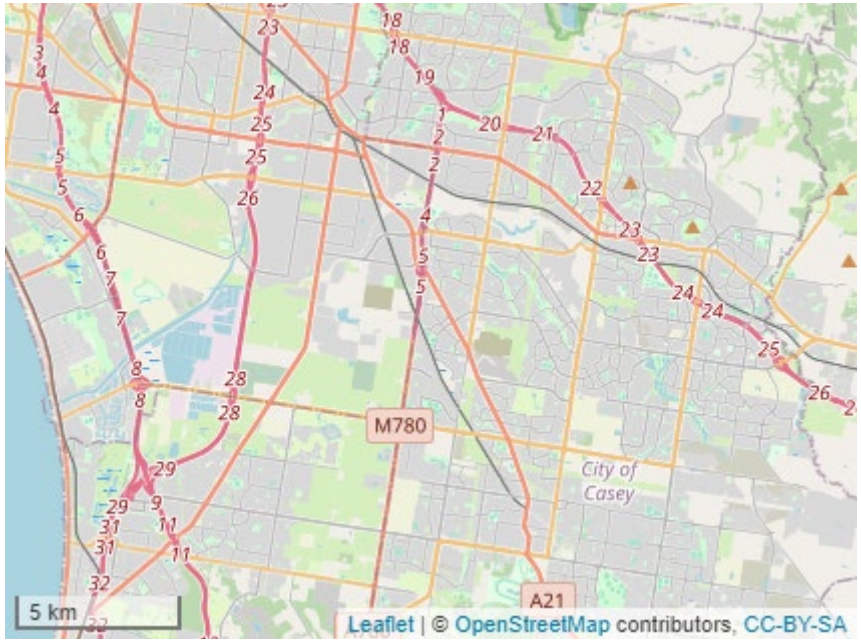
Change in apartments	+ 98.3 %
Change in population	+ 31.8 %
Change in public transport services	+ 25.9 %
Change in public transport services, capacity adjusted	+ 61.5 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Cranbourne (Lynbrook to Cranbourne)

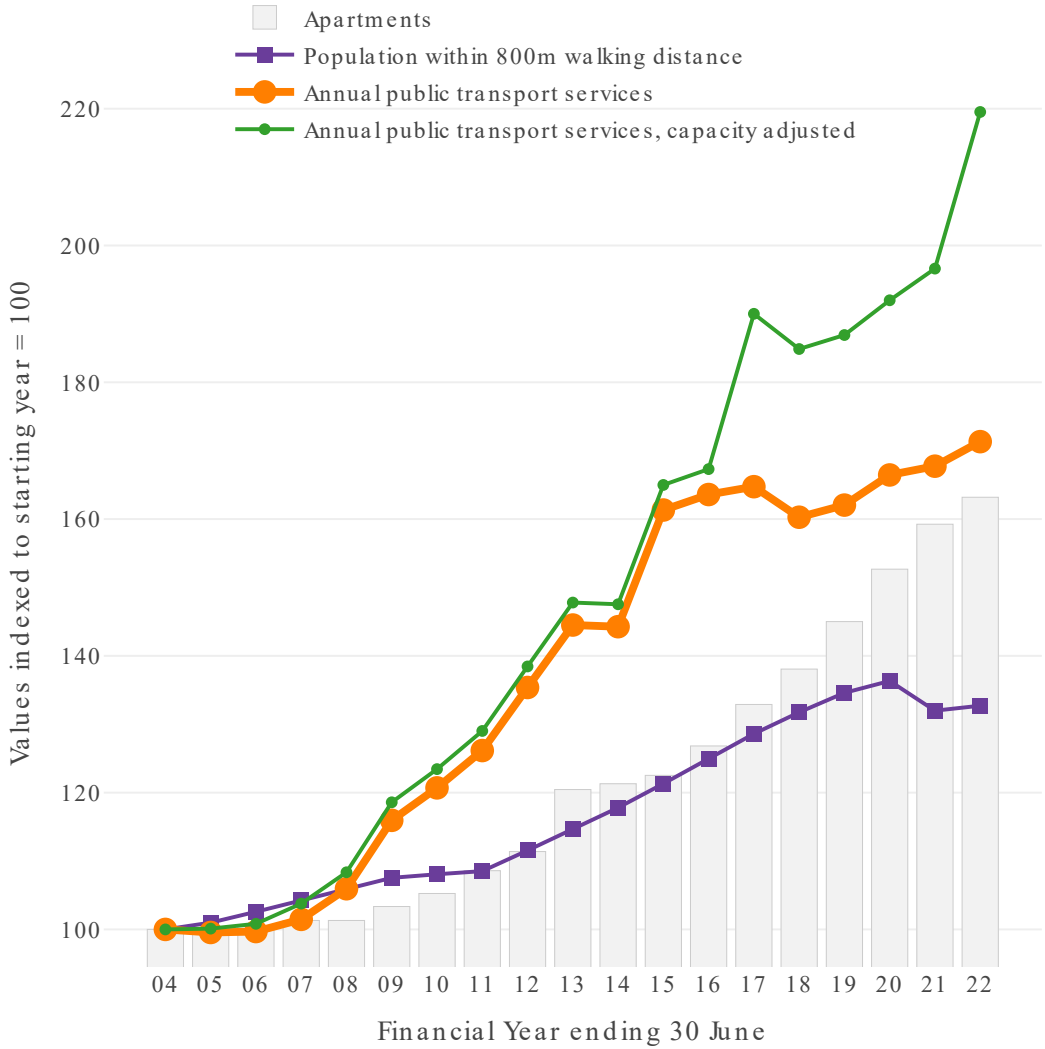


Change in apartments	0.0 %
Change in population	-
Change in public transport services	-
Change in public transport services, capacity adjusted	-

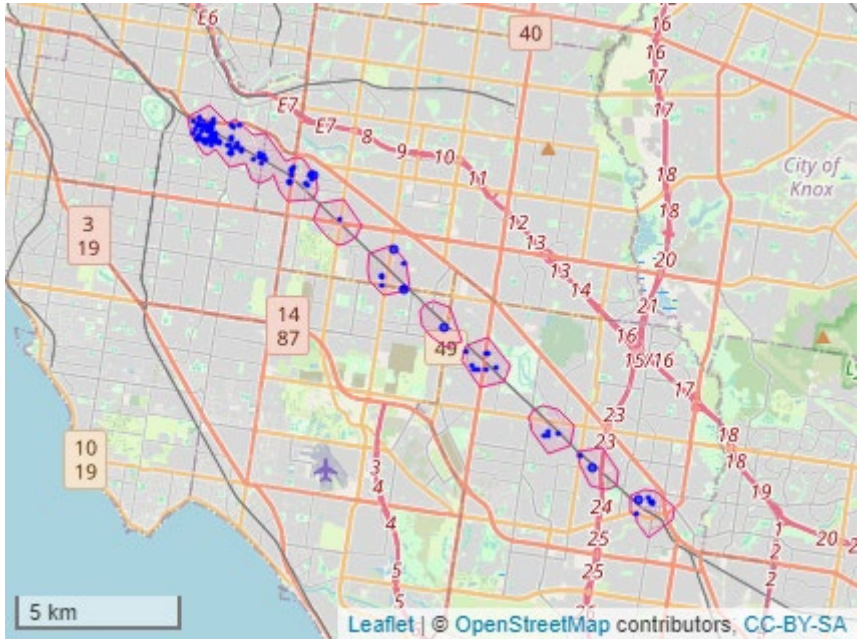


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Dandenong (Carnegie to Dandenong)

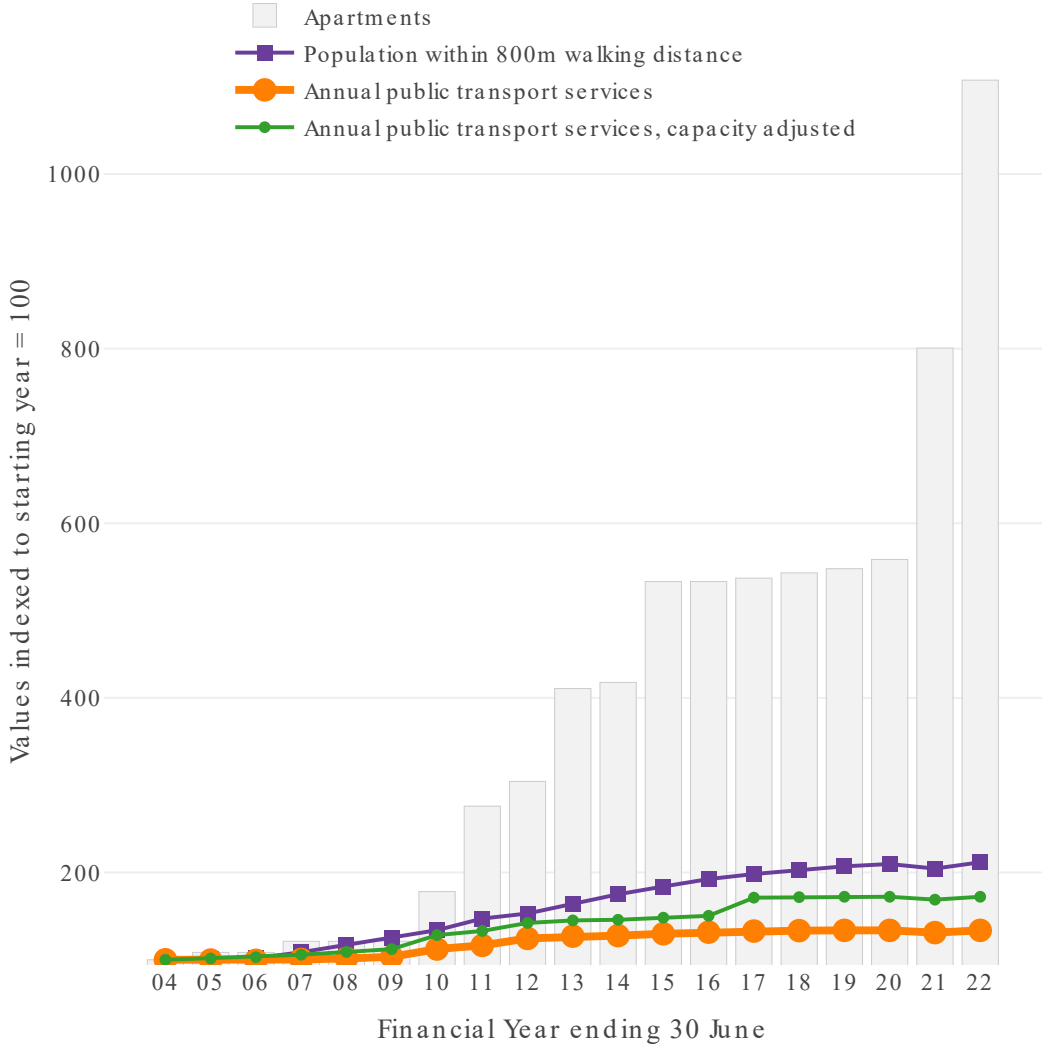


Change in apartments	+ 63.2 %
Change in population	+ 32.7 %
Change in public transport services	+ 71.3 %
Change in public transport services, capacity adjusted	+ 119.5 %

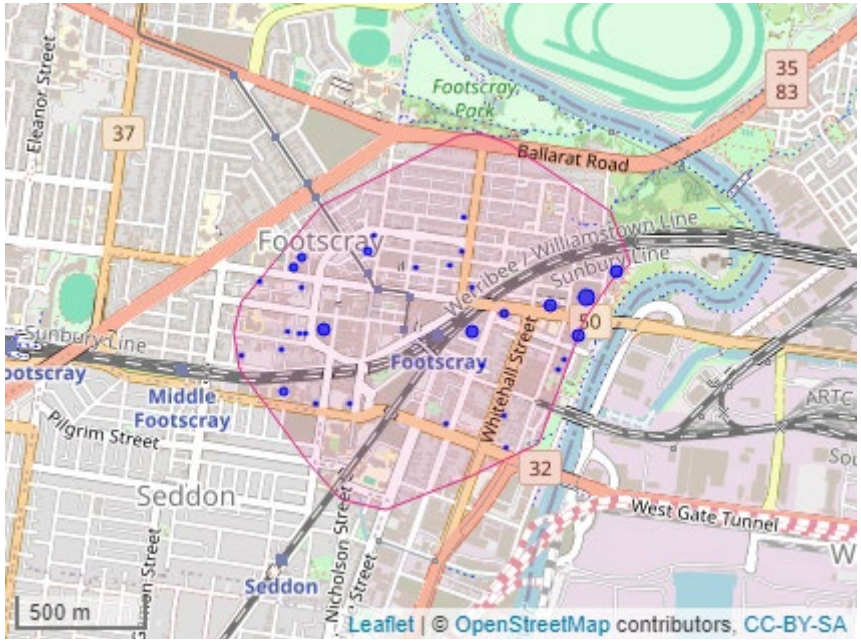


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Footscray

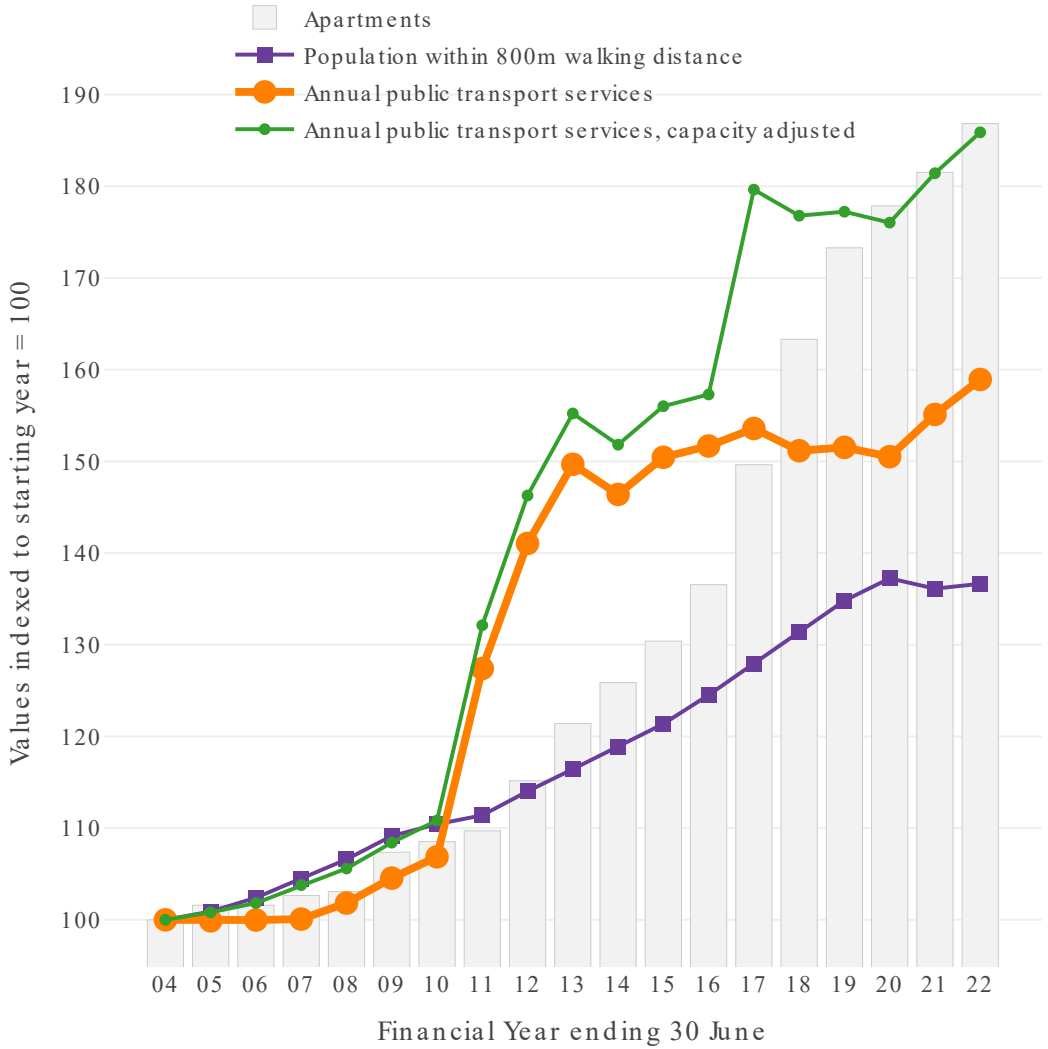


Change in apartments	+ 1007.6 %
Change in population	+ 111.7 %
Change in public transport services	+ 33.7 %
Change in public transport services, capacity adjusted	+ 72.2 %

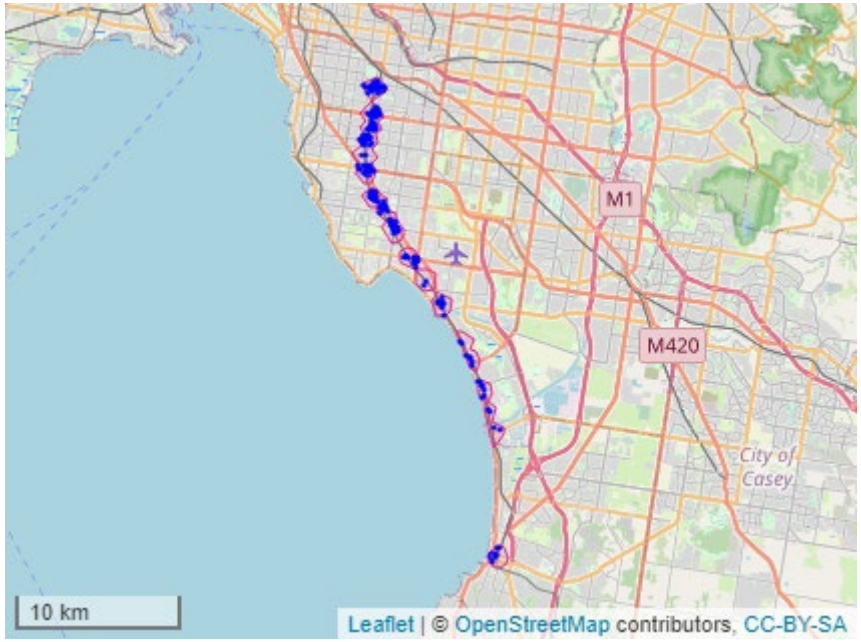


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Frankston (Glenhuntly to Frankston)

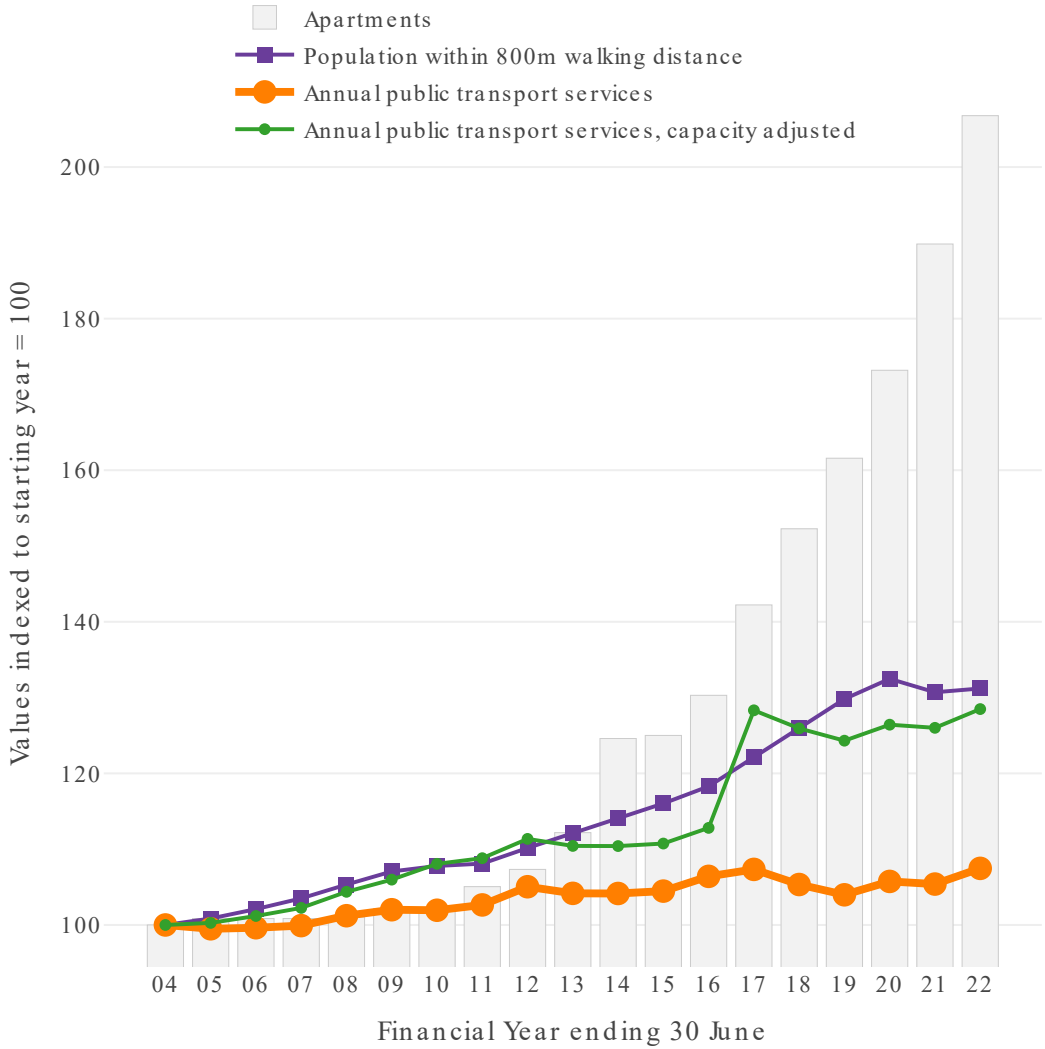


Change in apartments	+ 86.8 %
Change in population	+ 36.6 %
Change in public transport services	+ 58.9 %
Change in public transport services, capacity adjusted	+ 85.9 %

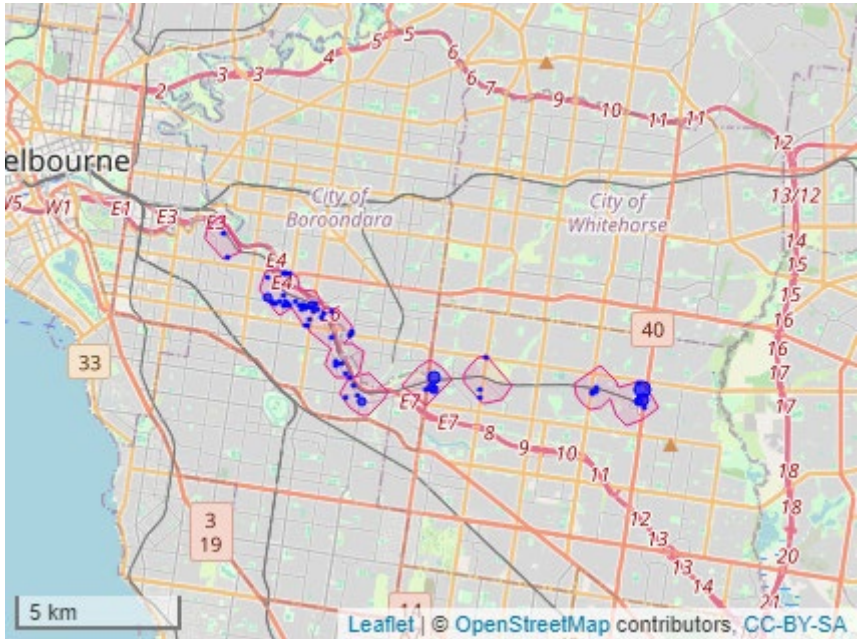


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Glen Waverley (Heyington to Glen Waverley)

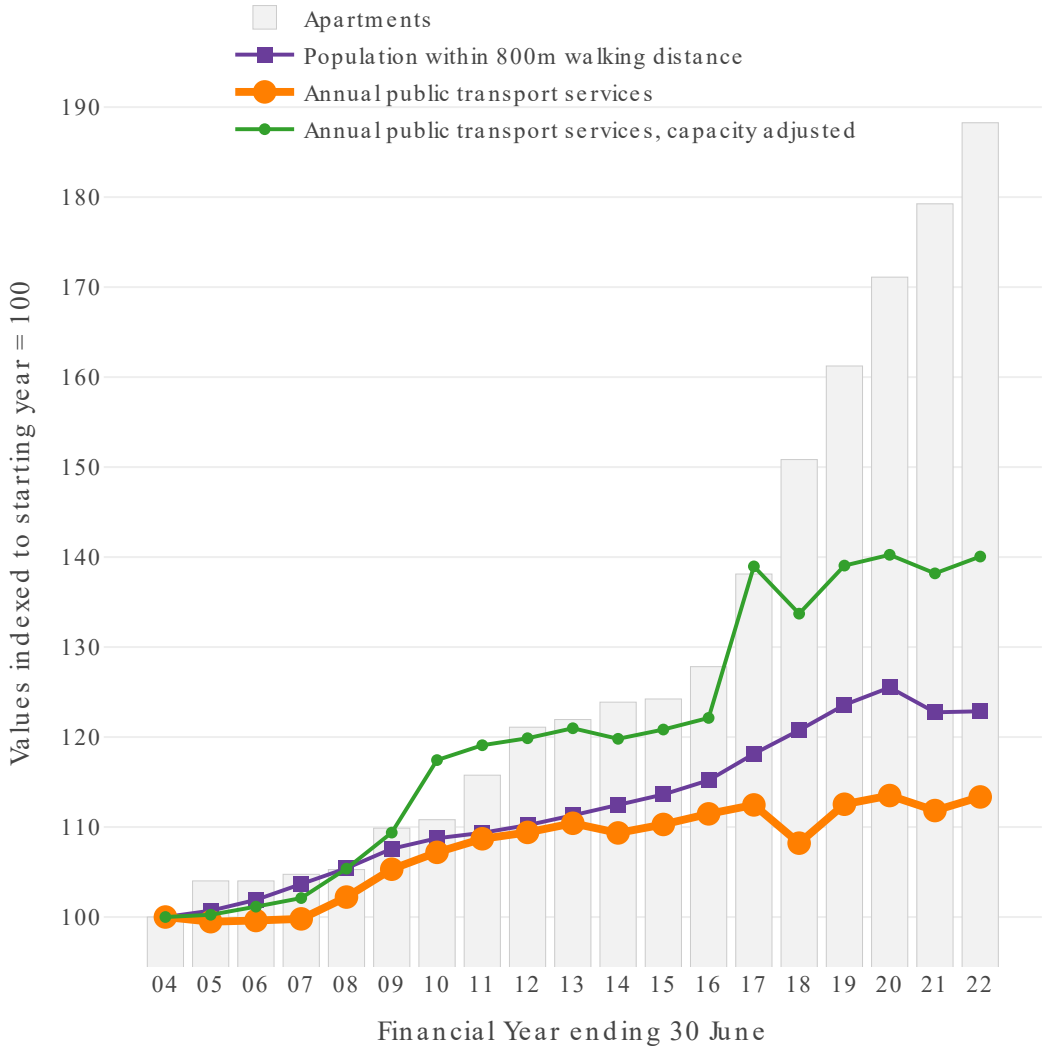


Change in apartments	+ 106.8 %
Change in population	+ 31.2 %
Change in public transport services	+ 7.5 %
Change in public transport services, capacity adjusted	+ 28.5 %

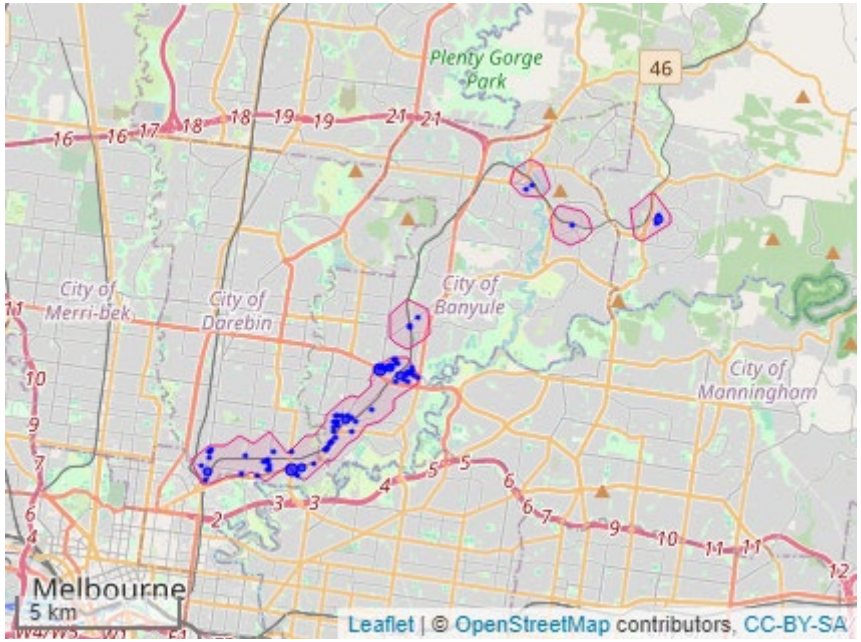


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Hurstbridge (Westgarth to Hurstbridge)

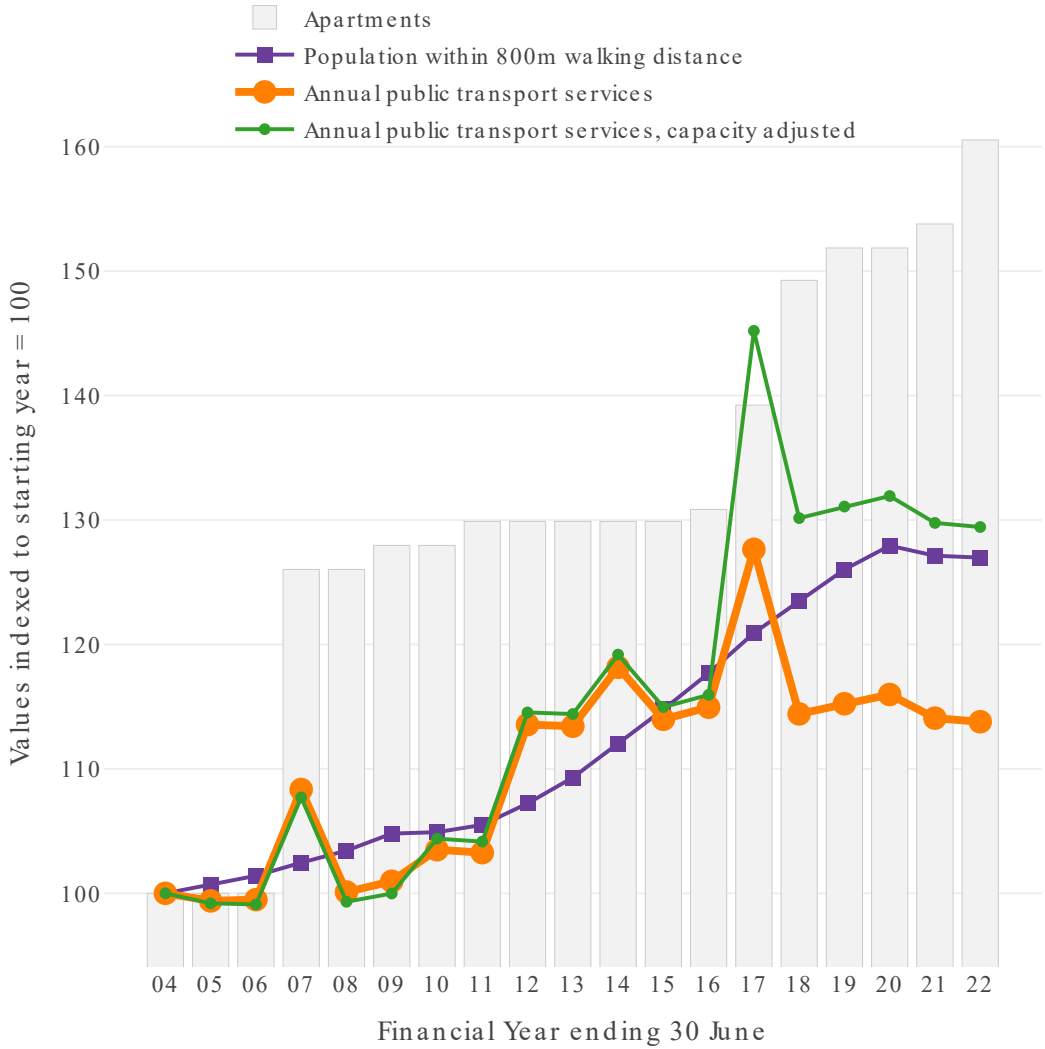


Change in apartments	+ 88.3 %
Change in population	+ 22.9 %
Change in public transport services	+ 13.3 %
Change in public transport services, capacity adjusted	+ 40.1 %

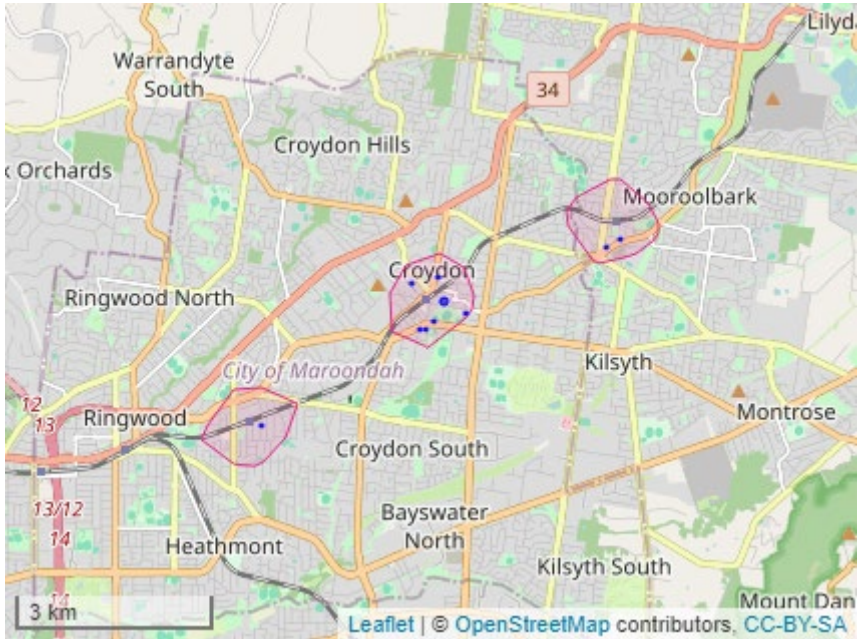


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Lilydale (East Ringwood to Lilydale)

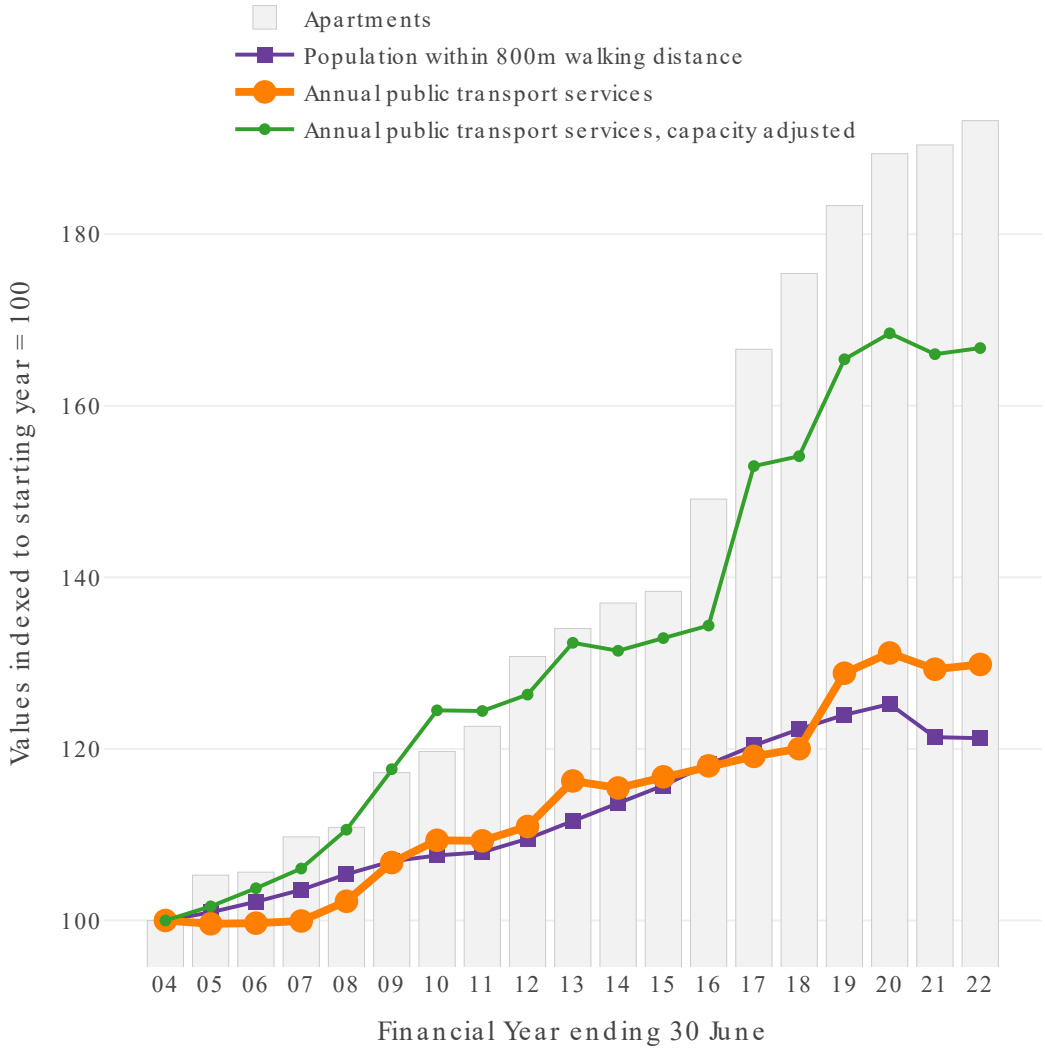


Change in apartments	+ 60.5 %
Change in population	+ 27.0 %
Change in public transport services	+ 13.8 %
Change in public transport services, capacity adjusted	+ 29.4 %

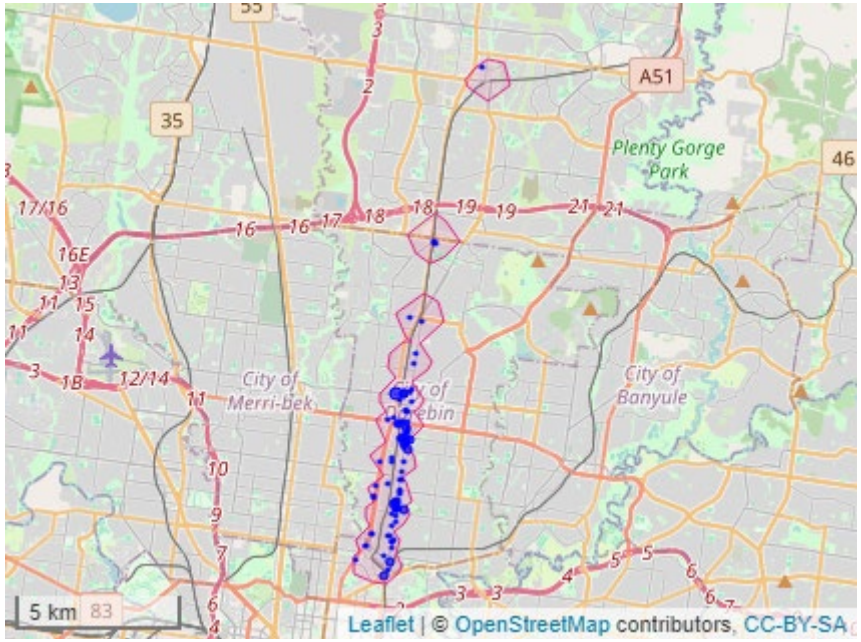


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Mernda (Rushall to Mernda)

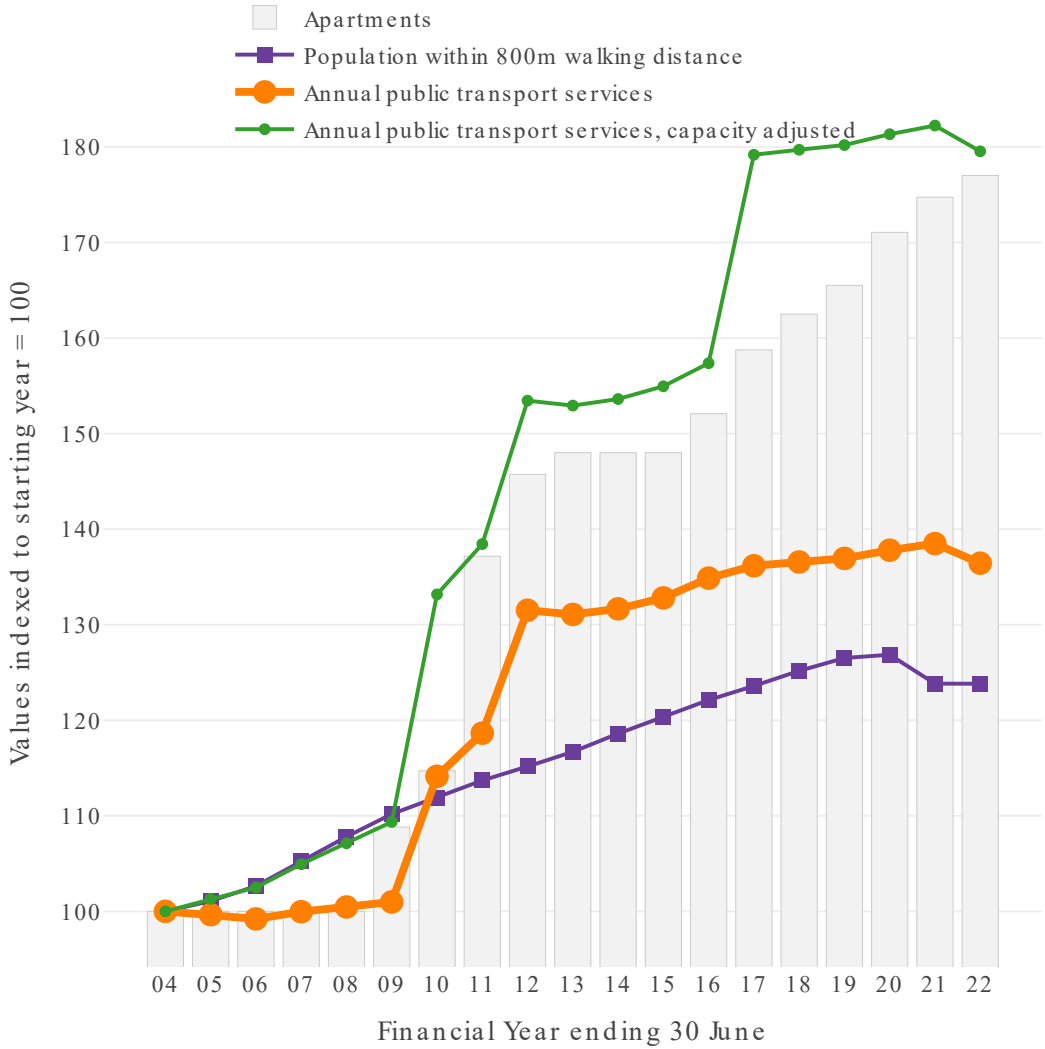


Change in apartments	+ 93.2 %
Change in population	+ 21.2 %
Change in public transport services	+ 29.8 %
Change in public transport services, capacity adjusted	+ 66.7 %

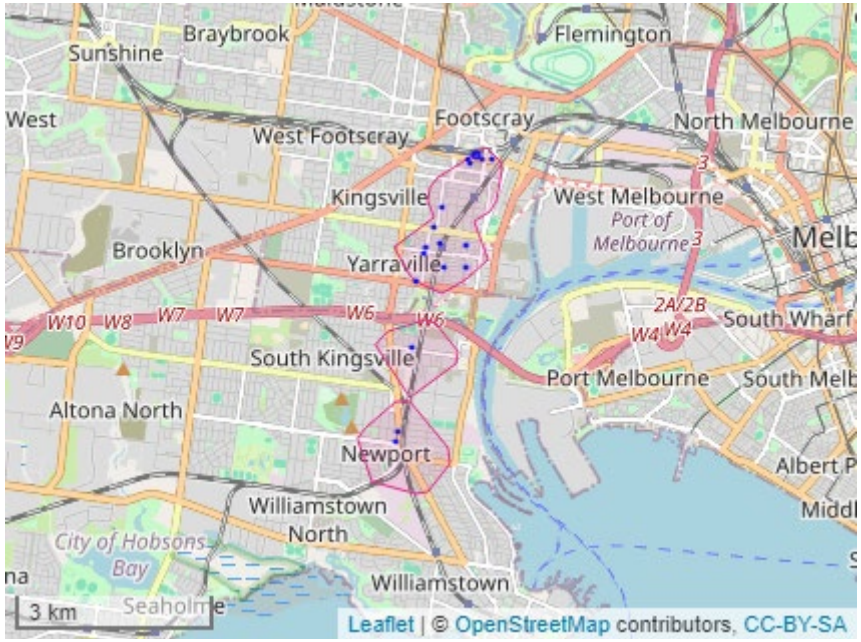


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Newport (Seddon to Newport)

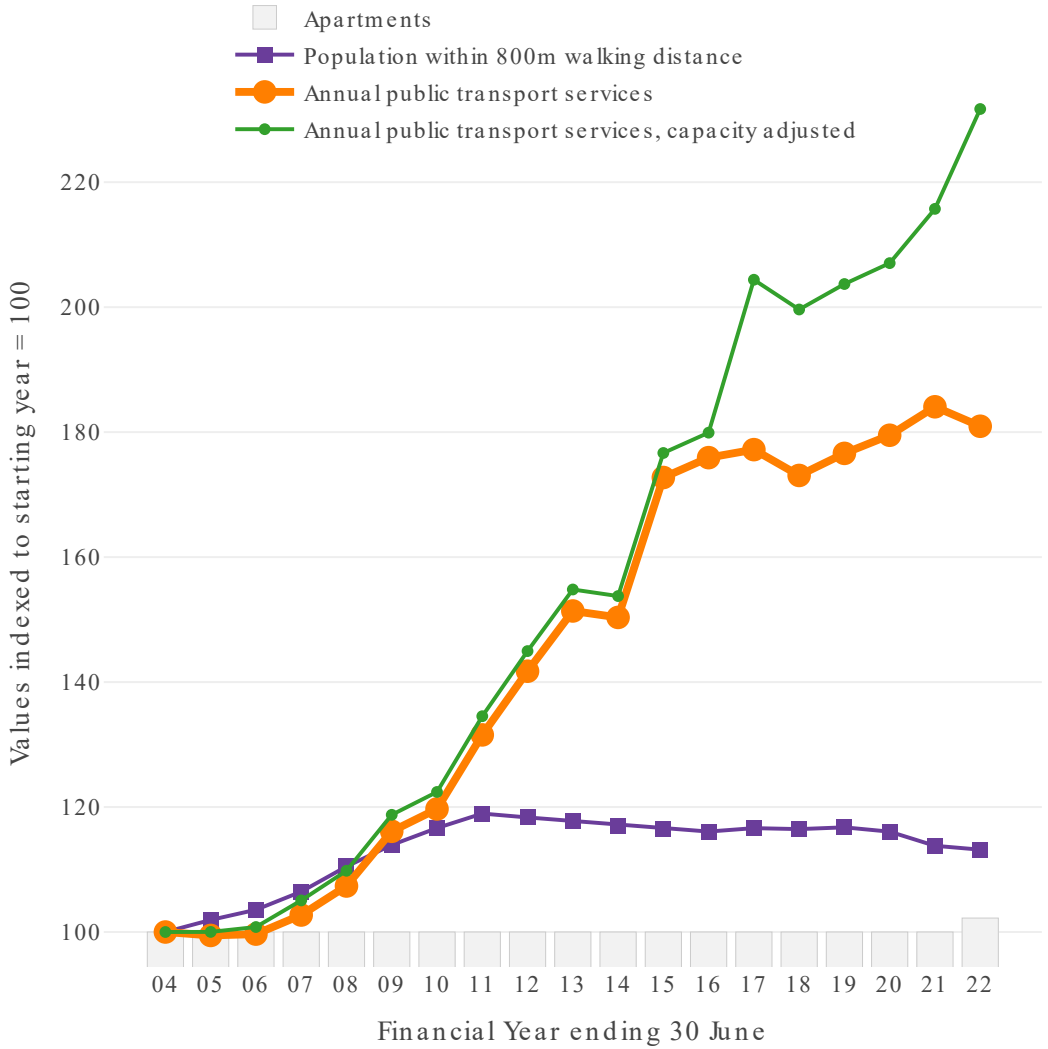


Change in apartments	+ 77.0 %
Change in population	+ 23.8 %
Change in public transport services	+ 36.4 %
Change in public transport services, capacity adjusted	+ 79.5 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

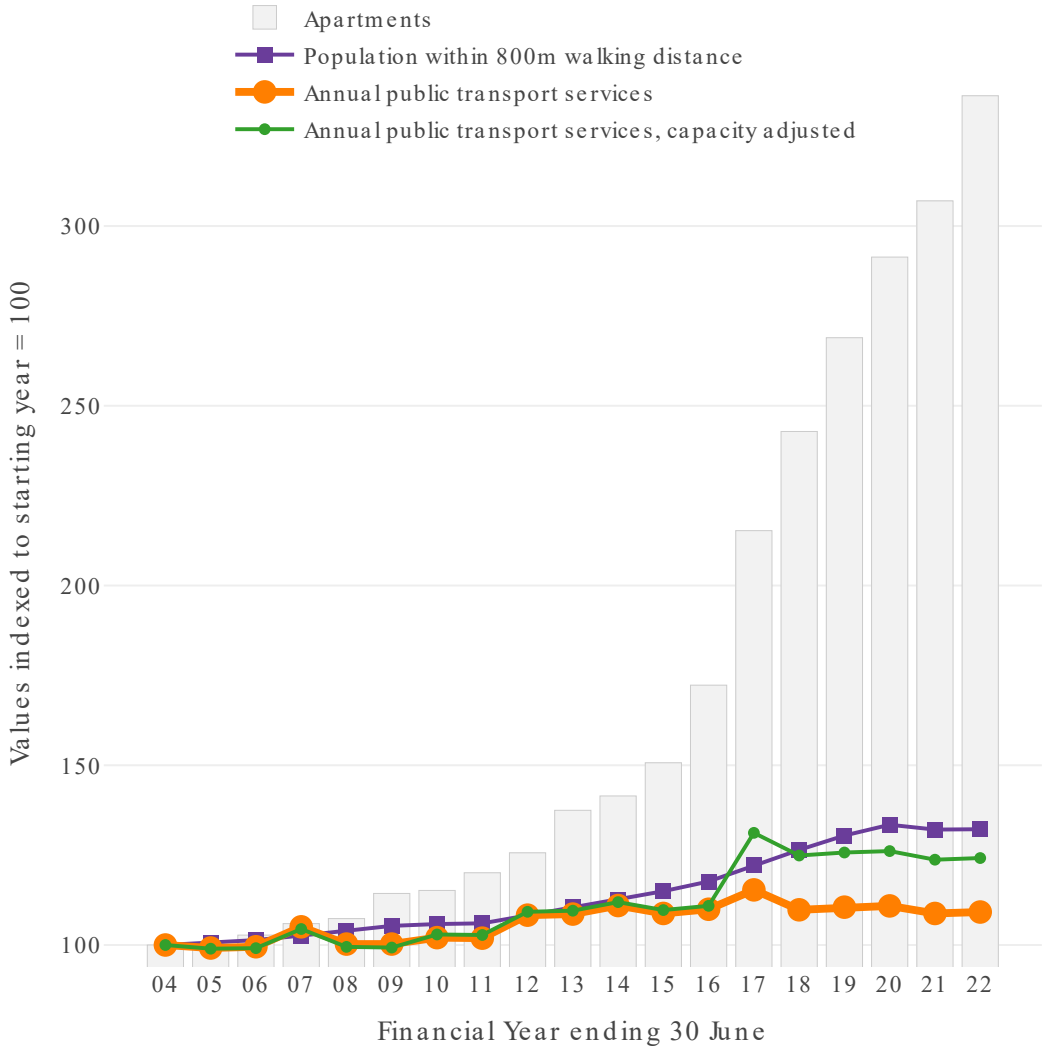
Train line: Pakenham (Hallam to Pakenham)



Change in apartments	+ 2.2 %
Change in population	+ 13.2 %
Change in public transport services	+ 80.9 %
Change in public transport services, capacity adjusted	+ 131.7 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

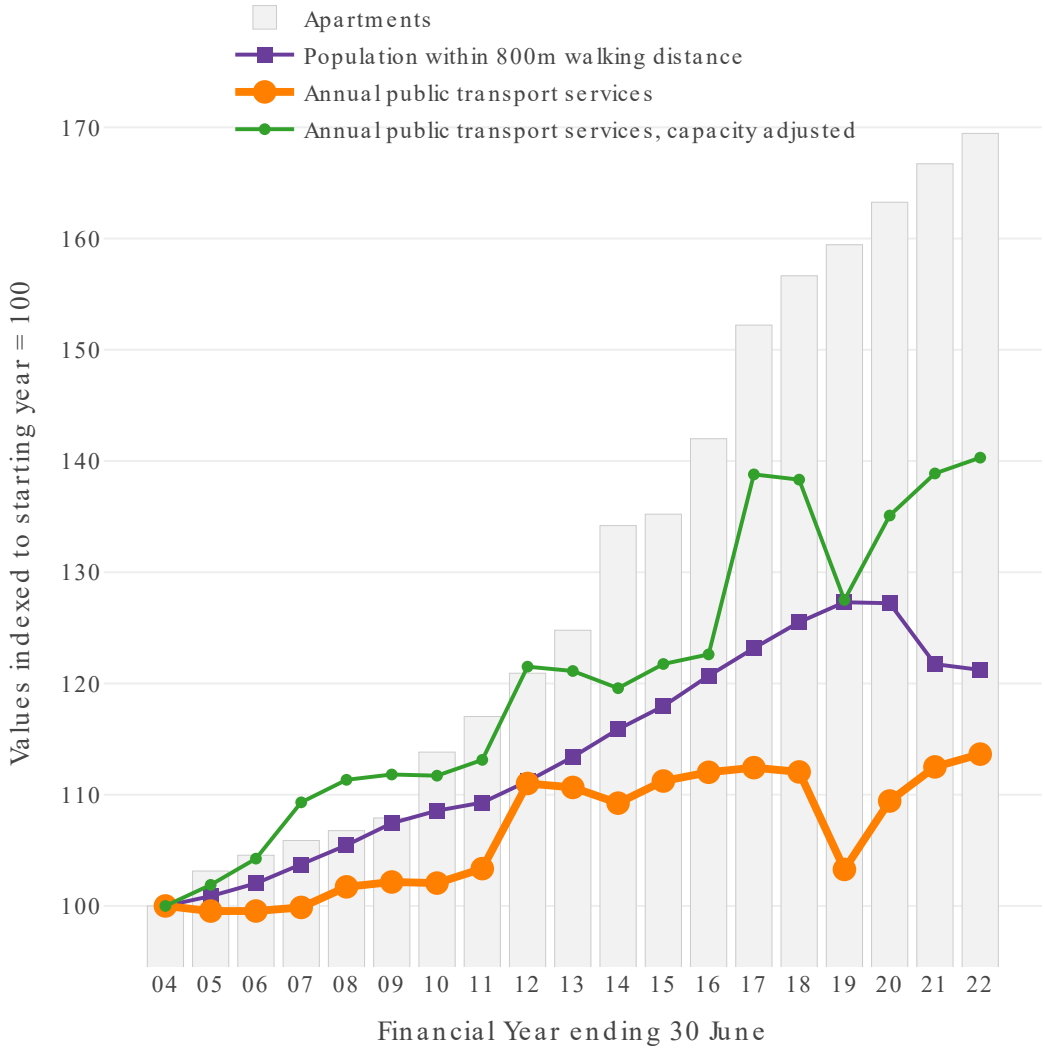
Train line: Ringwood (East Camberwell to Ringwood)



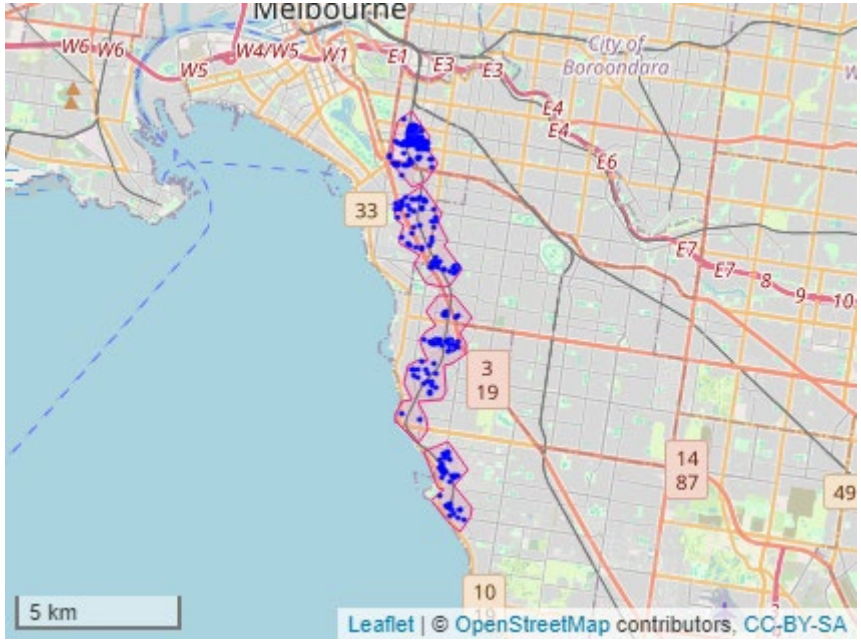
Change in apartments	+ 236.2 %
Change in population	+ 32.2 %
Change in public transport services	+ 9.2 %
Change in public transport services, capacity adjusted	+ 24.2 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Sandringham (Prahran to Sandringham)

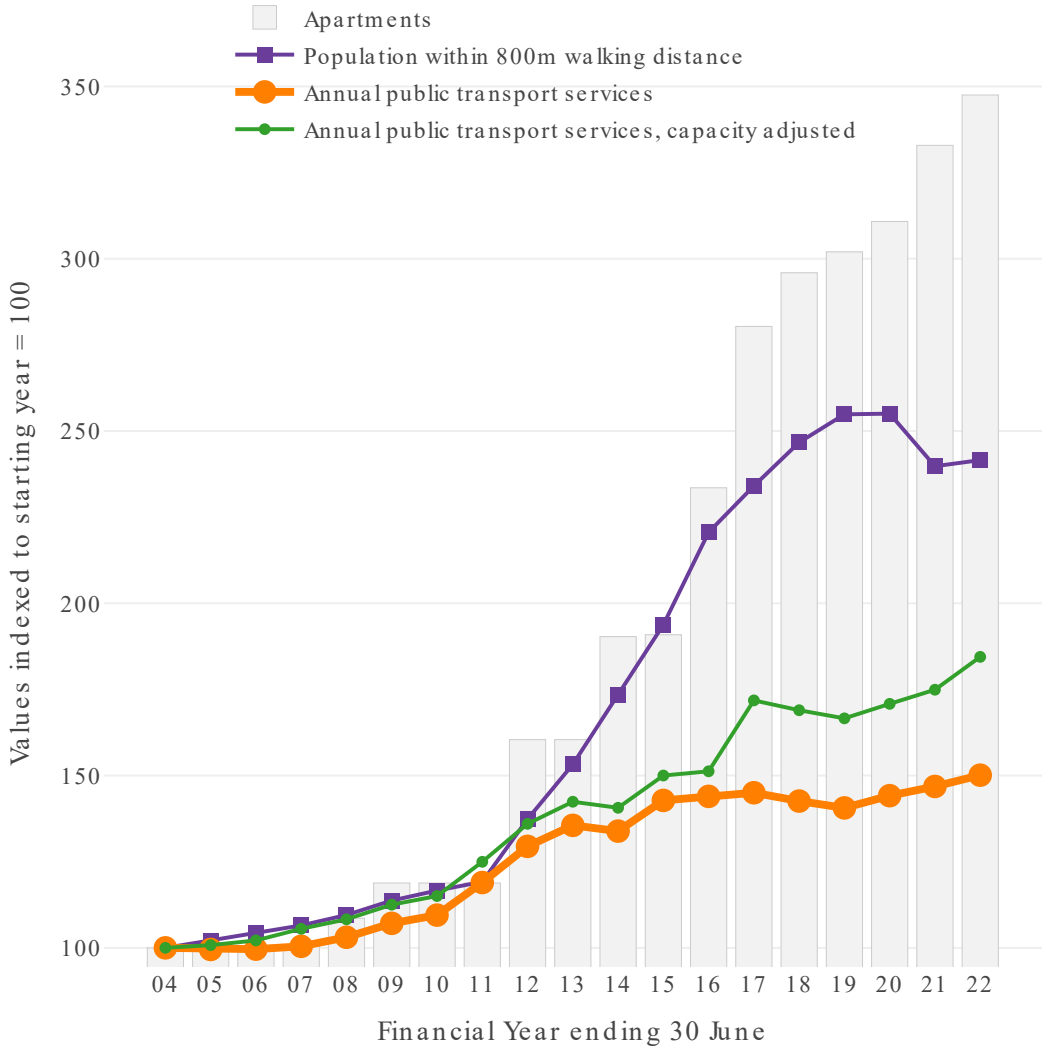


Change in apartments	+ 69.5 %
Change in population	+ 21.2 %
Change in public transport services	+ 13.7 %
Change in public transport services, capacity adjusted	+ 40.3 %

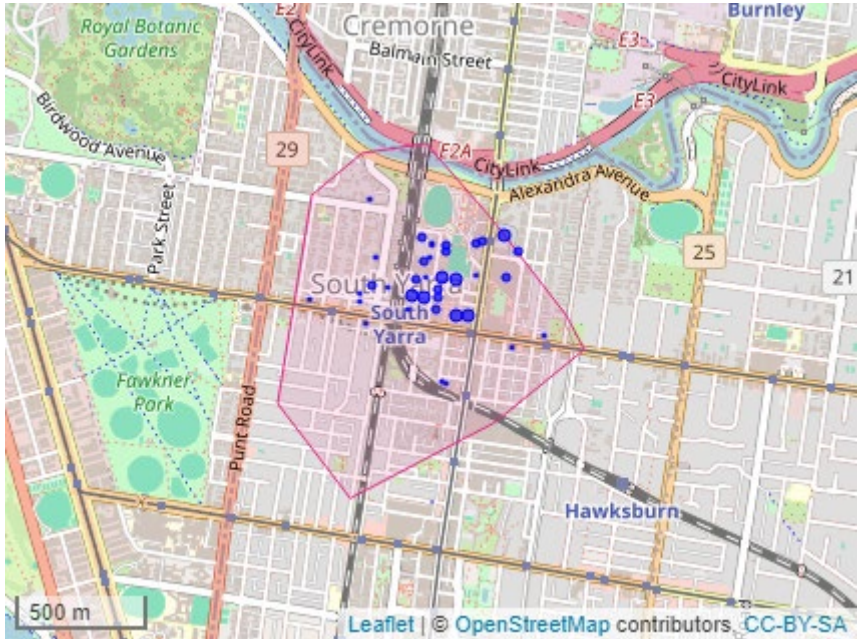


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: South Yarra

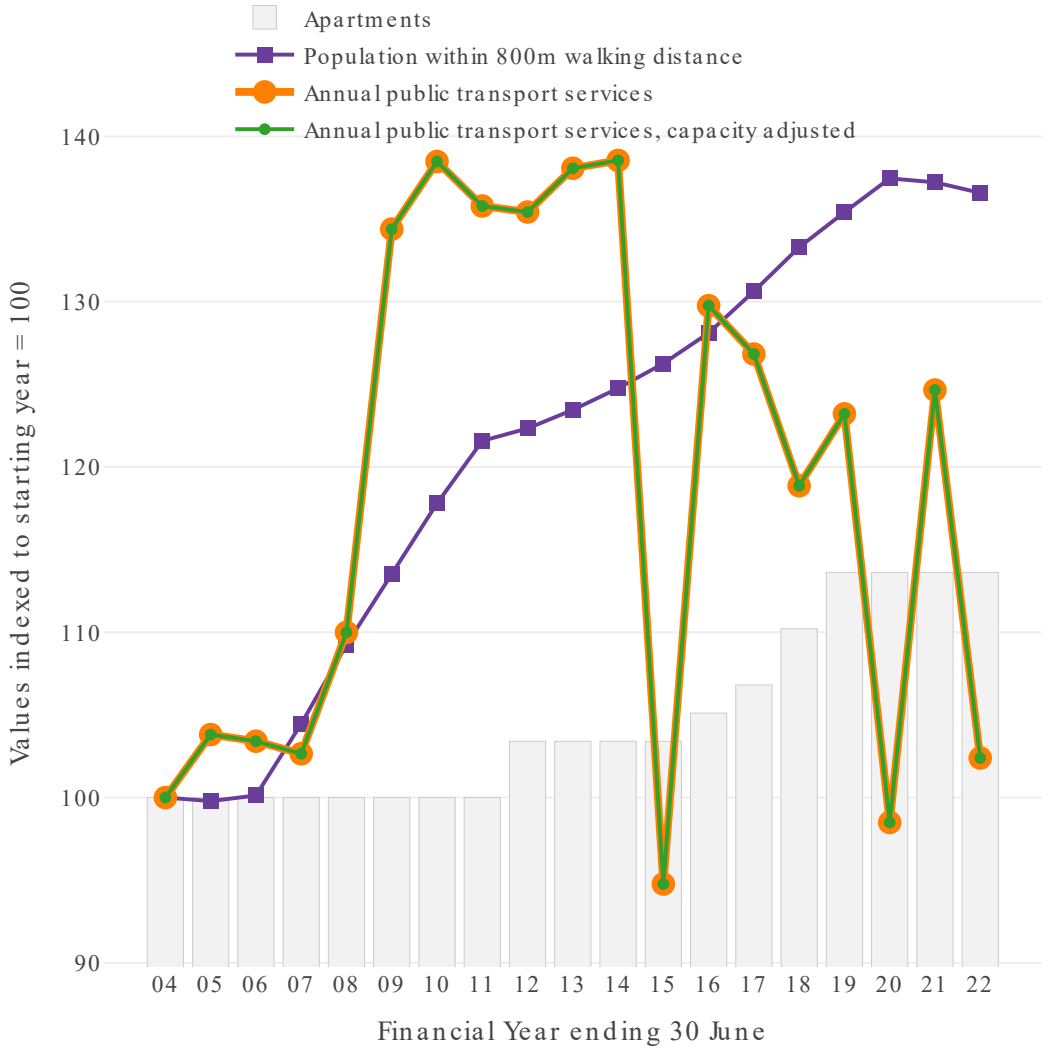


Change in apartments	+ 247.5 %
Change in population	+ 141.6 %
Change in public transport services	+ 50.1 %
Change in public transport services, capacity adjusted	+ 84.4 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

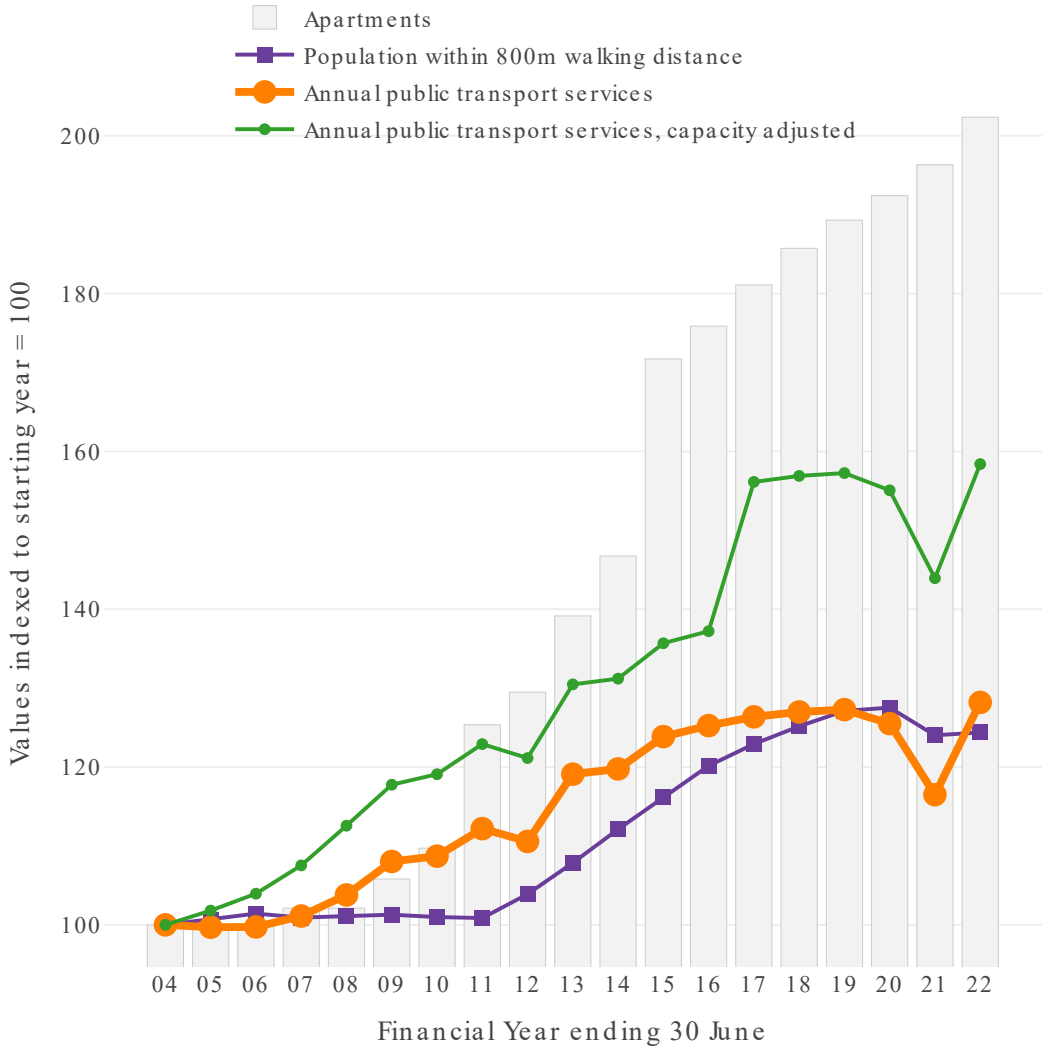
Train line: Stony Point (Leawarra to Stony Point)



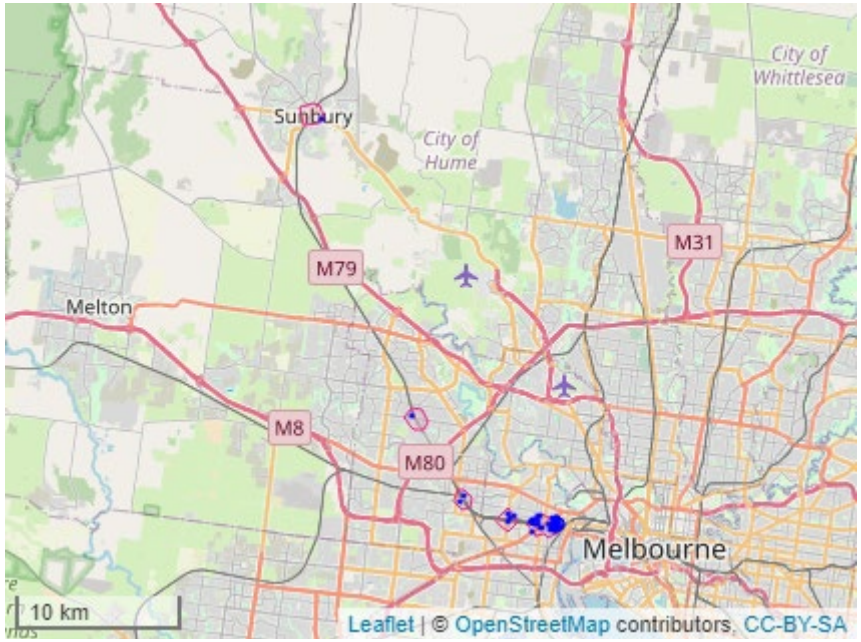
Change in apartments	+ 13.6 %
Change in population	+ 36.6 %
Change in public transport services	+ 2.4 %
Change in public transport services, capacity adjusted	+ 2.4 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Sunbury (Middle Footscray to Sunbury)

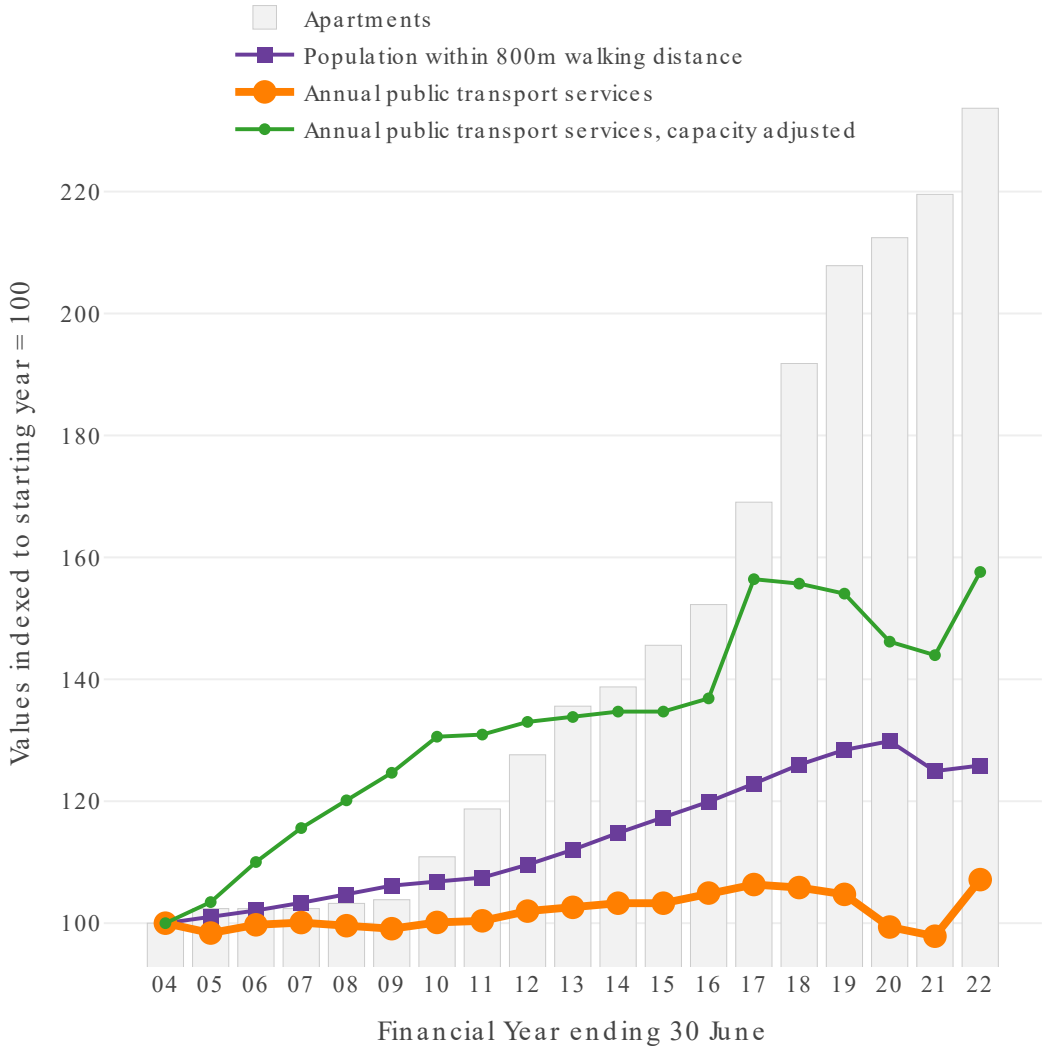


Change in apartments	+ 102.3 %
Change in population	+ 24.4 %
Change in public transport services	+ 28.2 %
Change in public transport services, capacity adjusted	+ 58.4 %

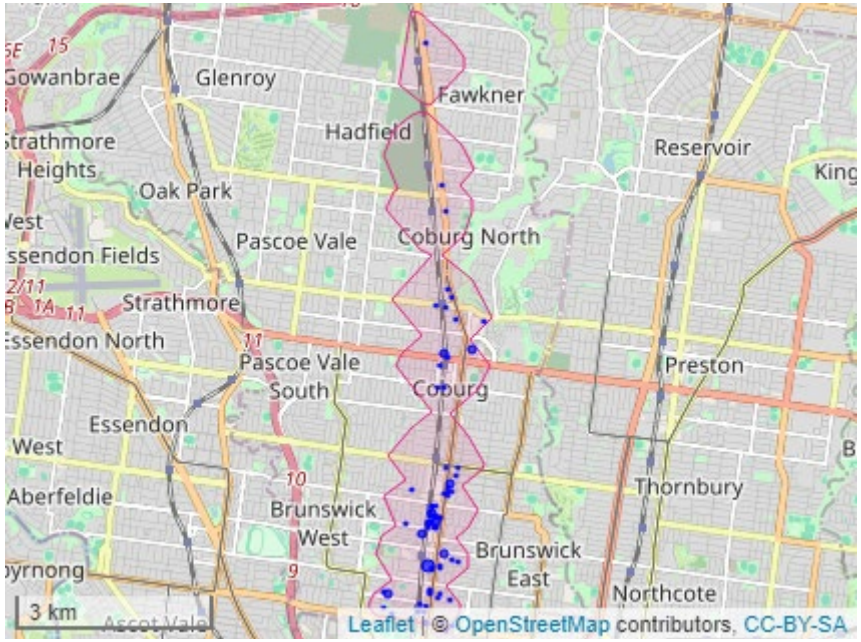


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Upfield (Jewell to Upfield)

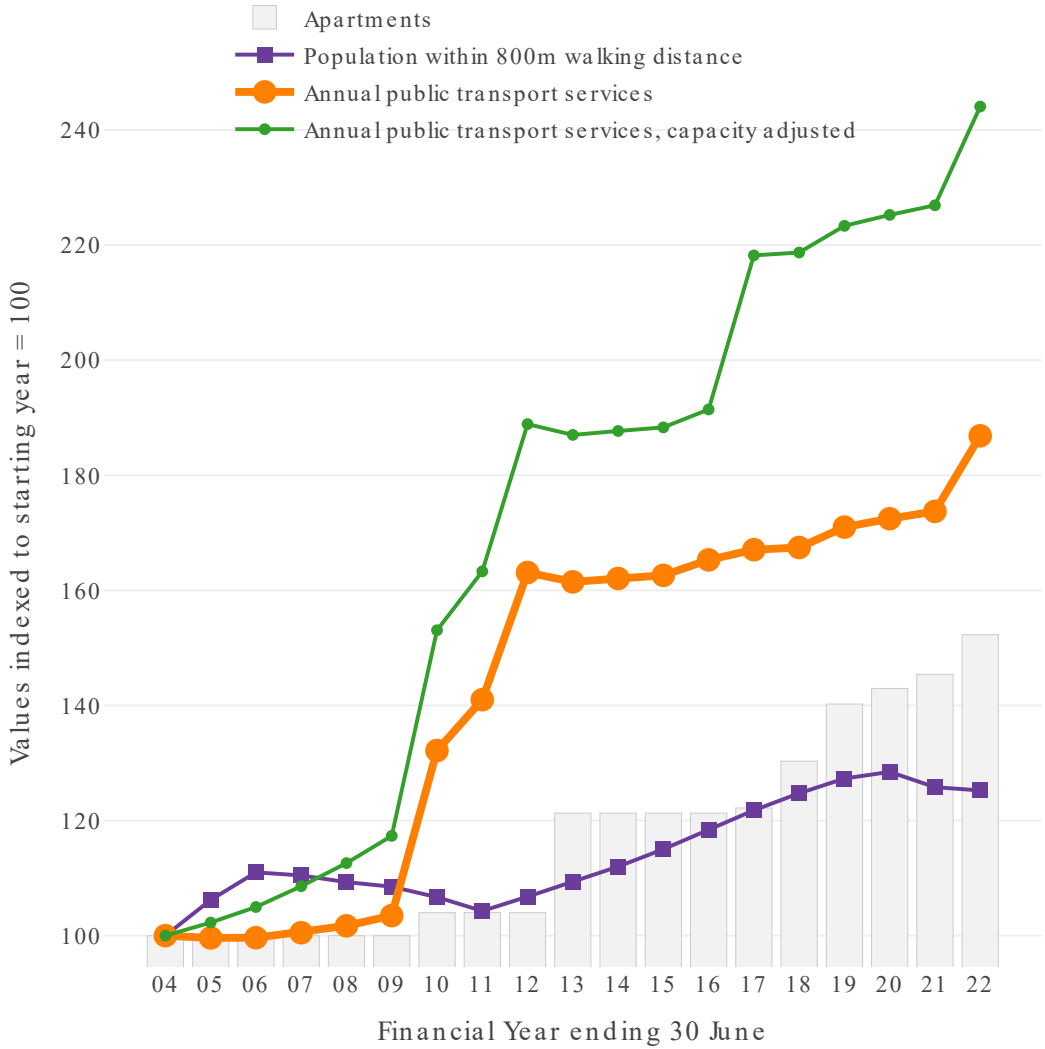


Change in apartments	+ 133.7 %
Change in population	+ 25.9 %
Change in public transport services	+ 7.1 %
Change in public transport services, capacity adjusted	+ 57.6 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

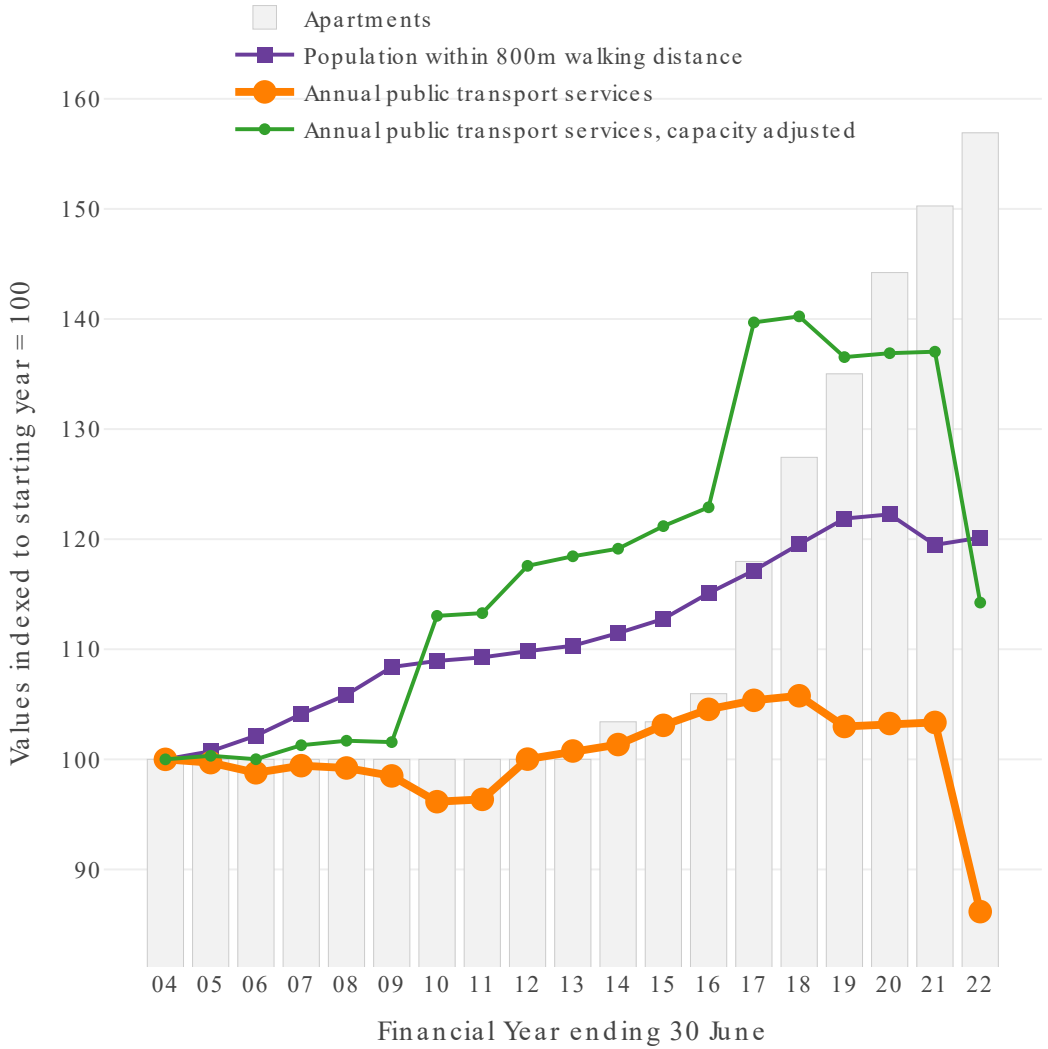
Train line: Werribee (Seaholme to Werribee)



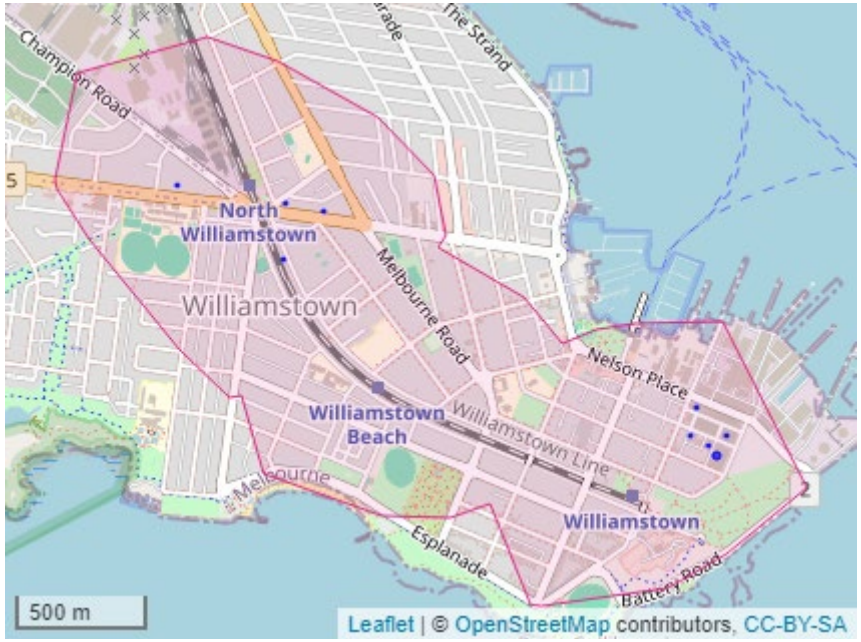
Change in apartments	+ 52.3 %
Change in population	+ 25.2 %
Change in public transport services	+ 86.9 %
Change in public transport services, capacity adjusted	+ 144.1 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Train line: Williamstown (North Williamstown to Williamstown)

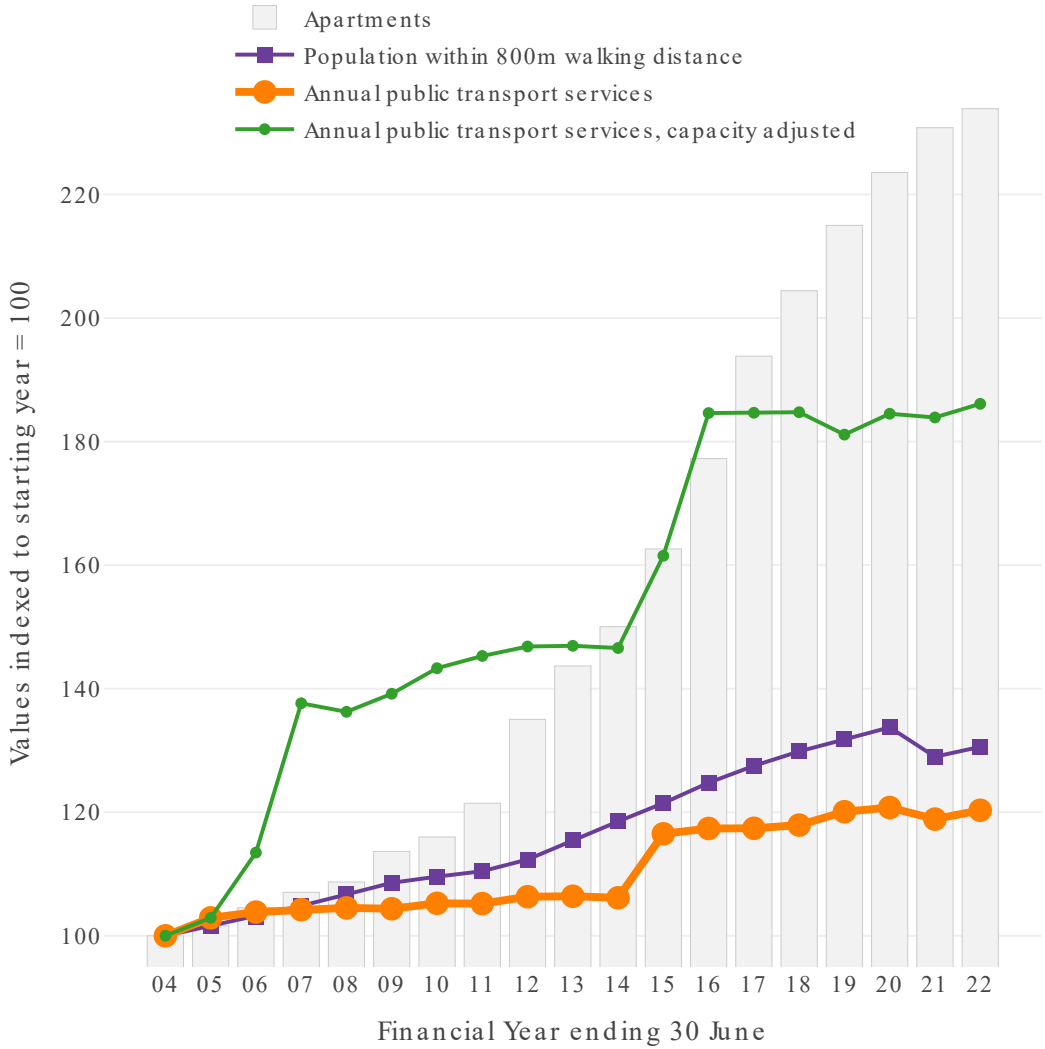


Change in apartments	+ 56.9 %
Change in population	+ 20.1 %
Change in public transport services	- 13.8 %
Change in public transport services, capacity adjusted	+ 14.2 %

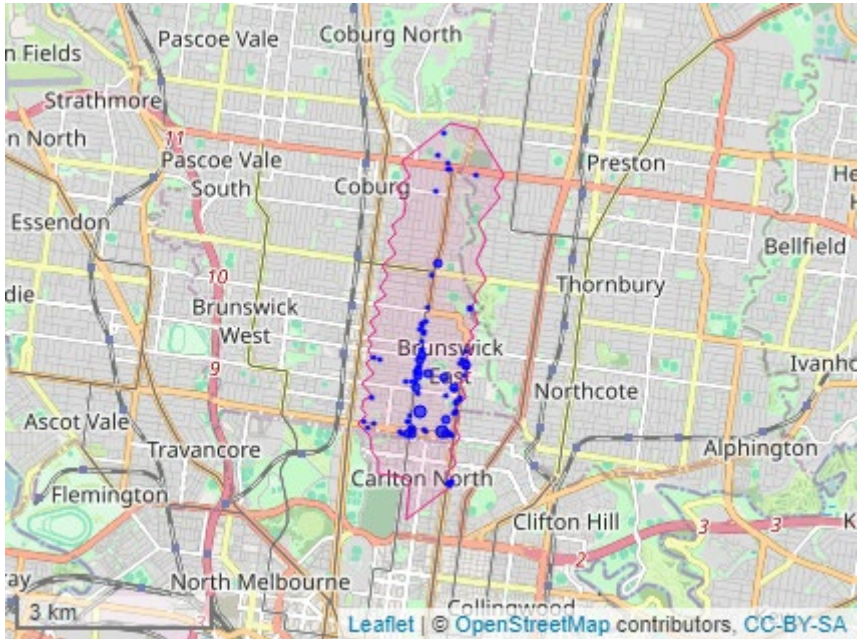


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 1 north

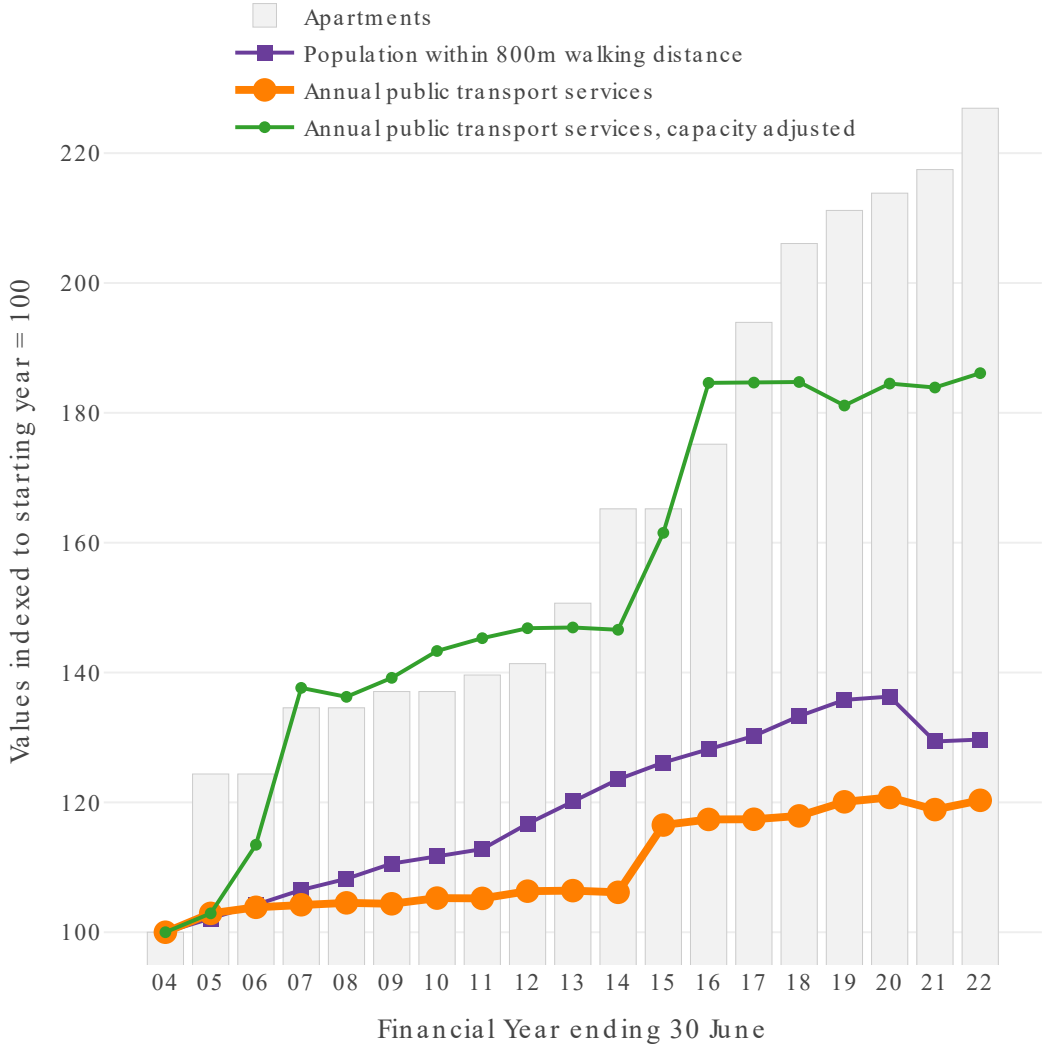


Change in apartments	+ 133.9 %
Change in population	+ 30.6 %
Change in public transport services	+ 20.3 %
Change in public transport services, capacity adjusted	+ 86.1 %

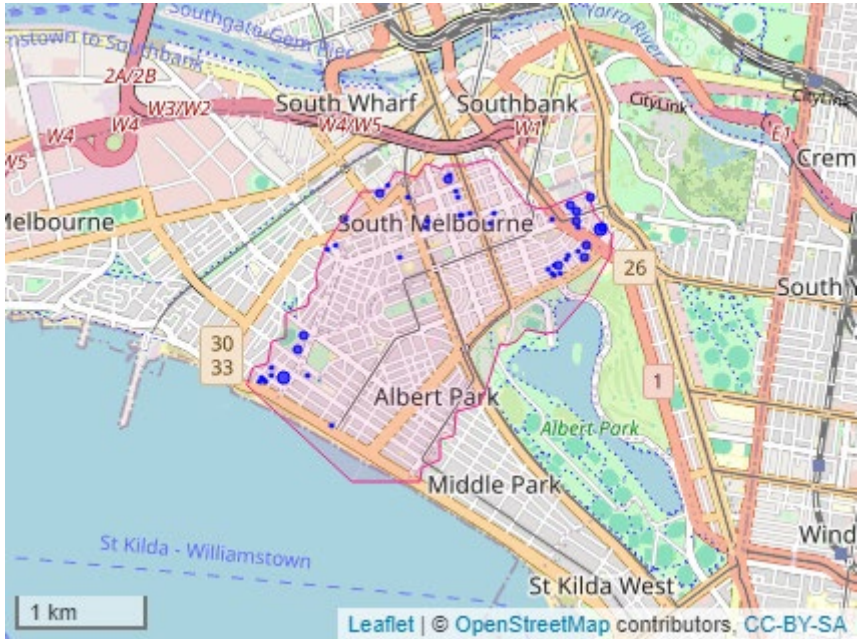


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 1 south

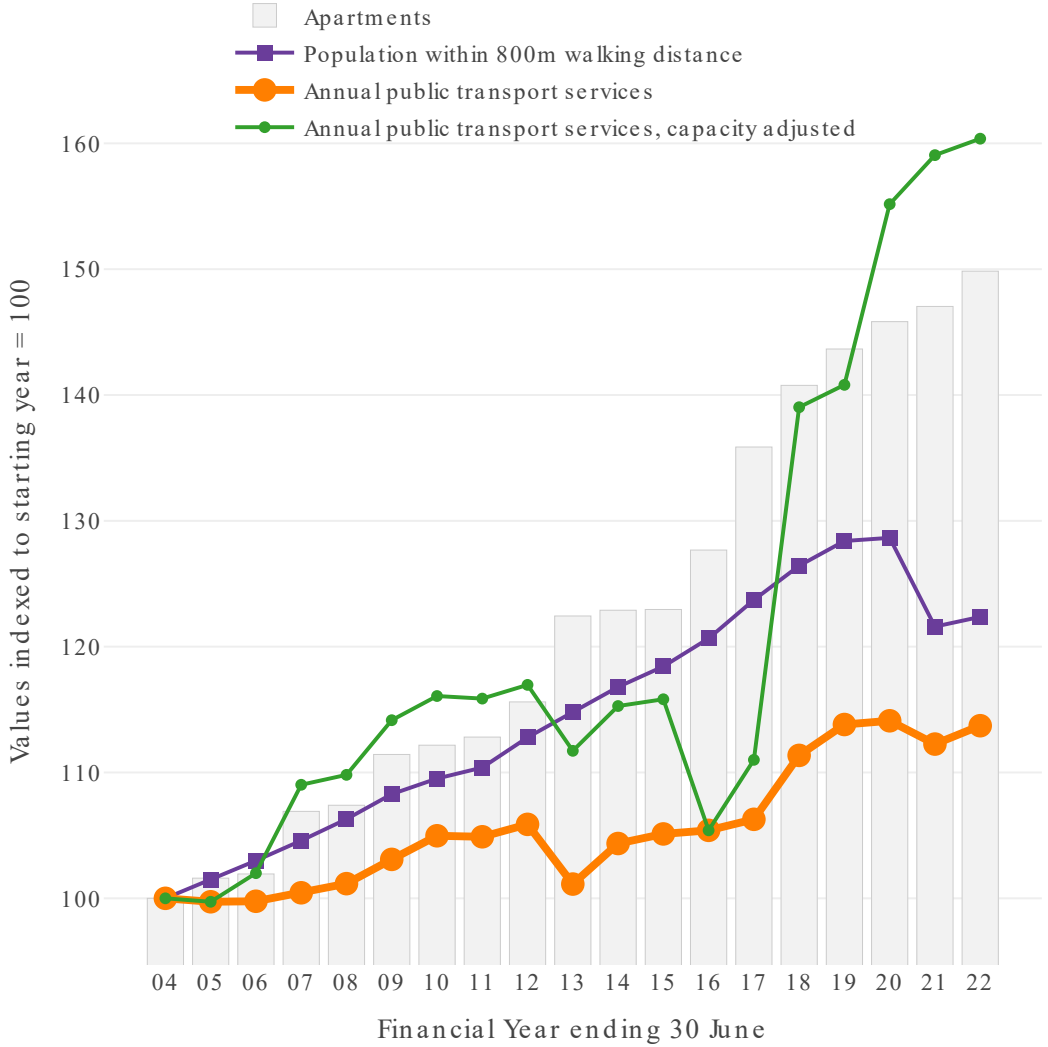


Change in apartments	+ 126.9 %
Change in population	+ 29.7 %
Change in public transport services	+ 20.3 %
Change in public transport services, capacity adjusted	+ 86.1 %

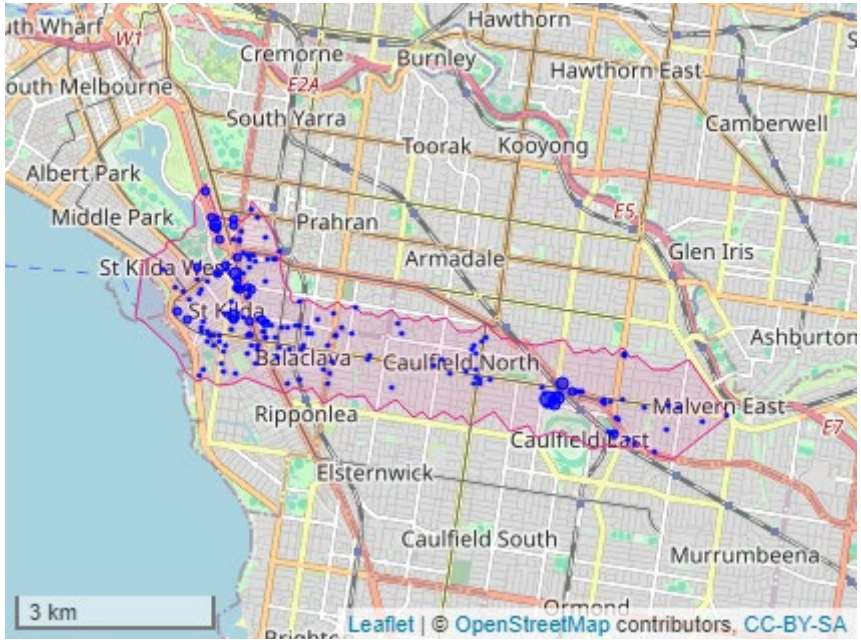


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 3

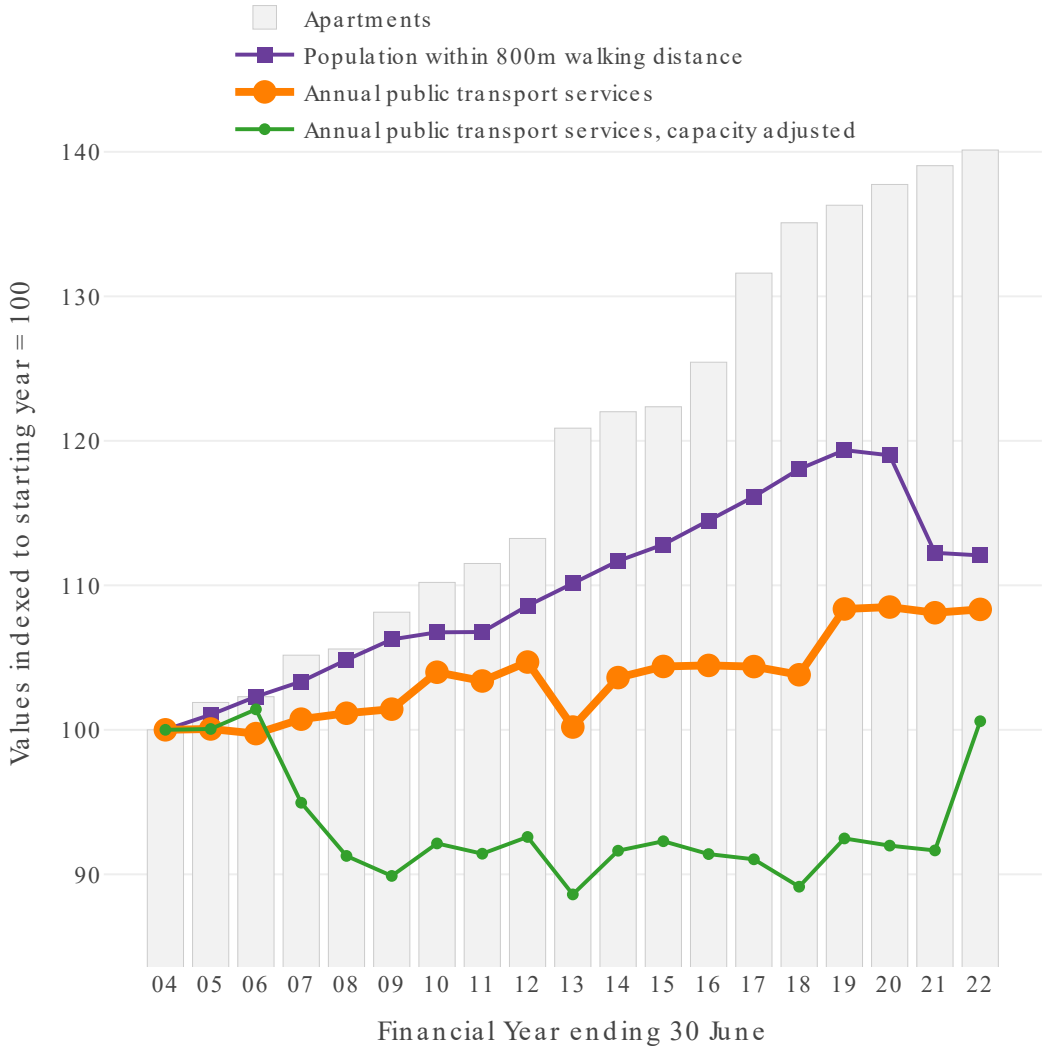


Change in apartments	+ 49.8 %
Change in population	+ 22.4 %
Change in public transport services	+ 13.7 %
Change in public transport services, capacity adjusted	+ 60.4 %

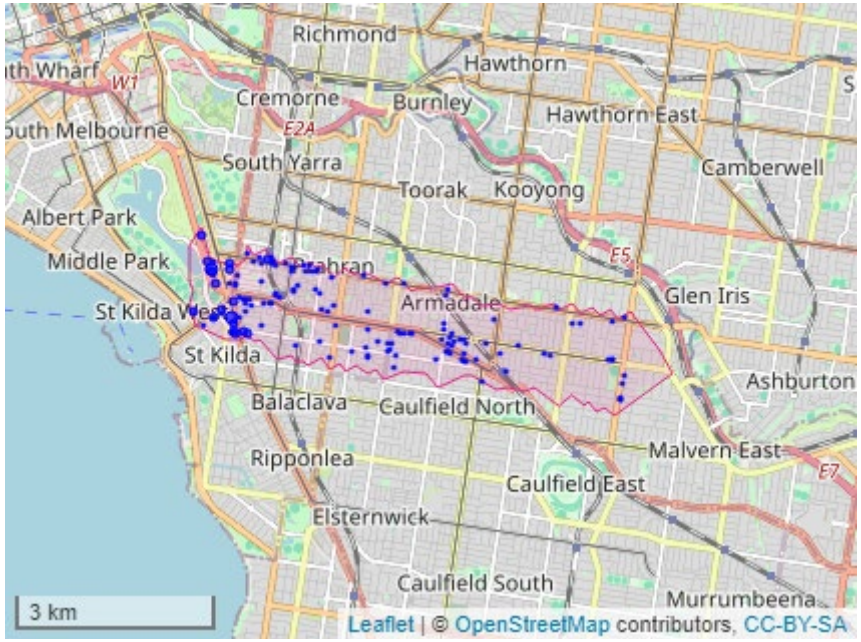


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 5

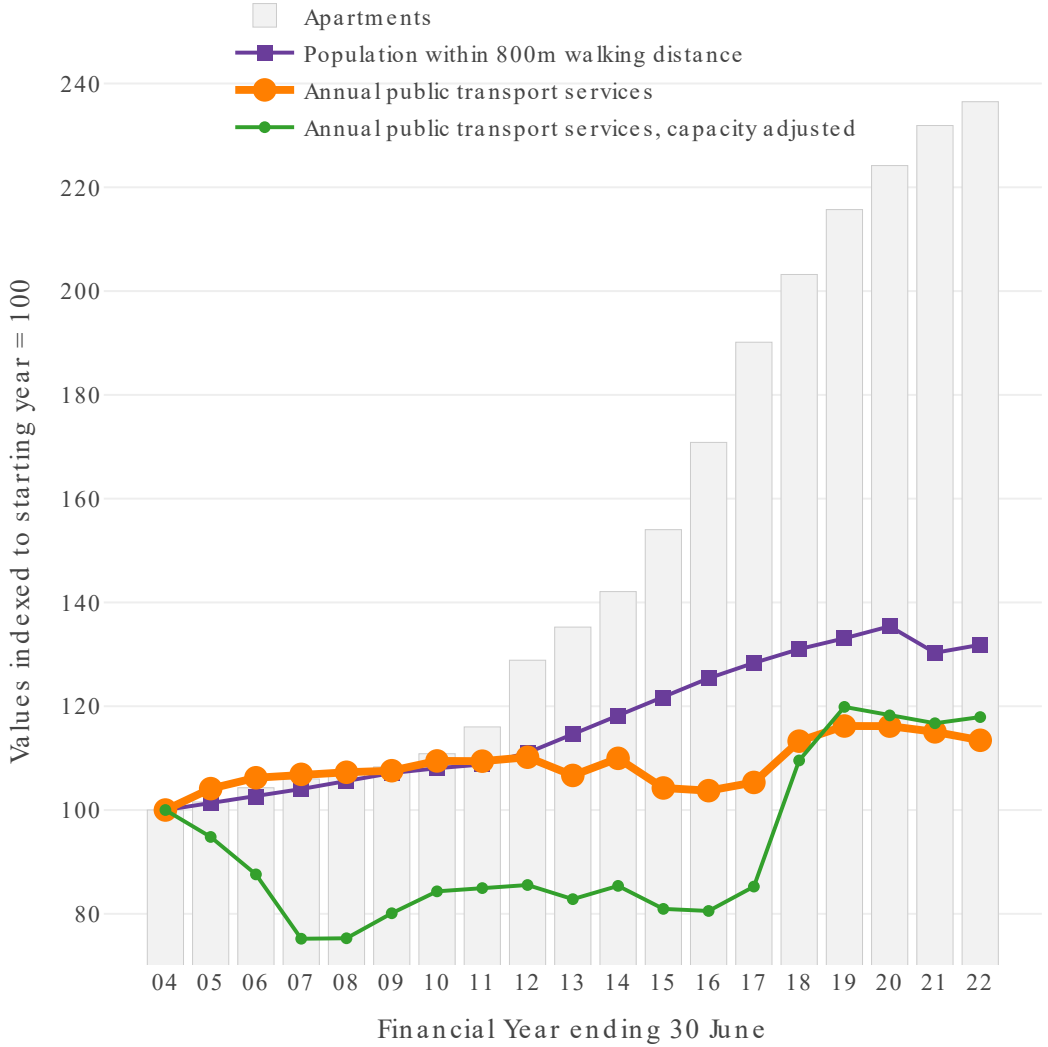


Change in apartments	+ 40.1 %
Change in population	+ 12.1 %
Change in public transport services	+ 8.3 %
Change in public transport services, capacity adjusted	+ 0.6 %

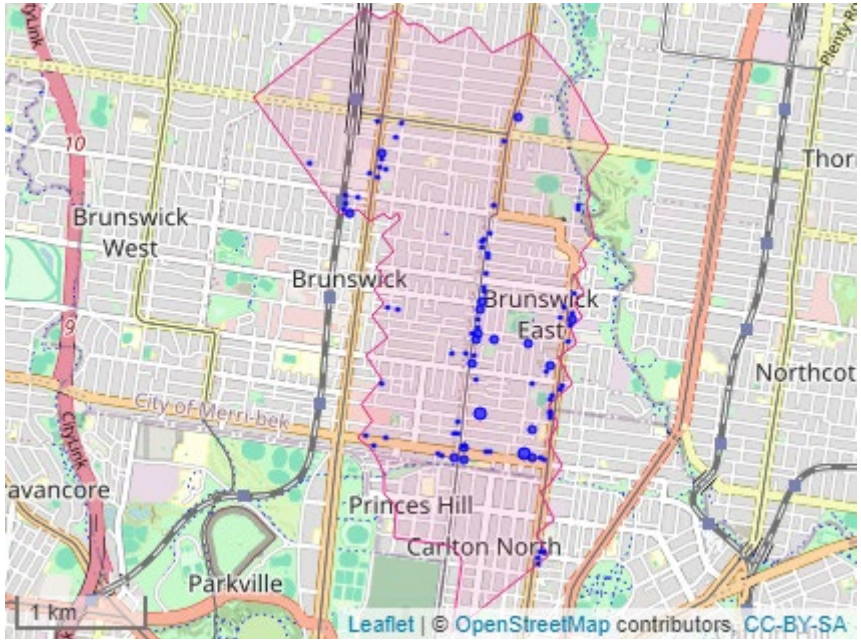


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 6 north

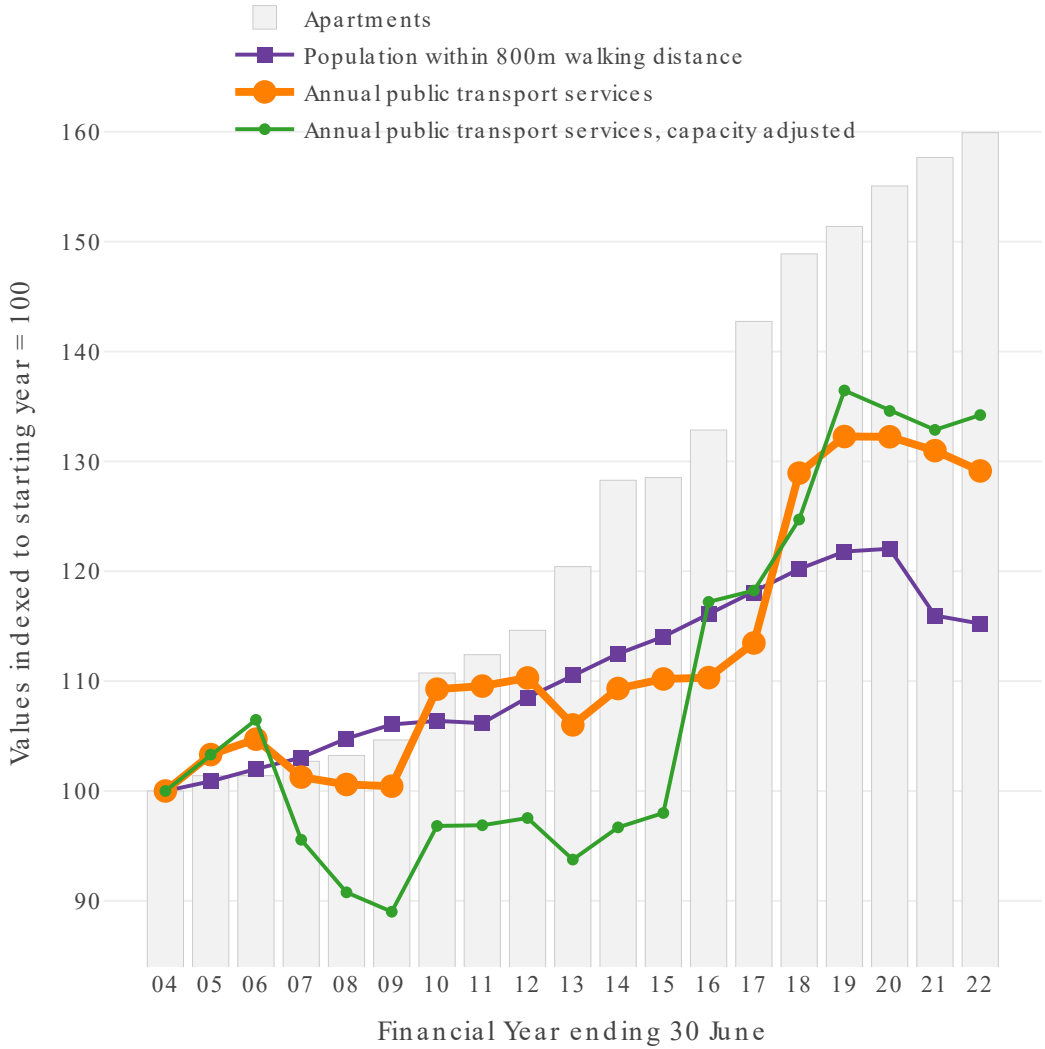


Change in apartments	+ 136.5 %
Change in population	+ 31.8 %
Change in public transport services	+ 13.4 %
Change in public transport services, capacity adjusted	+ 17.9 %

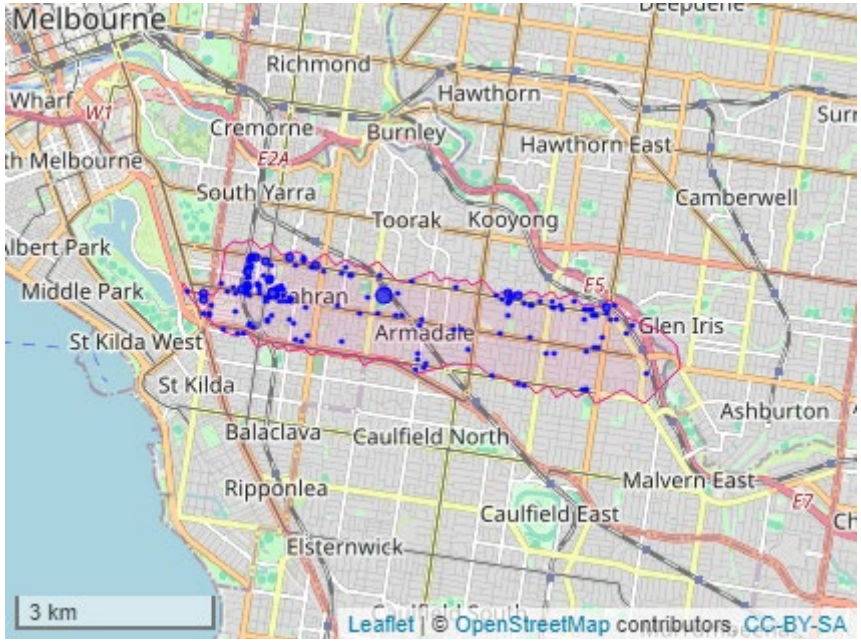


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 6 south

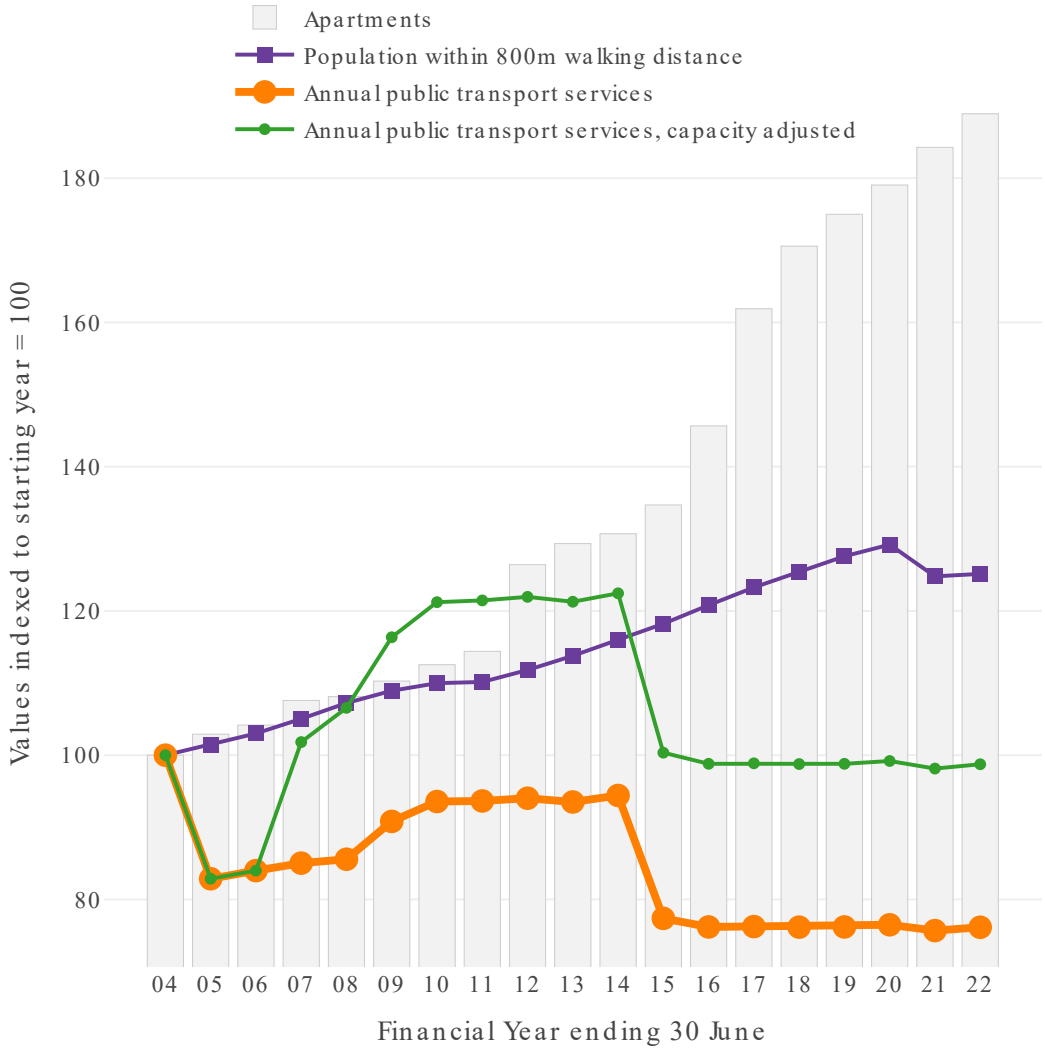


Change in apartments	+ 59.9 %
Change in population	+ 15.2 %
Change in public transport services	+ 29.1 %
Change in public transport services, capacity adjusted	+ 34.2 %

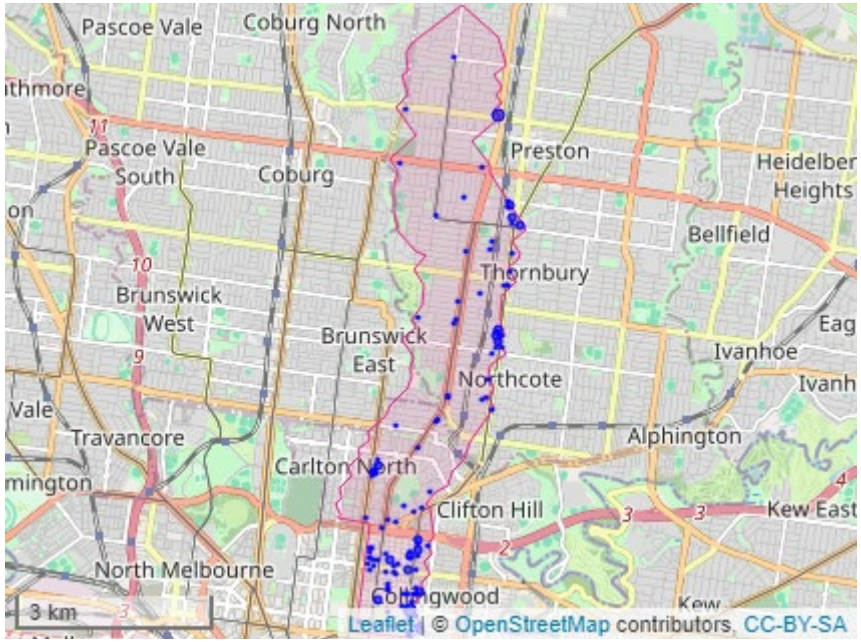


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 11

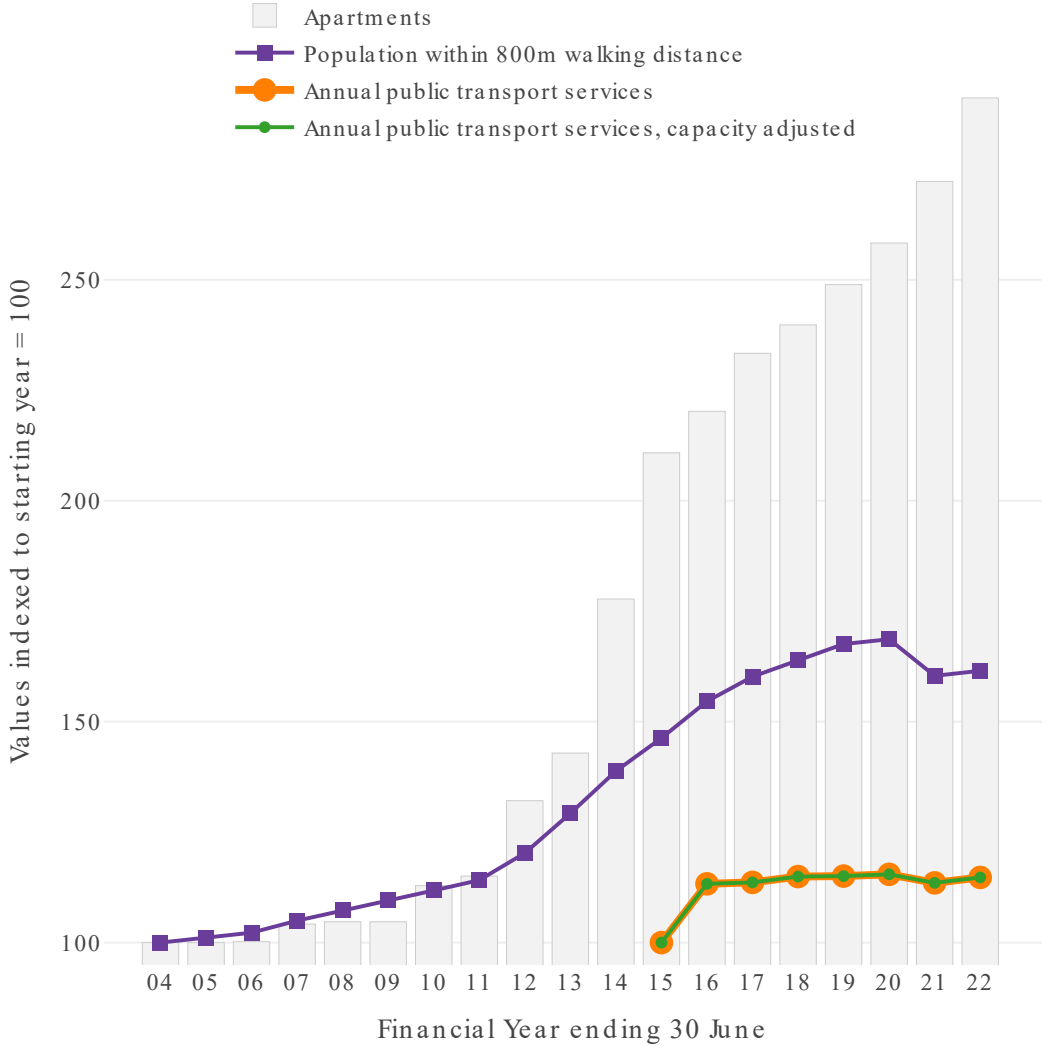


Change in apartments	+ 88.9 %
Change in population	+ 25.1 %
Change in public transport services	- 23.9 %
Change in public transport services, capacity adjusted	- 1.3 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

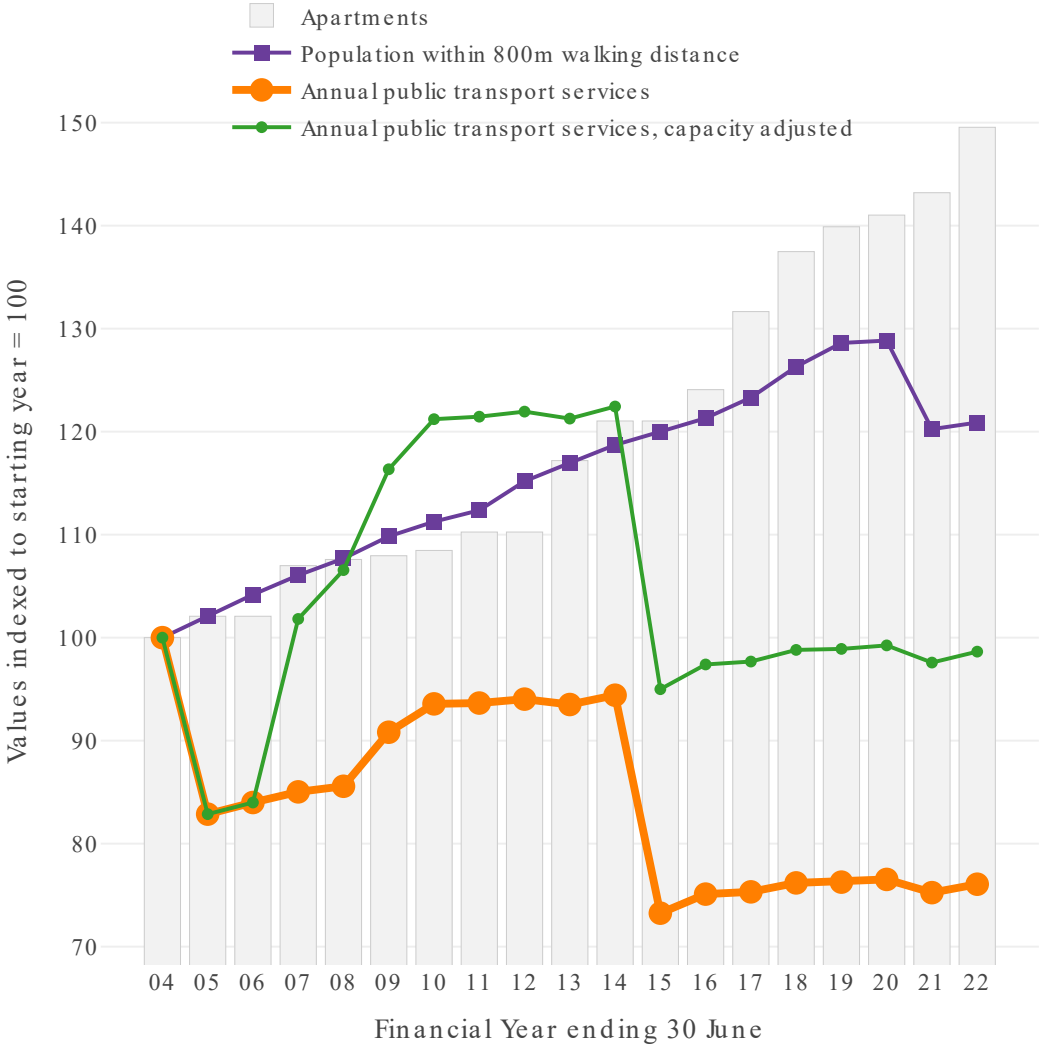
Tram route 12 north



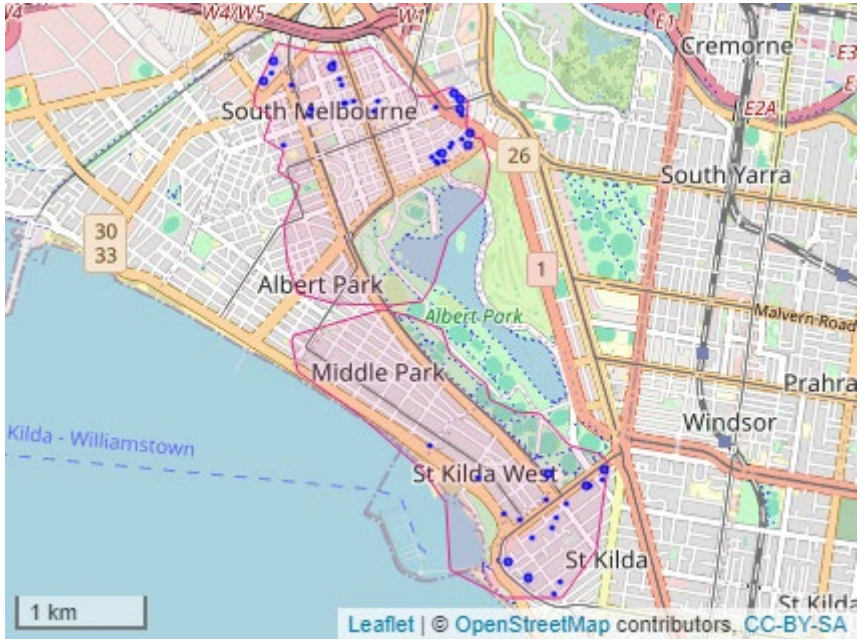
Change in apartments	+ 191.2 %
Change in population	+ 61.5 %
Change in public transport services	+ 14.7 %
Change in public transport services, capacity adjusted	+ 14.7 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 12 south

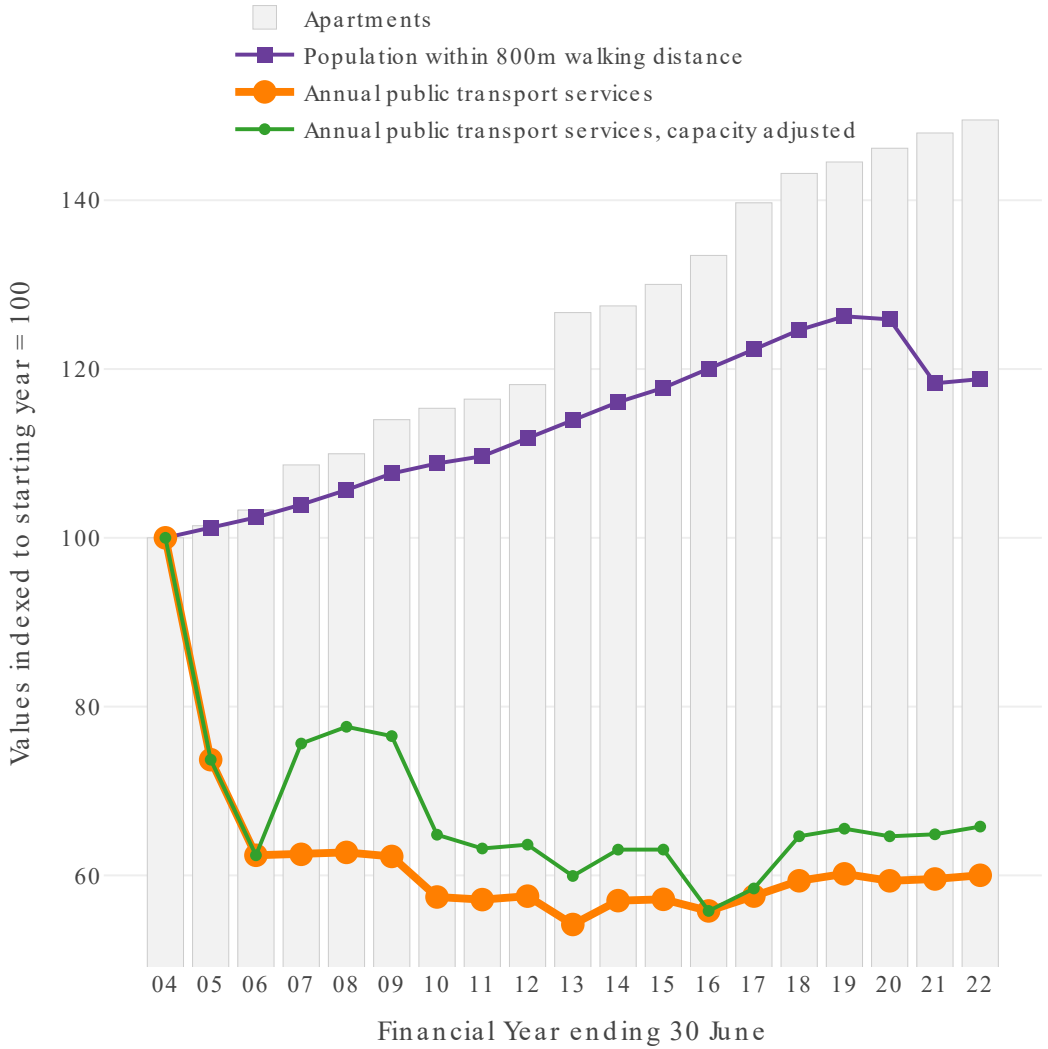


Change in apartments	+ 49.6 %
Change in population	+ 20.9 %
Change in public transport services	- 23.9 %
Change in public transport services, capacity adjusted	- 1.4 %

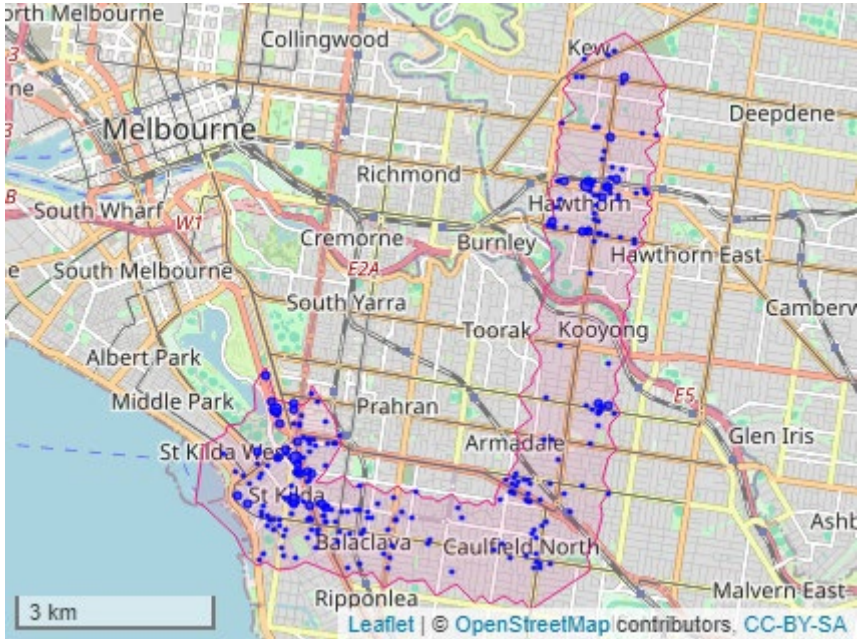


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 16

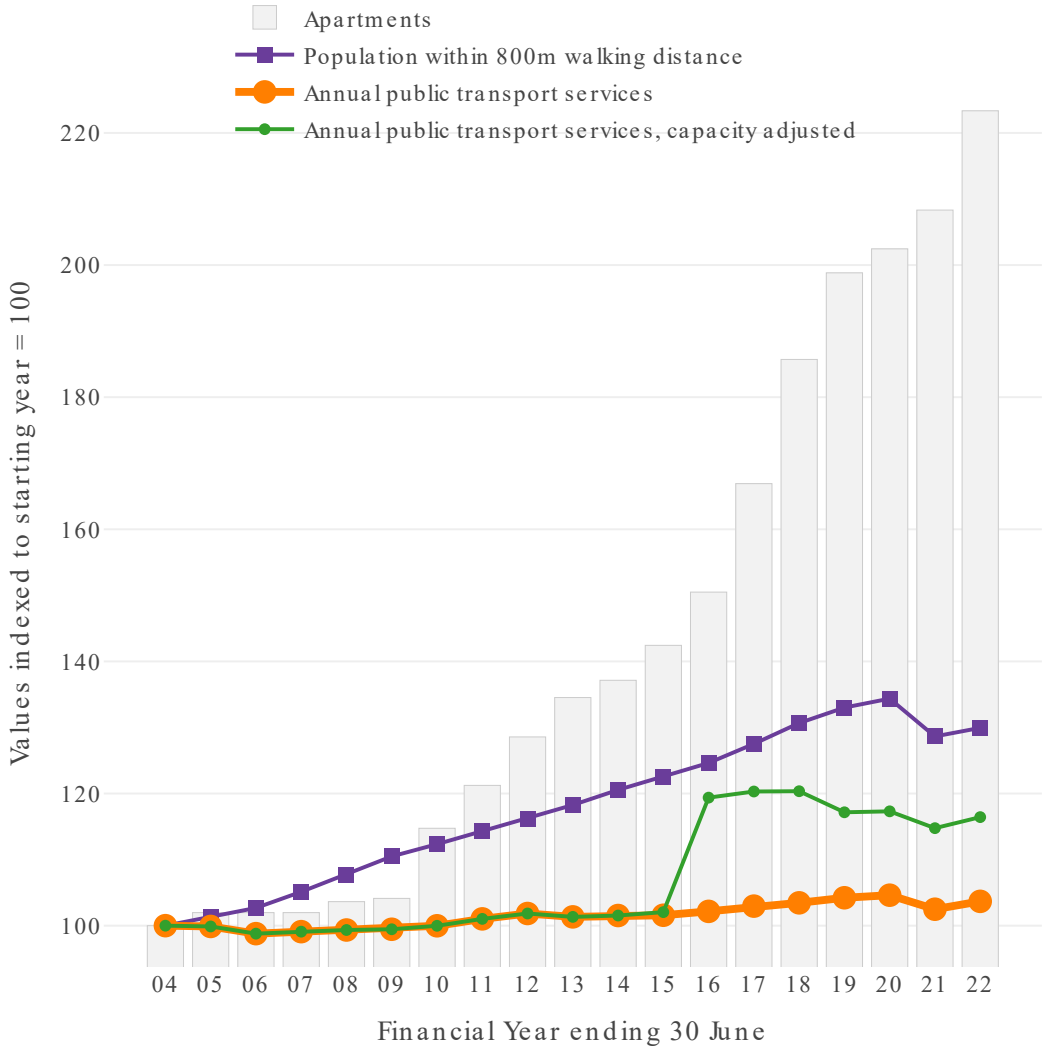


Change in apartments	+ 49.5 %
Change in population	+ 18.8 %
Change in public transport services	- 40.0 %
Change in public transport services, capacity adjusted	- 34.2 %

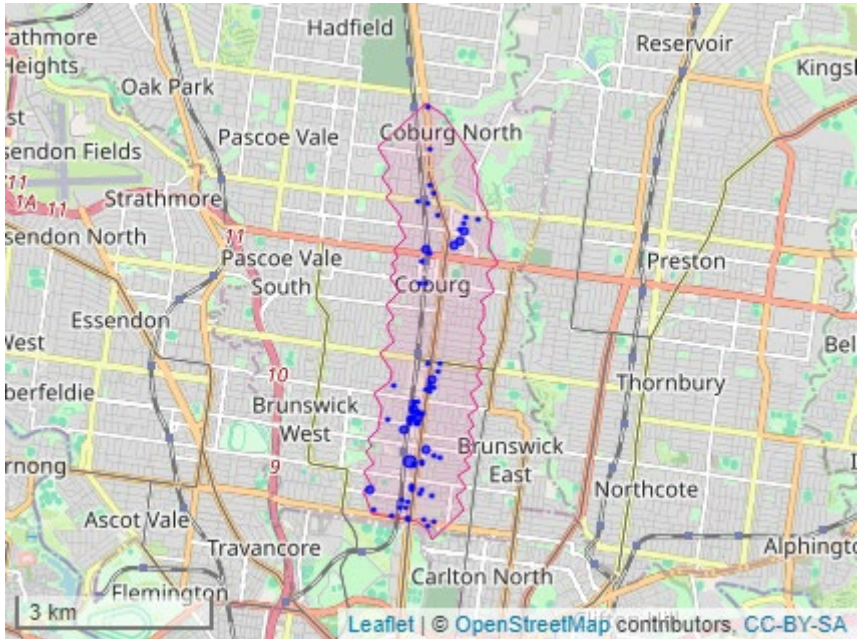


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 19

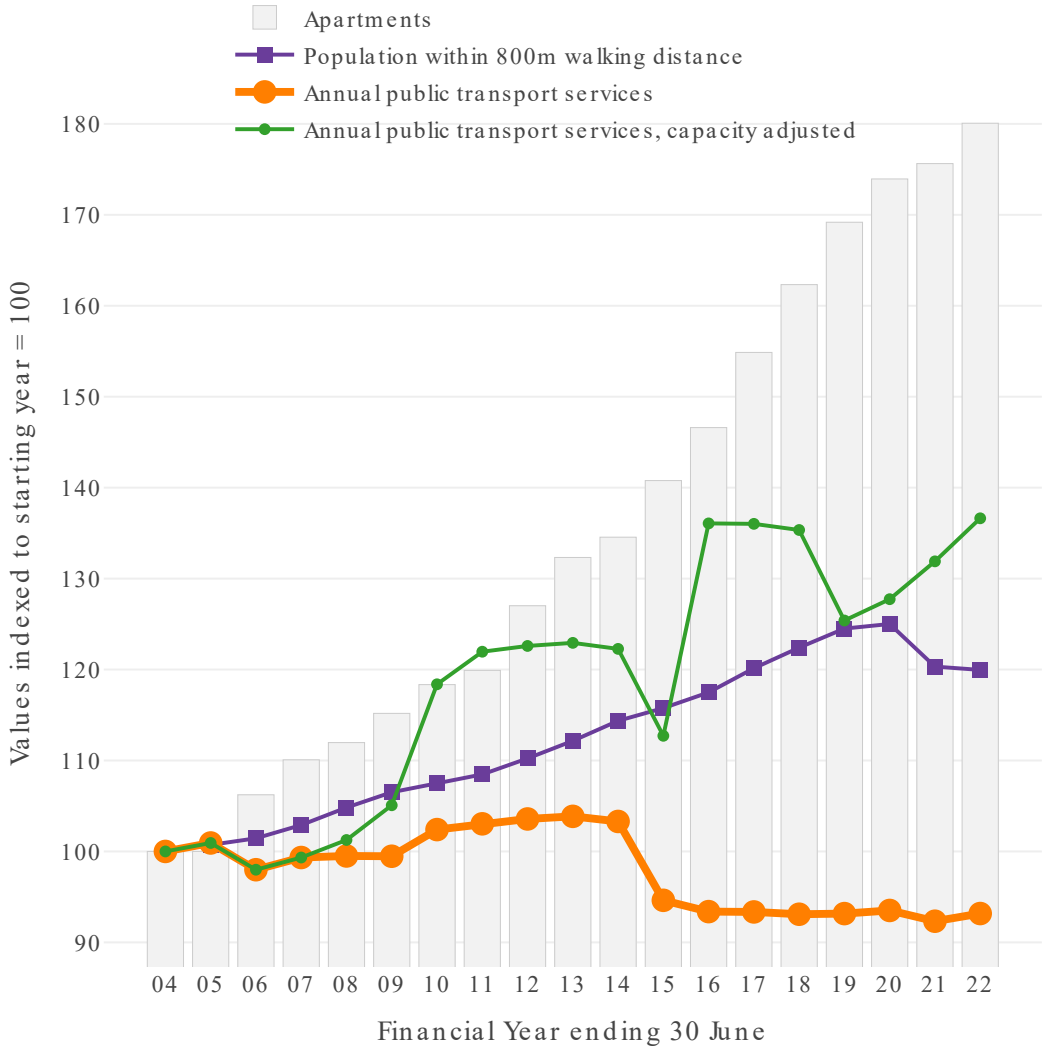


Change in apartments	+ 123.3 %
Change in population	+ 29.9 %
Change in public transport services	+ 3.7 %
Change in public transport services, capacity adjusted	+ 16.4 %

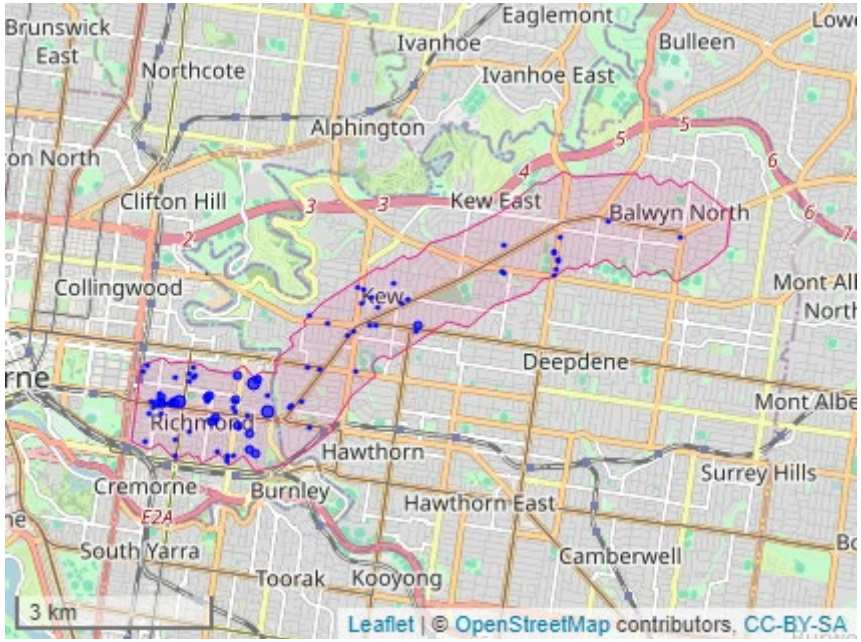


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 48

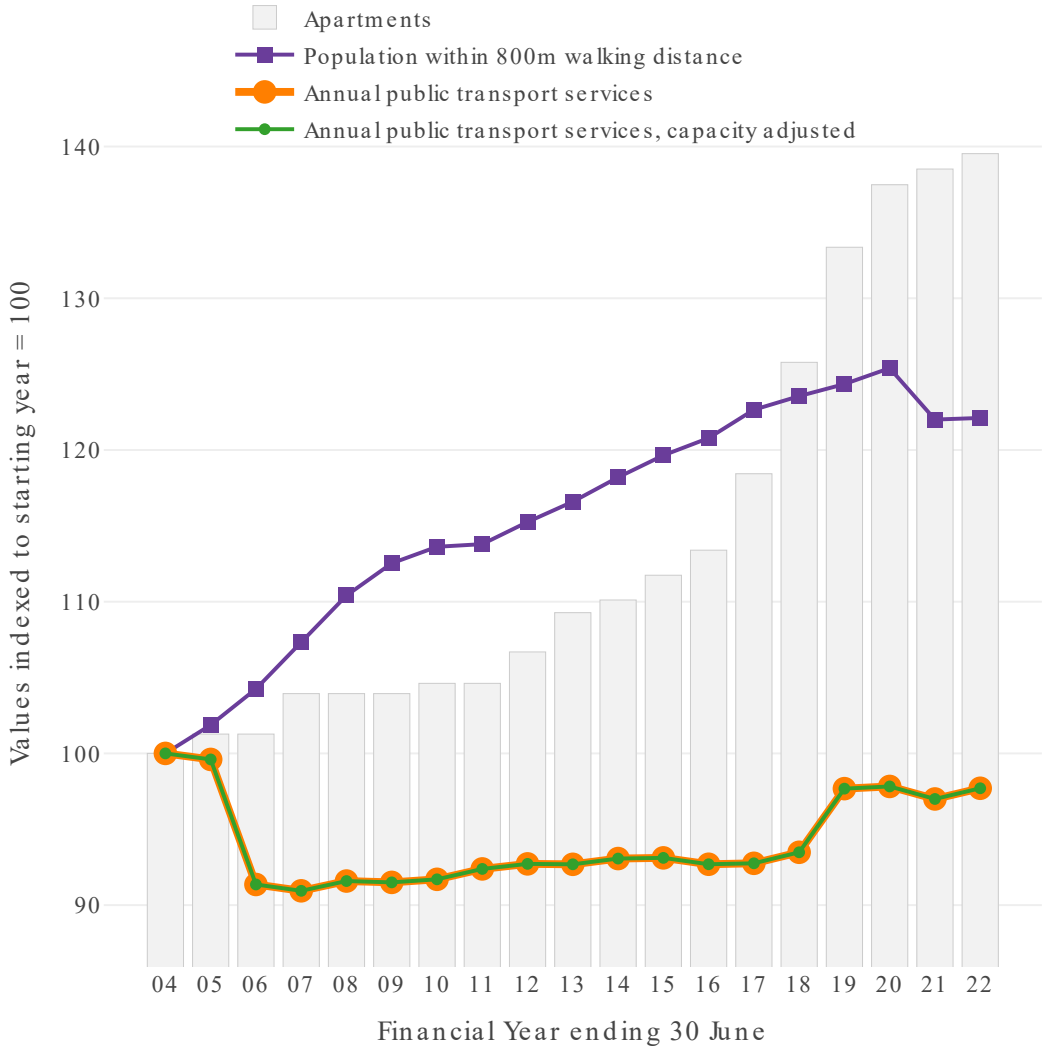


Change in apartments	+ 80.1 %
Change in population	+ 20.0 %
Change in public transport services	- 6.8 %
Change in public transport services, capacity adjusted	+ 36.6 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

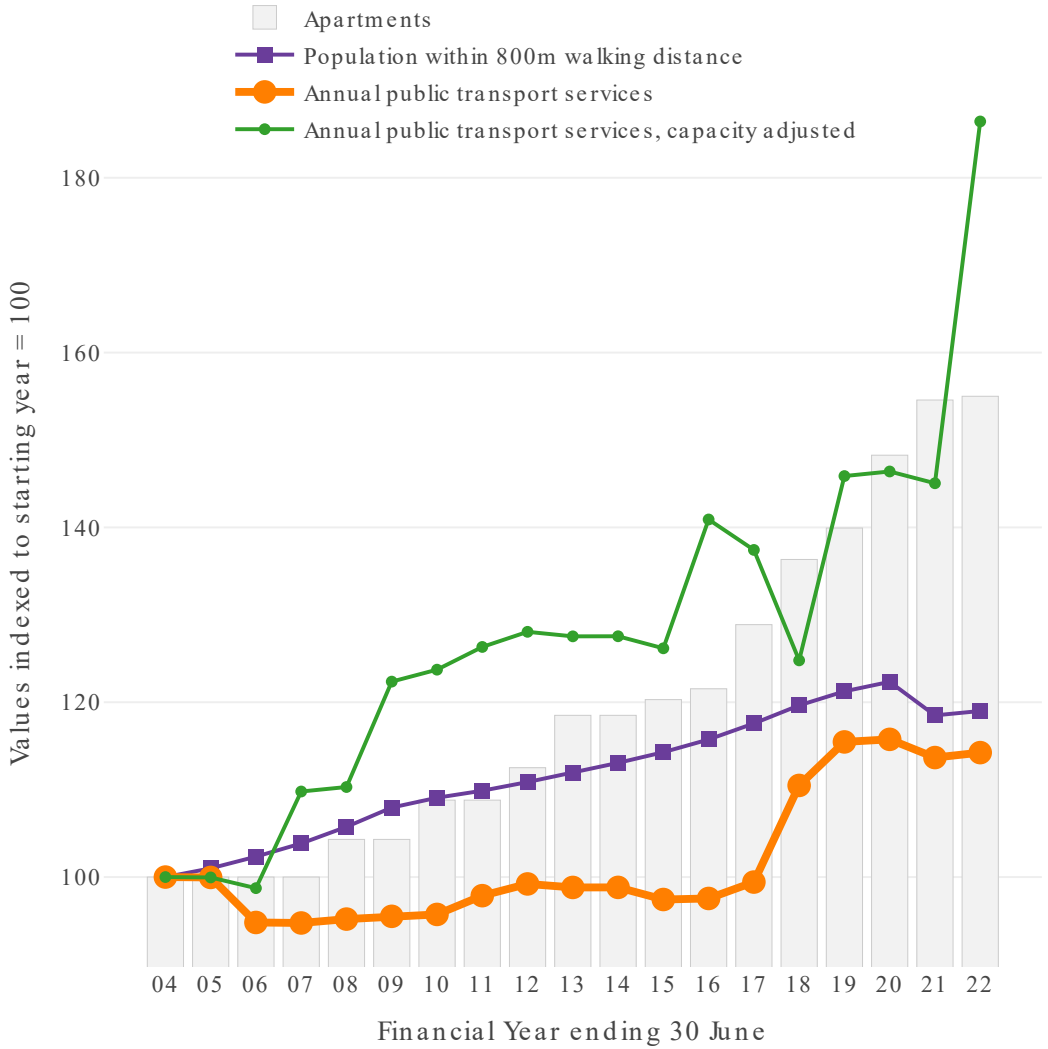
Tram route 57



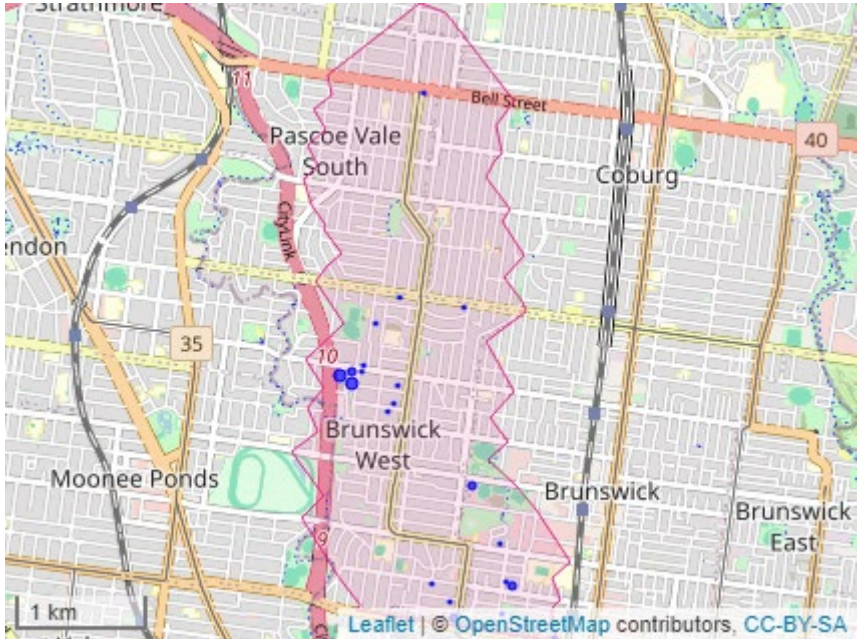
Change in apartments	+ 39.5 %
Change in population	+ 22.1 %
Change in public transport services	- 2.3 %
Change in public transport services, capacity adjusted	- 2.3 %

Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 58 north

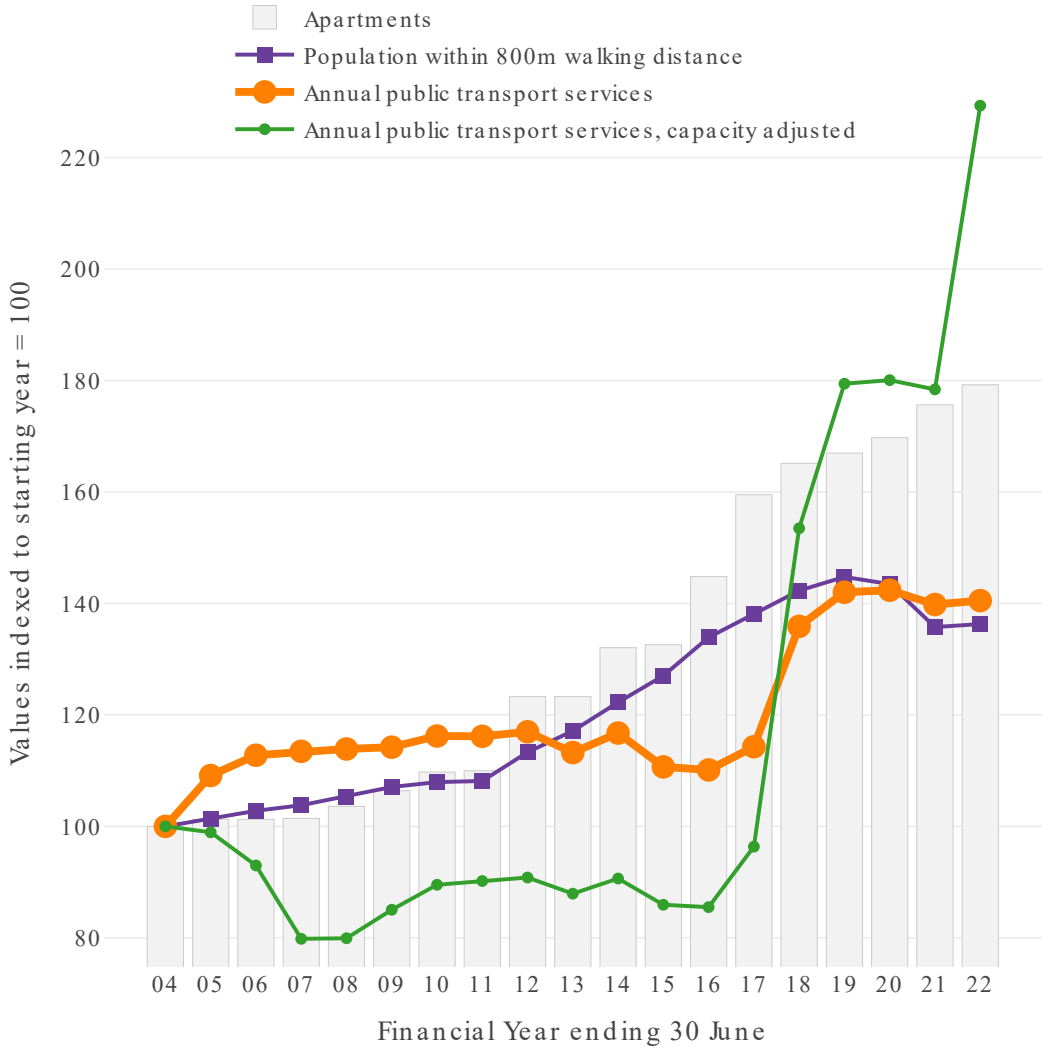


Change in apartments	+ 55.0 %
Change in population	+ 19.0 %
Change in public transport services	+ 14.2 %
Change in public transport services, capacity adjusted	+ 86.4 %

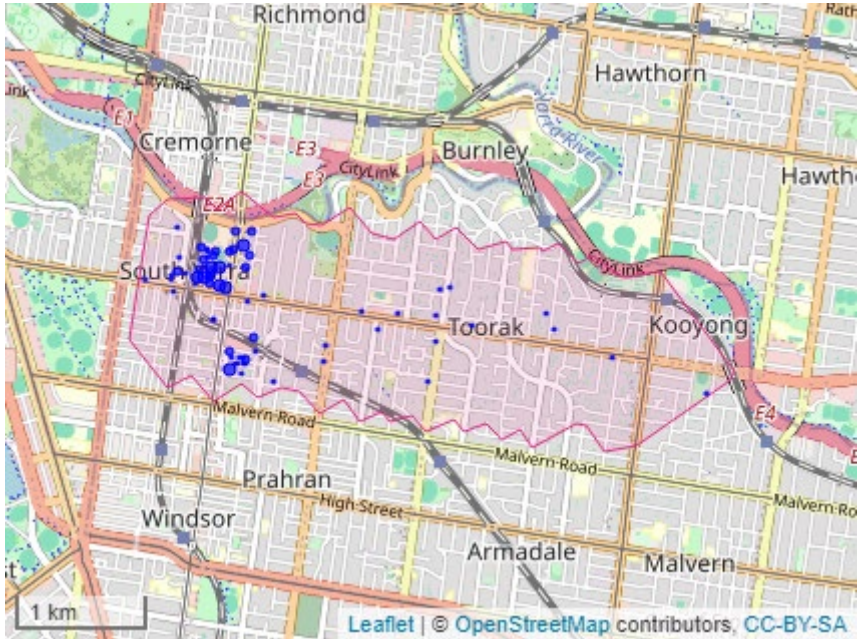


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 58 south

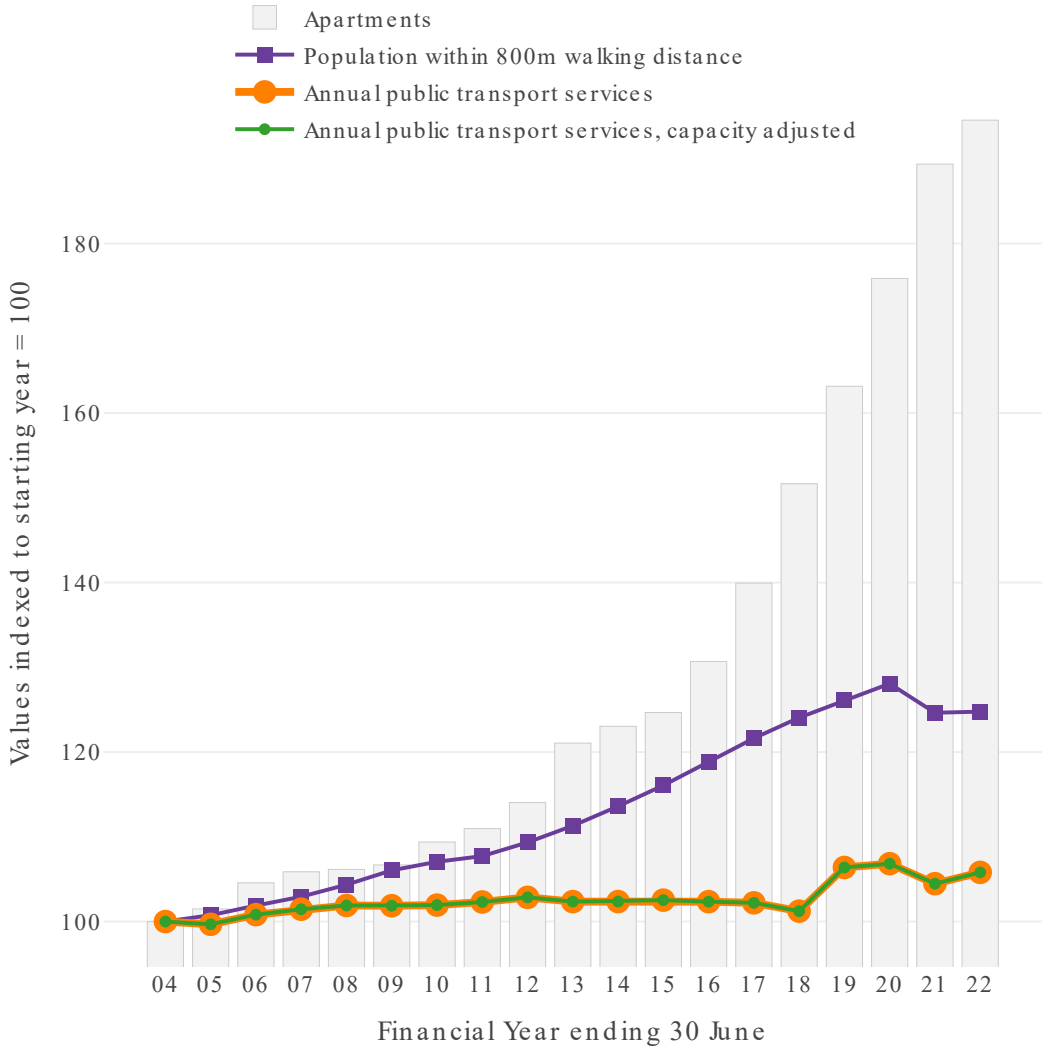


Change in apartments	+ 79.2 %
Change in population	+ 36.3 %
Change in public transport services	+ 40.5 %
Change in public transport services, capacity adjusted	+ 129.3 %

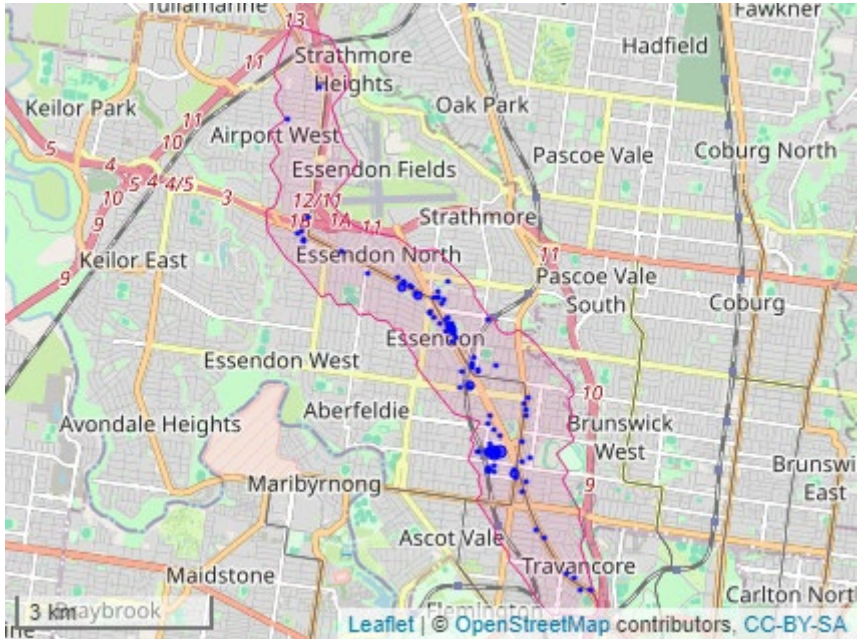


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 59

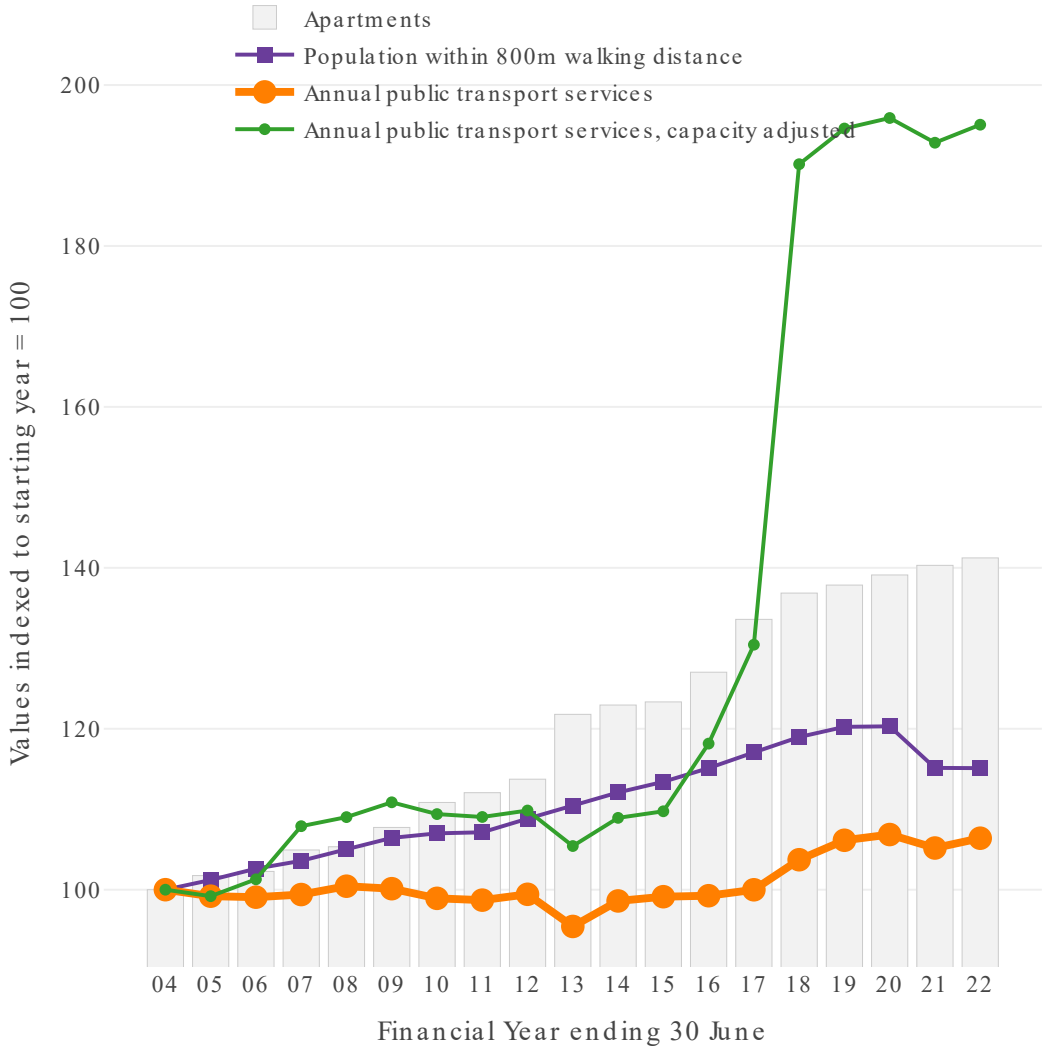


Change in apartments	+ 94.6 %
Change in population	+ 24.8 %
Change in public transport services	+ 5.8 %
Change in public transport services, capacity adjusted	+ 5.8 %

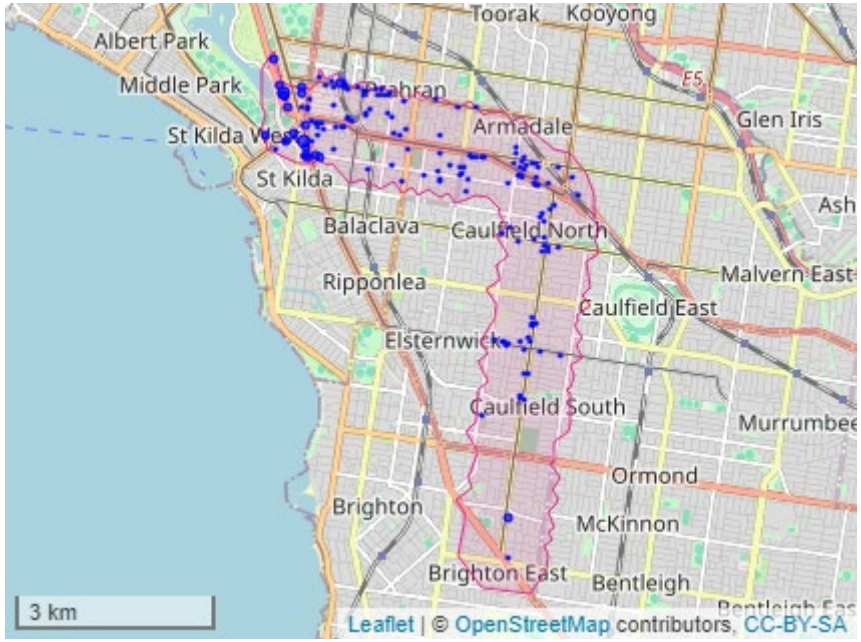


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 64

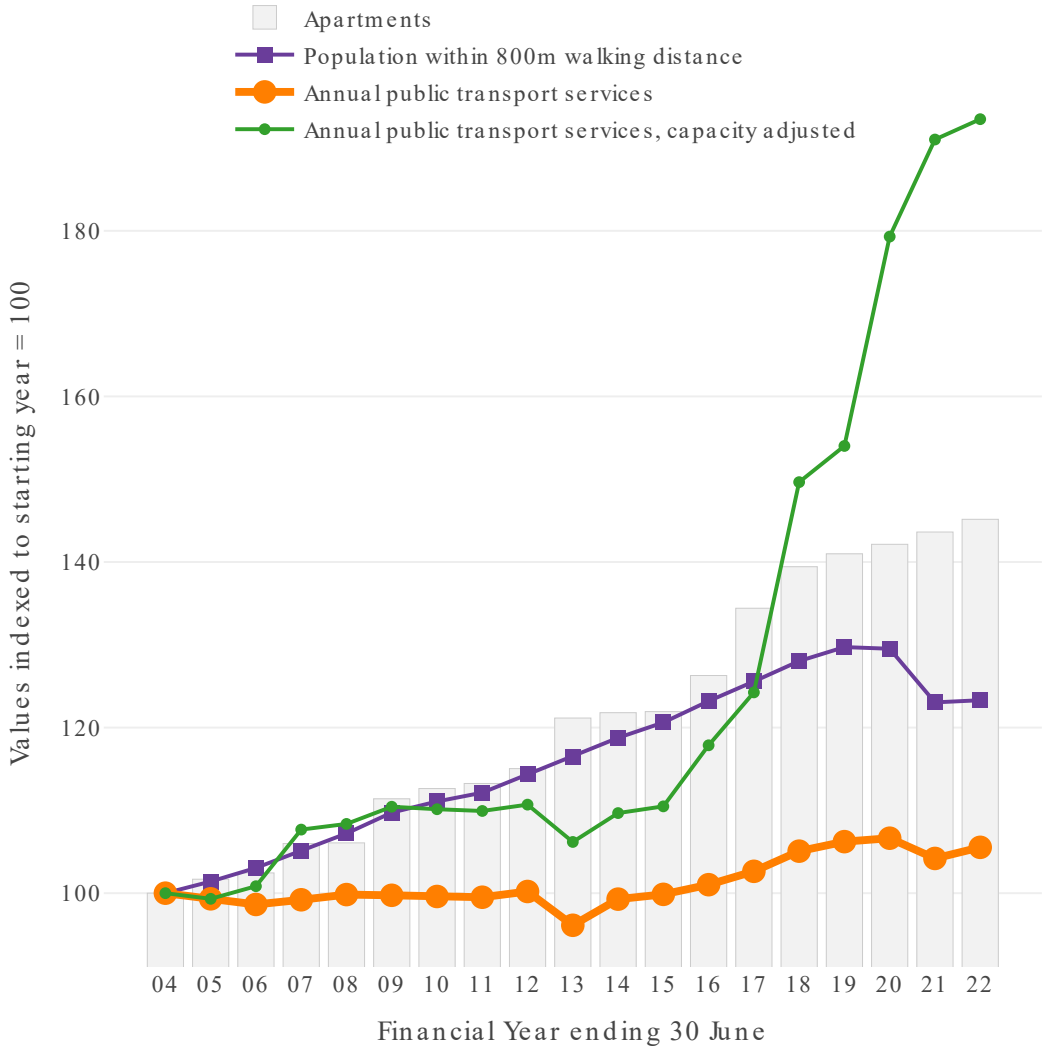


Change in apartments	+ 41.2 %
Change in population	+ 15.1 %
Change in public transport services	+ 6.4 %
Change in public transport services, capacity adjusted	+ 95.1 %

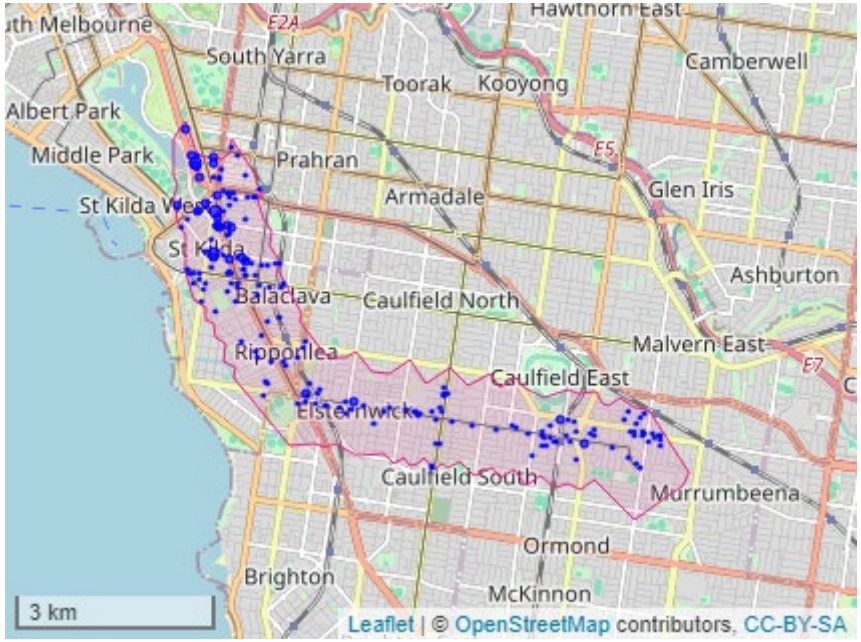


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 67

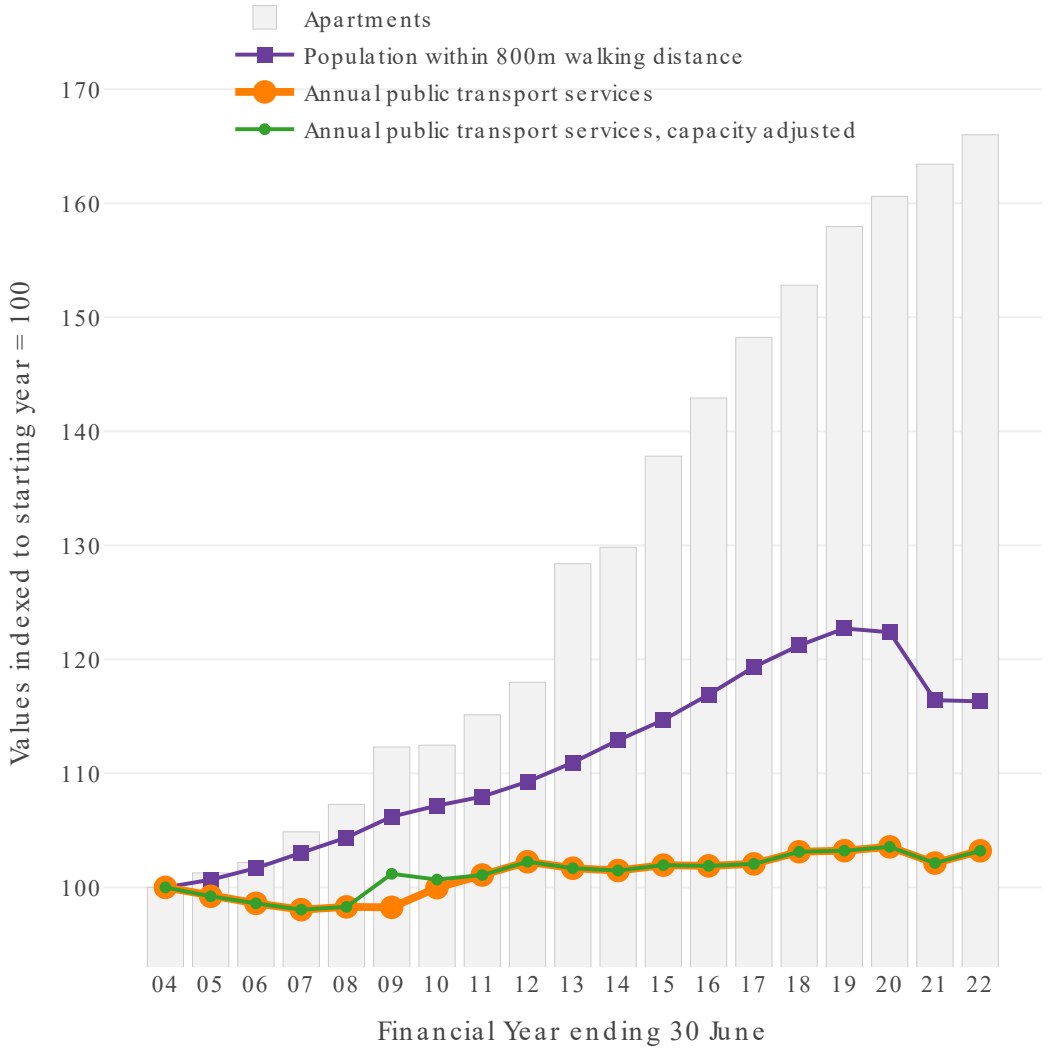


Change in apartments	+ 45.2 %
Change in population	+ 23.3 %
Change in public transport services	+ 5.5 %
Change in public transport services, capacity adjusted	+ 93.5 %

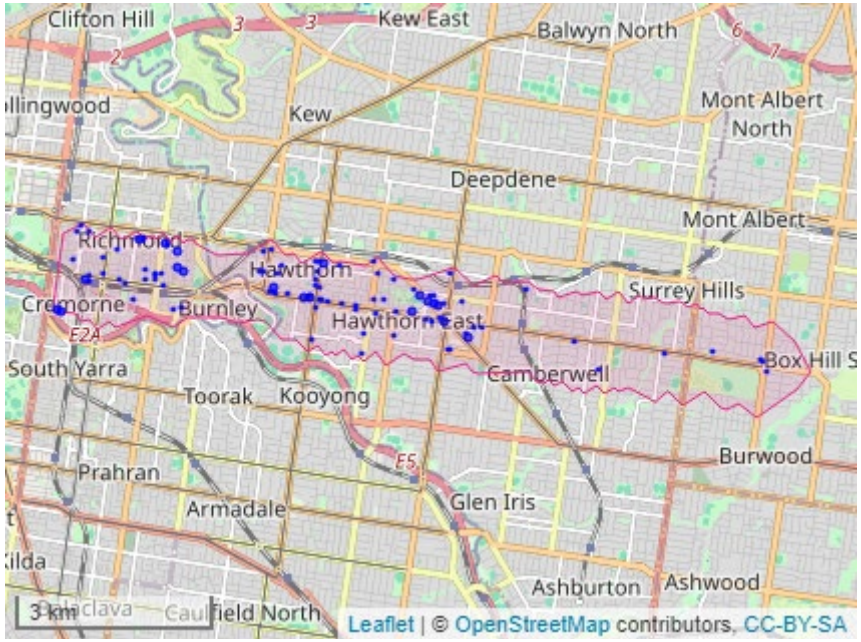


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 70

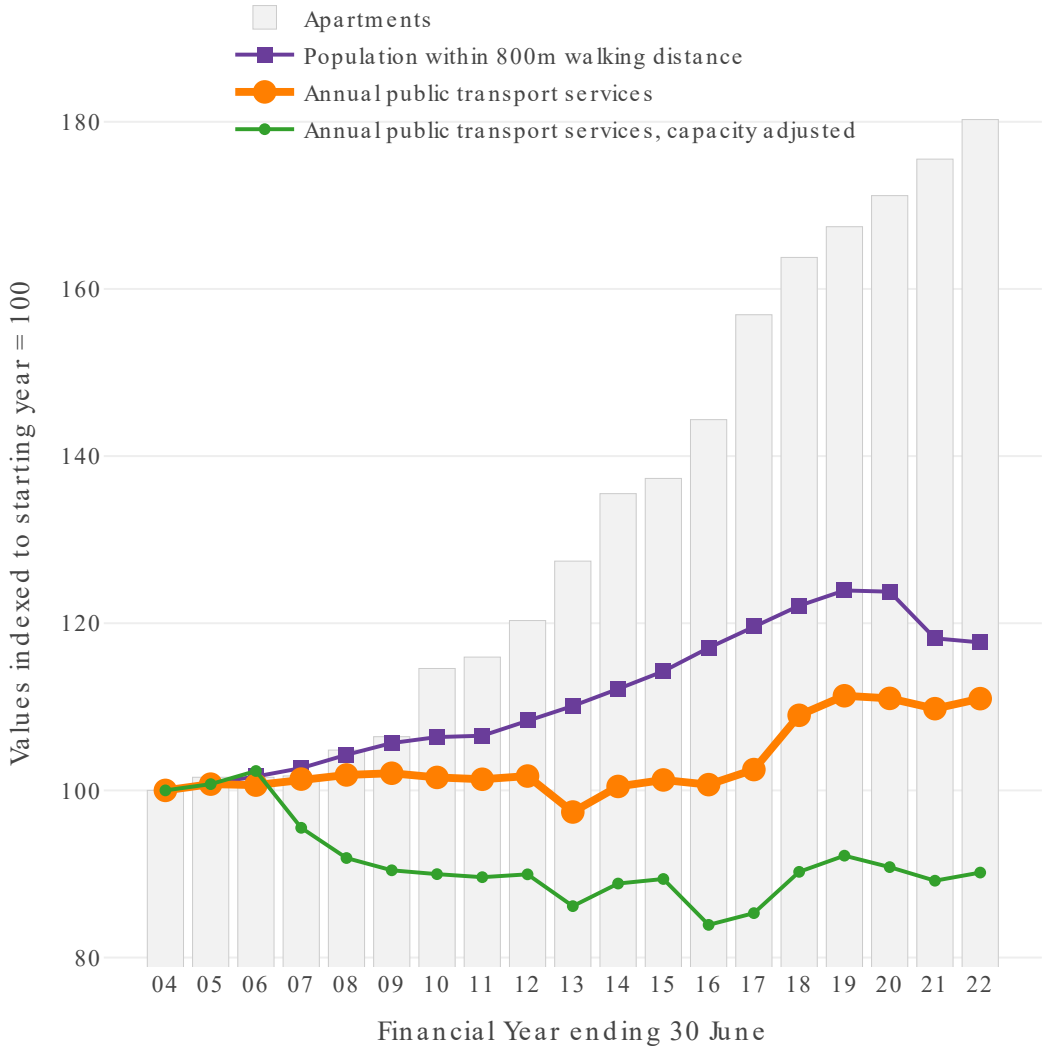


Change in apartments	+ 66.0 %
Change in population	+ 16.3 %
Change in public transport services	+ 3.2 %
Change in public transport services, capacity adjusted	+ 3.2 %

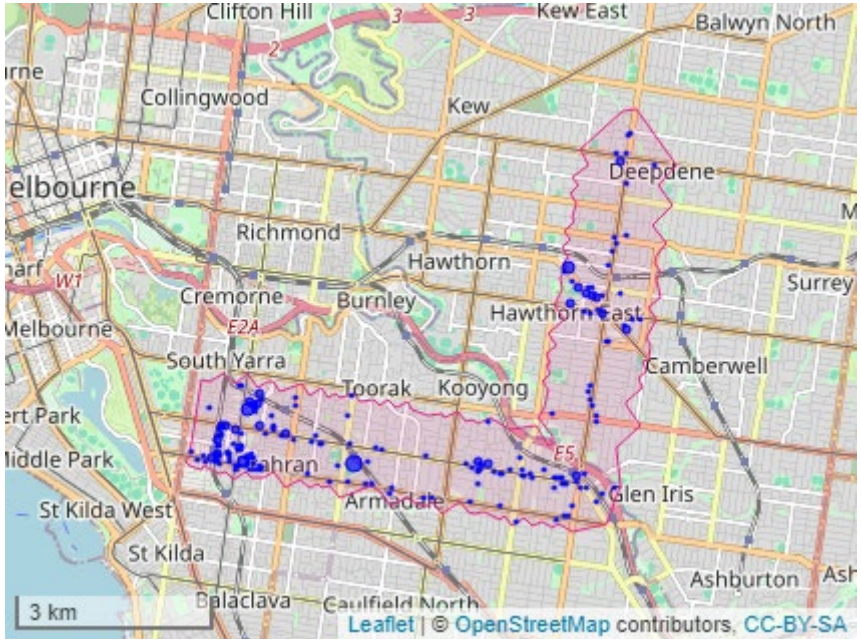


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 72

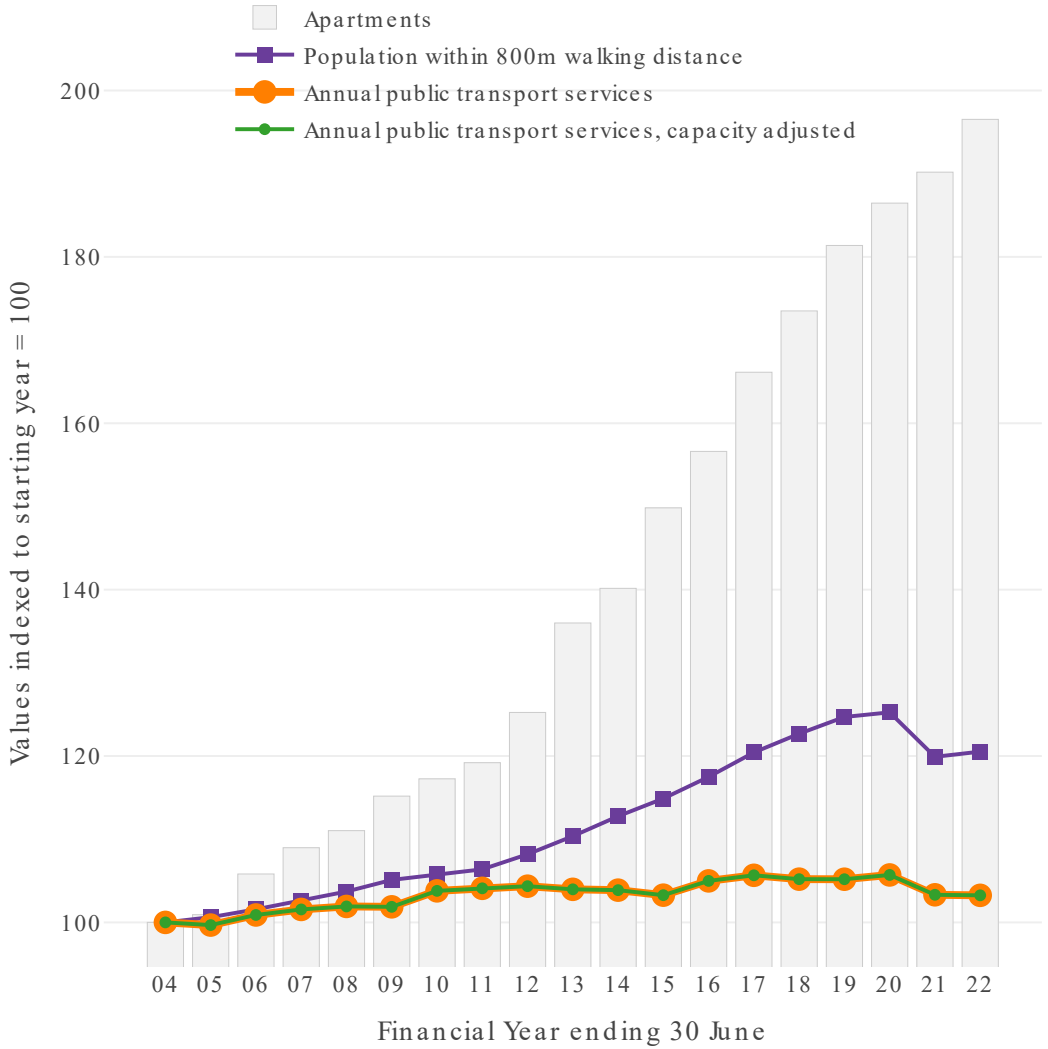


Change in apartments	+ 80.3 %
Change in population	+ 17.7 %
Change in public transport services	+ 11.0 %
Change in public transport services, capacity adjusted	- 9.8 %

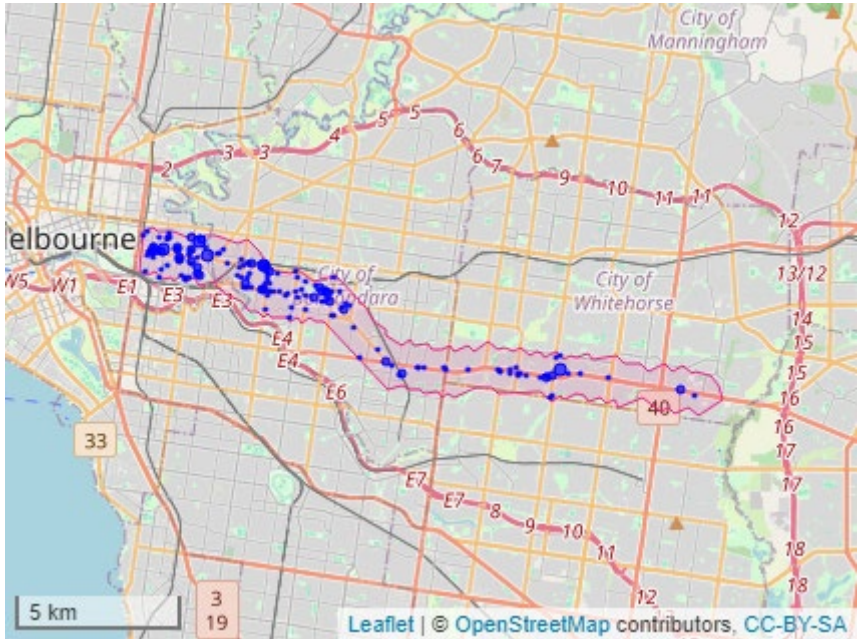


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 75

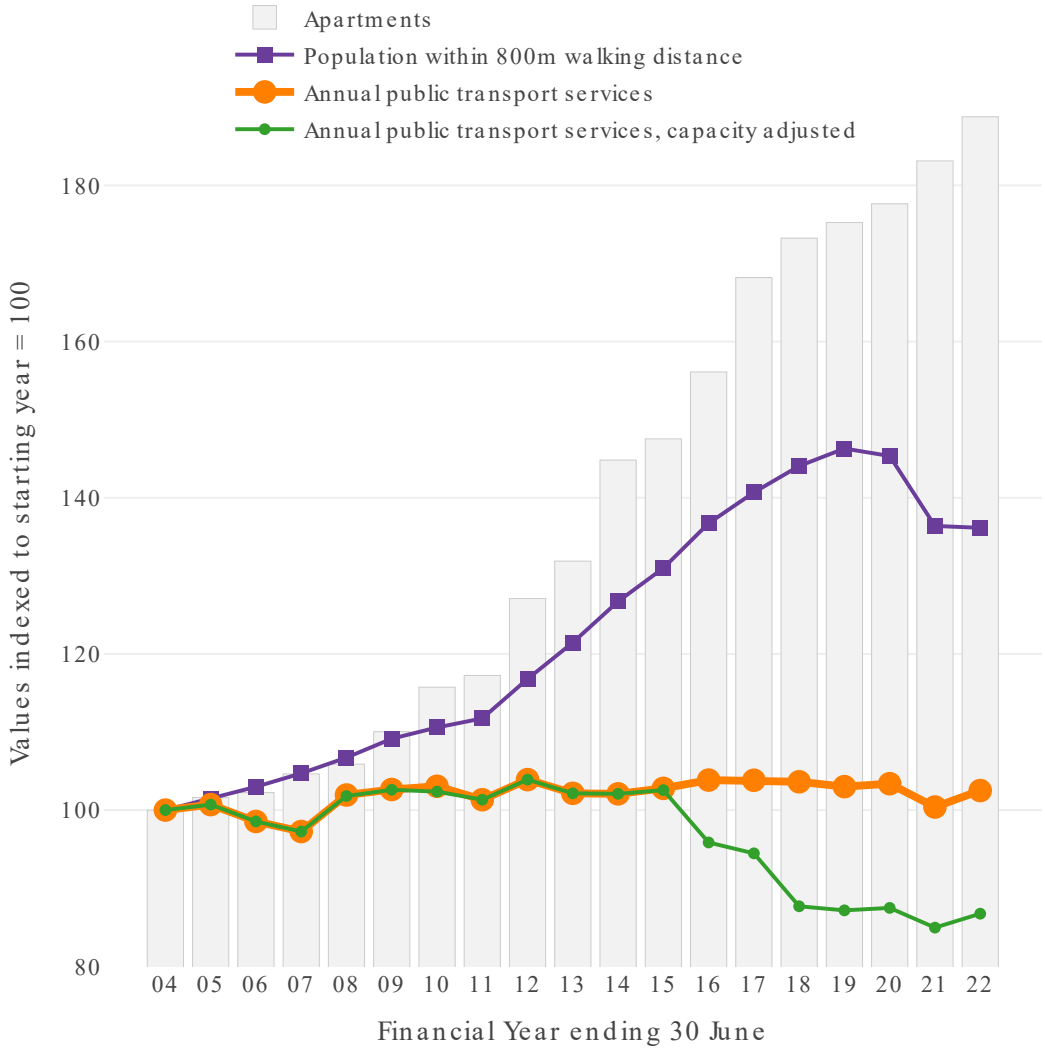


Change in apartments	+ 96.5 %
Change in population	+ 20.5 %
Change in public transport services	+ 3.3 %
Change in public transport services, capacity adjusted	+ 3.3 %

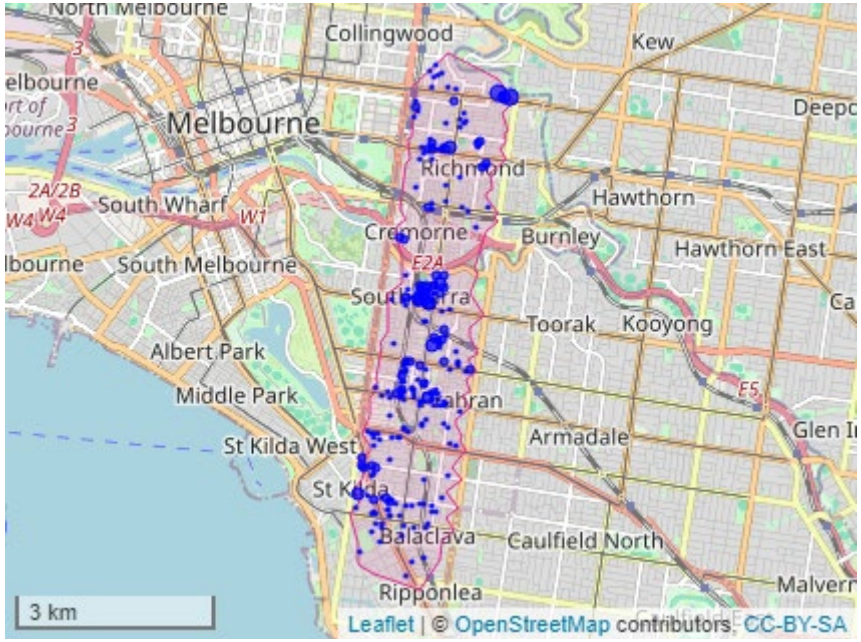


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 78

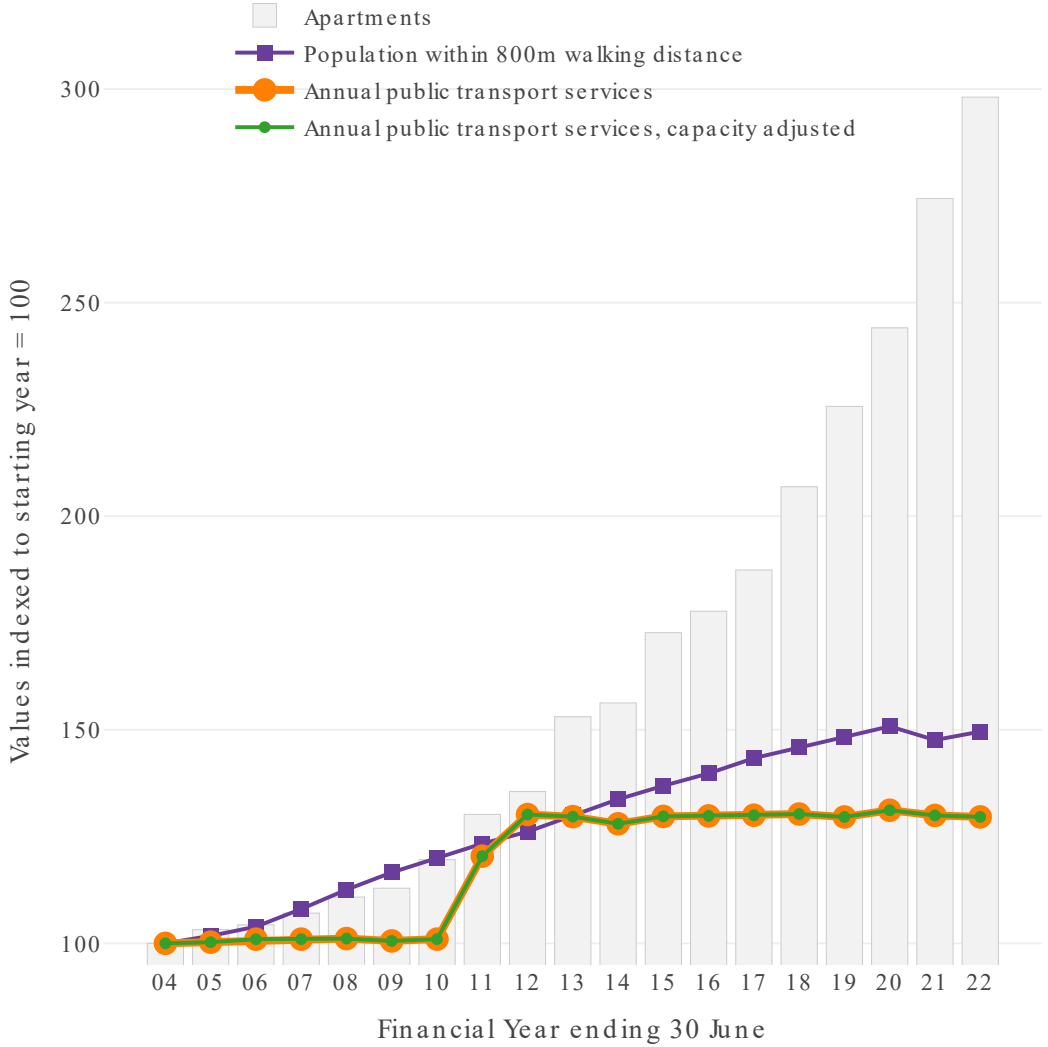


Change in apartments	+ 88.8 %
Change in population	+ 36.1 %
Change in public transport services	+ 2.5 %
Change in public transport services, capacity adjusted	- 13.3 %

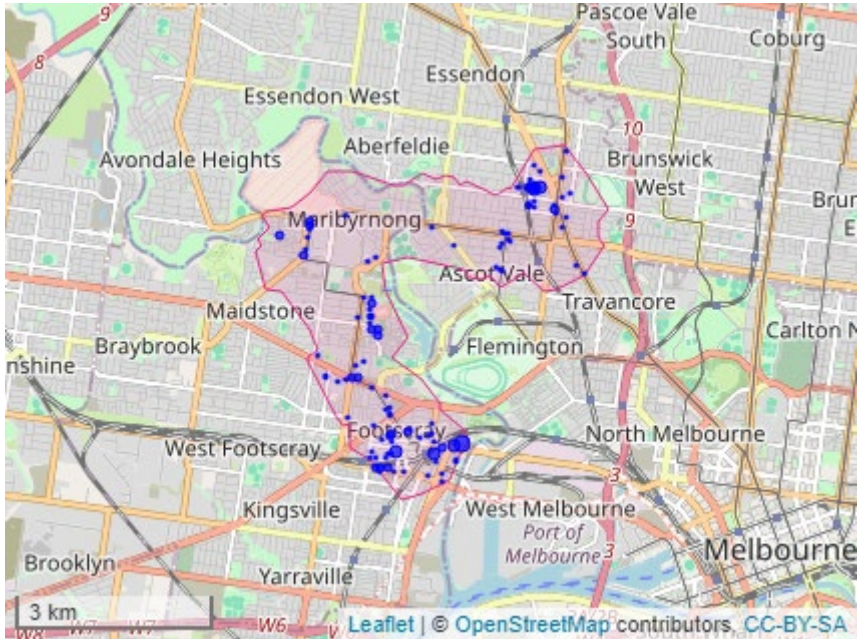


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 82

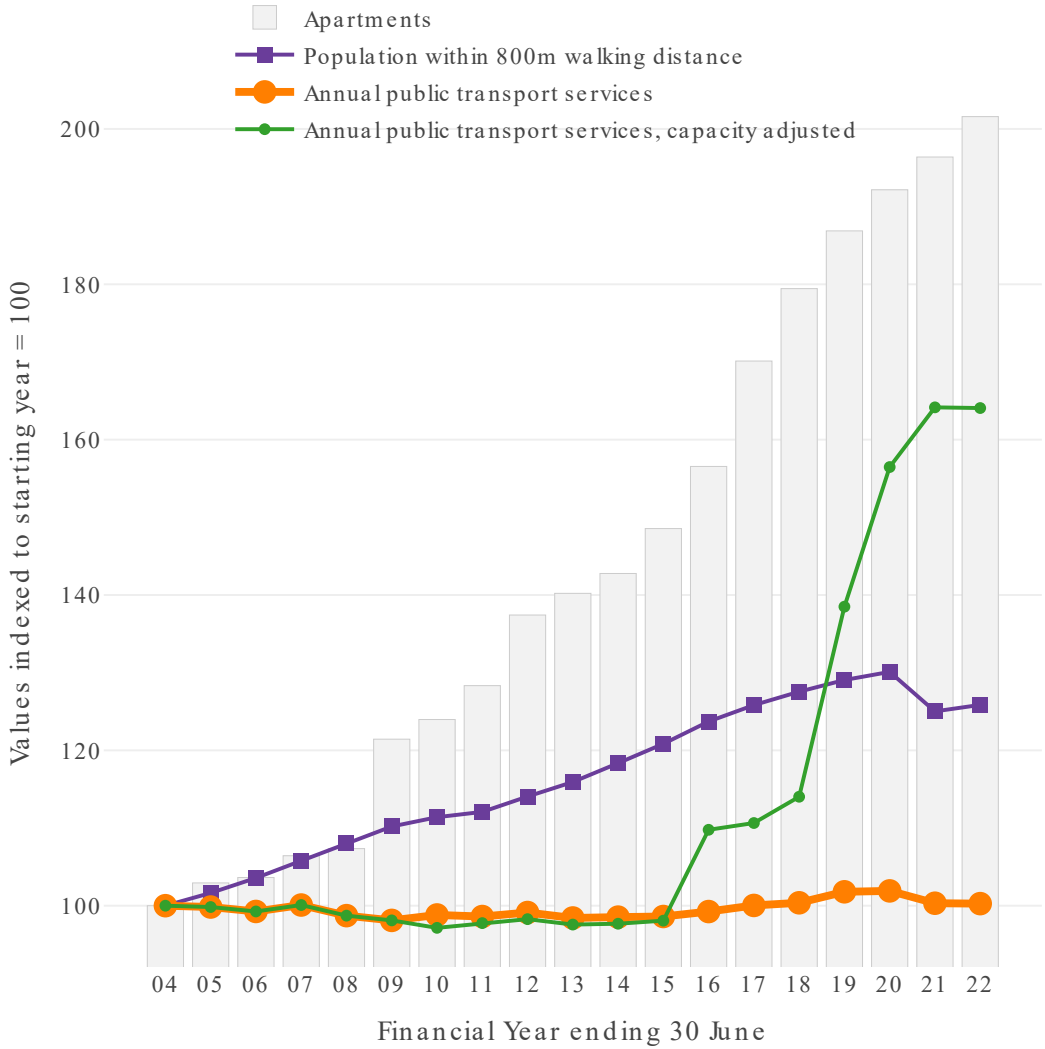


Change in apartments	+ 198.1 %
Change in population	+ 49.6 %
Change in public transport services	+ 29.6 %
Change in public transport services, capacity adjusted	+ 29.6 %

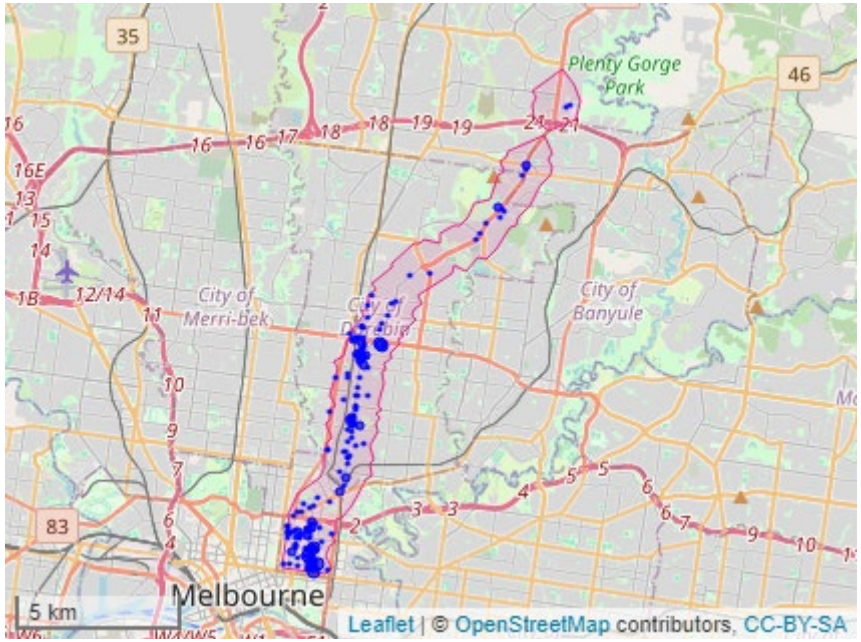


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 86

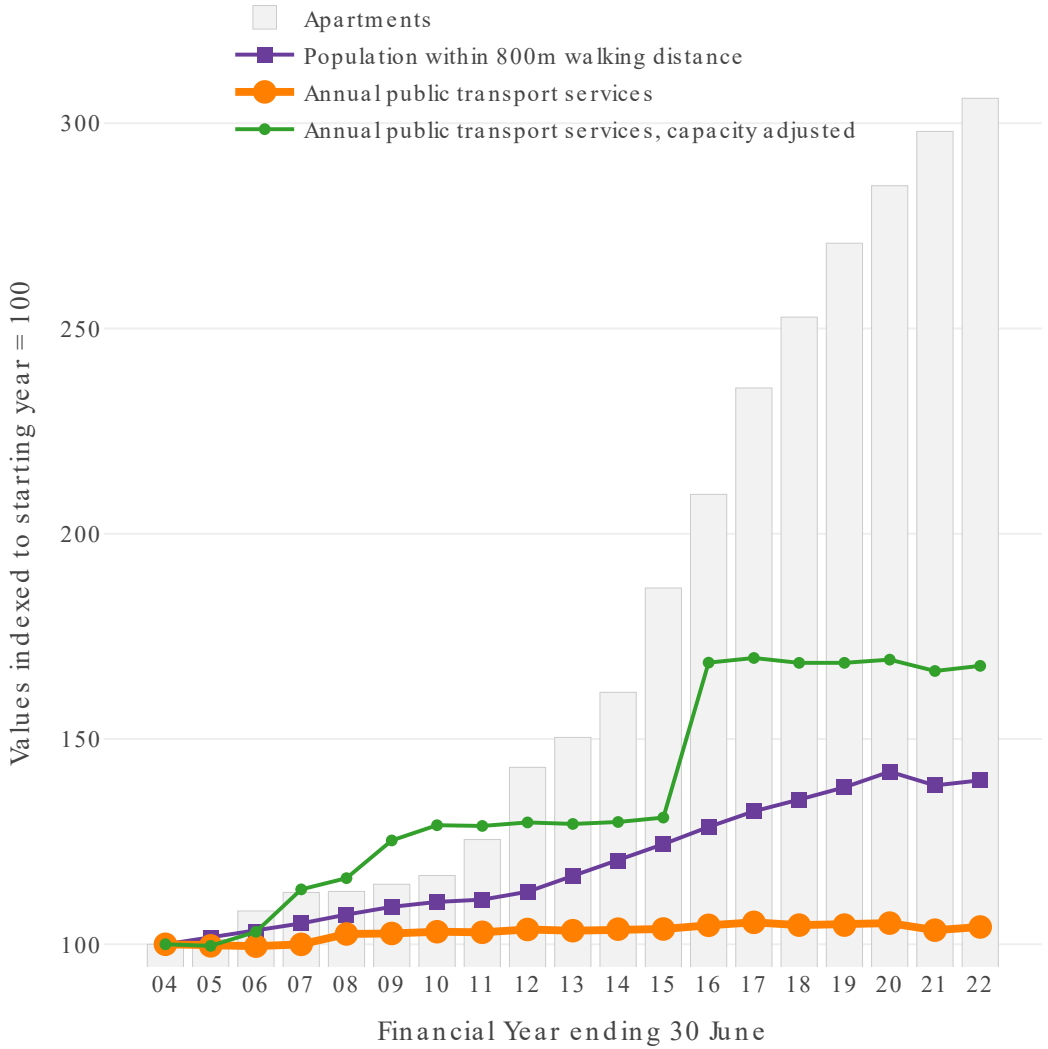


Change in apartments	+ 101.6 %
Change in population	+ 25.9 %
Change in public transport services	+ 0.3 %
Change in public transport services, capacity adjusted	+ 64.1 %

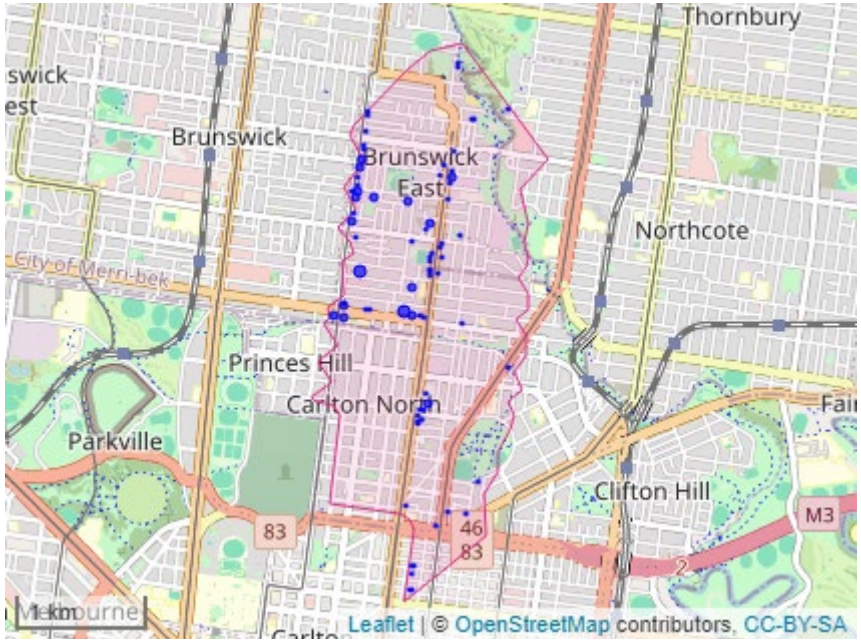


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 96 north

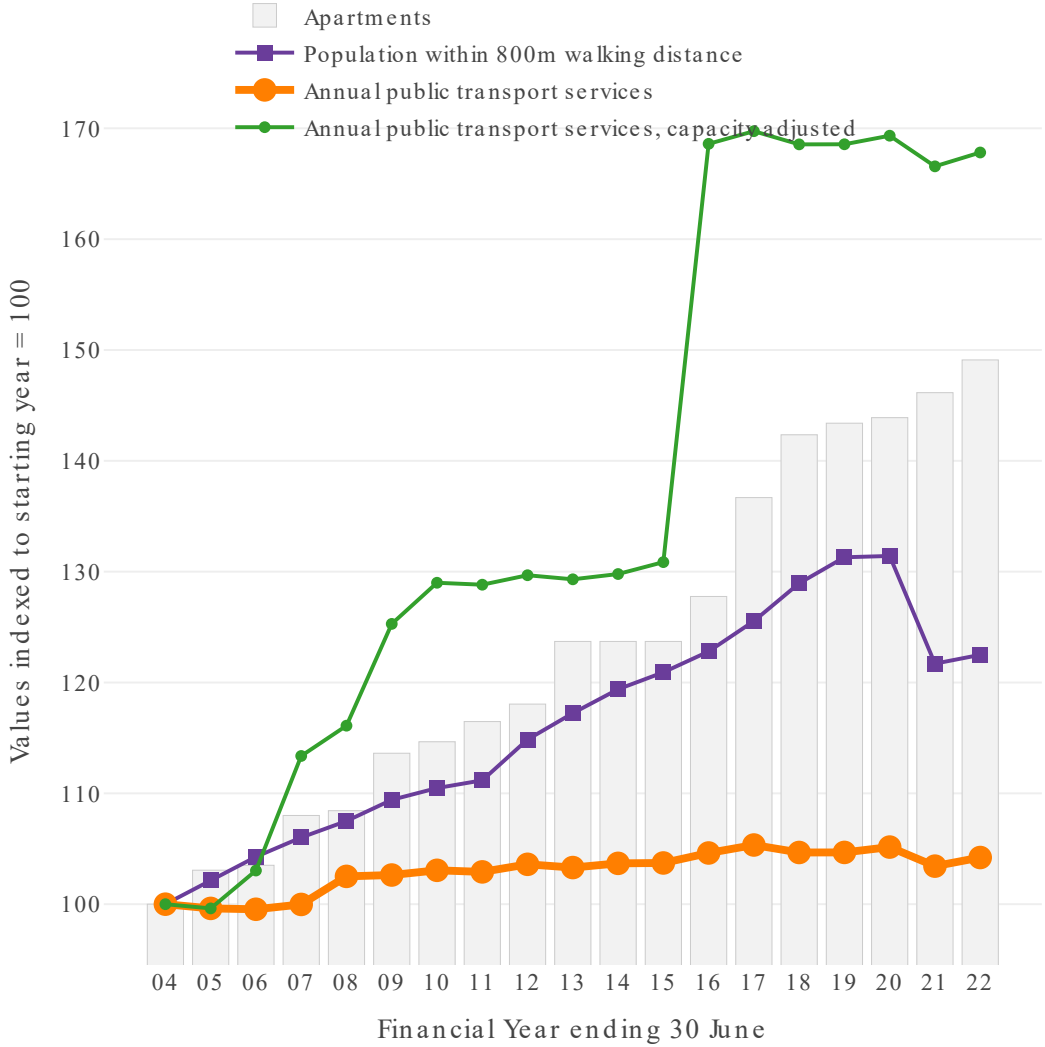


Change in apartments	+ 206.1 %
Change in population	+ 39.9 %
Change in public transport services	+ 4.2 %
Change in public transport services, capacity adjusted	+ 67.8 %

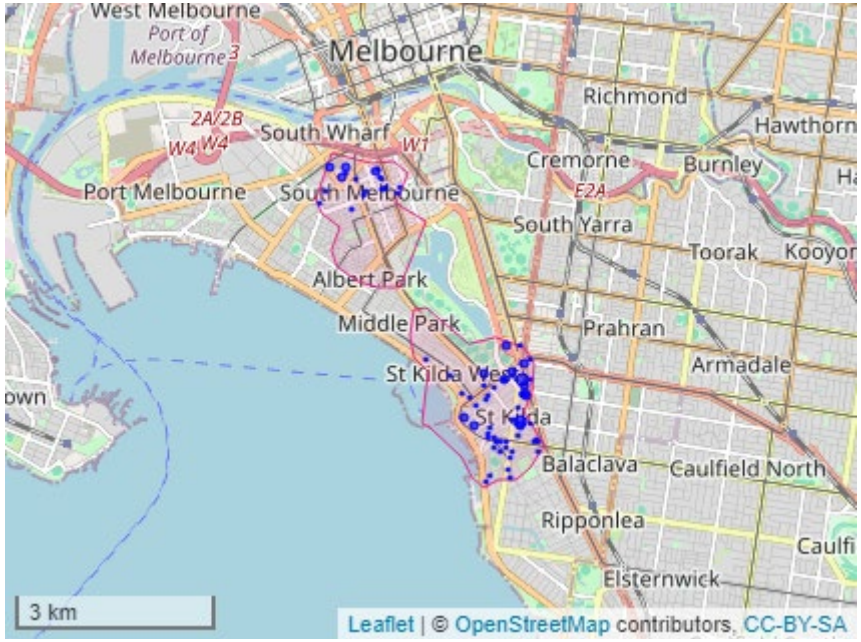


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 96 south

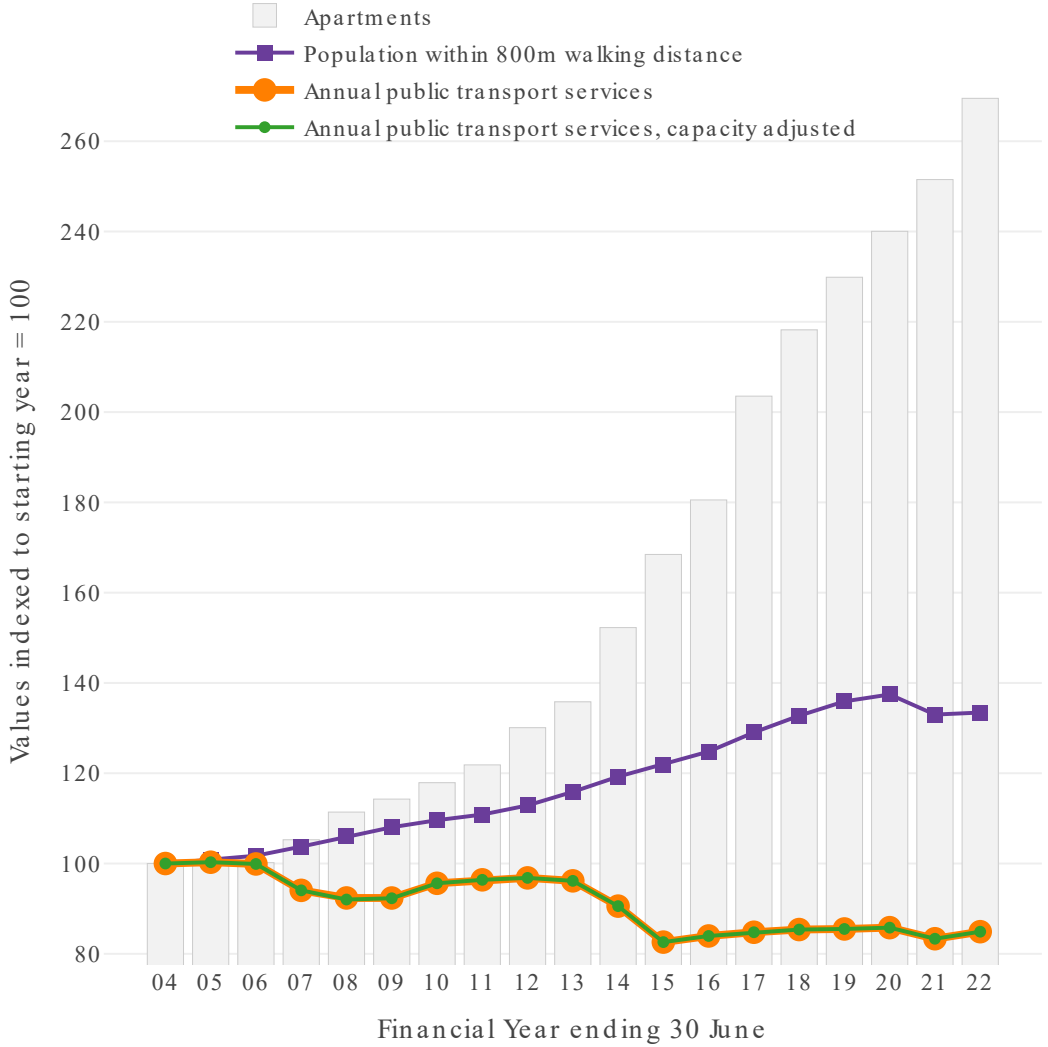


Change in apartments	+ 49.1 %
Change in population	+ 22.5 %
Change in public transport services	+ 4.2 %
Change in public transport services, capacity adjusted	+ 67.8 %

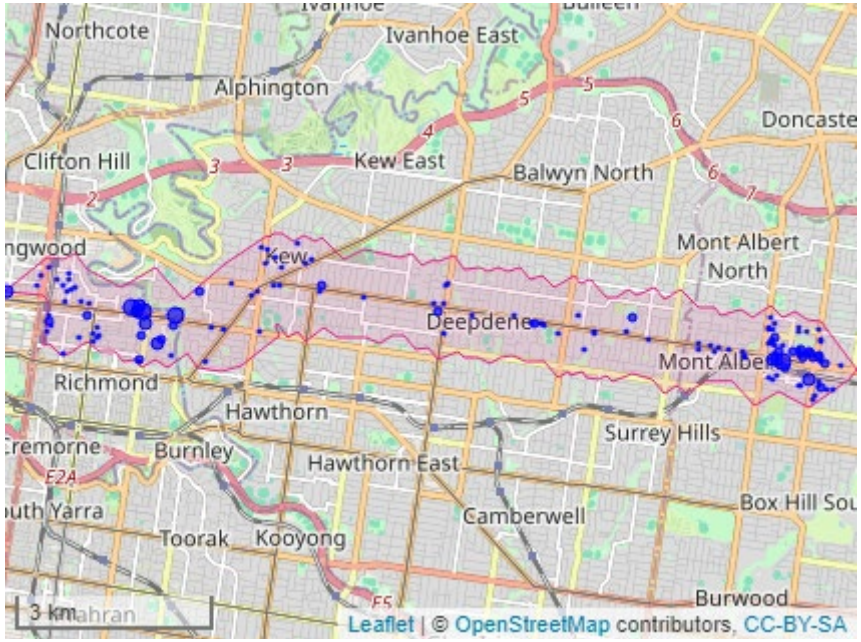


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 109 east

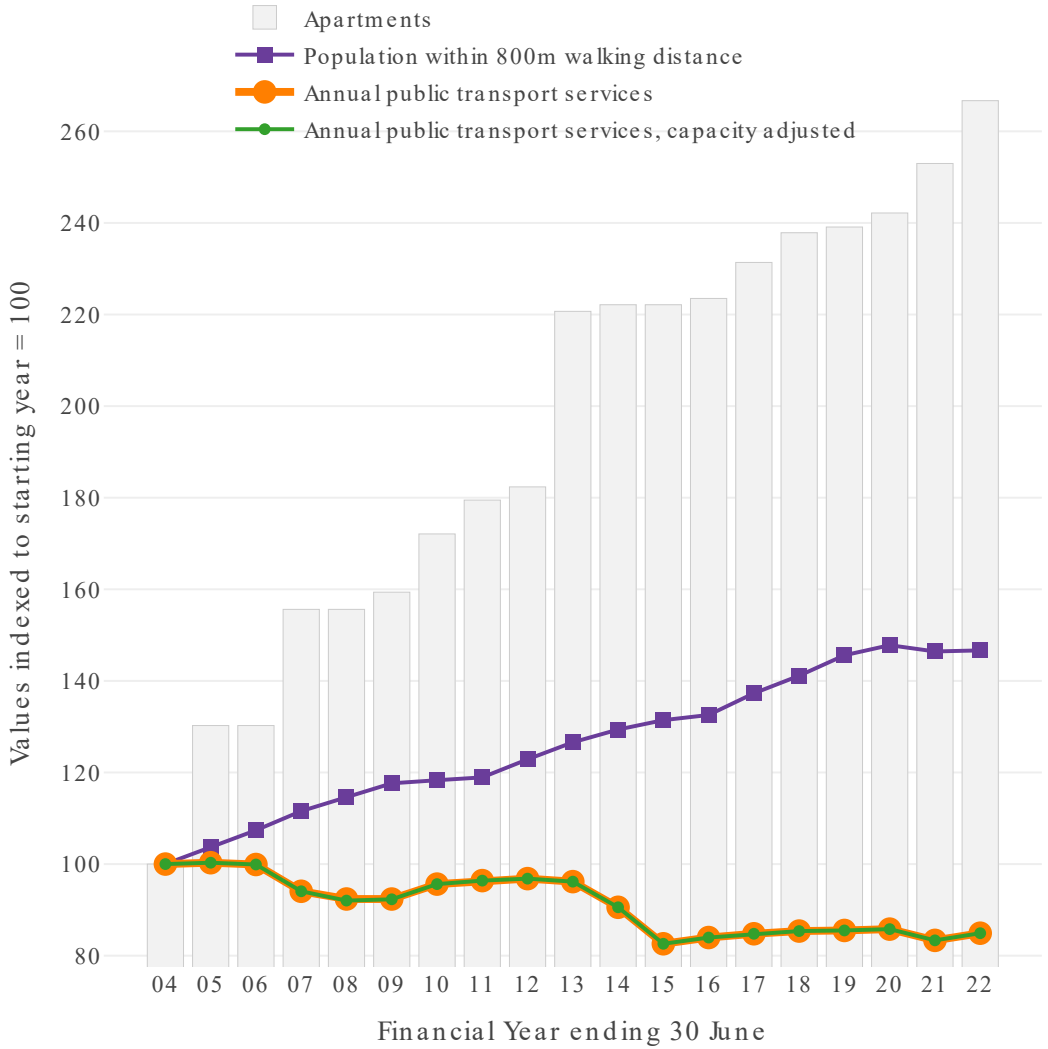


Change in apartments	+ 169.5 %
Change in population	+ 33.4 %
Change in public transport services	- 15.1 %
Change in public transport services, capacity adjusted	- 15.1 %

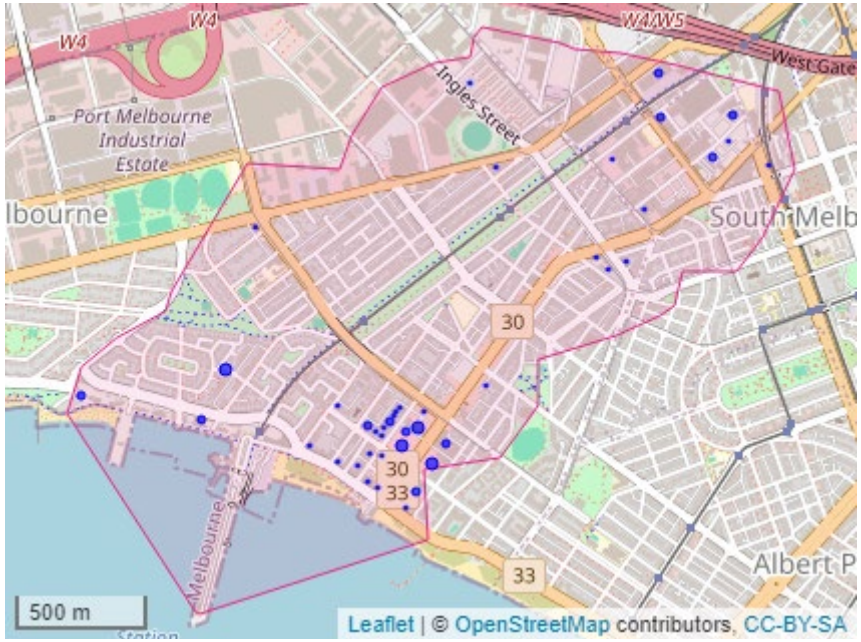


Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Tram route 109 west



Change in apartments	+ 166.7 %
Change in population	+ 46.7 %
Change in public transport services	- 15.1 %
Change in public transport services, capacity adjusted	- 15.1 %



Apartments constructed 2003-04 to 2021-22
800m walkable catchments

Appendix 3: Results by area (train, tram & bus) and bus route, 2015-16 to 2021-22

This Appendix shows results for Greater Melbourne as a whole and for Local Government Areas within Greater Melbourne for train tram and bus services, and for selected bus routes within Greater Melbourne, by year from 2015-16.

The information shown covers changes in apartments, population and public transport services. See Appendix 2 for results from 2003-04, but not including bus services.

Two indicators are shown for public transport services:

- 'annual services' - the raw number of services each year, and
- 'annual services, capacity adjusted' - the number of services adjusted to account for changes in the passenger carrying capacity, which is particularly relevant for tram (and some train) services in Melbourne where larger vehicle types have been progressively introduced on some routes.

For Greater Melbourne and Local Government Areas, services are train, tram and bus services for the relevant financial year. For bus routes, they are bus services.

The values shown on the charts are aligned so that they are all indexed to 100 in the starting year.

The charts show apartments constructed from 2015-16. The maps also show apartments constructed from 2003-04, but in a different colour.

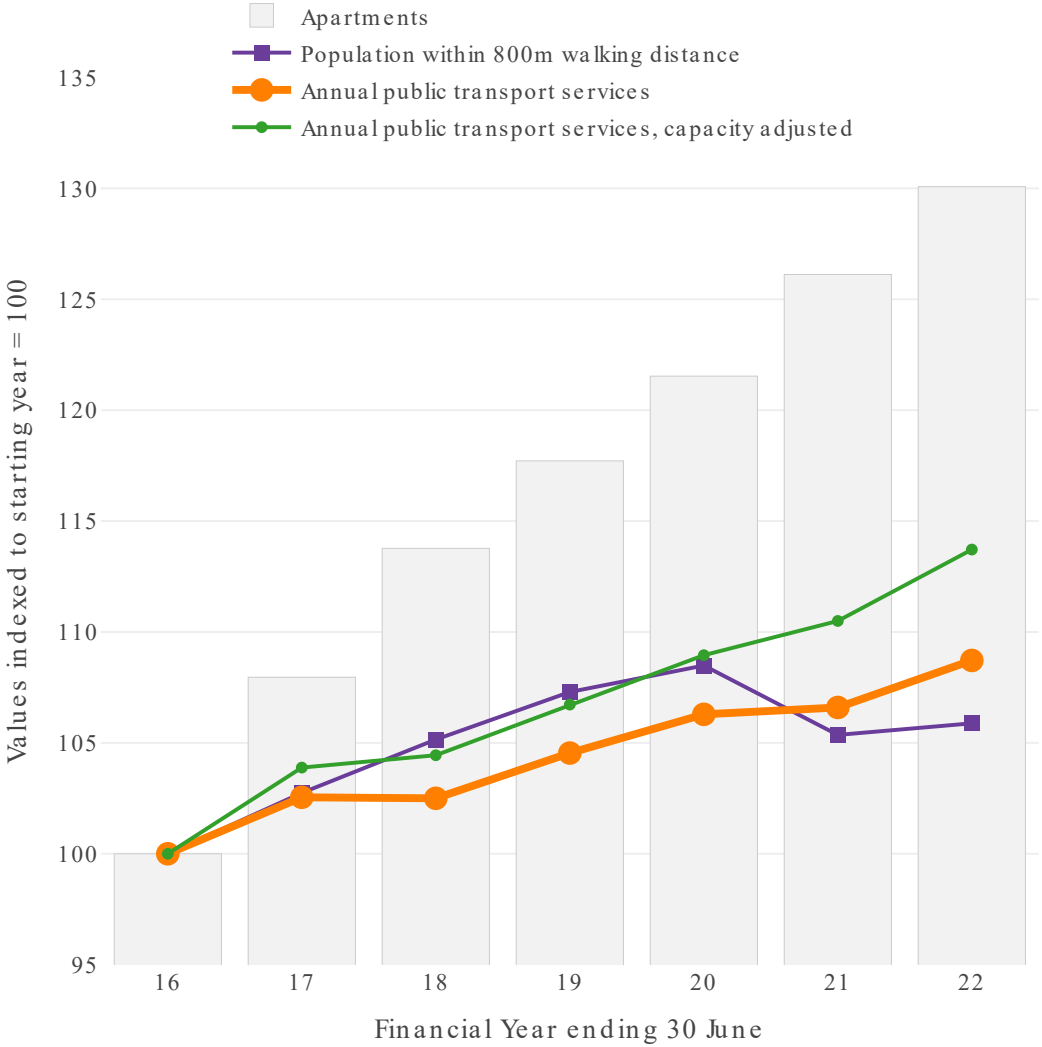
The '800m walkable catchments' shown on the maps are:

- for Greater Melbourne and Local Government Areas, places within 800m walking distance of the public transport stops that are walkable from the apartments in those areas; and
- for bus routes, places within 800m walking distance of the stops that make up the bus route, where those stops have apartments within their catchments.

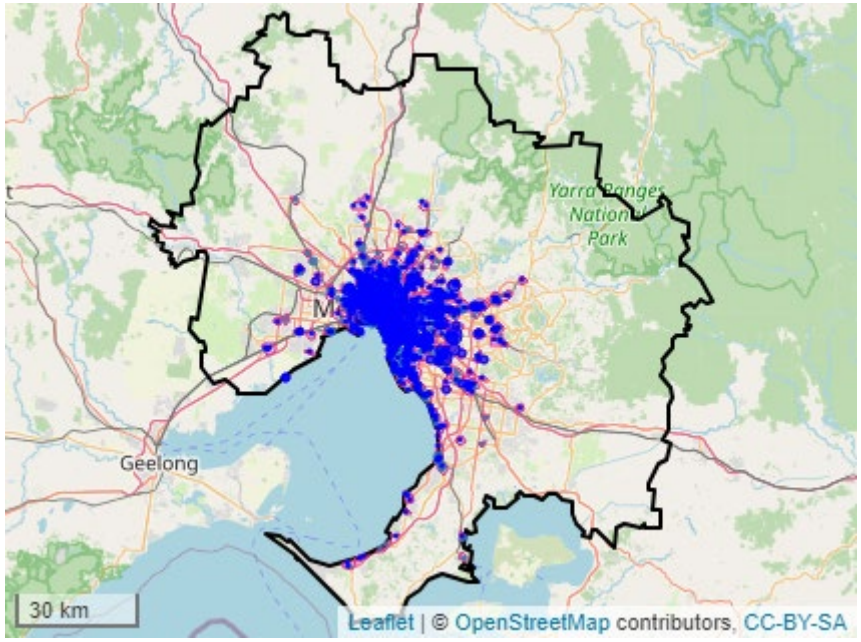
'Population' is the population of the walkable catchment.

Results for bus routes exclude stops within the Melbourne Local Government Area (to avoid the large apartment numbers in that area overshadowing results along the full extent of the route).

Greater Melbourne

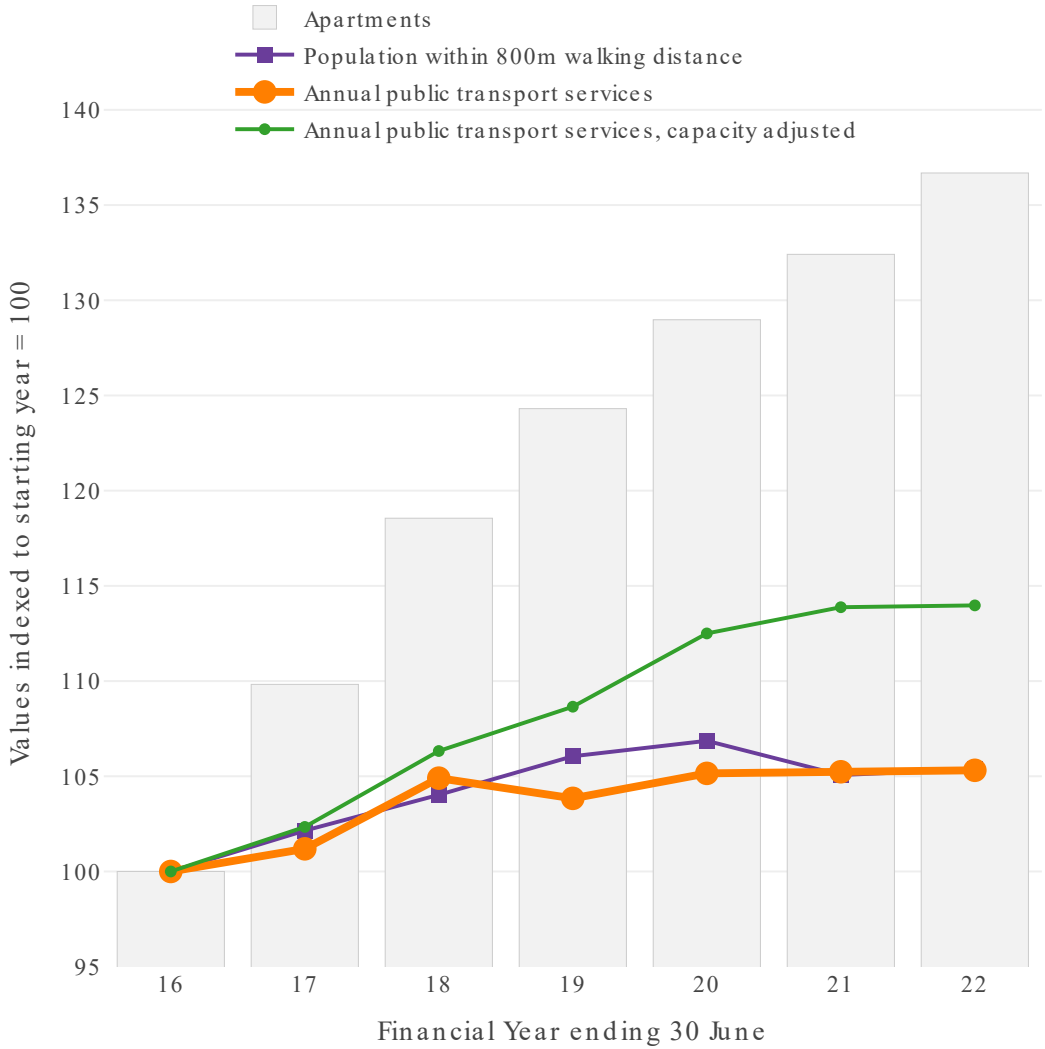


Change in apartments	+ 30.1 %
Change in population	+ 5.9 %
Change in public transport services	+ 8.7 %
Change in public transport services, capacity adjusted	+ 13.7 %

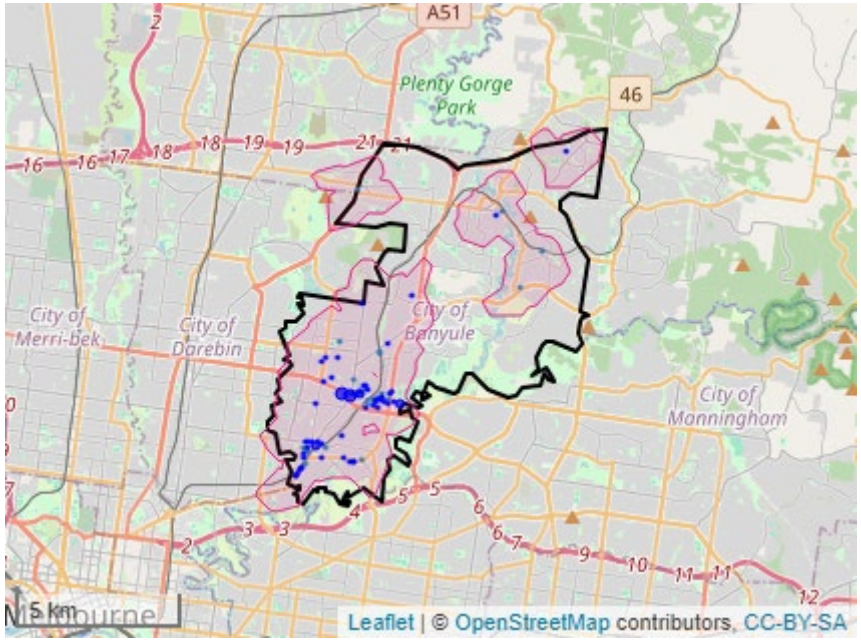


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Greater Melbourne

Local Government Area: Banyule

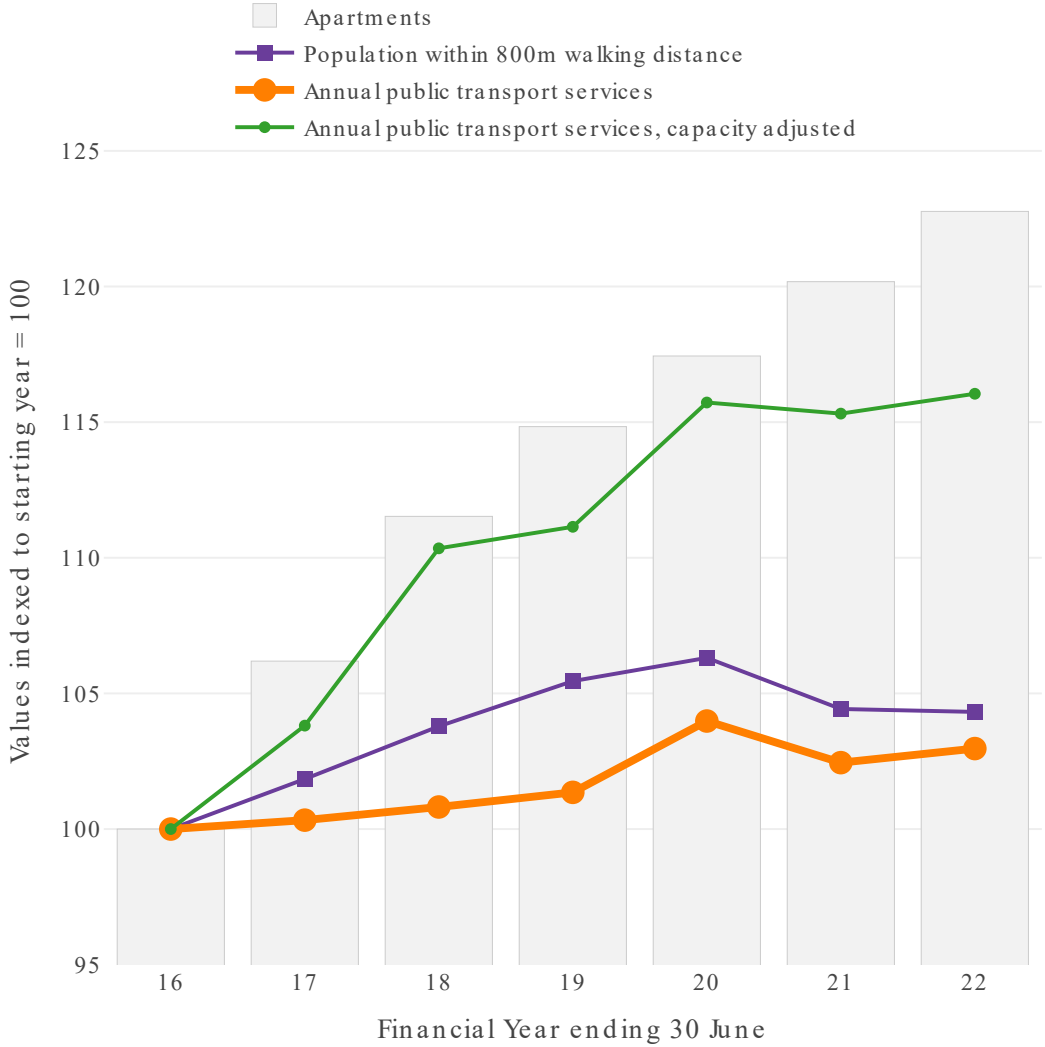


Change in apartments	+ 36.7 %
Change in population	+ 5.4 %
Change in public transport services	+ 5.3 %
Change in public transport services, capacity adjusted	+ 14.0 %

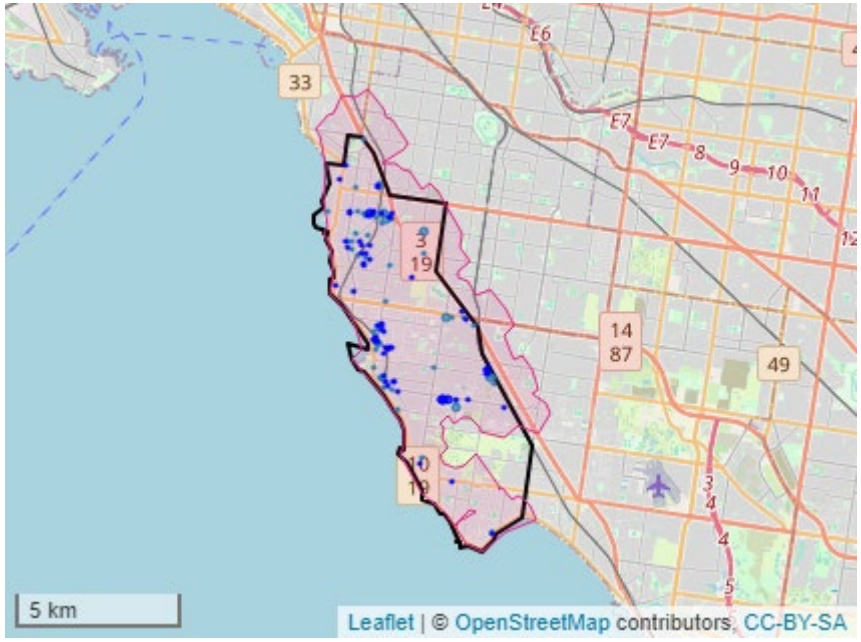


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Banyule

Local Government Area: Bayside

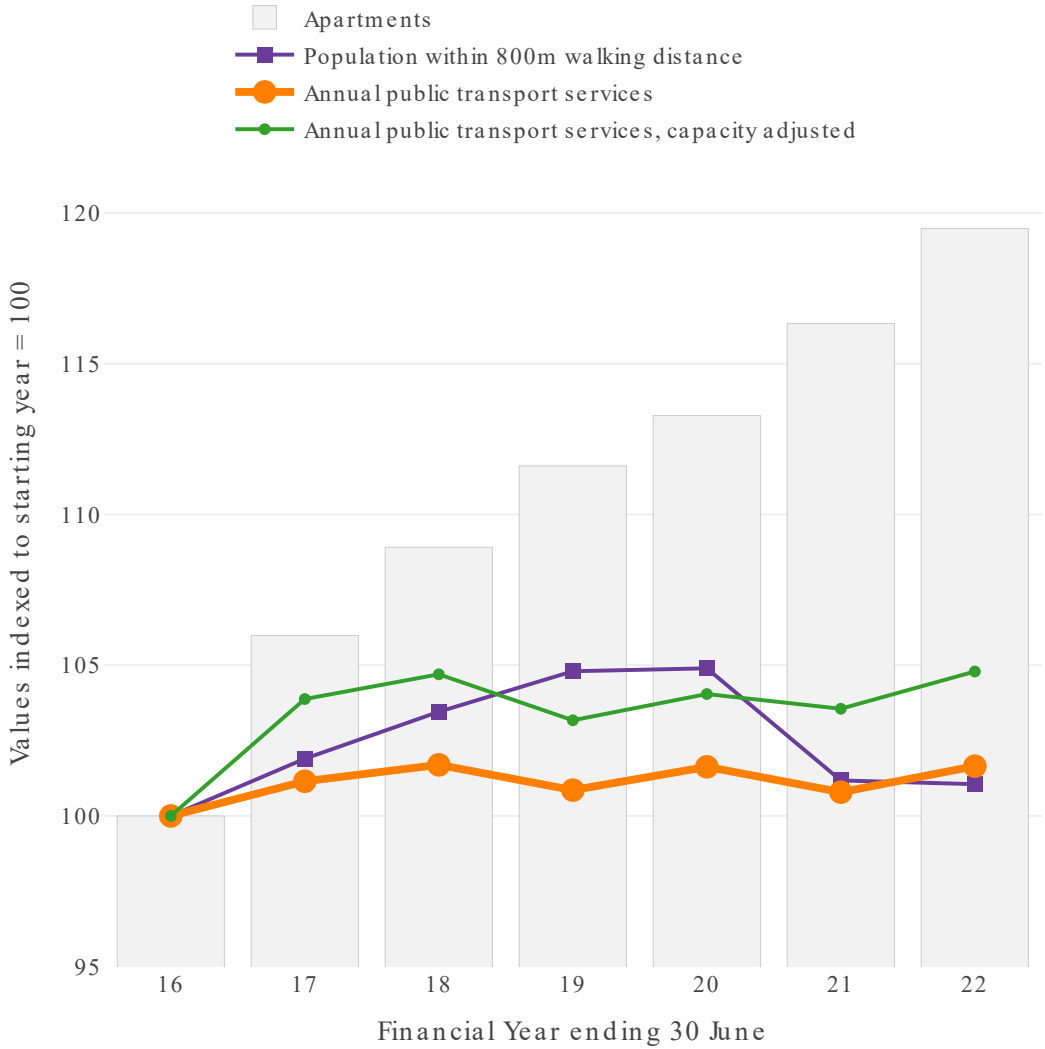


Change in apartments	+ 22.8 %
Change in population	+ 4.3 %
Change in public transport services	+ 3.0 %
Change in public transport services, capacity adjusted	+ 16.0 %

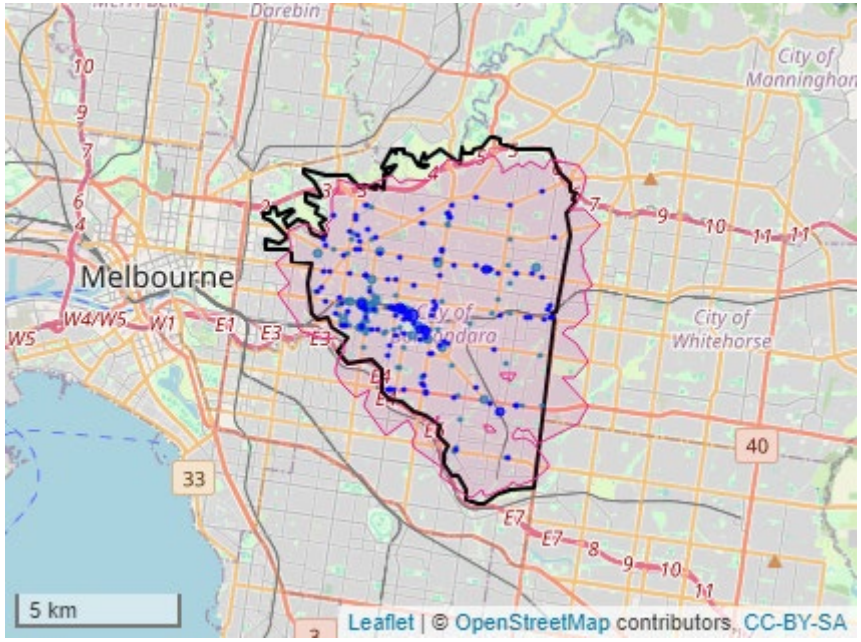


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Bayside

Local Government Area: Boroondara

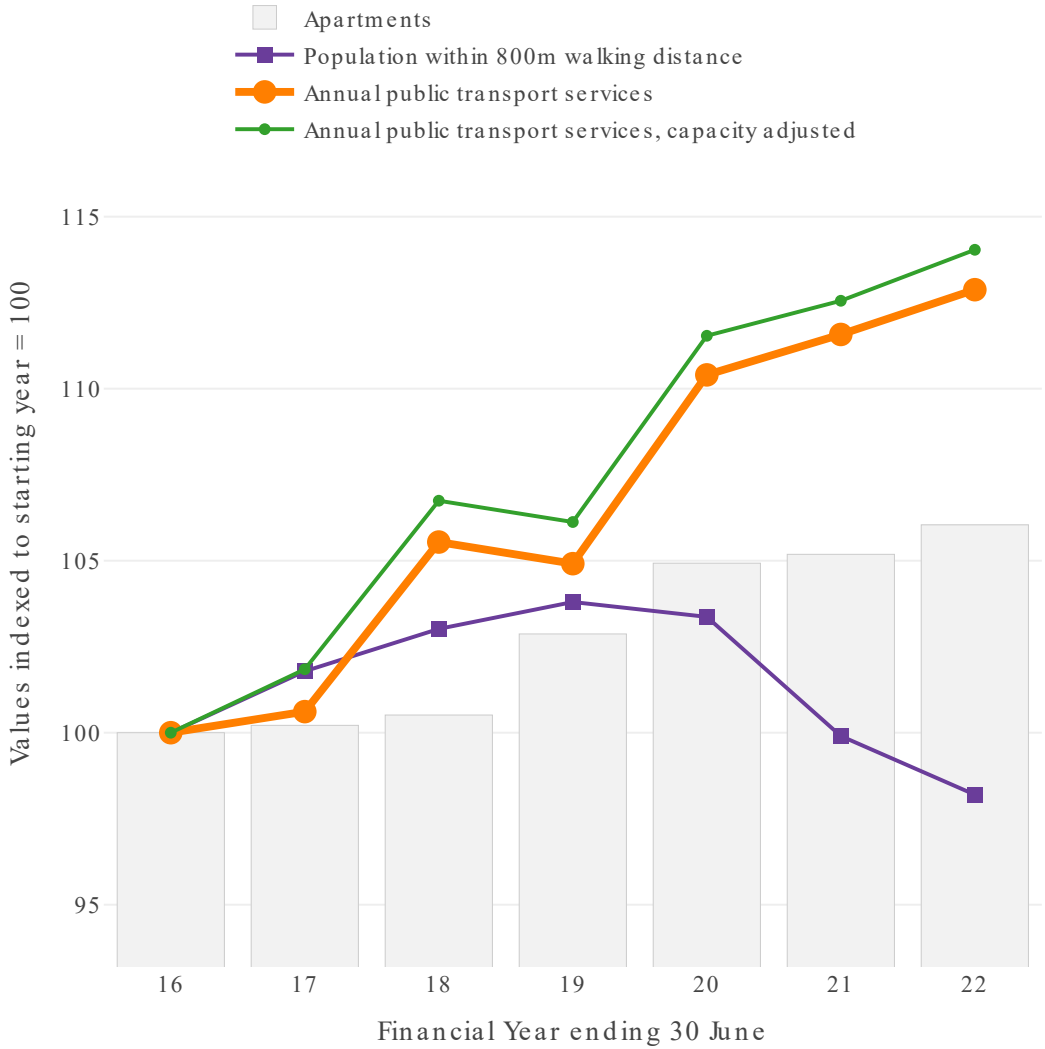


Change in apartments	+ 19.5 %
Change in population	+ 1.1 %
Change in public transport services	+ 1.6 %
Change in public transport services, capacity adjusted	+ 4.8 %

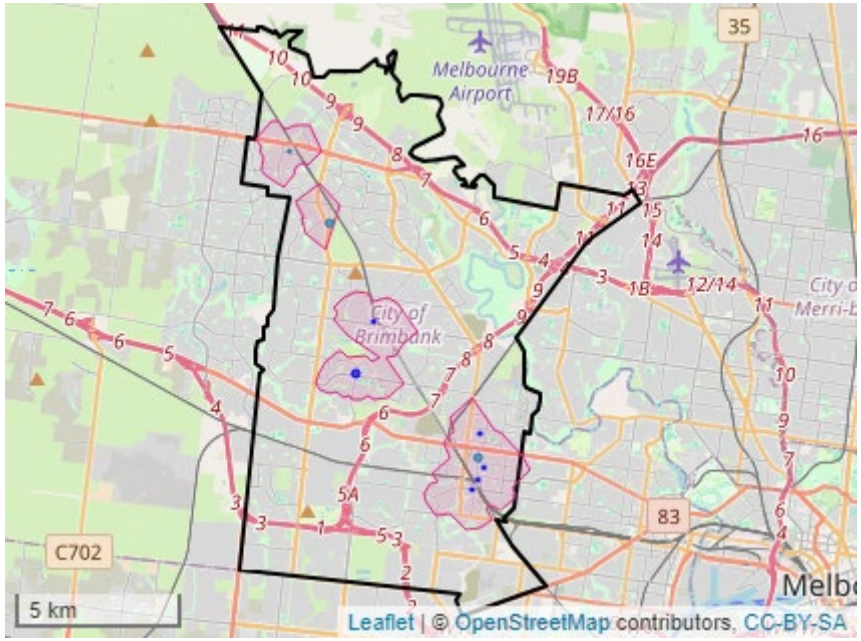


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Boroondara

Local Government Area: Brimbank

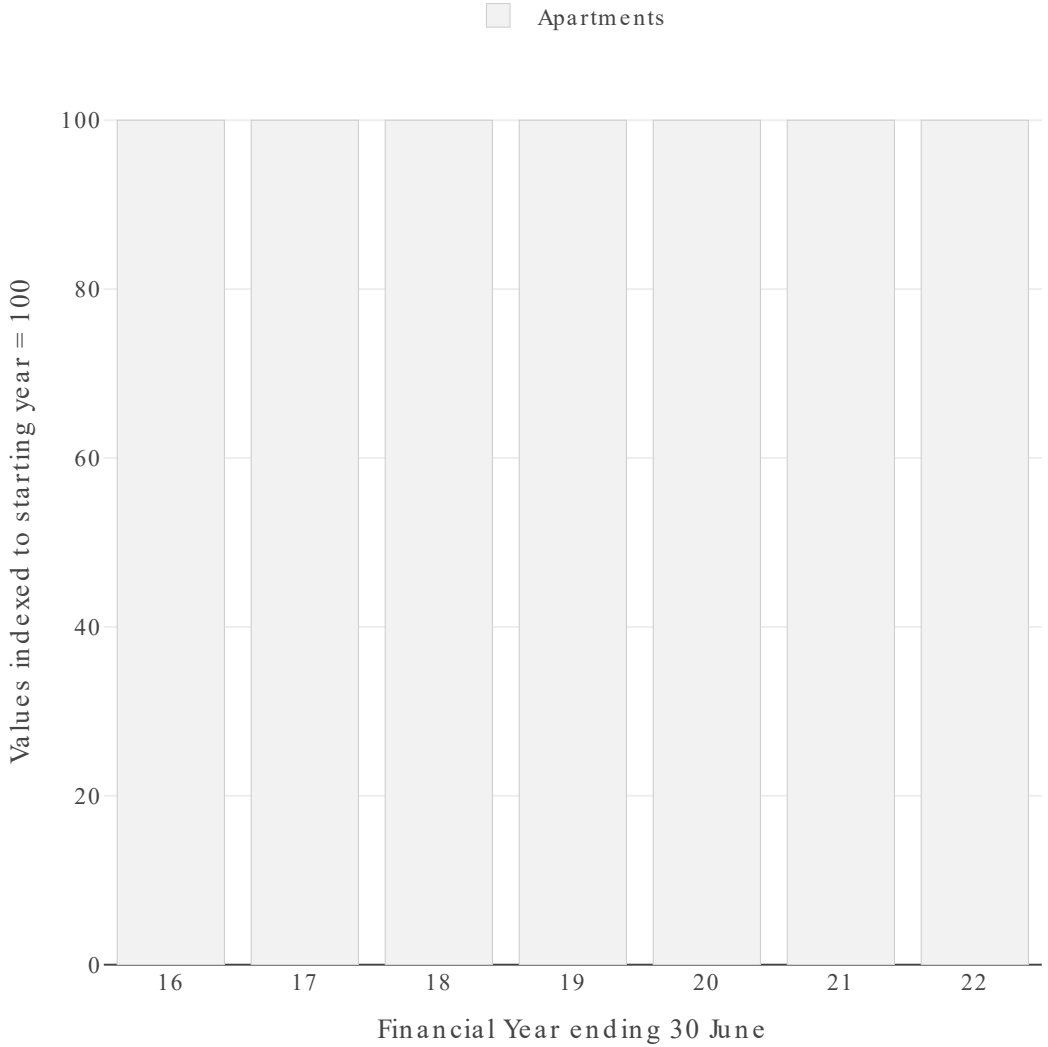


Change in apartments	+ 6.0 %
Change in population	- 1.8 %
Change in public transport services	+ 12.9 %
Change in public transport services, capacity adjusted	+ 14.0 %



Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Brimbank

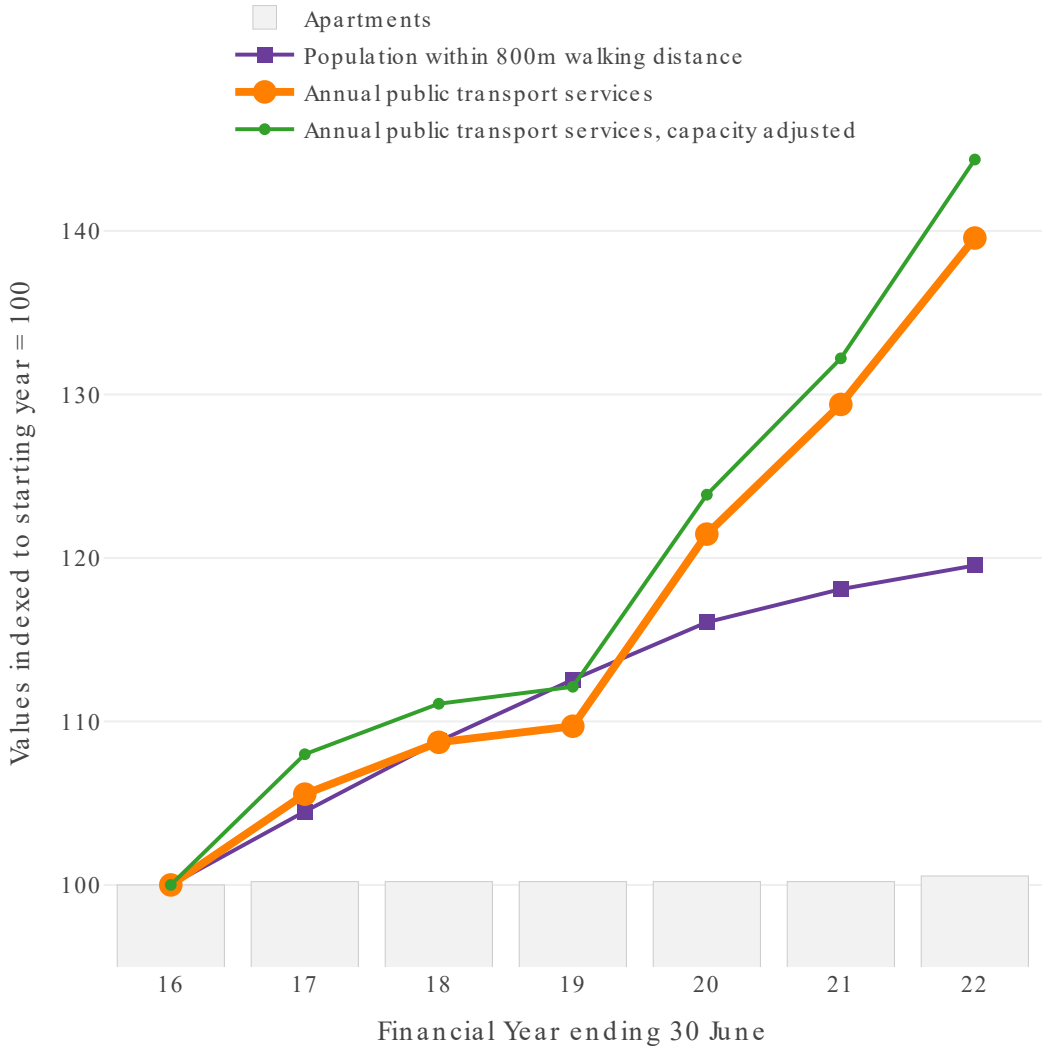
Local Government Area: Cardinia



Change in apartments	0.0 %
Change in population	-
Change in public transport services	-
Change in public transport services, capacity adjusted	-

Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Cardinia

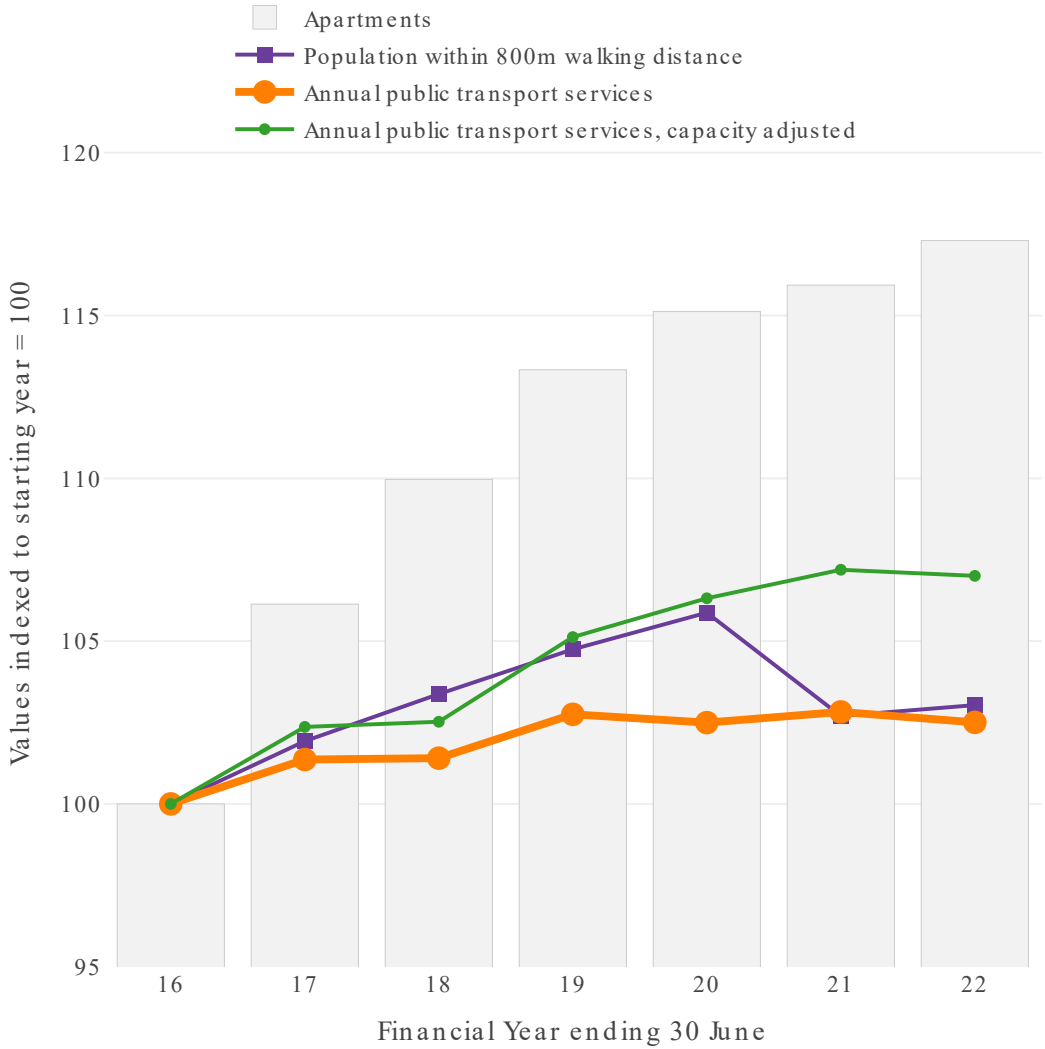
Local Government Area: Casey



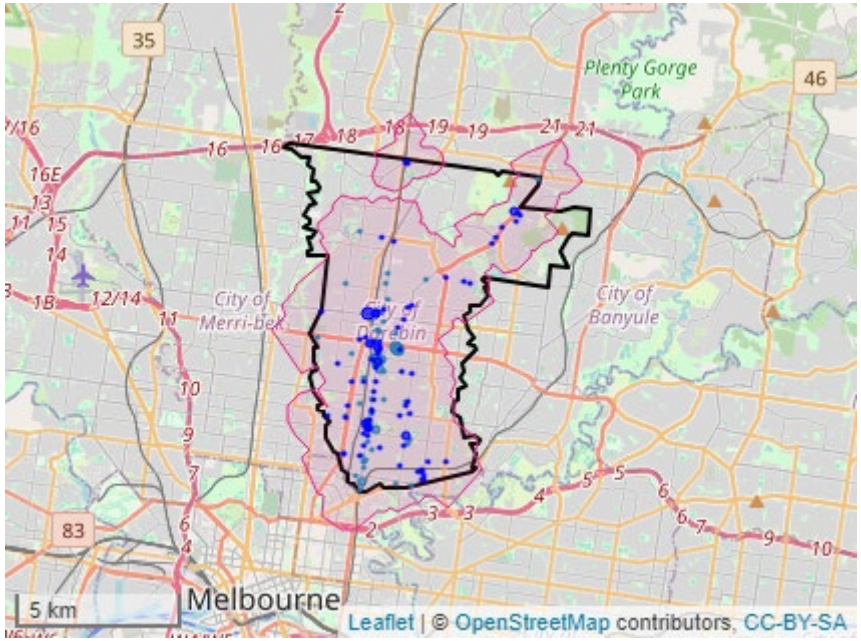
Change in apartments	+ 0.5 %
Change in population	+ 19.5 %
Change in public transport services	+ 39.6 %
Change in public transport services, capacity adjusted	+ 44.4 %

Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Casey

Local Government Area: Darebin

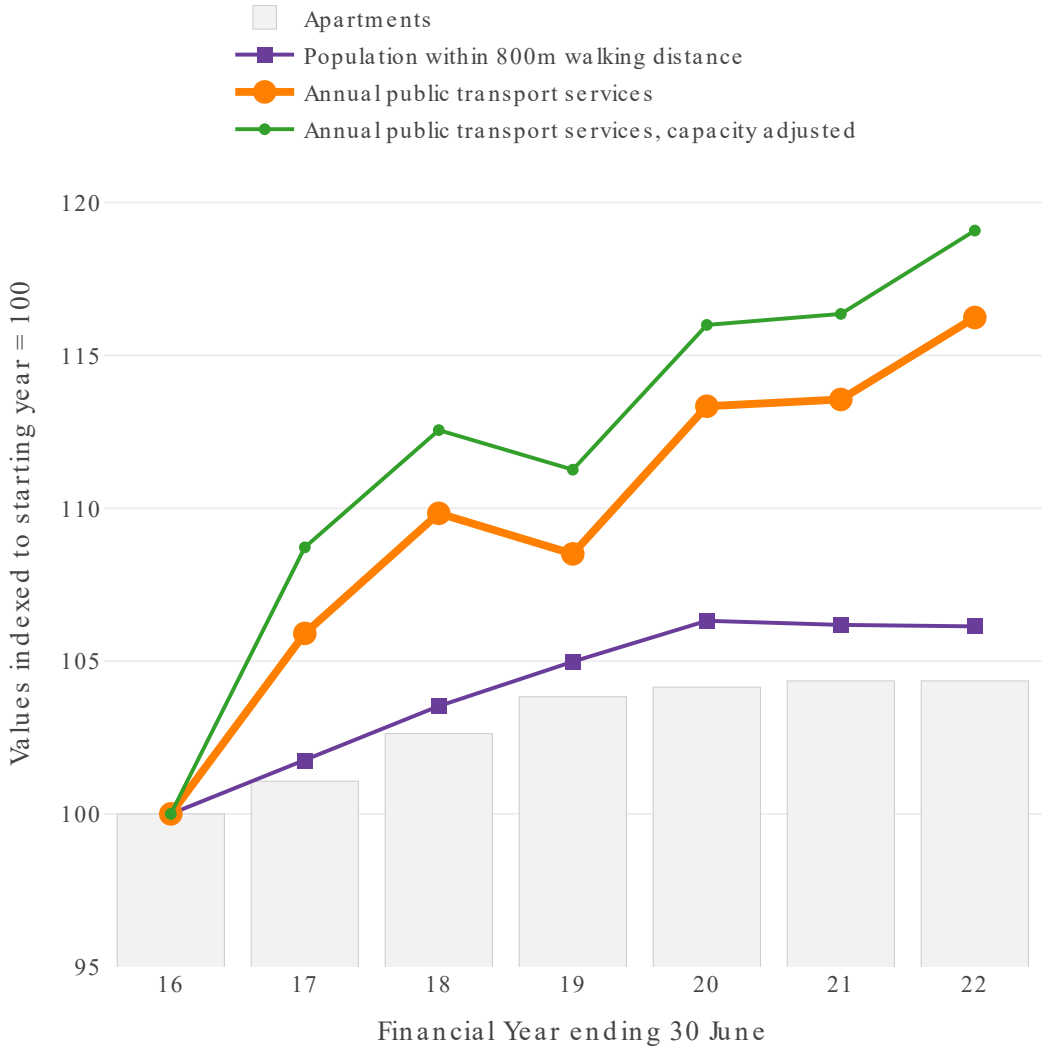


Change in apartments	+ 17.3 %
Change in population	+ 3.0 %
Change in public transport services	+ 2.5 %
Change in public transport services, capacity adjusted	+ 7.0 %

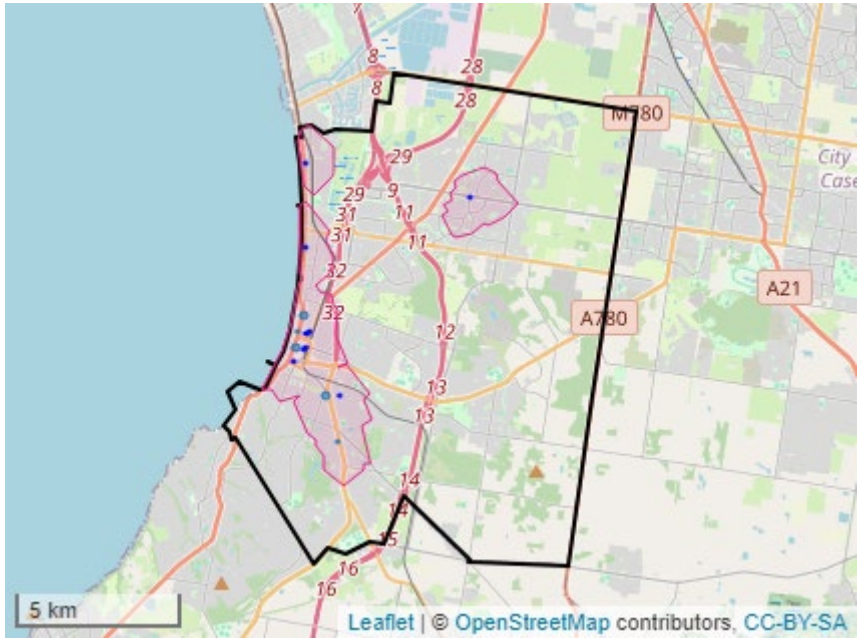


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Darebin

Local Government Area: Frankston

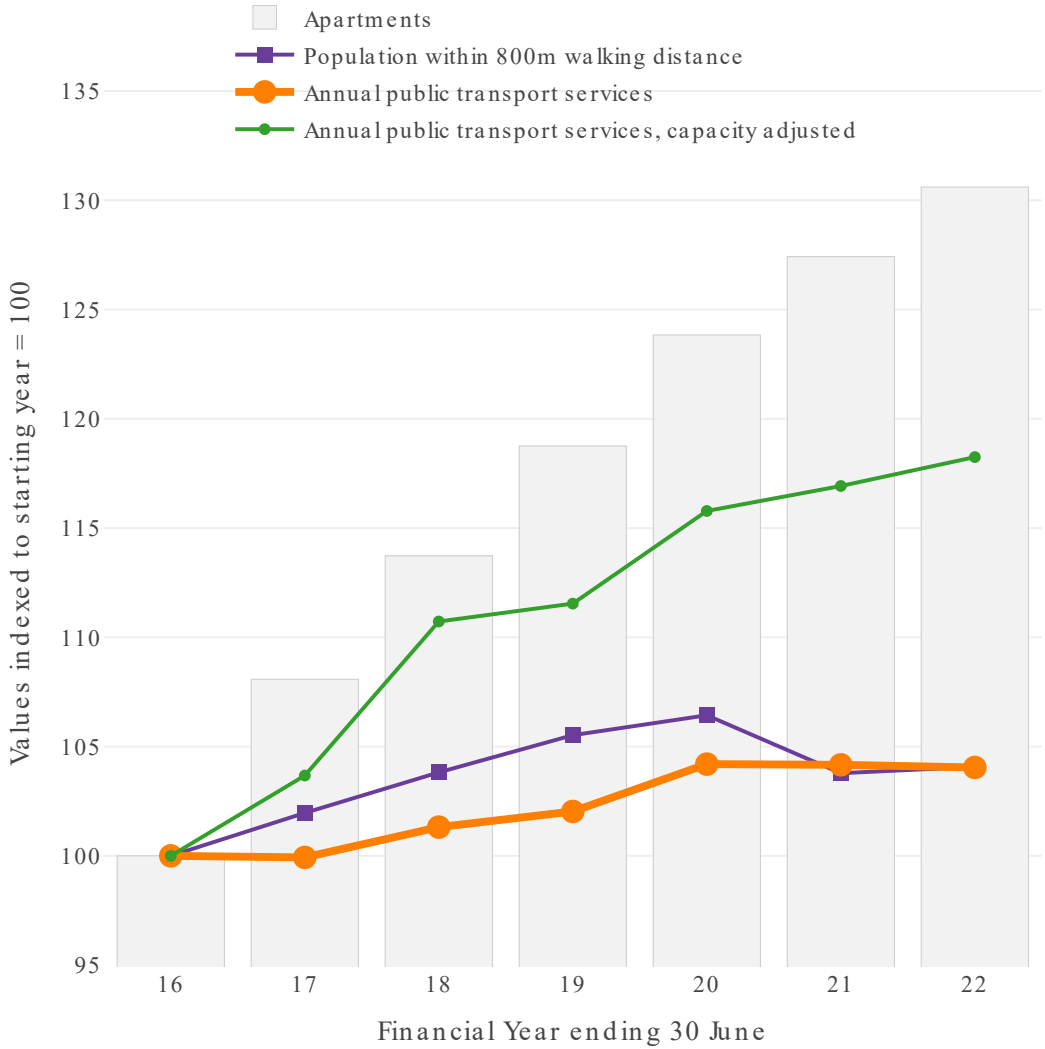


Change in apartments	+ 4.4 %
Change in population	+ 6.1 %
Change in public transport services	+ 16.2 %
Change in public transport services, capacity adjusted	+ 19.1 %

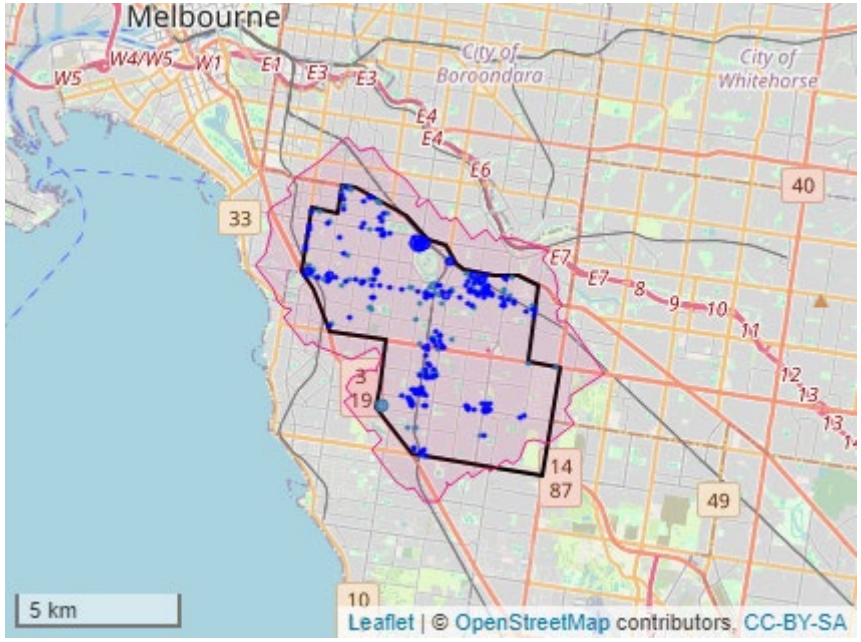


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Frankston

Local Government Area: Glen Eira

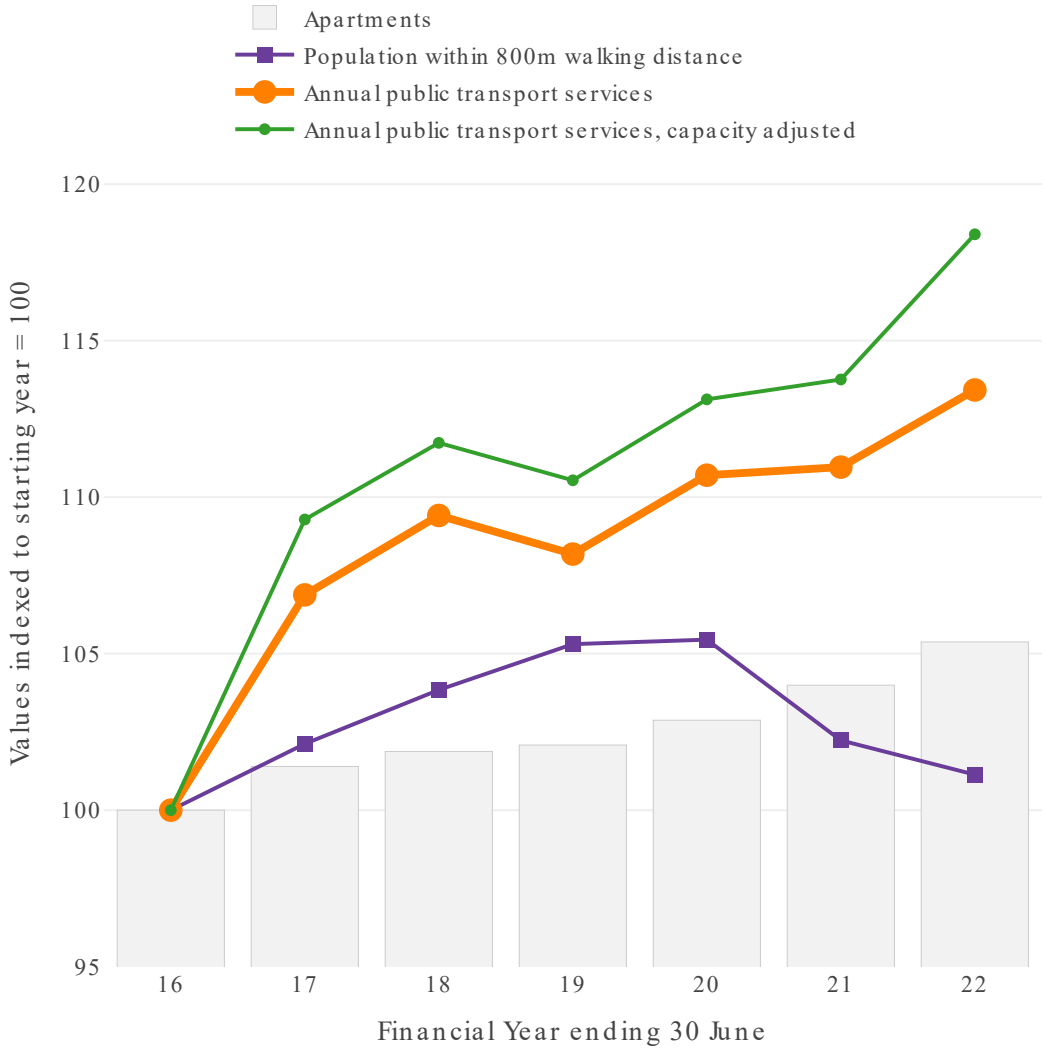


Change in apartments	+ 30.6 %
Change in population	+ 4.1 %
Change in public transport services	+ 4.0 %
Change in public transport services, capacity adjusted	+ 18.2 %

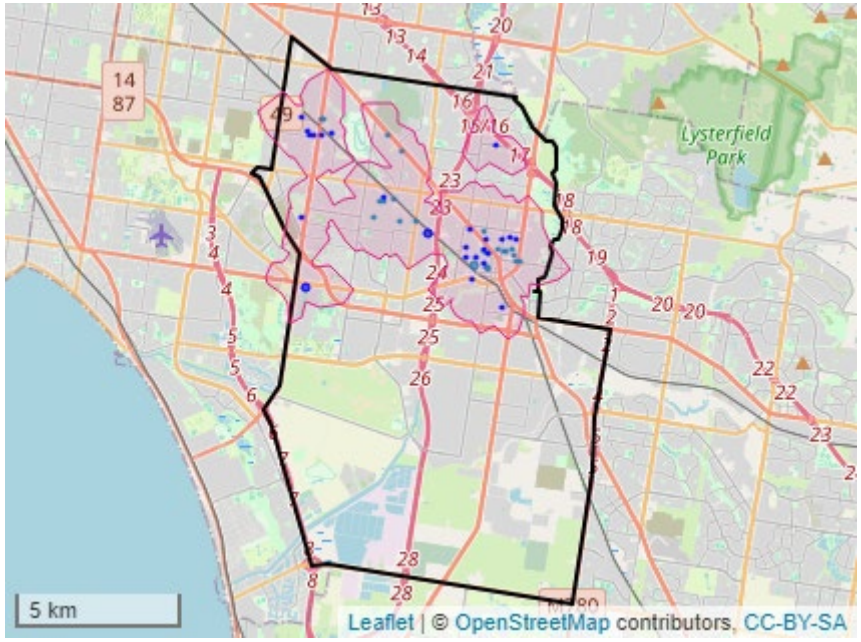


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Glen Eira

Local Government Area: Greater Dandenong

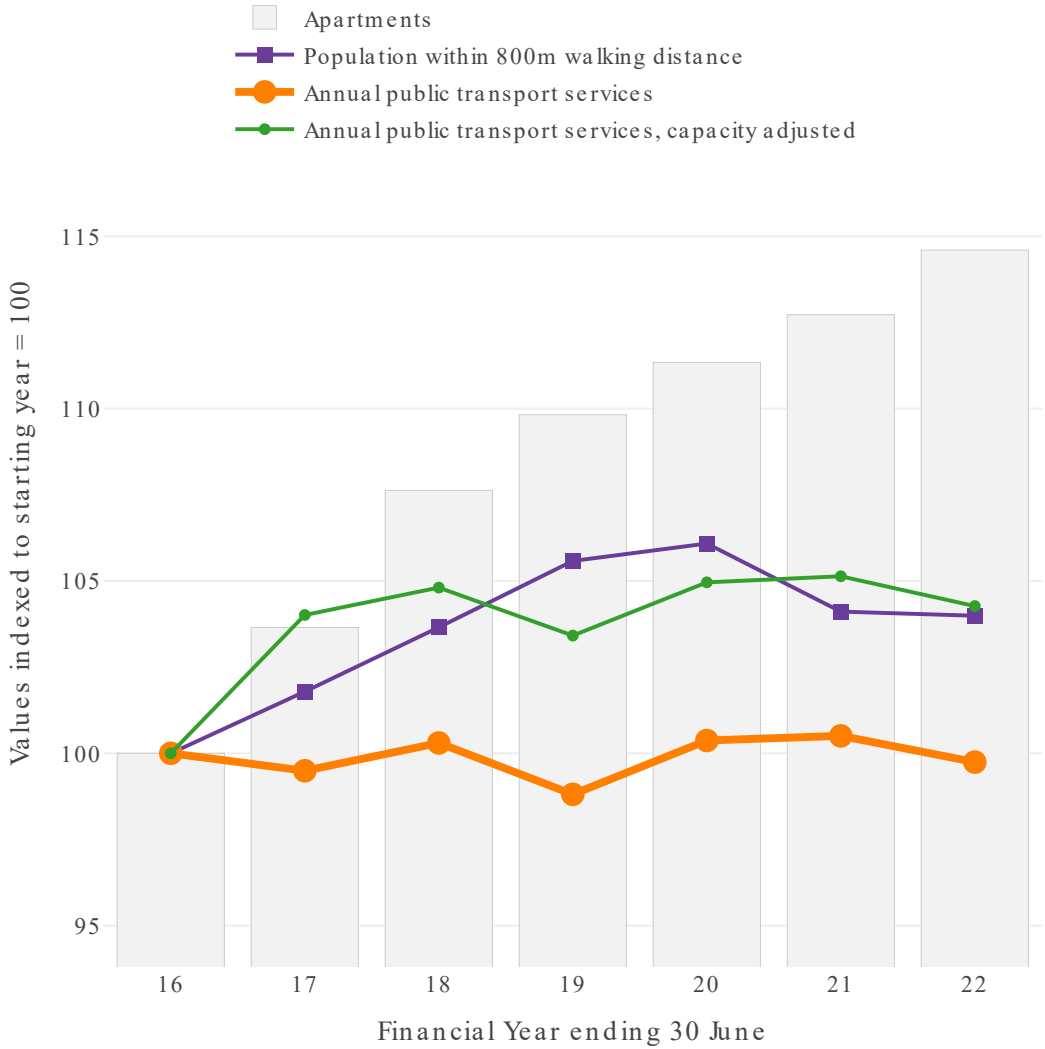


Change in apartments	+ 5.4 %
Change in population	+ 1.1 %
Change in public transport services	+ 13.4 %
Change in public transport services, capacity adjusted	+ 18.4 %

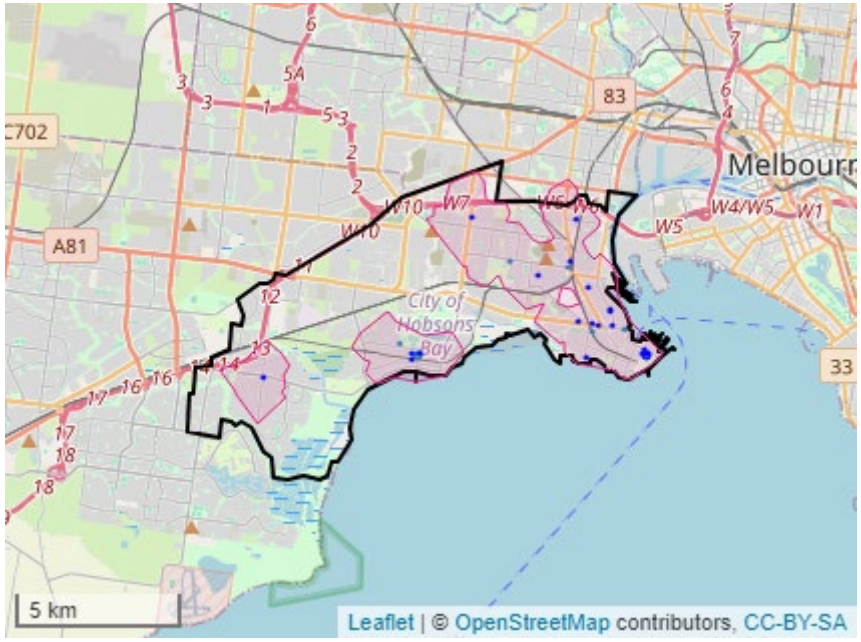


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Greater Dandenong

Local Government Area: Hobsons Bay

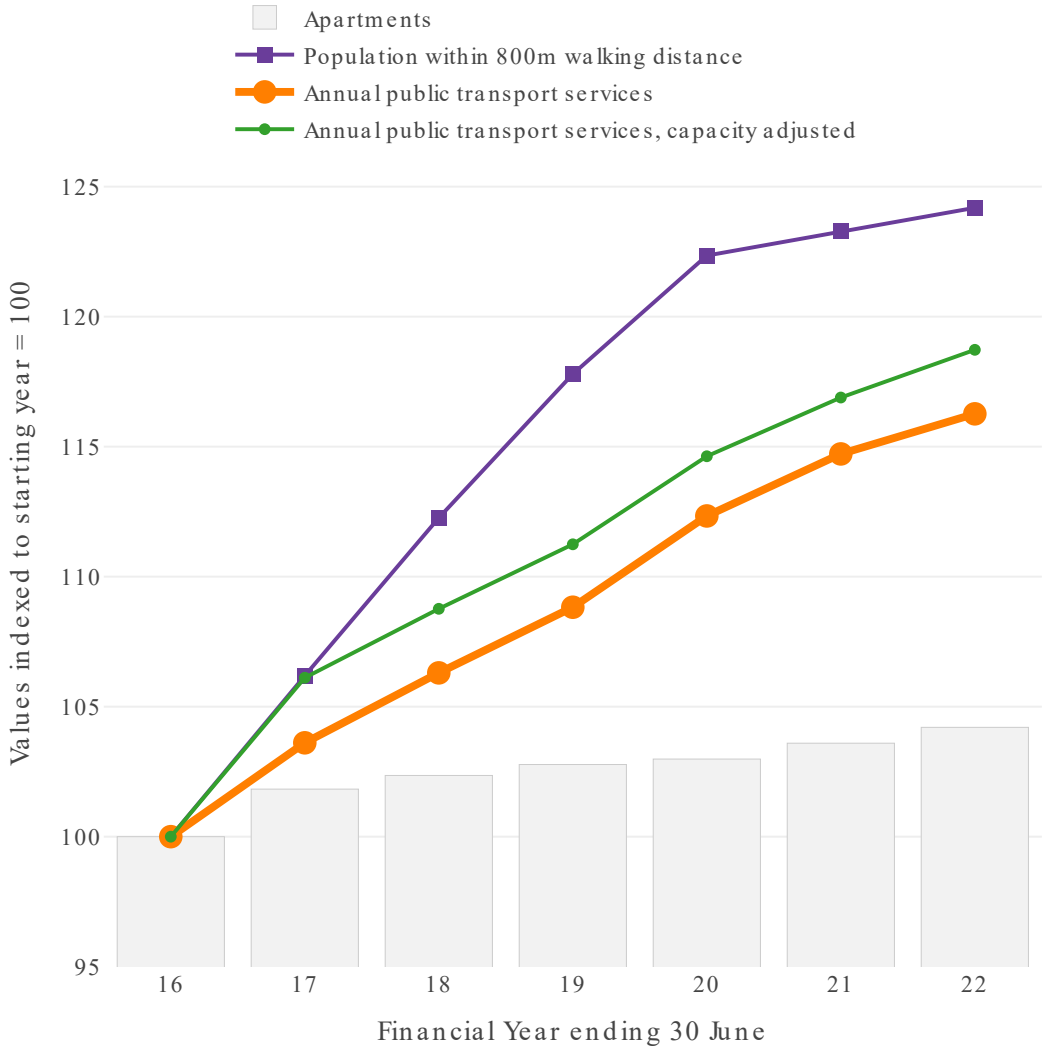


Change in apartments	+ 14.6 %
Change in population	+ 4.0 %
Change in public transport services	- 0.3 %
Change in public transport services, capacity adjusted	+ 4.3 %

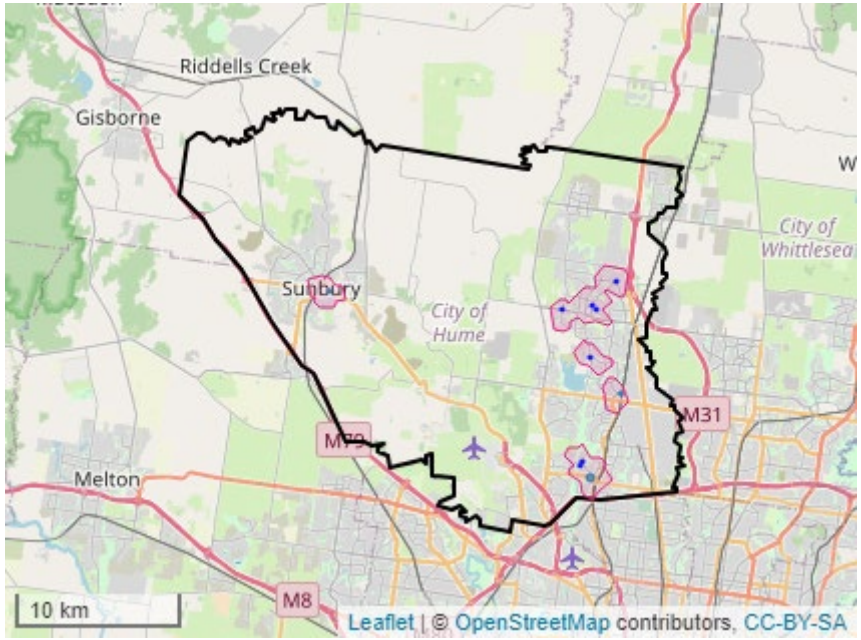


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Hobsons Bay

Local Government Area: Hume

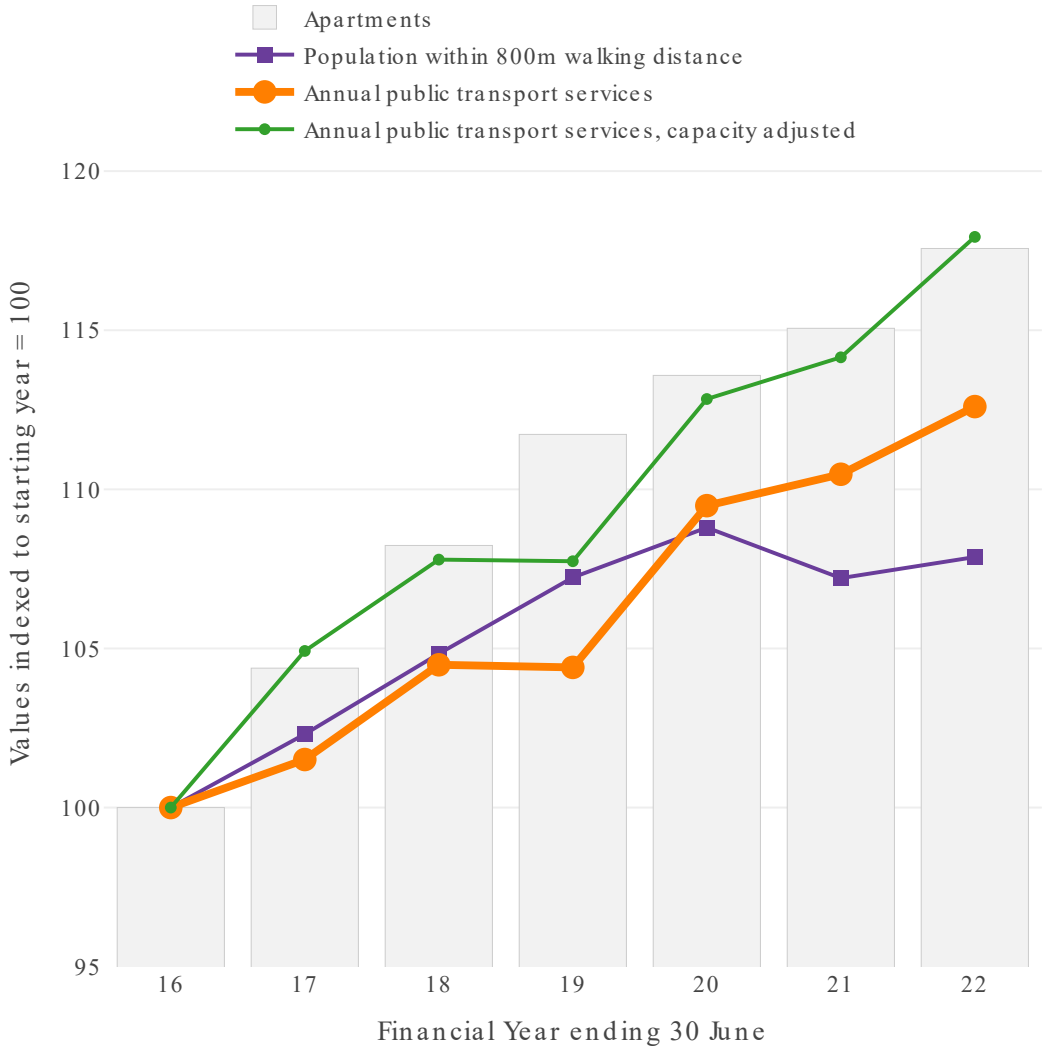


Change in apartments	+ 4.2 %
Change in population	+ 24.2 %
Change in public transport services	+ 16.3 %
Change in public transport services, capacity adjusted	+ 18.7 %

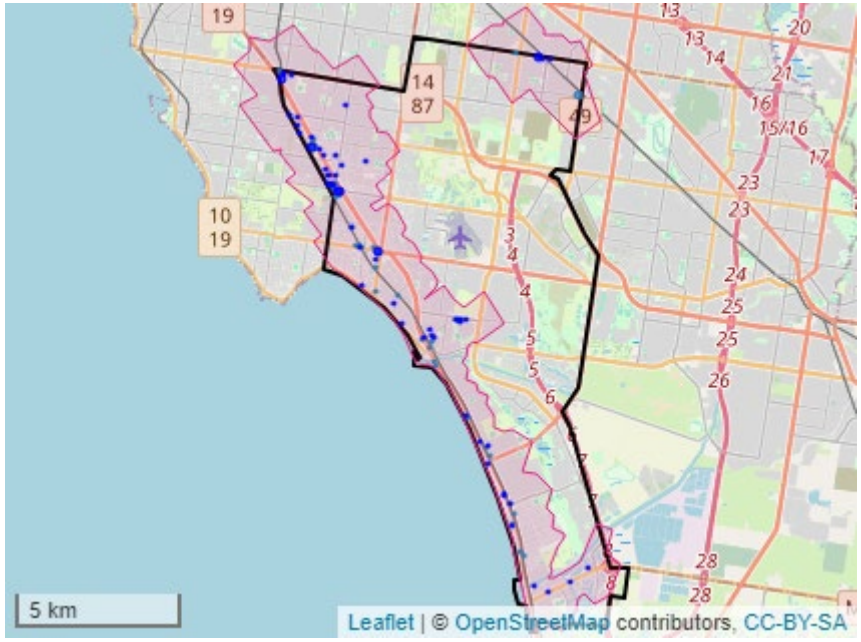


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Hume

Local Government Area: Kingston

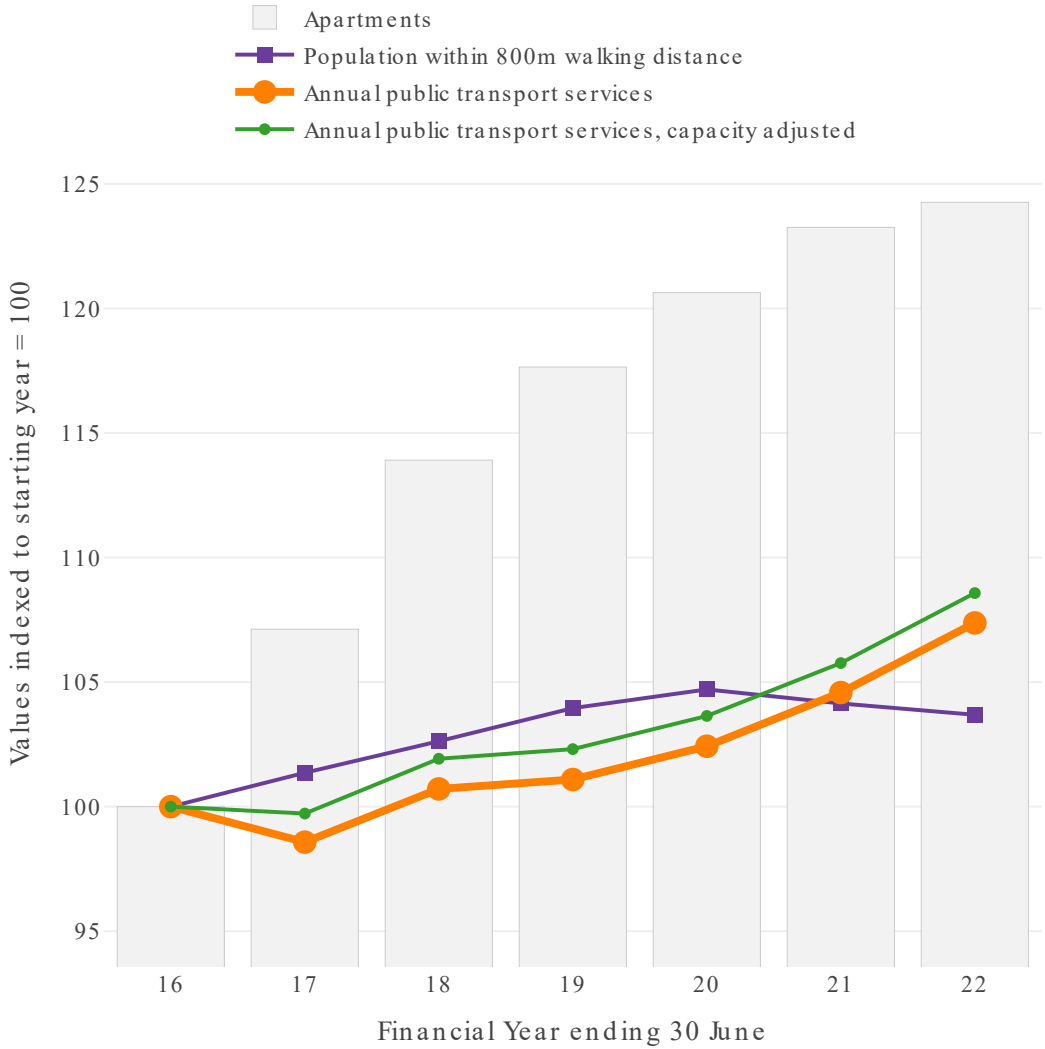


Change in apartments	+ 17.6 %
Change in population	+ 7.9 %
Change in public transport services	+ 12.6 %
Change in public transport services, capacity adjusted	+ 17.9 %

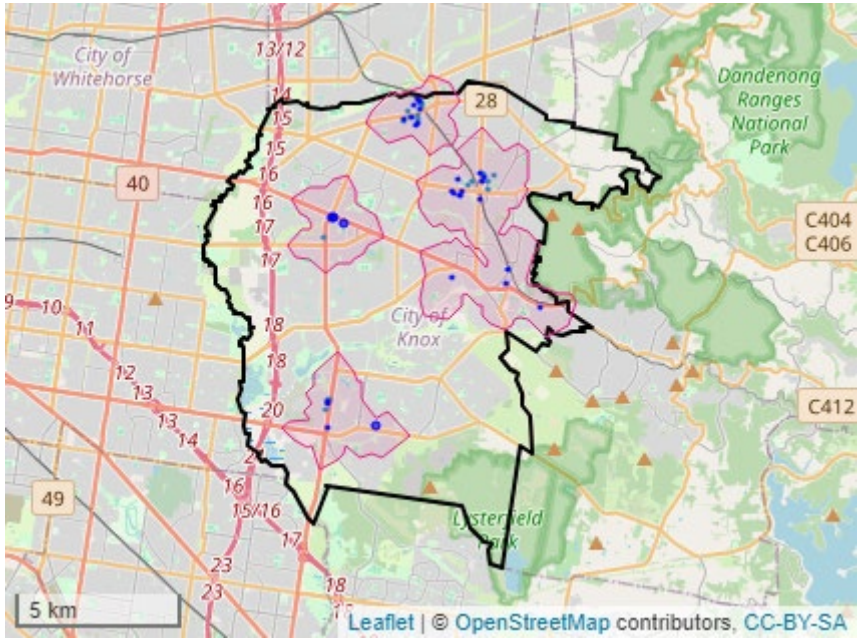


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Kingston

Local Government Area: Knox

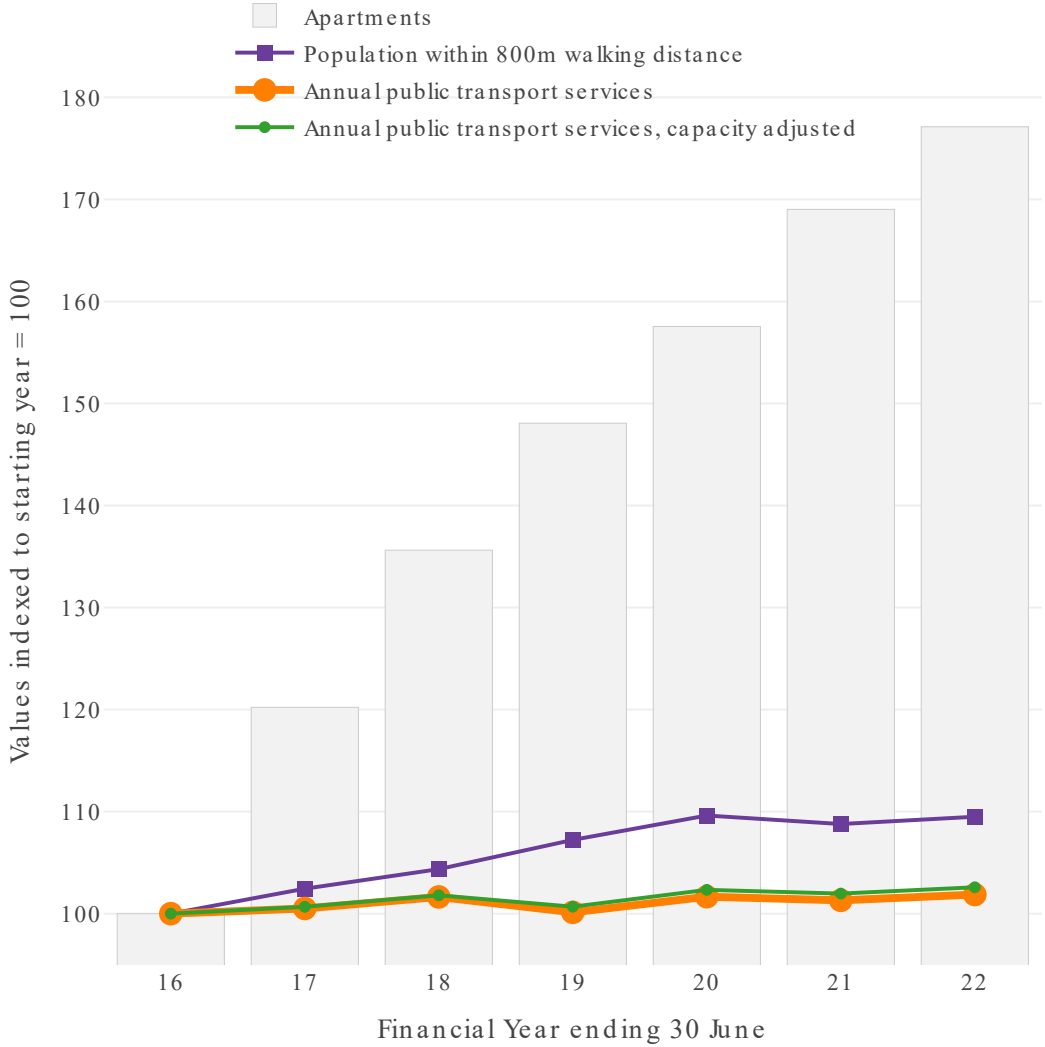


Change in apartments	+ 24.3 %
Change in population	+ 3.7 %
Change in public transport services	+ 7.4 %
Change in public transport services, capacity adjusted	+ 8.6 %

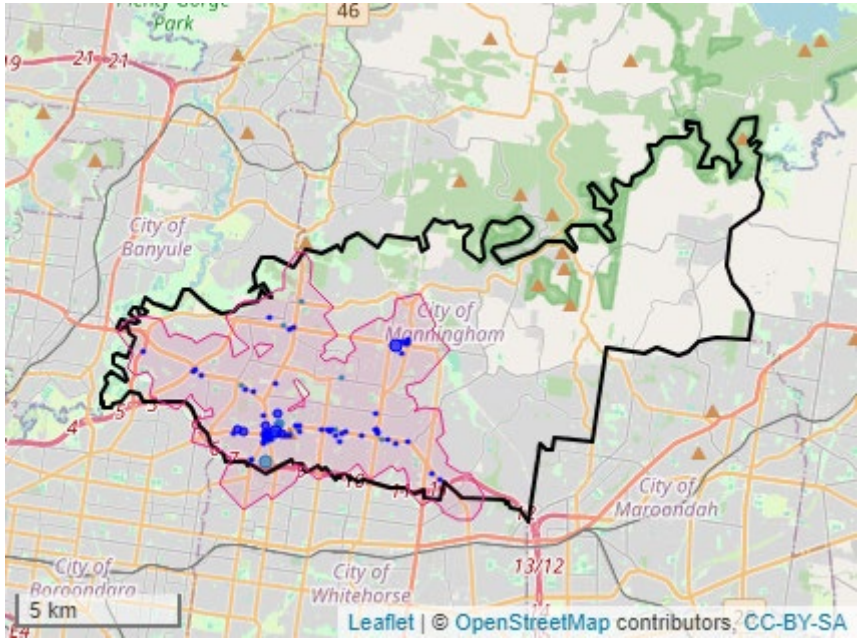


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Knox

Local Government Area: Manningham

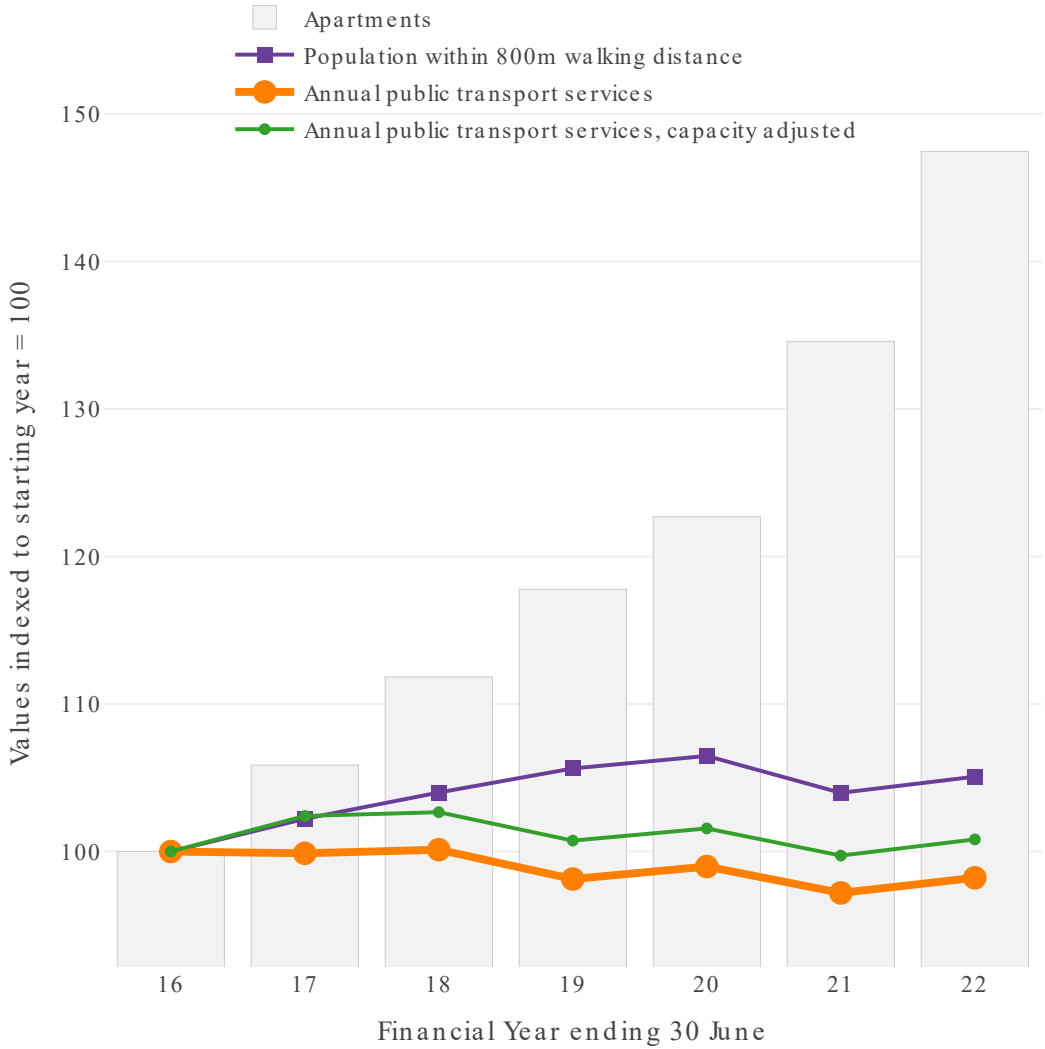


Change in apartments	+ 77.1 %
Change in population	+ 9.5 %
Change in public transport services	+ 1.9 %
Change in public transport services, capacity adjusted	+ 2.6 %

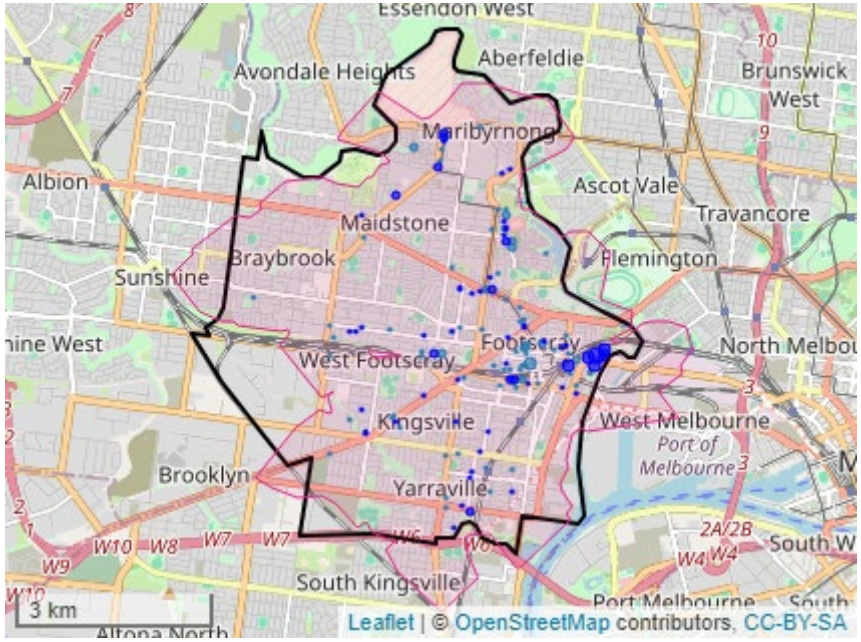


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Manningham

Local Government Area: Maribyrnong

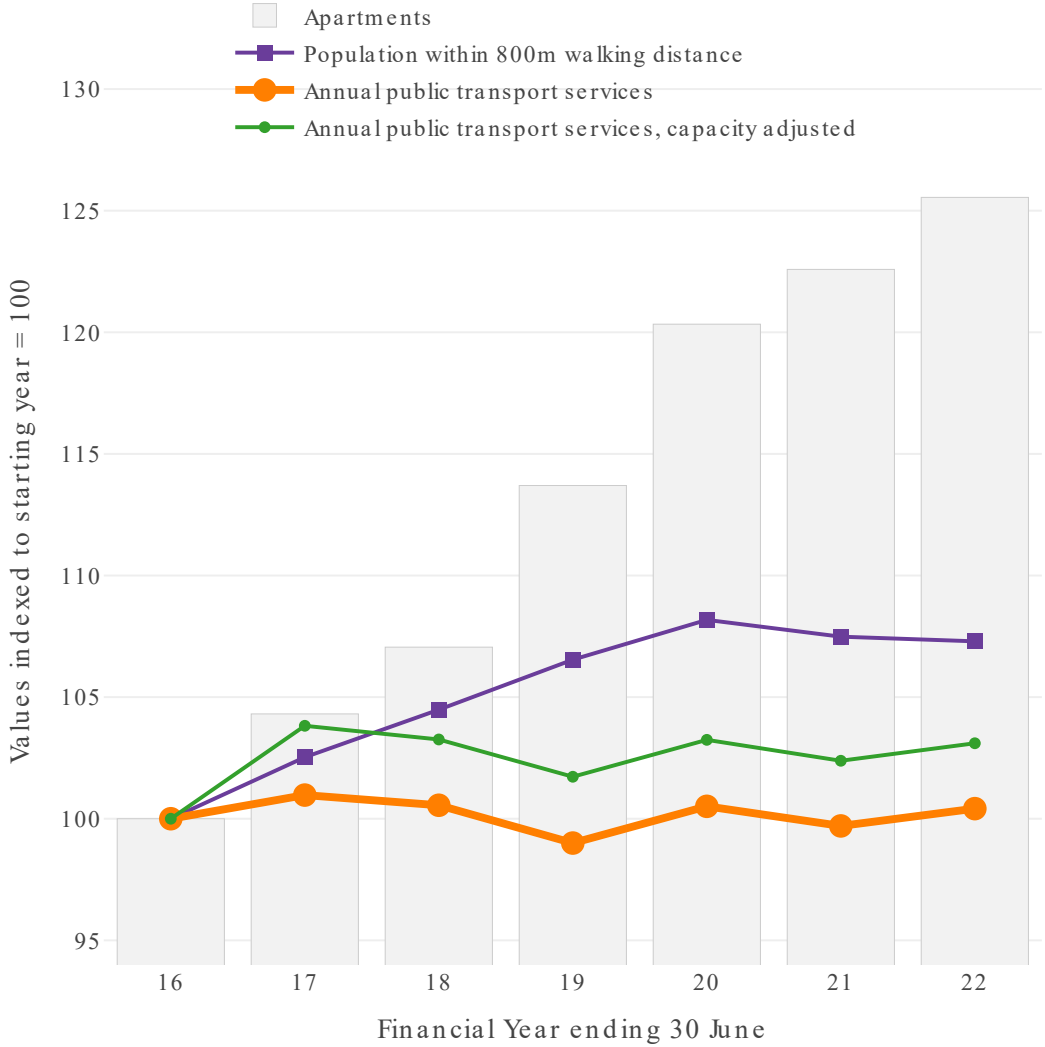


Change in apartments	+ 47.4 %
Change in population	+ 5.1 %
Change in public transport services	- 1.8 %
Change in public transport services, capacity adjusted	+ 0.8 %



Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Maribyrnong

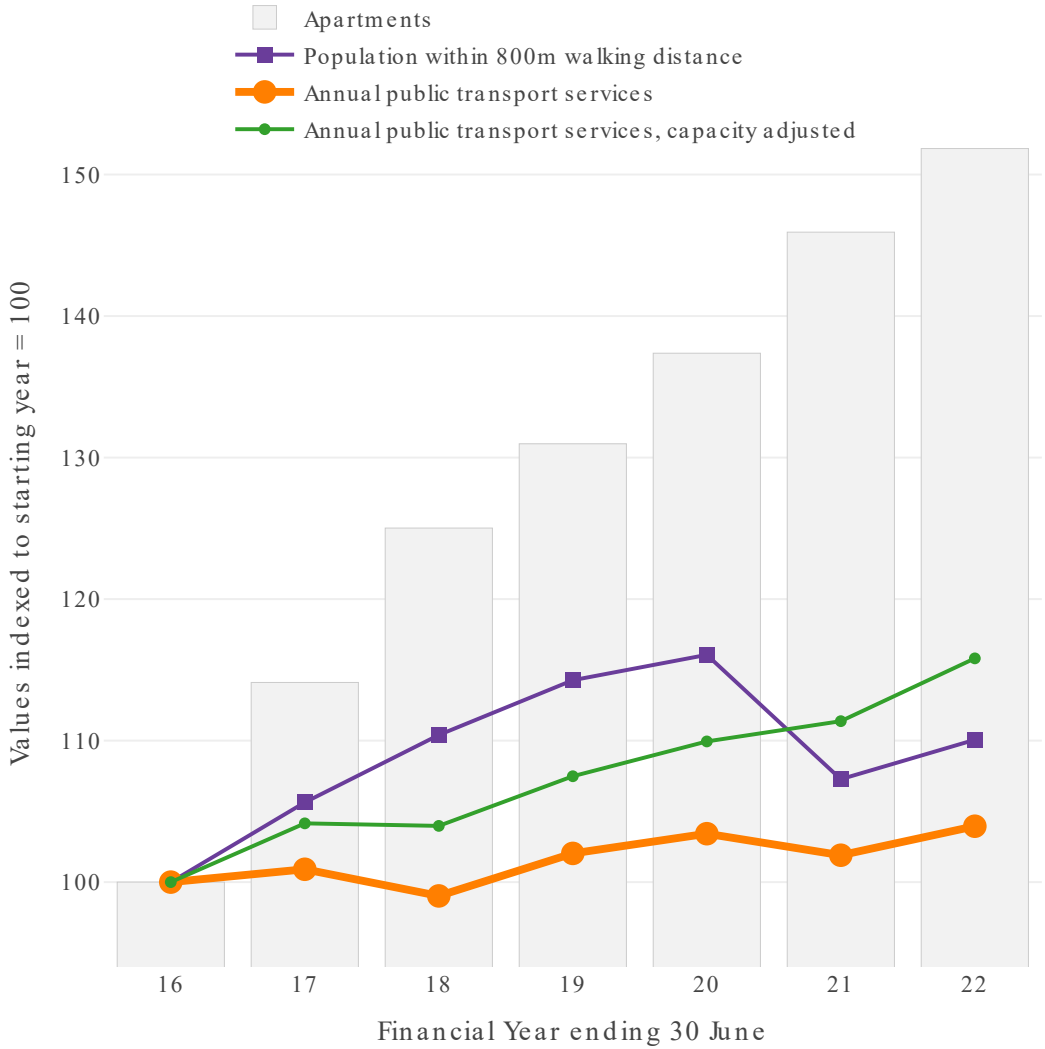
Local Government Area: Maroondah



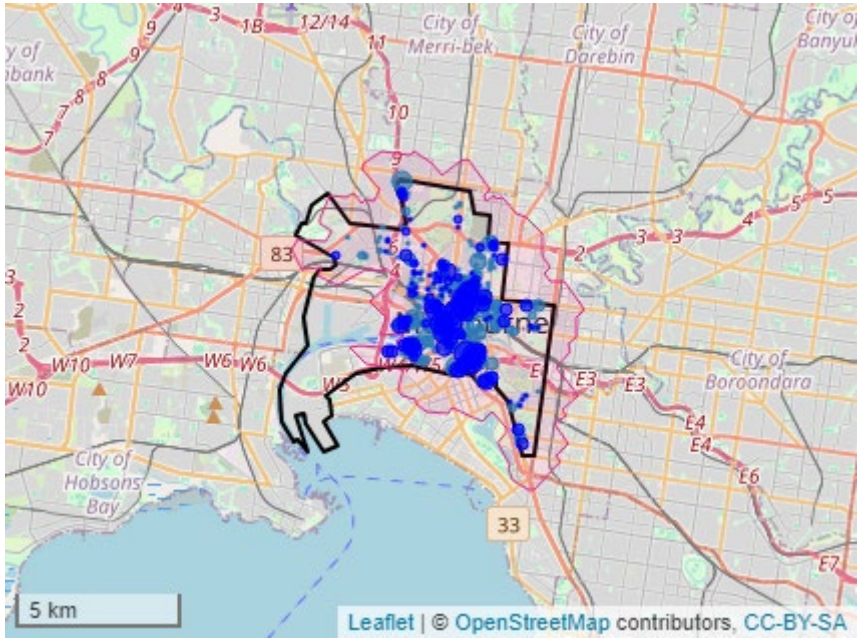
Change in apartments	+ 25.5 %
Change in population	+ 7.3 %
Change in public transport services	+ 0.4 %
Change in public transport services, capacity adjusted	+ 3.1 %

Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Maroondah

Local Government Area: Melbourne

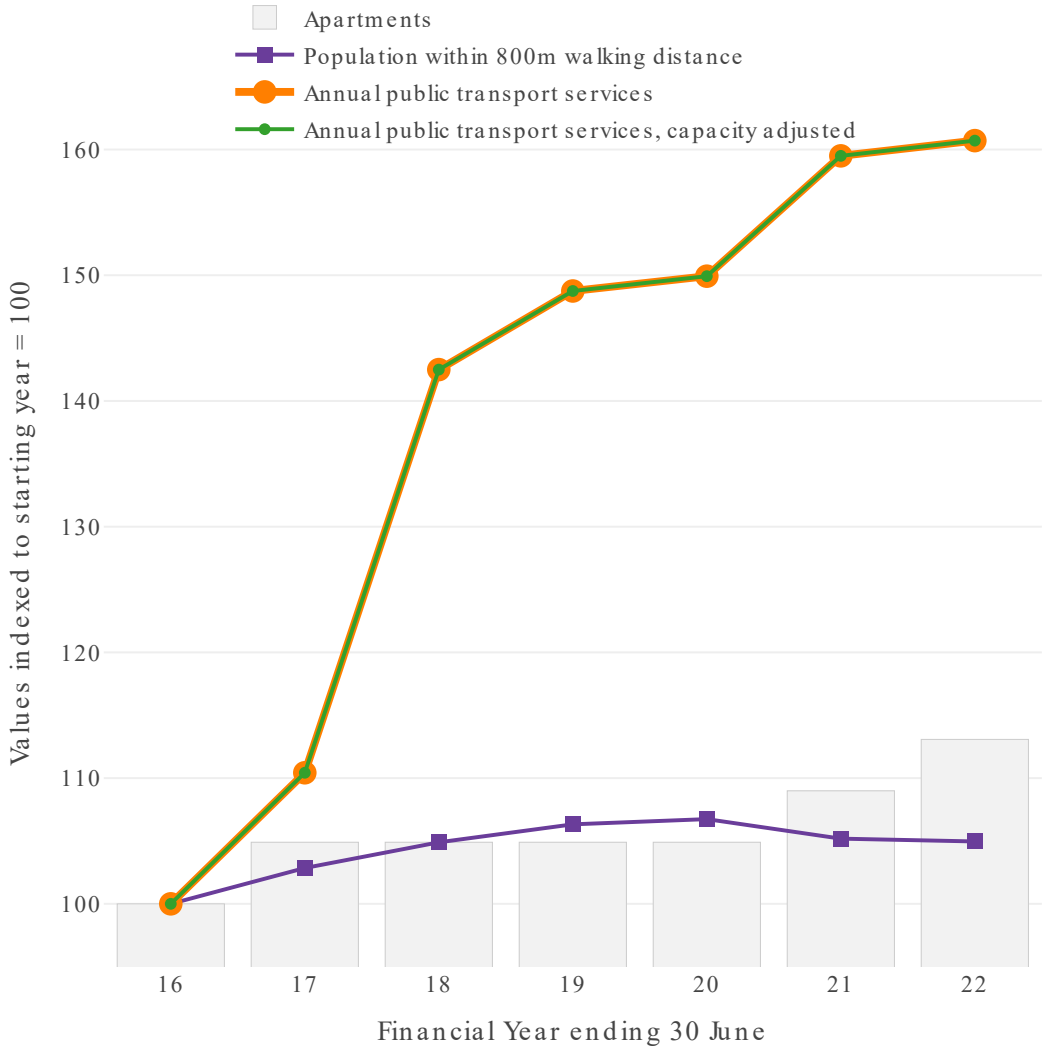


Change in apartments	+ 51.8 %
Change in population	+ 10.1 %
Change in public transport services	+ 3.9 %
Change in public transport services, capacity adjusted	+ 15.8 %

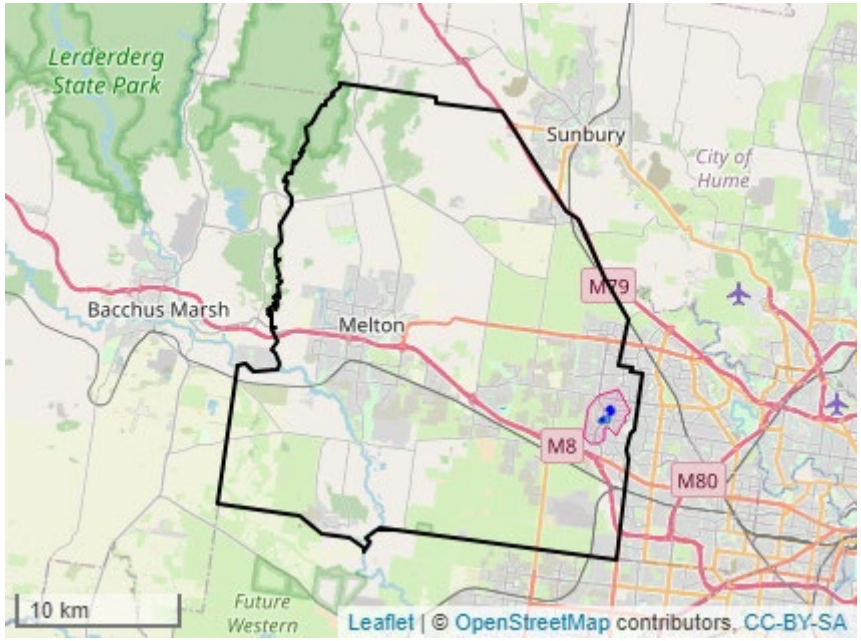


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Melbourne

Local Government Area: Melton

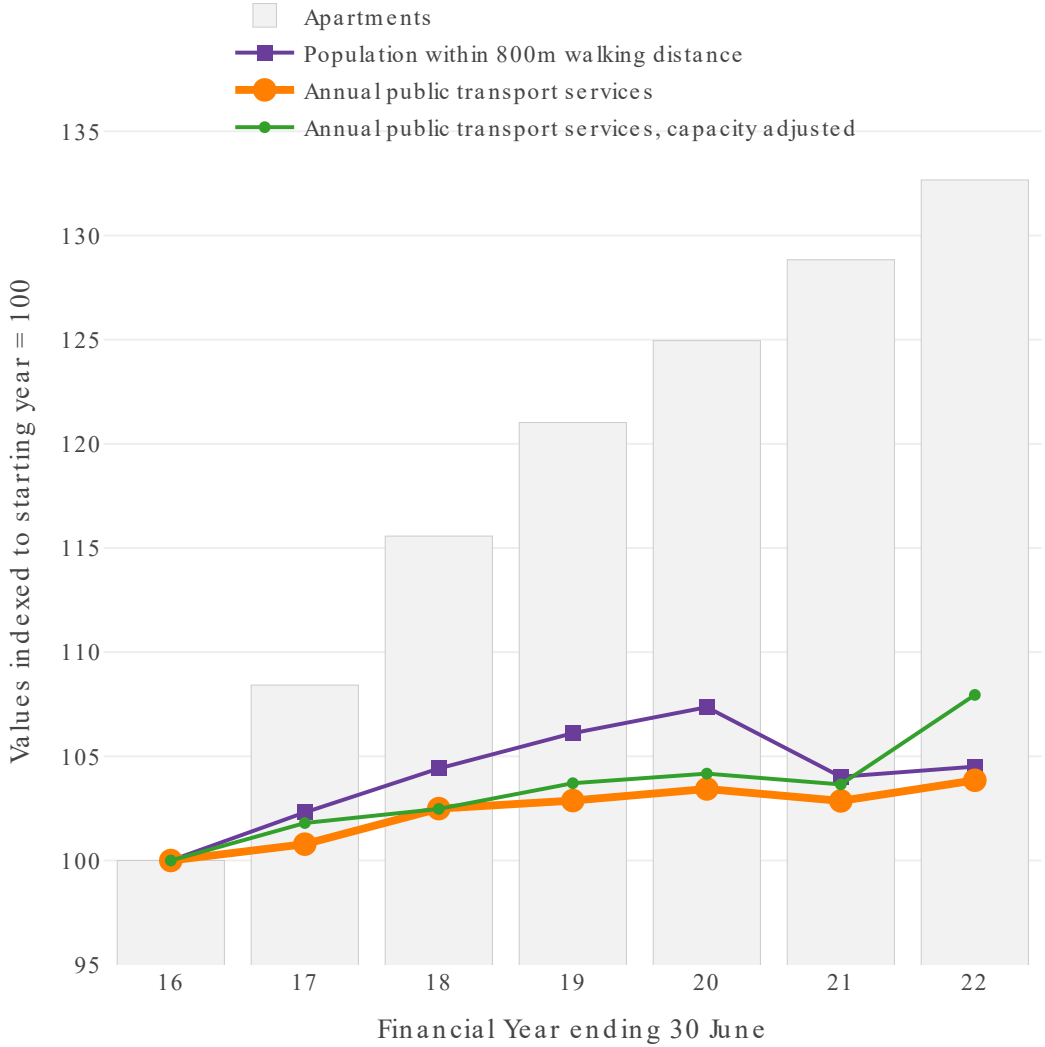


Change in apartments	+ 13.1 %
Change in population	+ 5.0 %
Change in public transport services	+ 60.7 %
Change in public transport services, capacity adjusted	+ 60.7 %

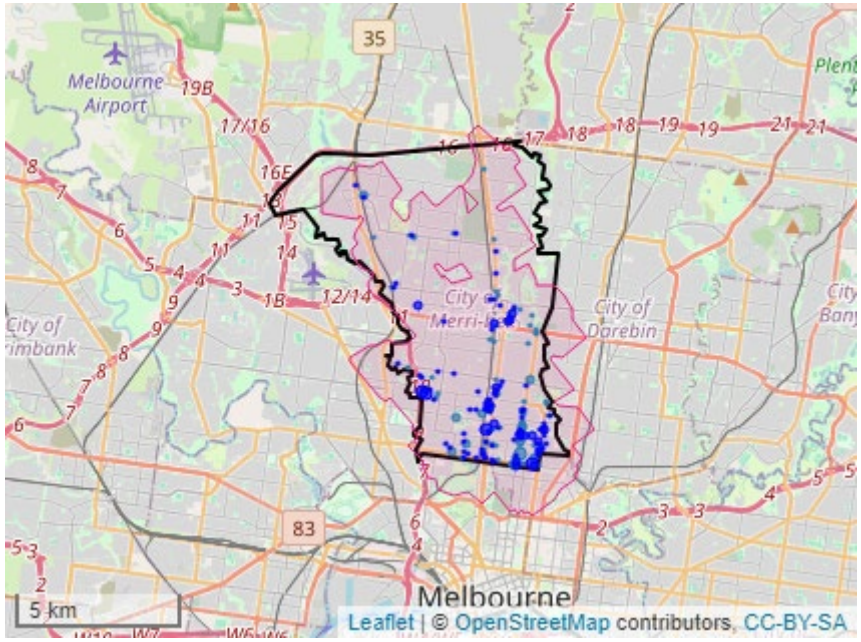


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Melton

Local Government Area: Merri-bek

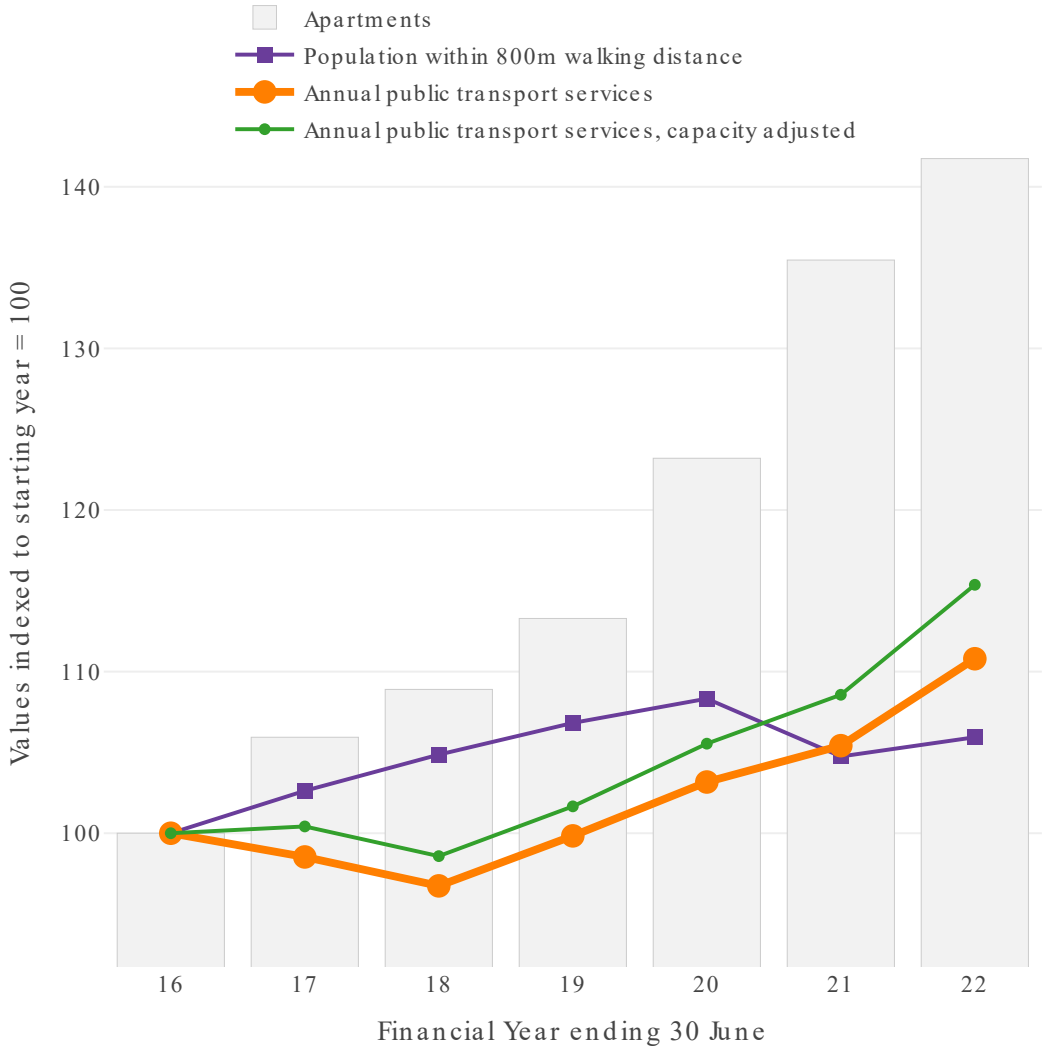


Change in apartments	+ 32.7 %
Change in population	+ 4.5 %
Change in public transport services	+ 3.9 %
Change in public transport services, capacity adjusted	+ 7.9 %

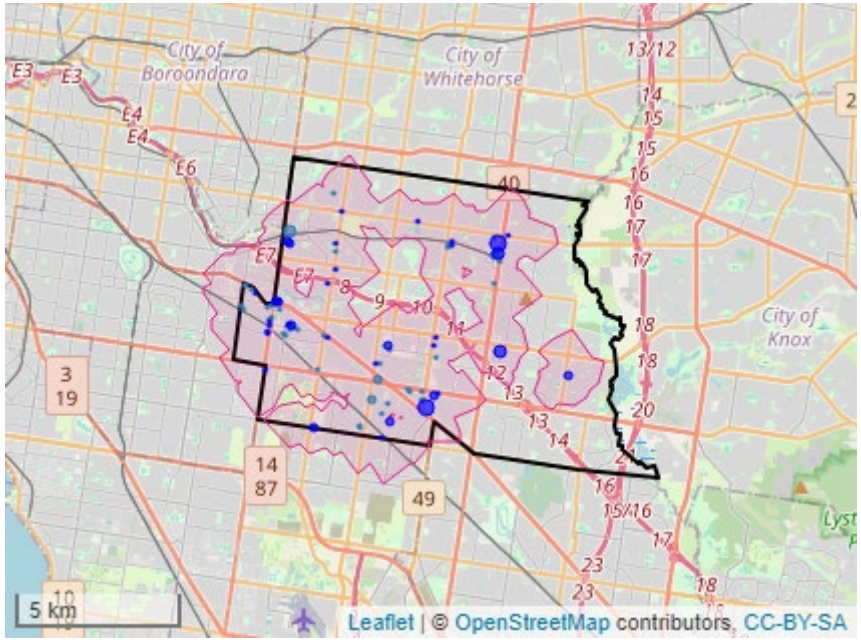


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Merri-bek

Local Government Area: Monash

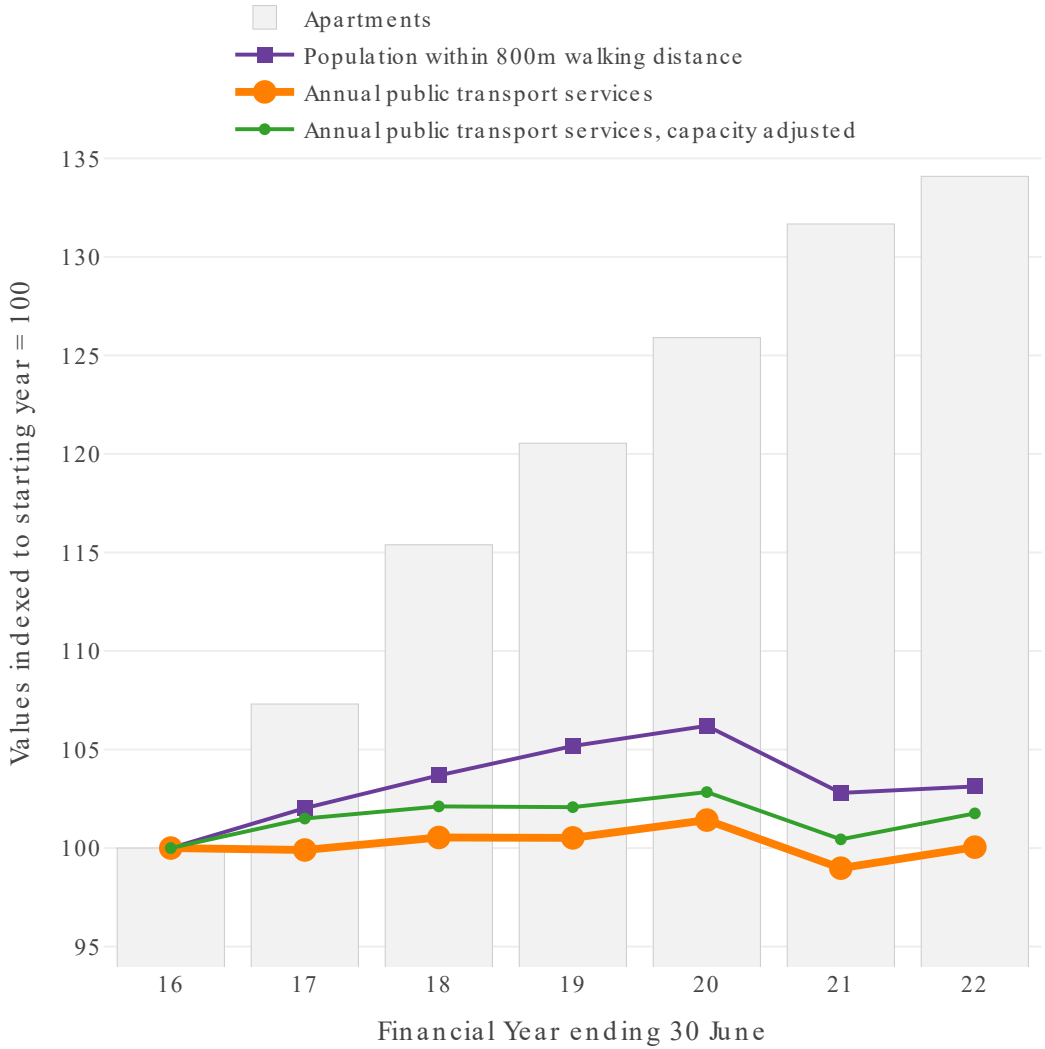


Change in apartments	+ 41.7 %
Change in population	+ 5.9 %
Change in public transport services	+ 10.8 %
Change in public transport services, capacity adjusted	+ 15.4 %

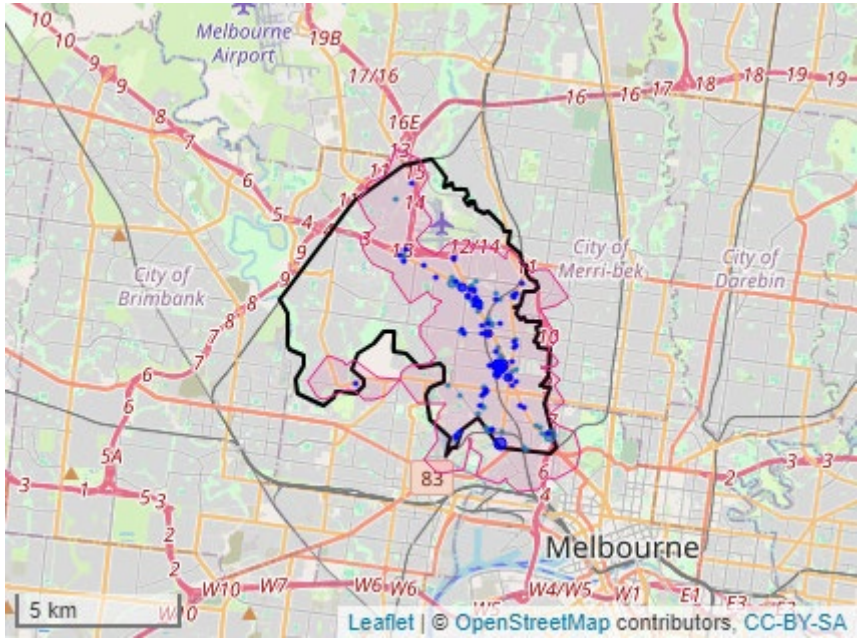


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Monash

Local Government Area: Moonee Valley

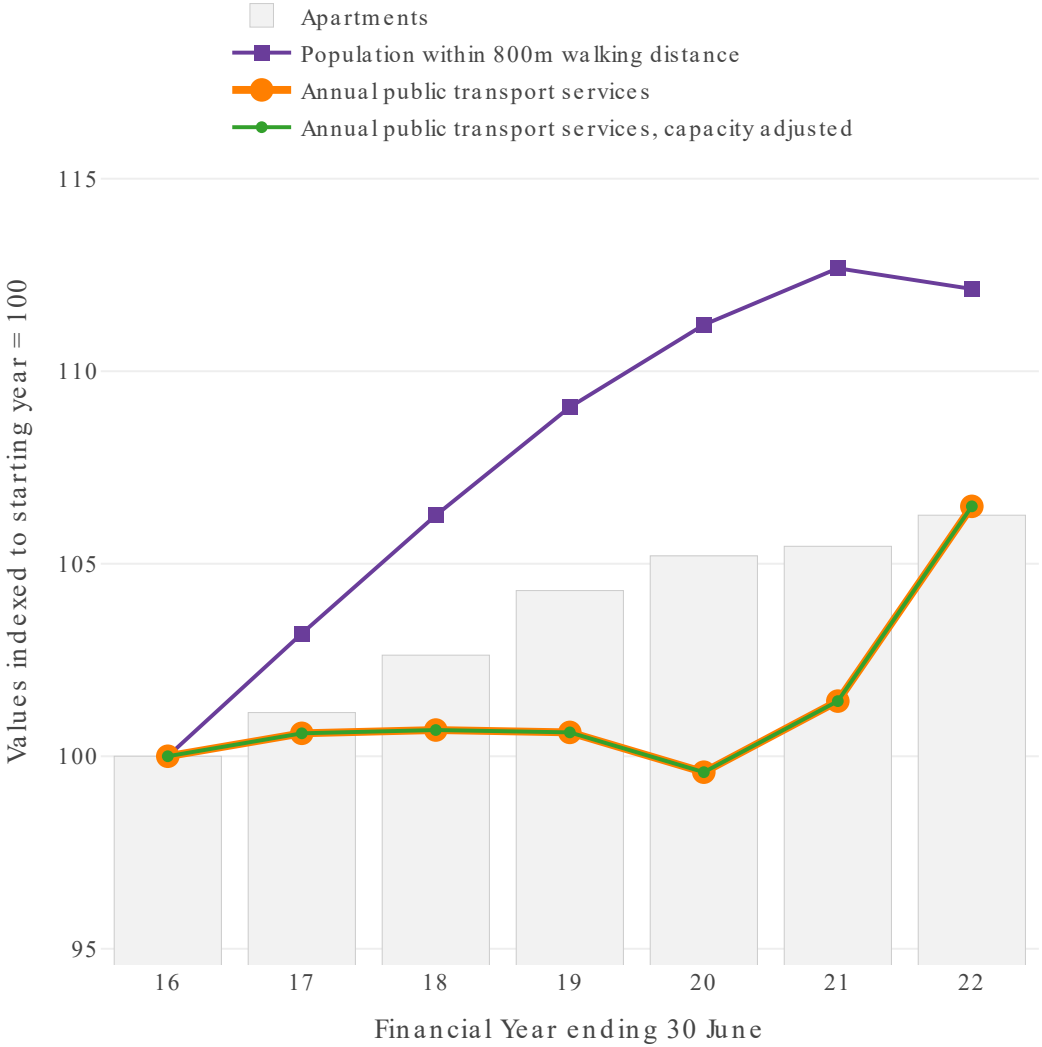


Change in apartments	+ 34.1 %
Change in population	+ 3.1 %
Change in public transport services	+ 0.0 %
Change in public transport services, capacity adjusted	+ 1.8 %



Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Moonee Valley

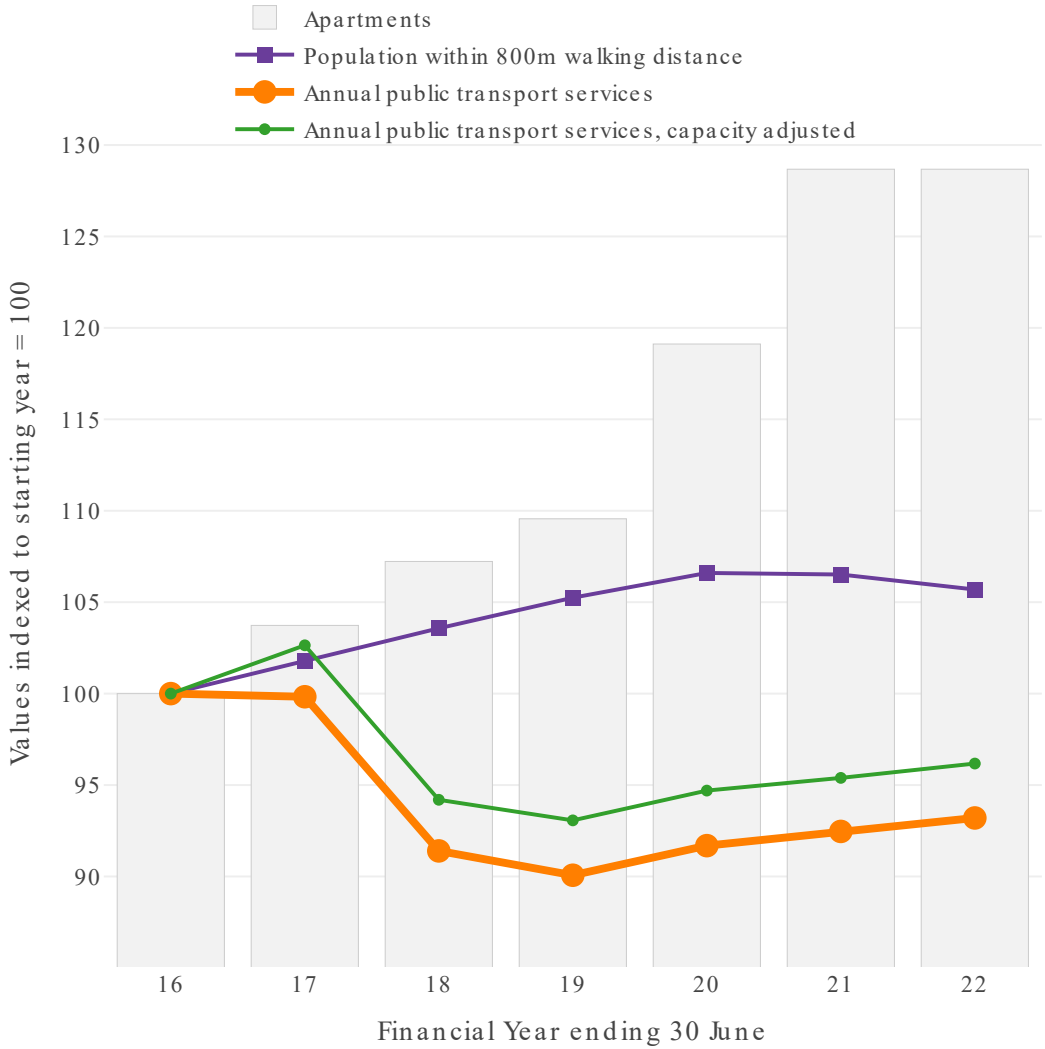
Local Government Area: Mornington Peninsula



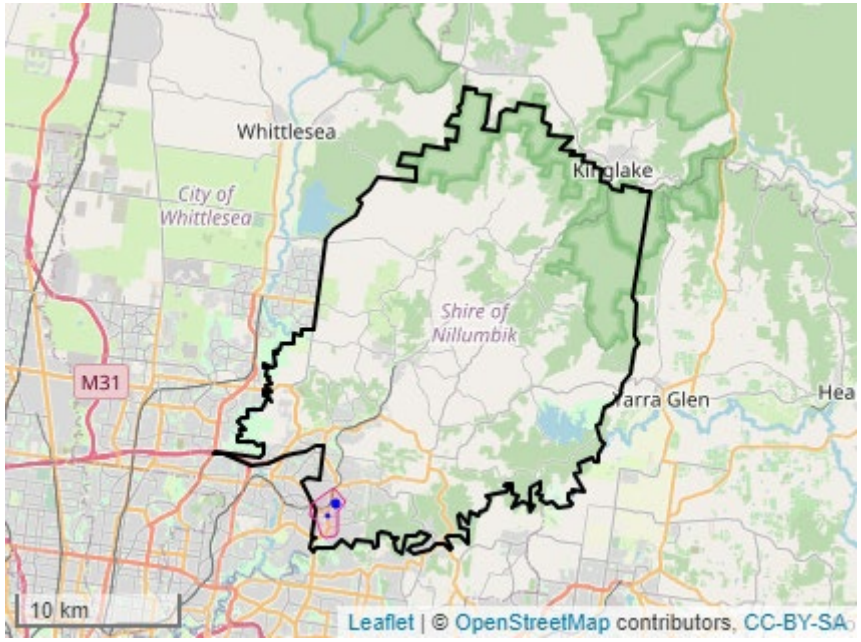
Change in apartments	+ 6.3 %
Change in population	+ 12.1 %
Change in public transport services	+ 6.5 %
Change in public transport services, capacity adjusted	+ 6.5 %

Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Mornington Peninsula

Local Government Area: Nillumbik

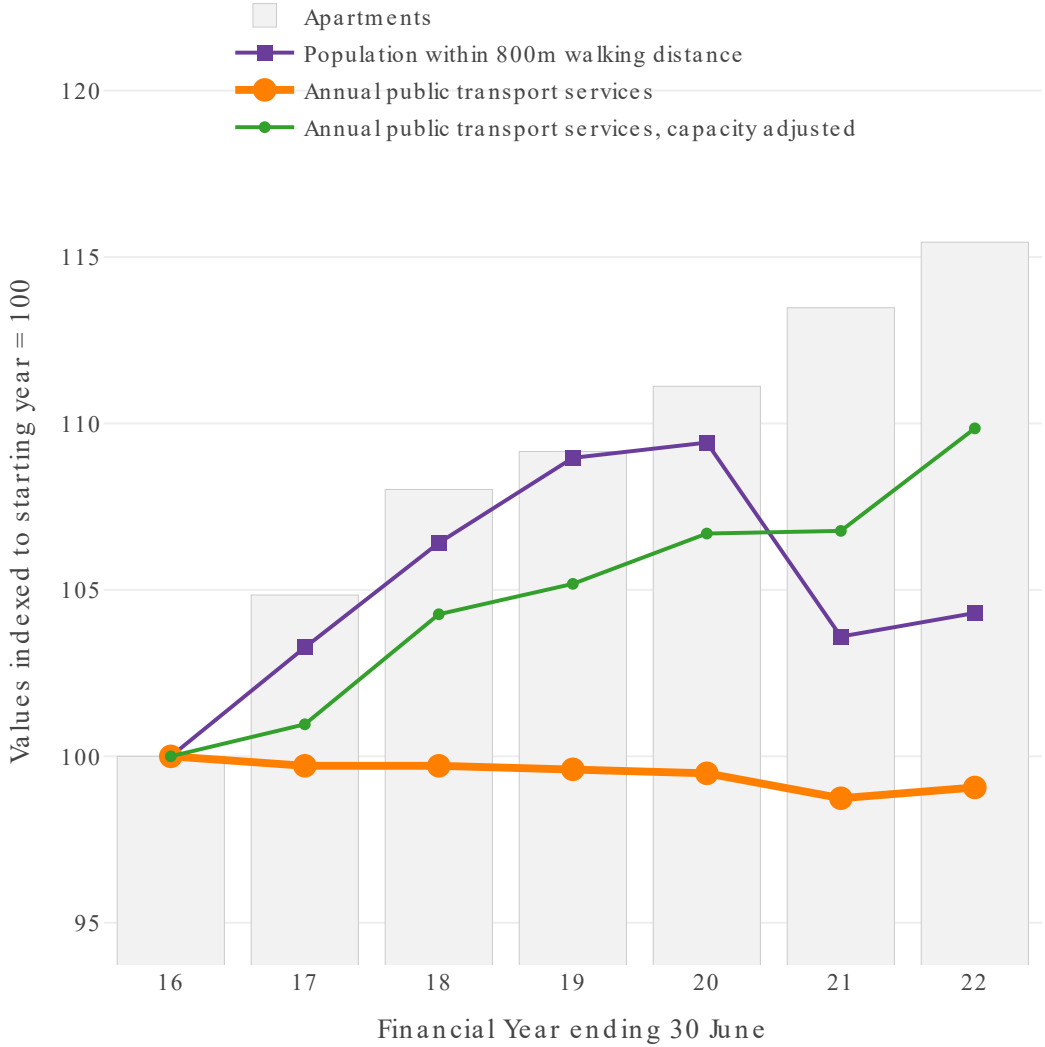


Change in apartments	+ 28.7 %
Change in population	+ 5.7 %
Change in public transport services	- 6.8 %
Change in public transport services, capacity adjusted	- 3.8 %

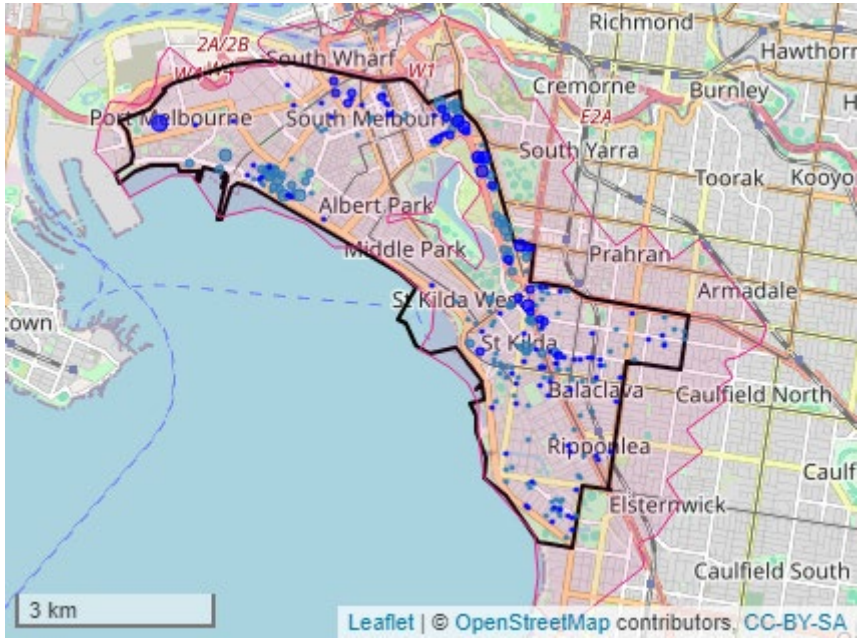


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Nillumbik

Local Government Area: Port Phillip

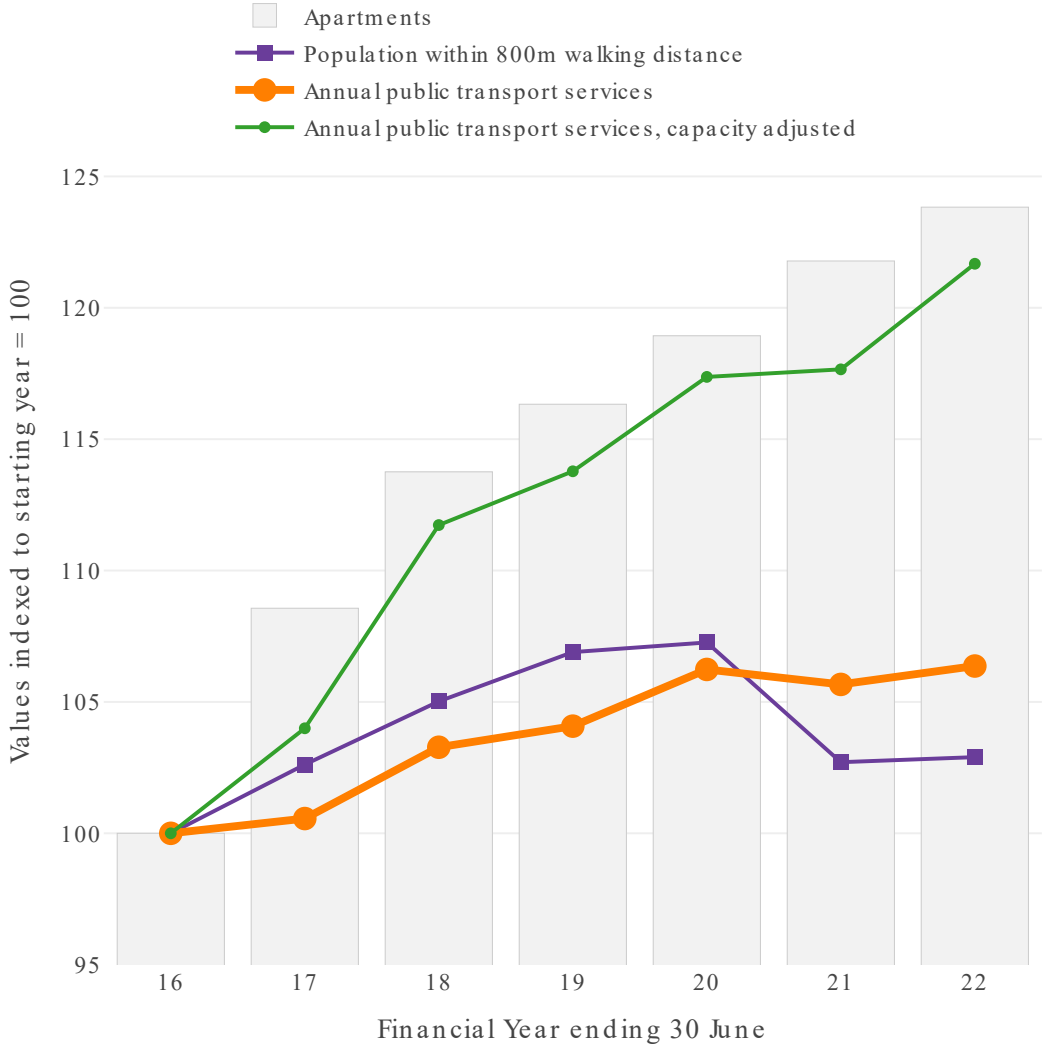


Change in apartments	+ 15.4 %
Change in population	+ 4.3 %
Change in public transport services	- 0.9 %
Change in public transport services, capacity adjusted	+ 9.9 %

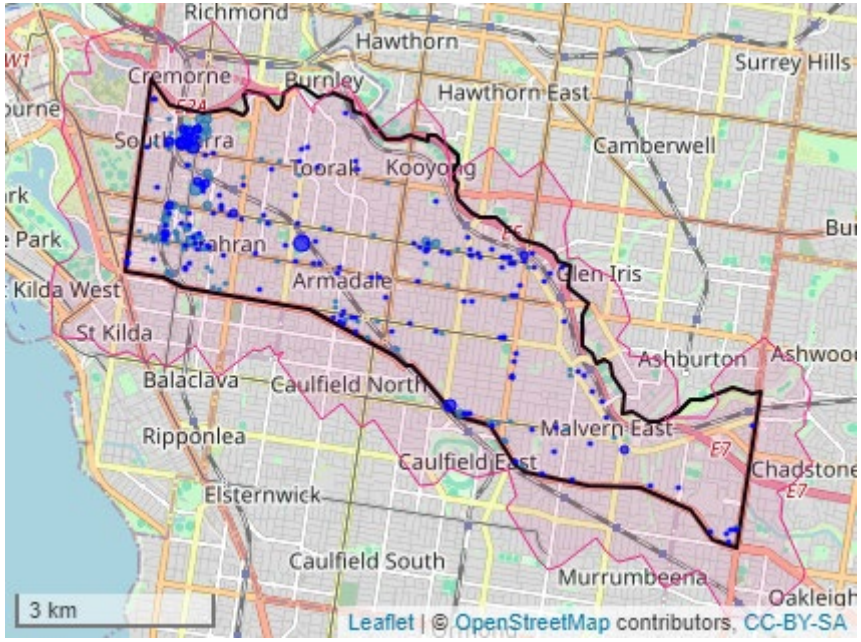


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Port Phillip

Local Government Area: Stonnington

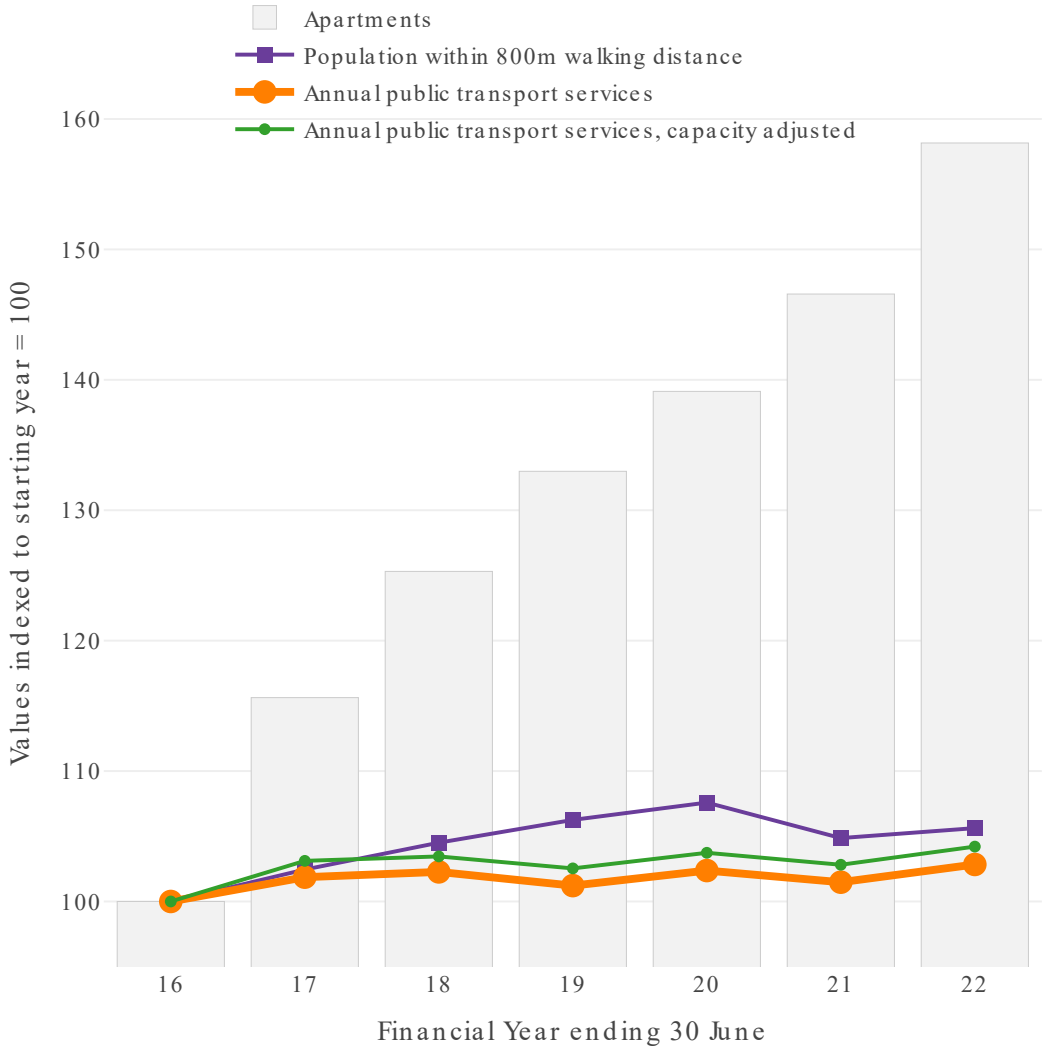


Change in apartments	+ 23.8 %
Change in population	+ 2.9 %
Change in public transport services	+ 6.4 %
Change in public transport services, capacity adjusted	+ 21.7 %

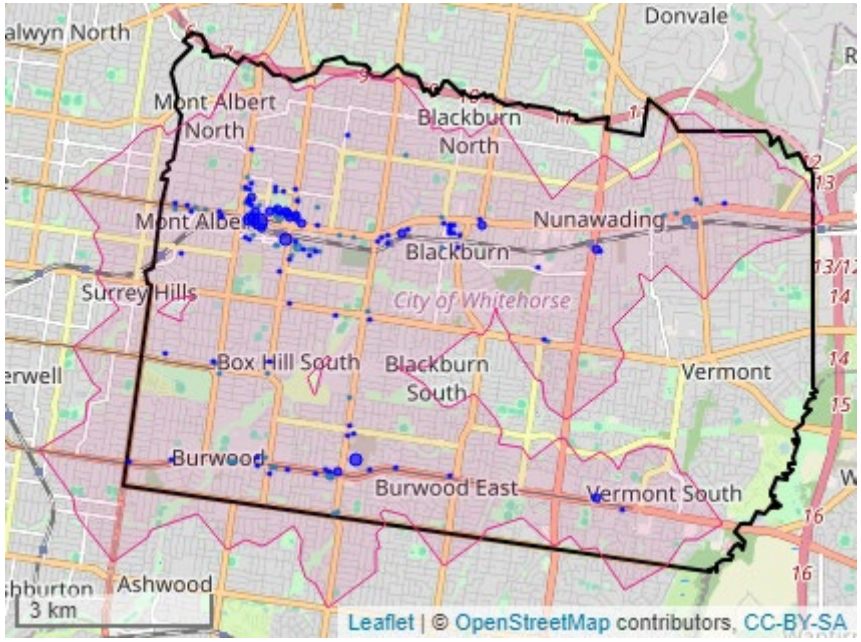


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Stonnington

Local Government Area: Whitehorse

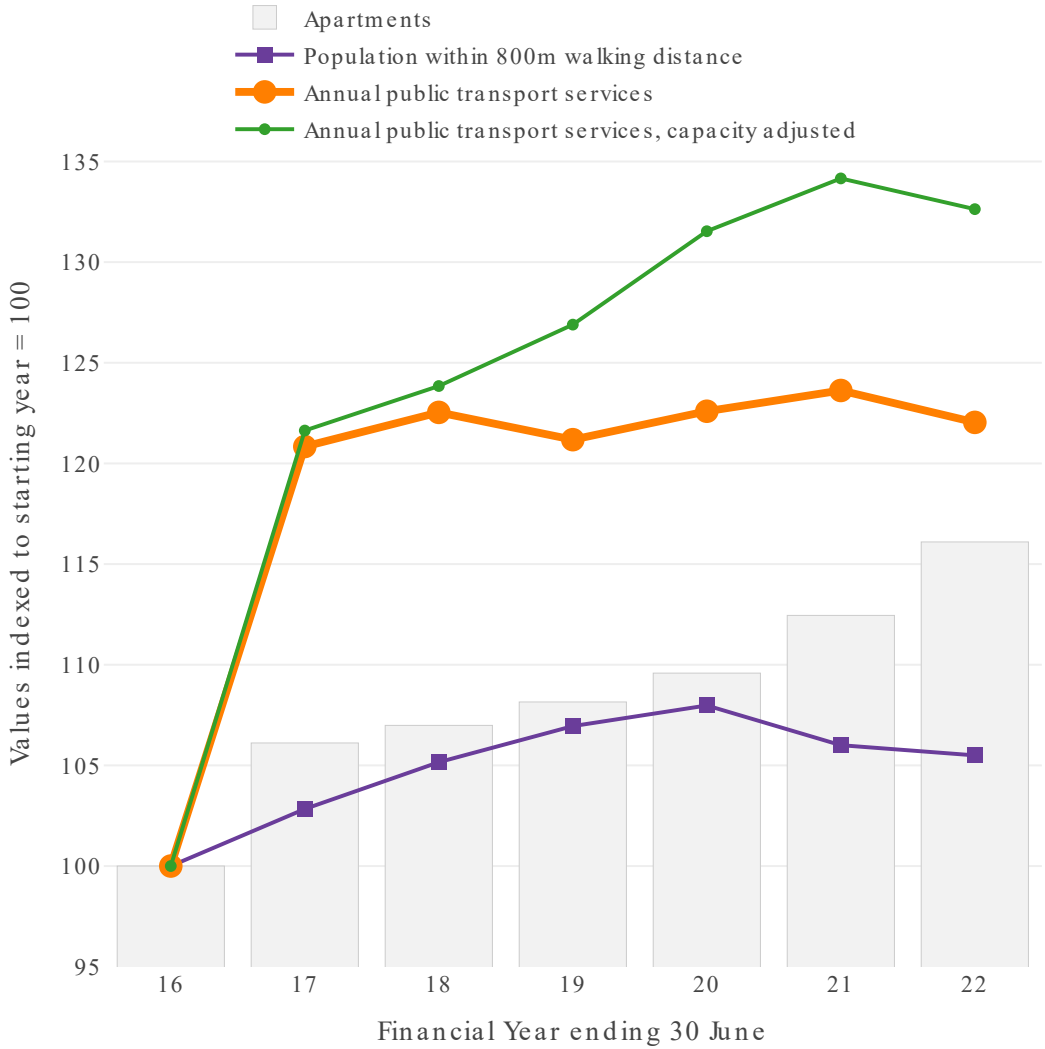


Change in apartments	+ 58.2 %
Change in population	+ 5.6 %
Change in public transport services	+ 2.8 %
Change in public transport services, capacity adjusted	+ 4.2 %

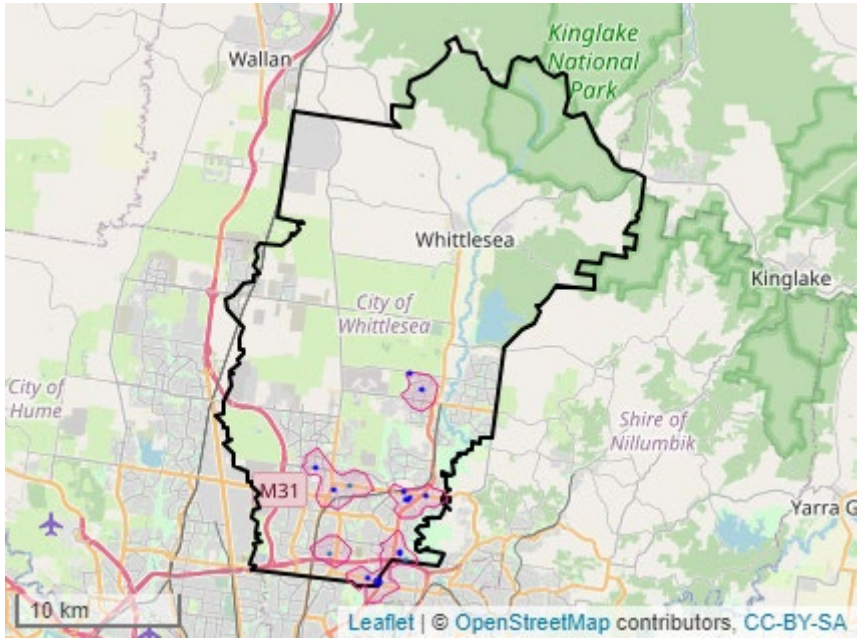


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Whitehorse

Local Government Area: Whittlesea

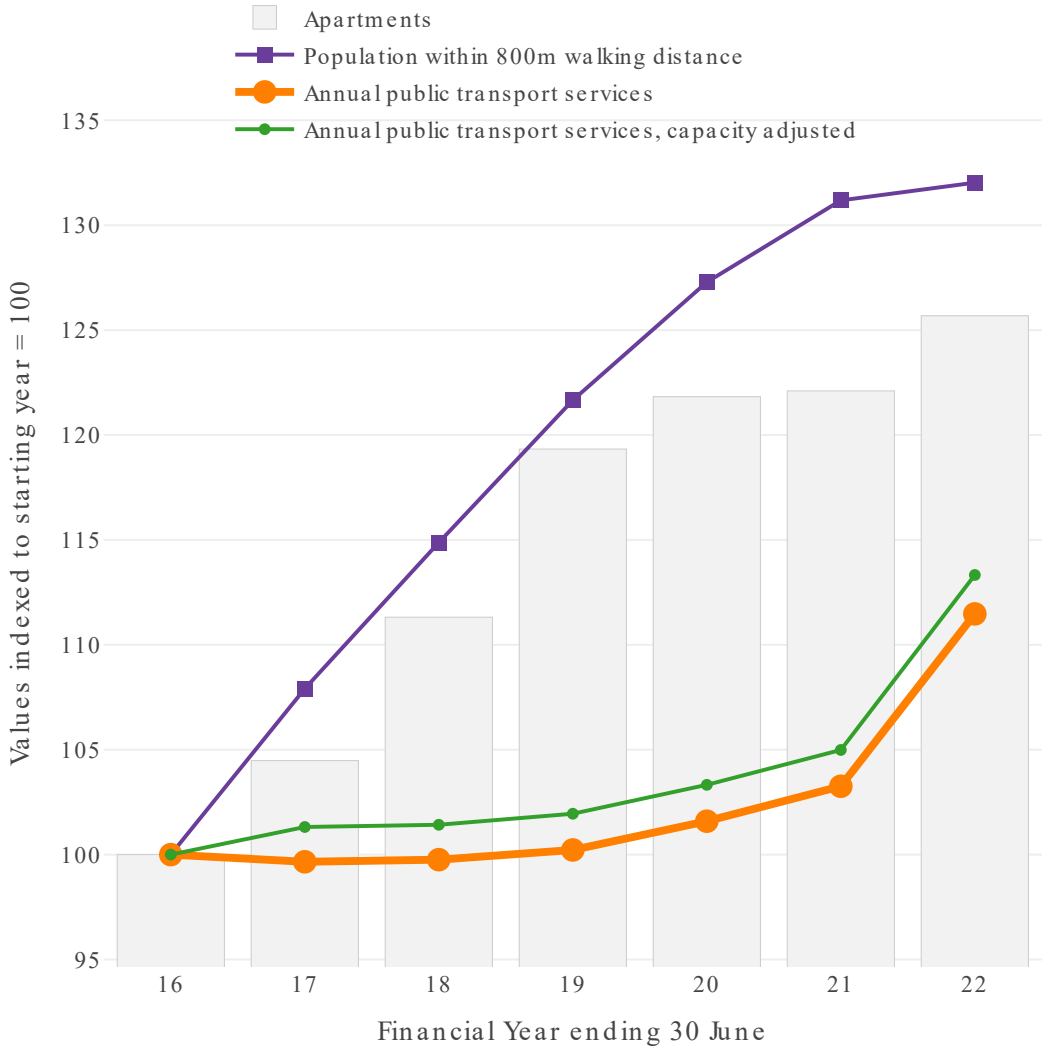


Change in apartments	+ 16.1 %
Change in population	+ 5.5 %
Change in public transport services	+ 22.0 %
Change in public transport services, capacity adjusted	+ 32.6 %

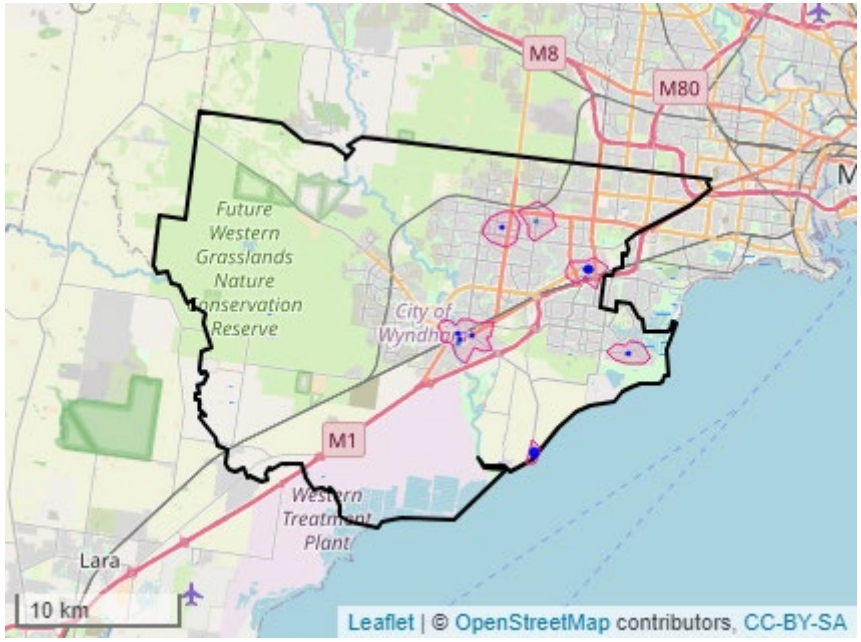


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Whittlesea

Local Government Area: Wyndham

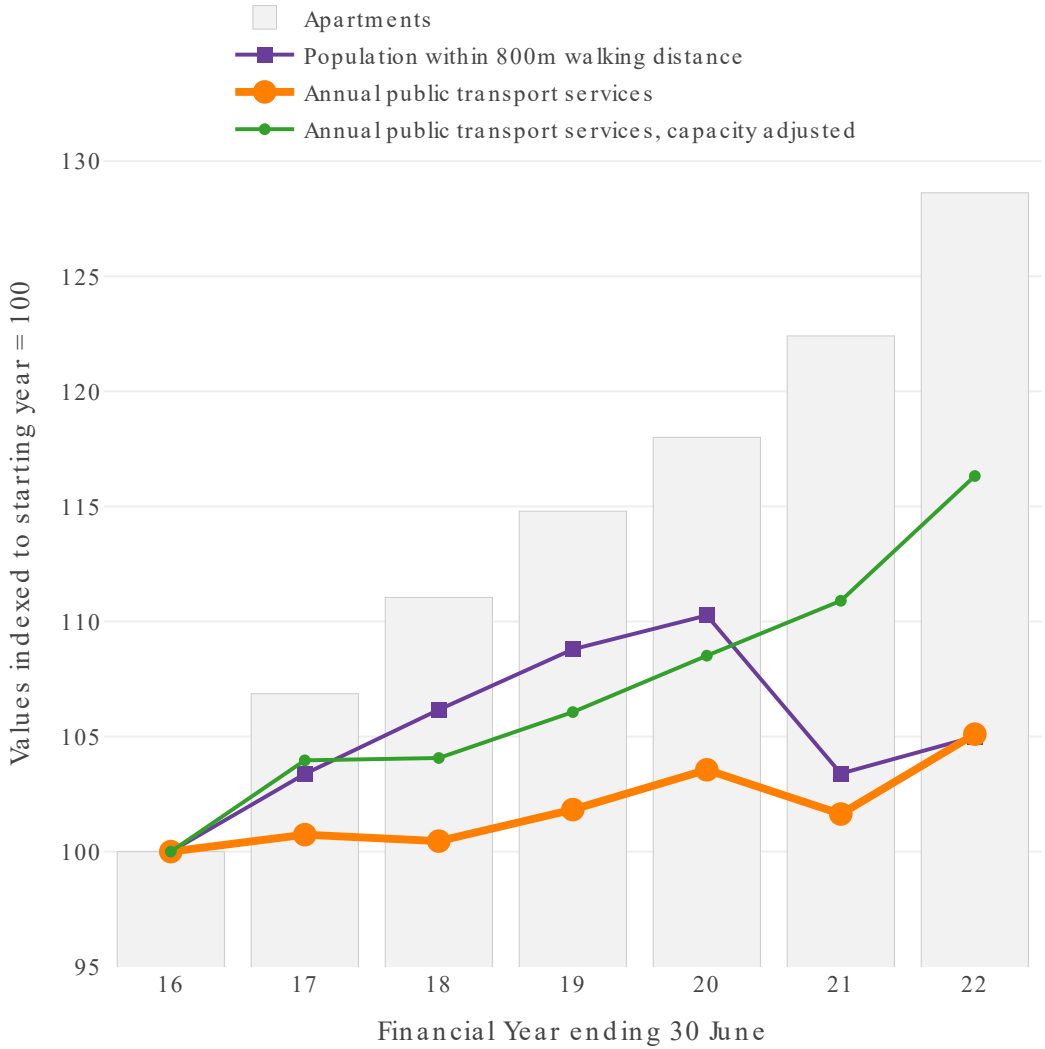


Change in apartments	+ 25.7 %
Change in population	+ 32.0 %
Change in public transport services	+ 11.5 %
Change in public transport services, capacity adjusted	+ 13.3 %

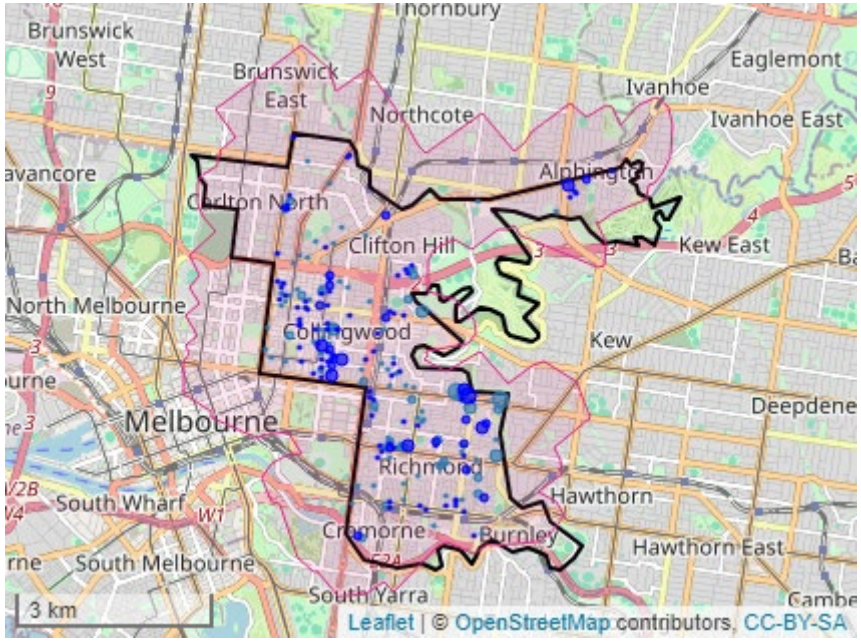


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Wyndham

Local Government Area: Yarra

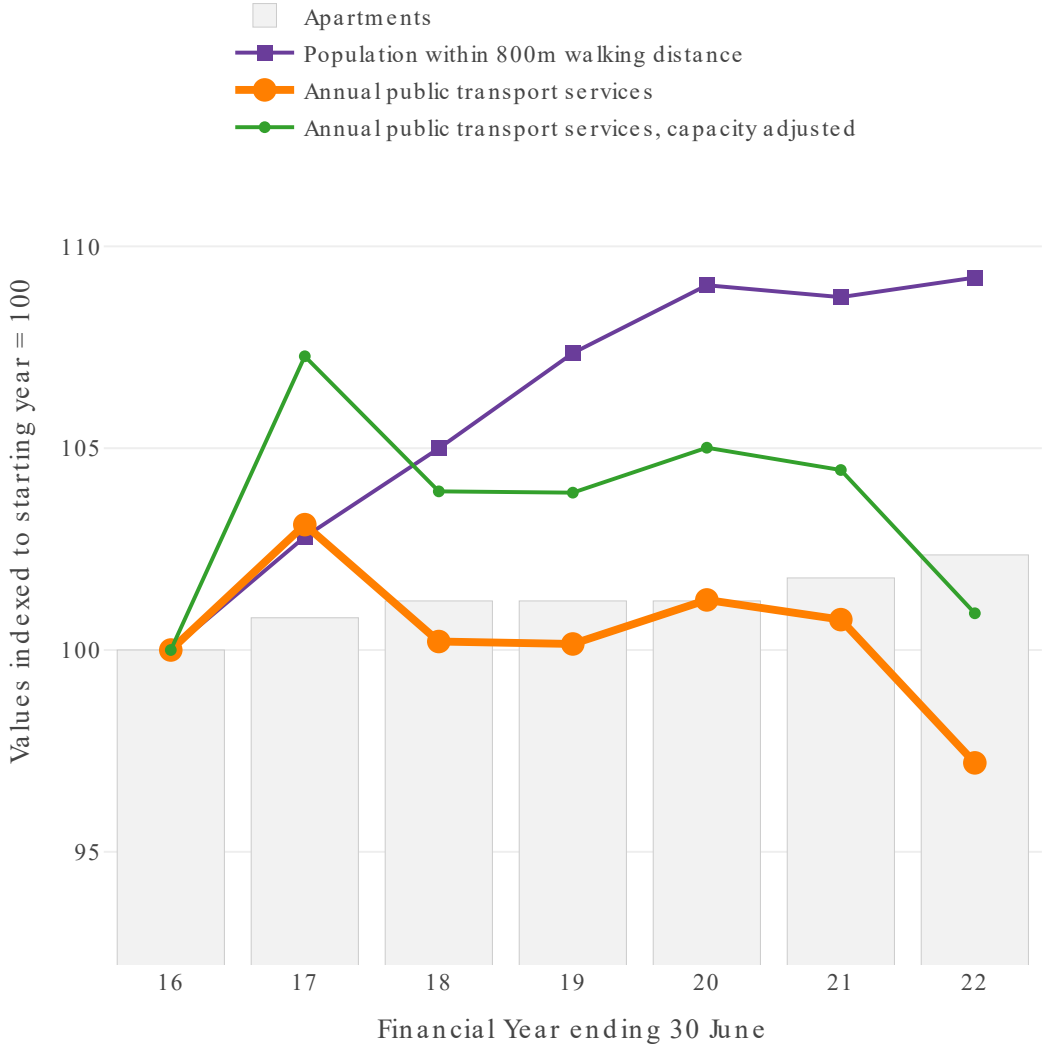


Change in apartments	+ 28.6 %
Change in population	+ 5.0 %
Change in public transport services	+ 5.1 %
Change in public transport services, capacity adjusted	+ 16.3 %

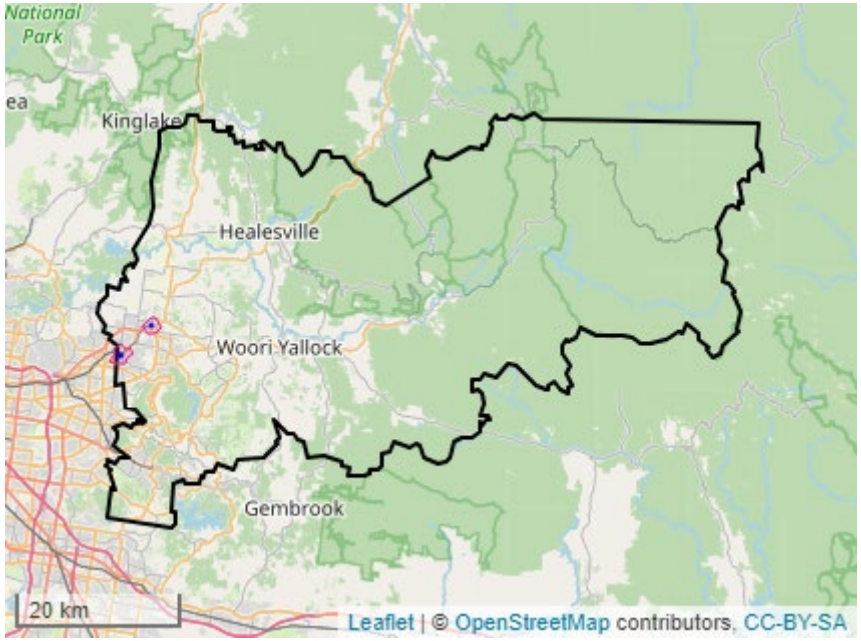


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Yarra

Local Government Area: Yarra Ranges

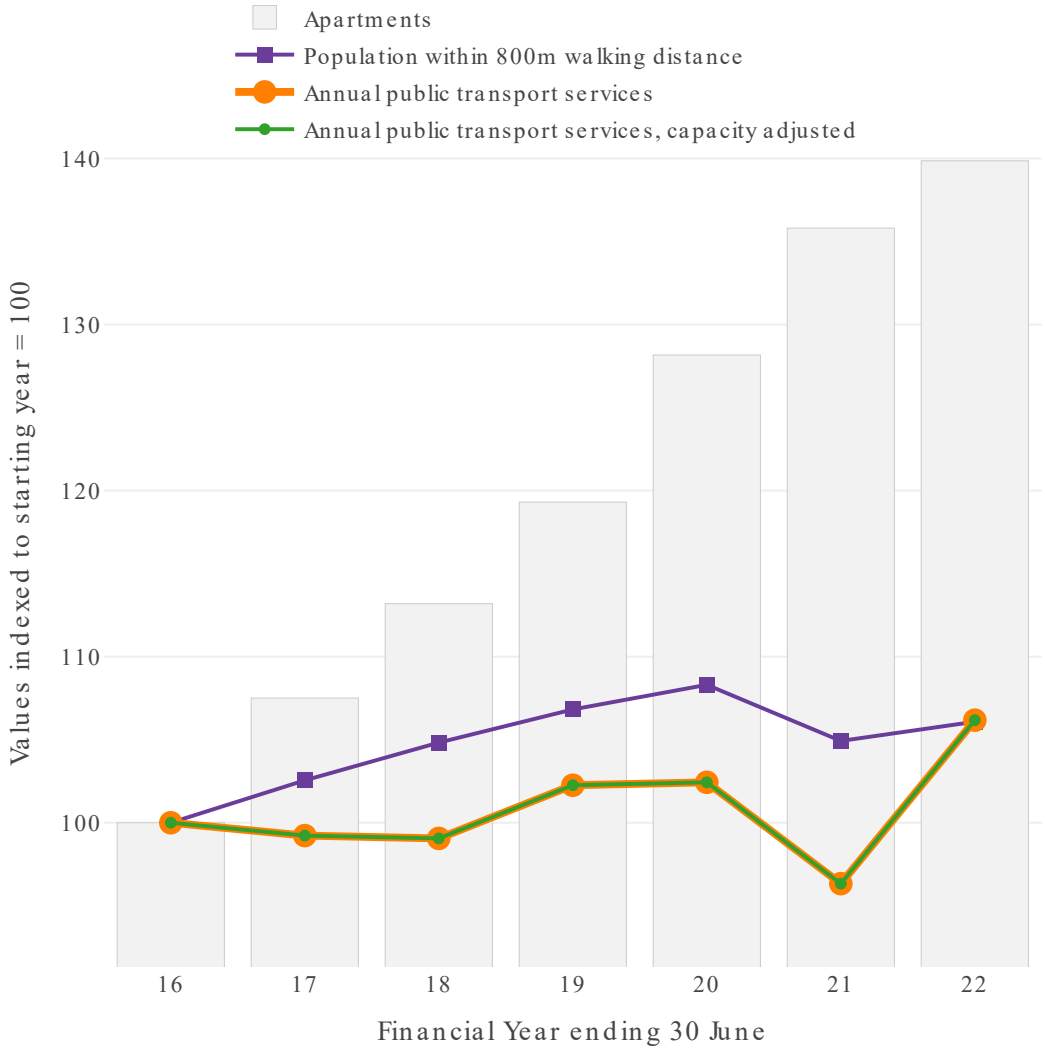


Change in apartments	+ 2.4 %
Change in population	+ 9.2 %
Change in public transport services	- 2.8 %
Change in public transport services, capacity adjusted	+ 0.9 %

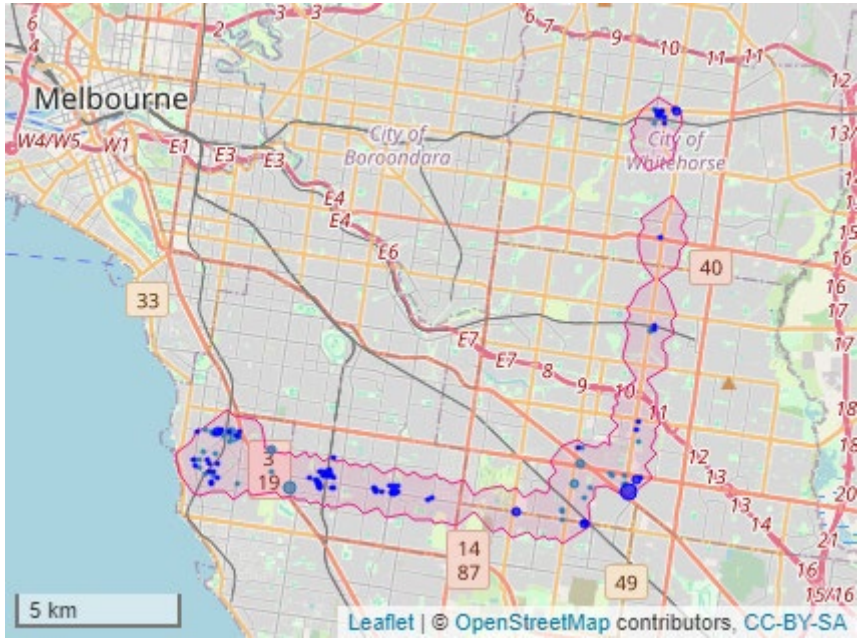


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments
Yarra Ranges

Bus route 703

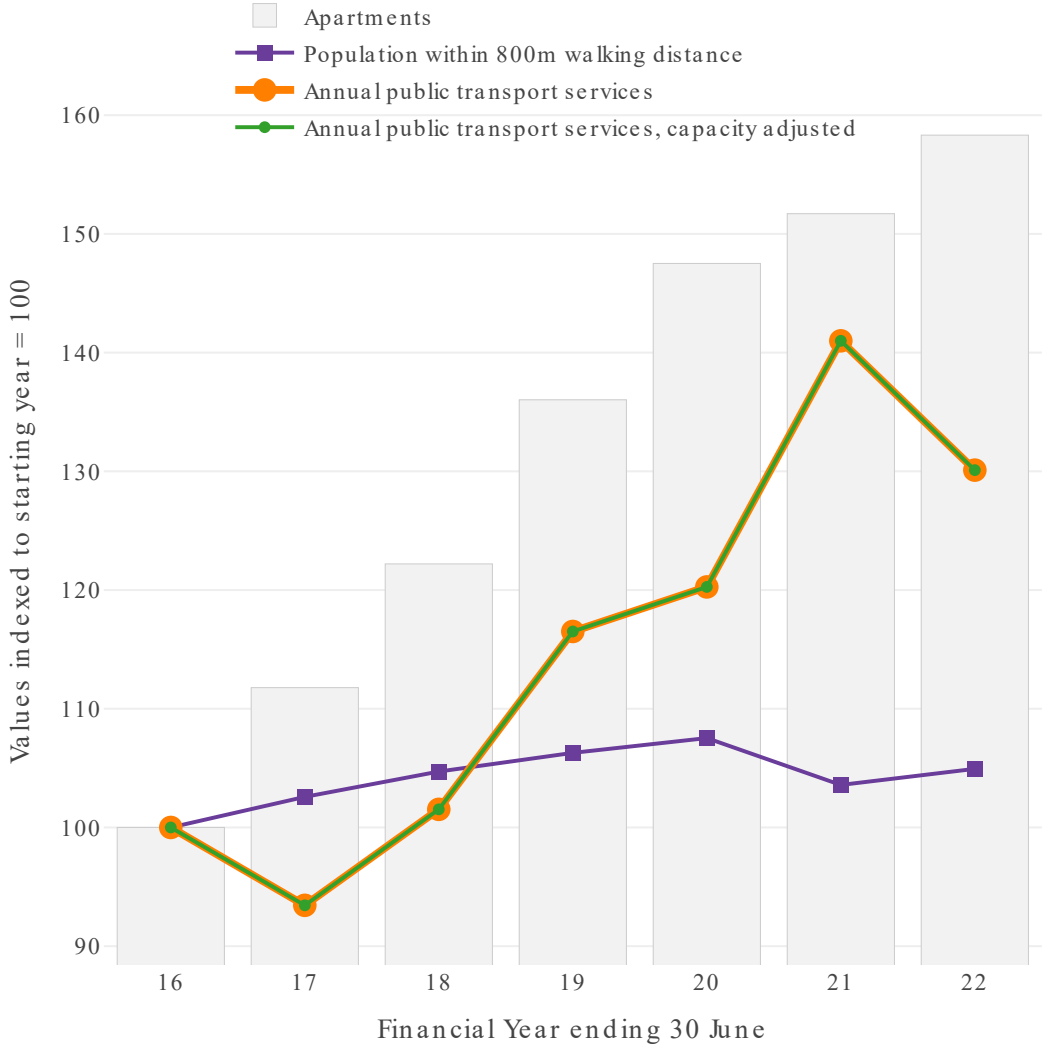


Change in apartments	+ 39.9 %
Change in population	+ 6.1 %
Change in public transport services	+ 6.2 %
Change in public transport services, capacity adjusted	+ 6.2 %

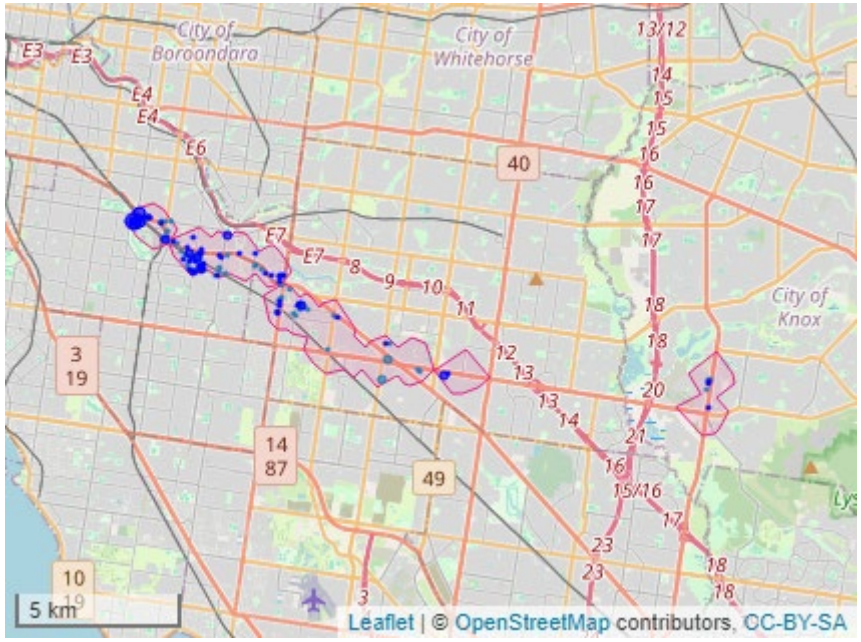


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Bus route 900

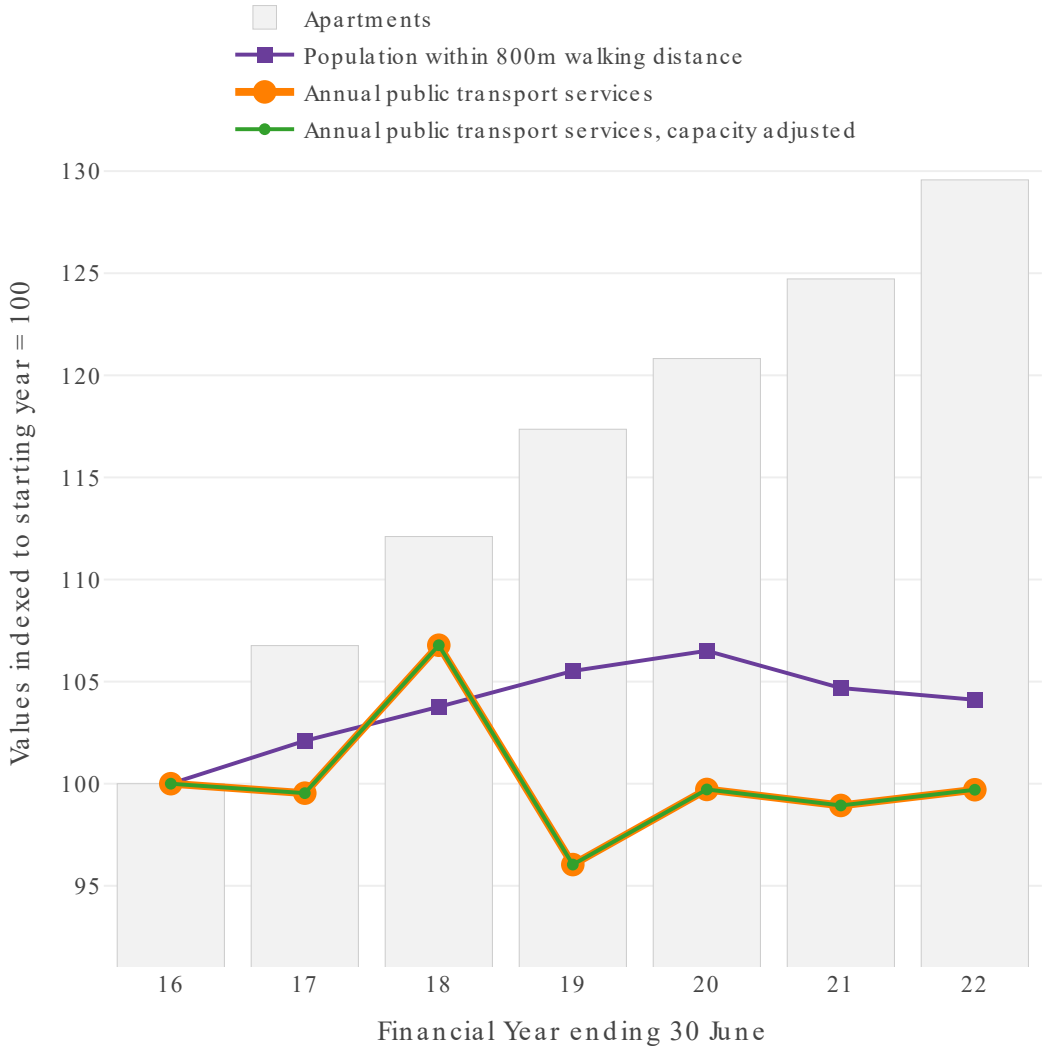


Change in apartments	+ 58.3 %
Change in population	+ 4.9 %
Change in public transport services	+ 30.1 %
Change in public transport services, capacity adjusted	+ 30.1 %

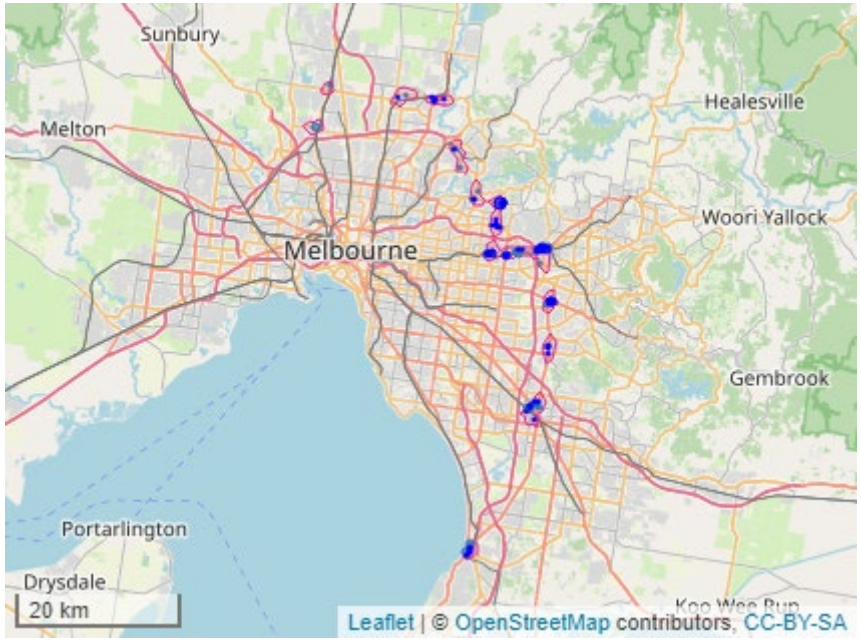


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Bus route 901

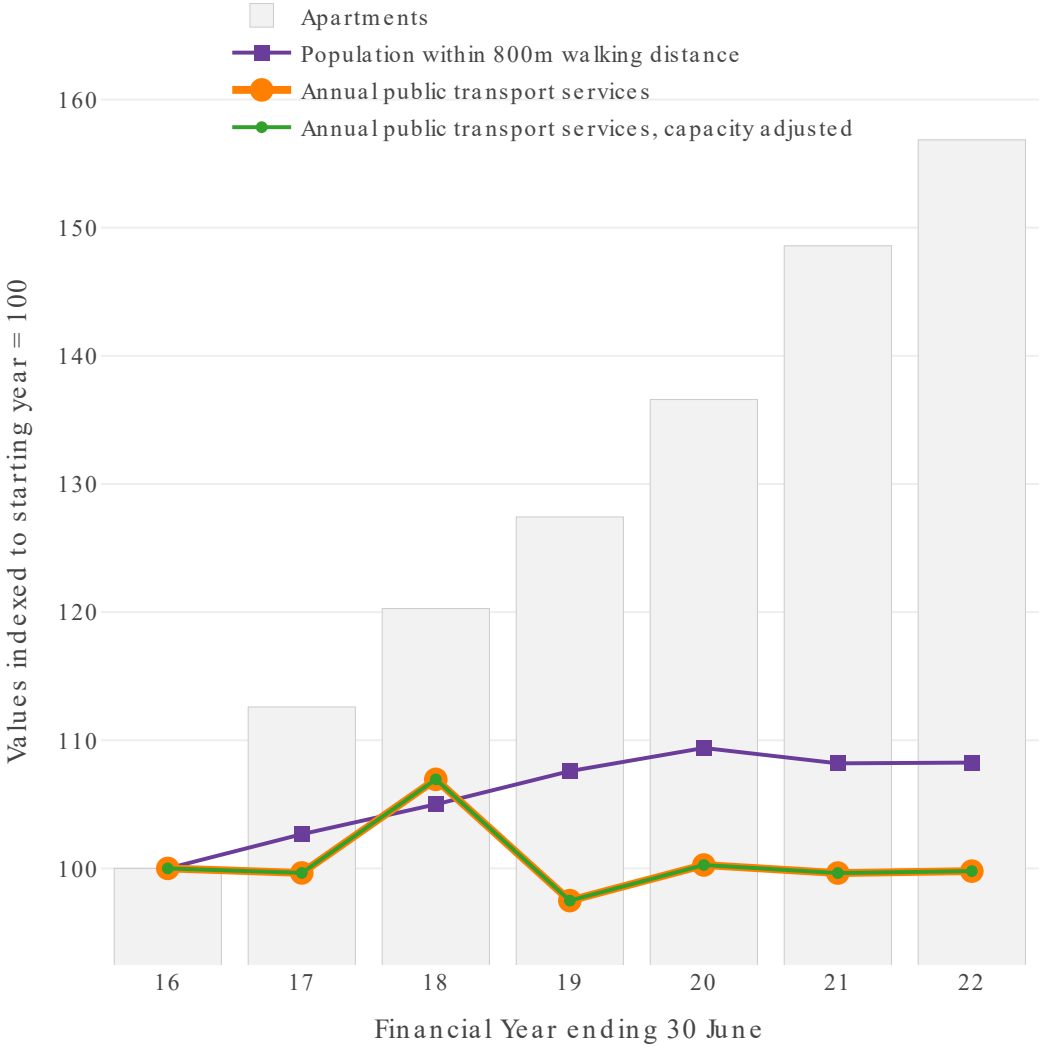


Change in apartments	+ 29.6 %
Change in population	+ 4.1 %
Change in public transport services	- 0.3 %
Change in public transport services, capacity adjusted	- 0.3 %



Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

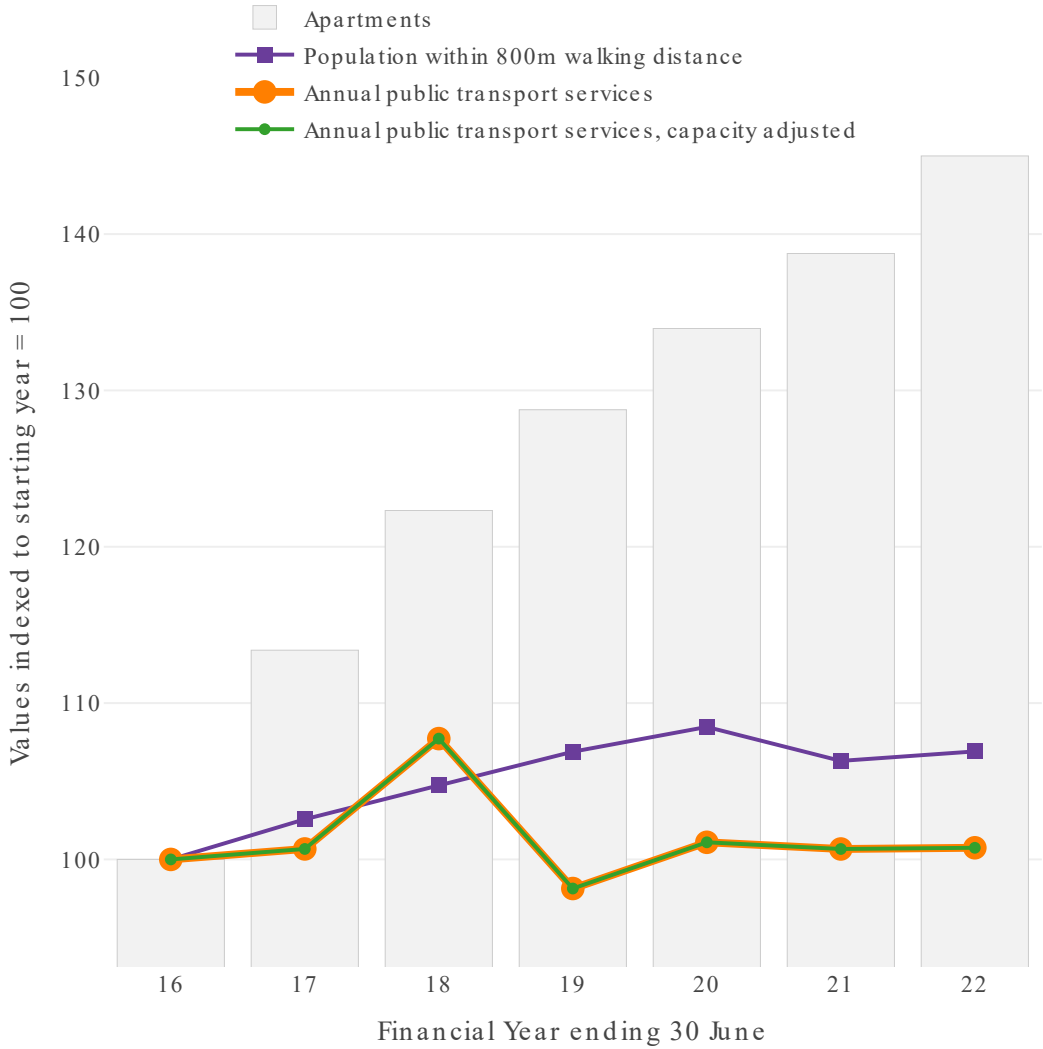
Bus route 902



Change in apartments	+ 56.9 %
Change in population	+ 8.3 %
Change in public transport services	- 0.2 %
Change in public transport services, capacity adjusted	- 0.2 %

Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

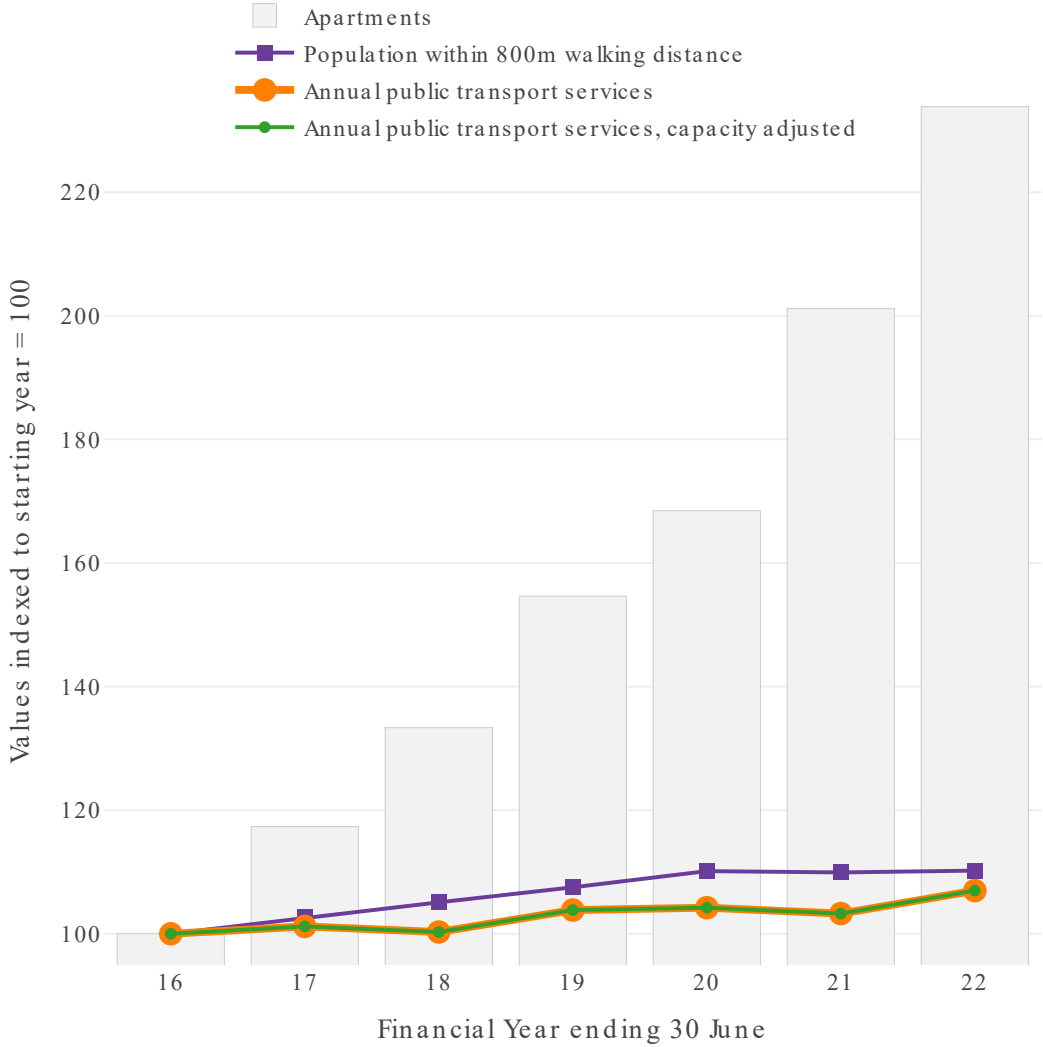
Bus route 903



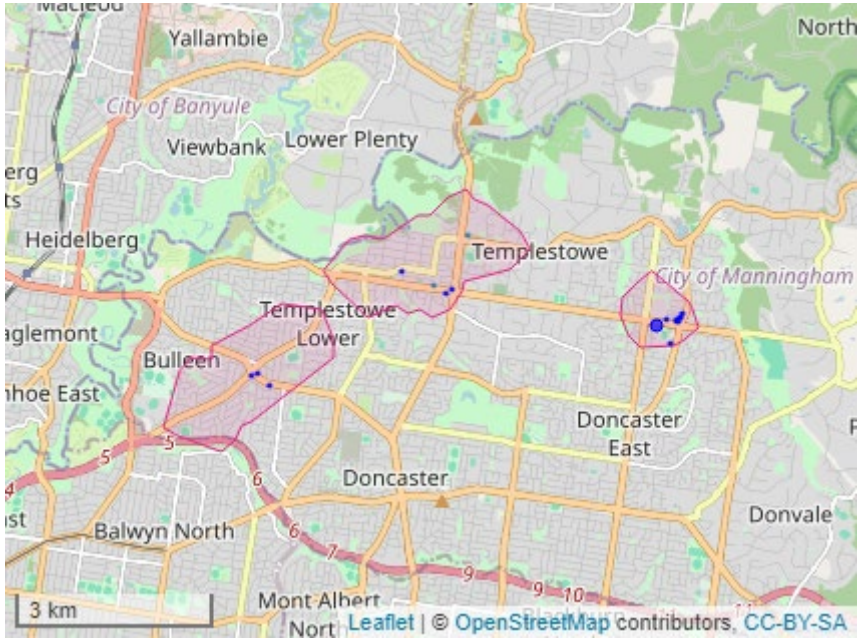
Change in apartments	+ 45.0 %
Change in population	+ 6.9 %
Change in public transport services	+ 0.7 %
Change in public transport services, capacity adjusted	+ 0.7 %

Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Bus route 905

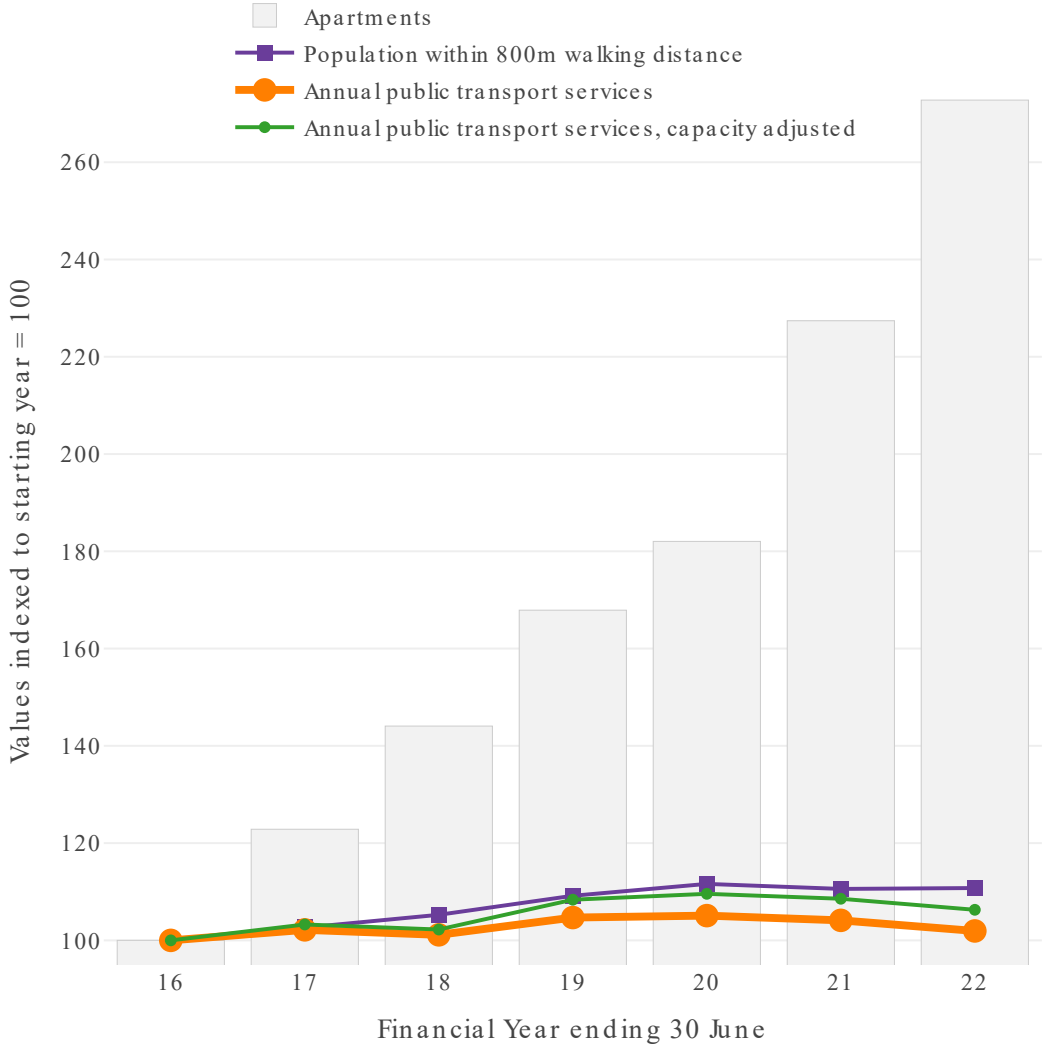


Change in apartments	+ 133.8 %
Change in population	+ 10.2 %
Change in public transport services	+ 7.0 %
Change in public transport services, capacity adjusted	+ 7.0 %

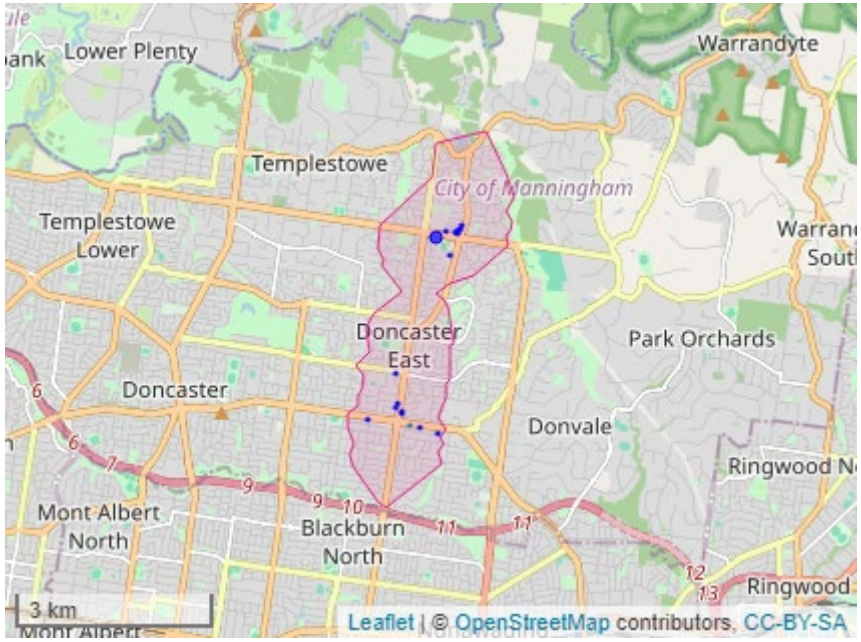


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Bus route 906

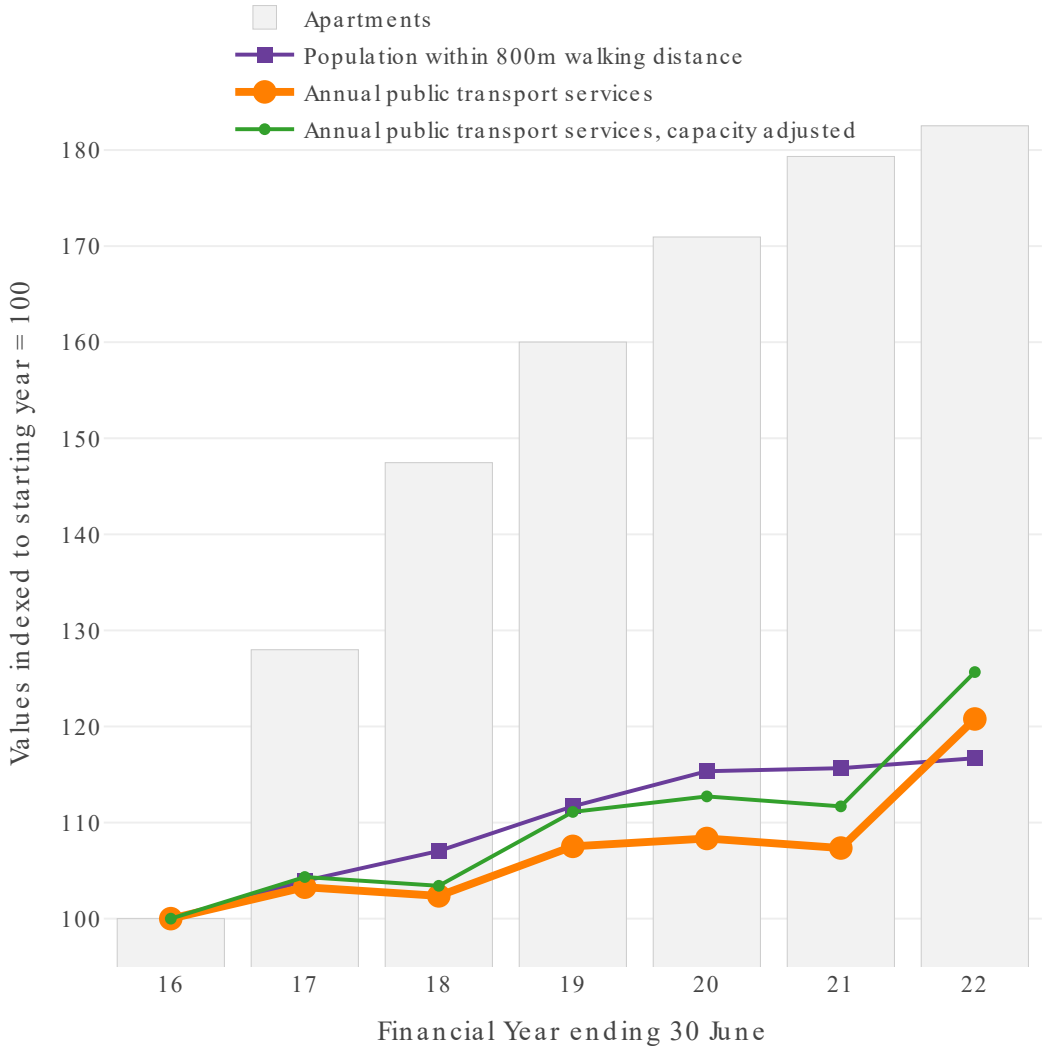


Change in apartments	+ 172.8 %
Change in population	+ 10.8 %
Change in public transport services	+ 1.9 %
Change in public transport services, capacity adjusted	+ 6.3 %

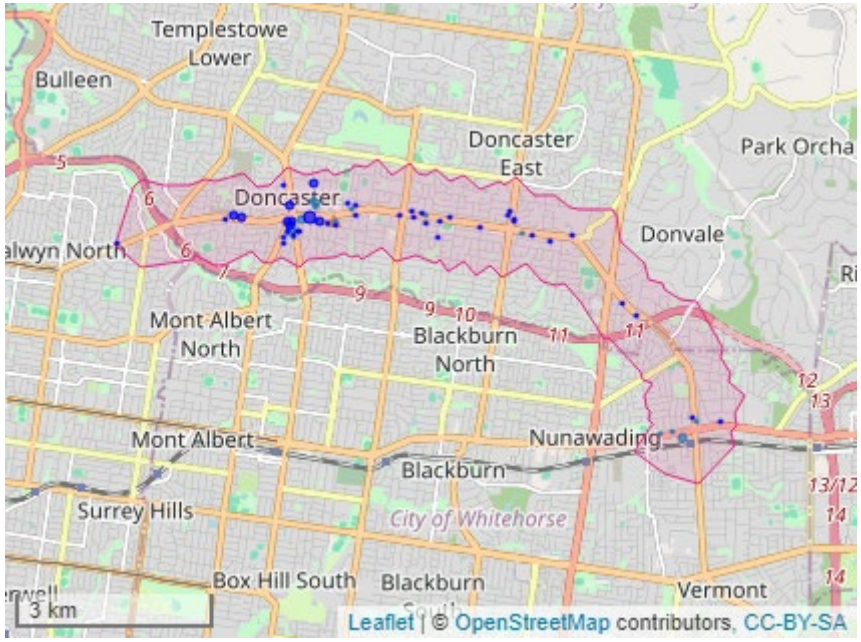


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Bus route 907

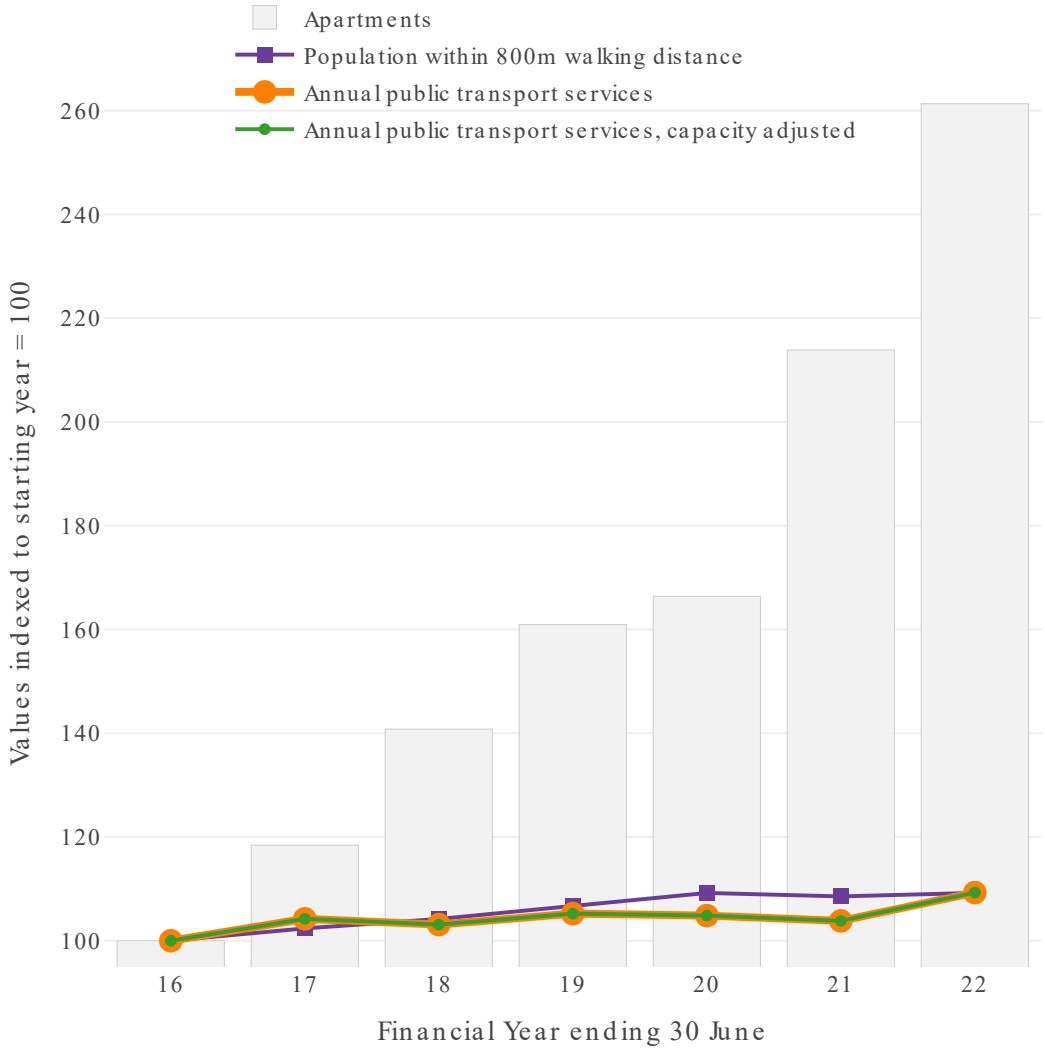


Change in apartments	+ 82.5 %
Change in population	+ 16.7 %
Change in public transport services	+ 20.8 %
Change in public transport services, capacity adjusted	+ 25.7 %

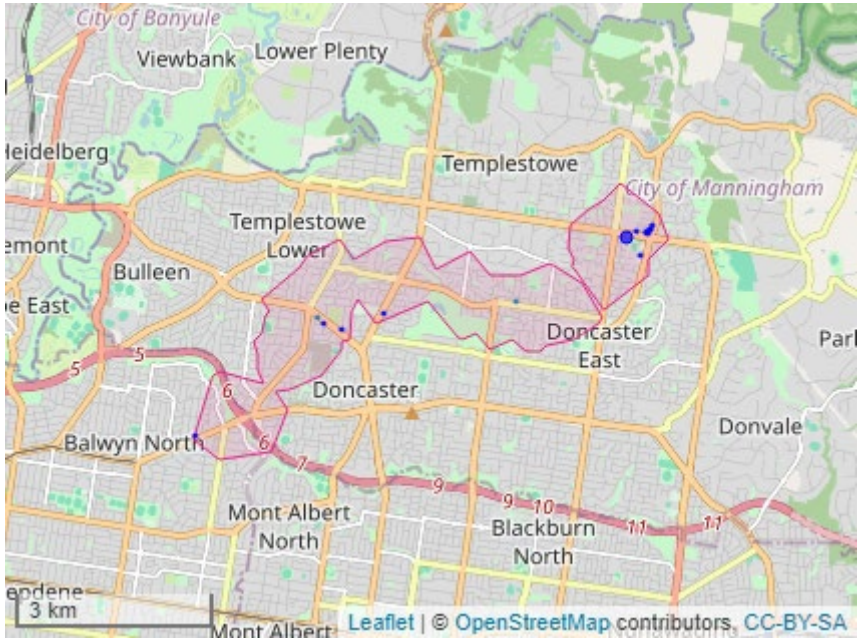


Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Bus route 908



Change in apartments	+ 161.3 %
Change in population	+ 9.2 %
Change in public transport services	+ 9.3 %
Change in public transport services, capacity adjusted	+ 9.3 %



Apartments constructed 2015-16 to 2021-22
Apartments constructed 2003-04 to 2014-15
800m walkable catchments

Appendix 4: Number of services compared to service-km for merged tram routes

This Appendix presents results for tram routes affected by two route mergers on the basis of service km (that is, distance) rather than number of services. The two mergers occurred in October 2004, as follows.

1. Route 16 (Melbourne University to St Kilda) was merged with route 69 (St Kilda to Kew), to form route 16 (Melbourne University to Kew), as illustrated in Figure A7.

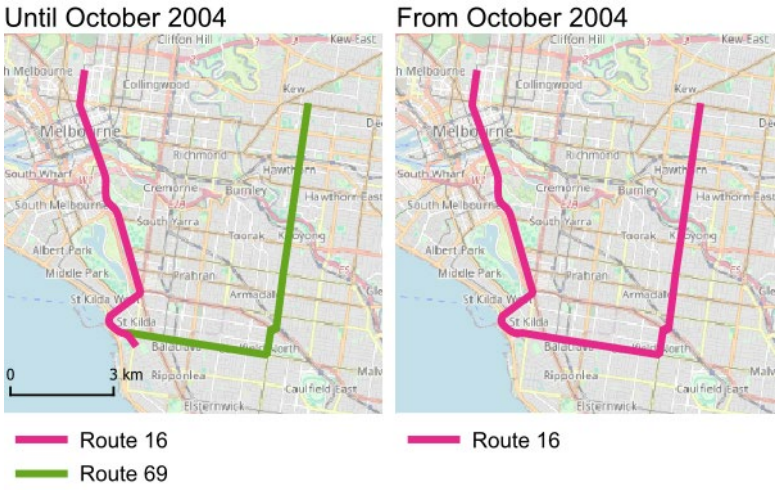


Figure A7: Merger of routes 16 and 69 in October 2004.

2. Overlapping routes 8 (Melbourne University to Toorak) and route 22 (Moreland to Arts Precinct) were merged to form route 8 (Moreland to Toorak), as illustrated in Figure A8.

Subsequently, in May 2017, route 8 was split at Domain Interchange into parts of routes 6 (Moreland to Glen Iris) and 58 (West Coburg to Toorak). Accordingly, the routes as shown in Appendix 2 affected by this merger are routes 6 north and 58 south.

Both mergers resulted in decreases in the number of services on the relevant routes, as a single trip on the new merged route could replace two separate trips on the former routes, while the routes themselves became longer. This Appendix compares the results for the affected routes as presented in Appendix 2 with an alternative set of results where 'services' are calculated as the total distance run on the relevant routes rather than the number of services.

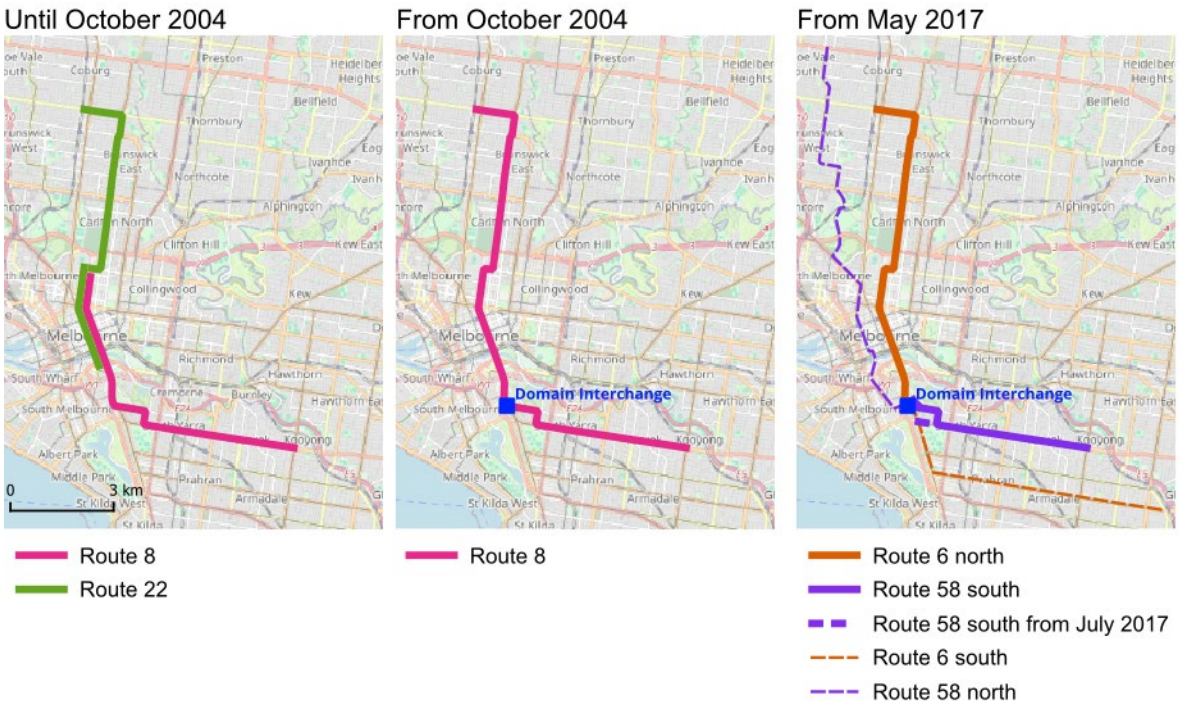


Figure A8: Merger of routes 8 and 22 in October 2004, and subsequent reorganisation of route 8.

For the purpose of this calculation, 'annual services' are calculated as

$$no.services * route.length$$

where $no.services$ is the number of services and $route.length$ is the full length of the relevant route.

The calculations assume that all services run the full length of the relevant routes. In fact, services may be affected by short running, where they do not run for the route's full length, but data for short running is not available.

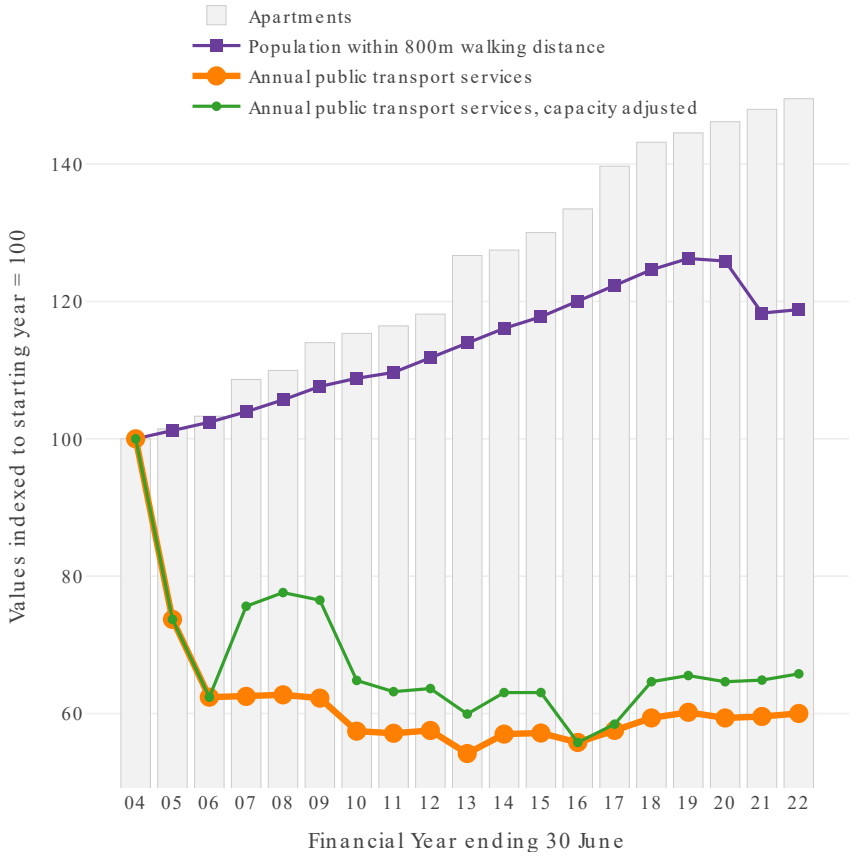
While this Appendix presents results on the basis of service km for routes where a merger resulted in a single trip on the merged route replacing two separate trips (thereby decreasing the number of services run), there have also been route splits where a single trip is replaced by two separate trips on the split routes (thereby increasing the number of services). For example, in July 2014 route 112 (West Preston to St Kilda) was split into routes 11 (West Preston to Victoria Harbour) and 12 (Victoria Gardens to St Kilda).

In the results shown on the following pages for each route:

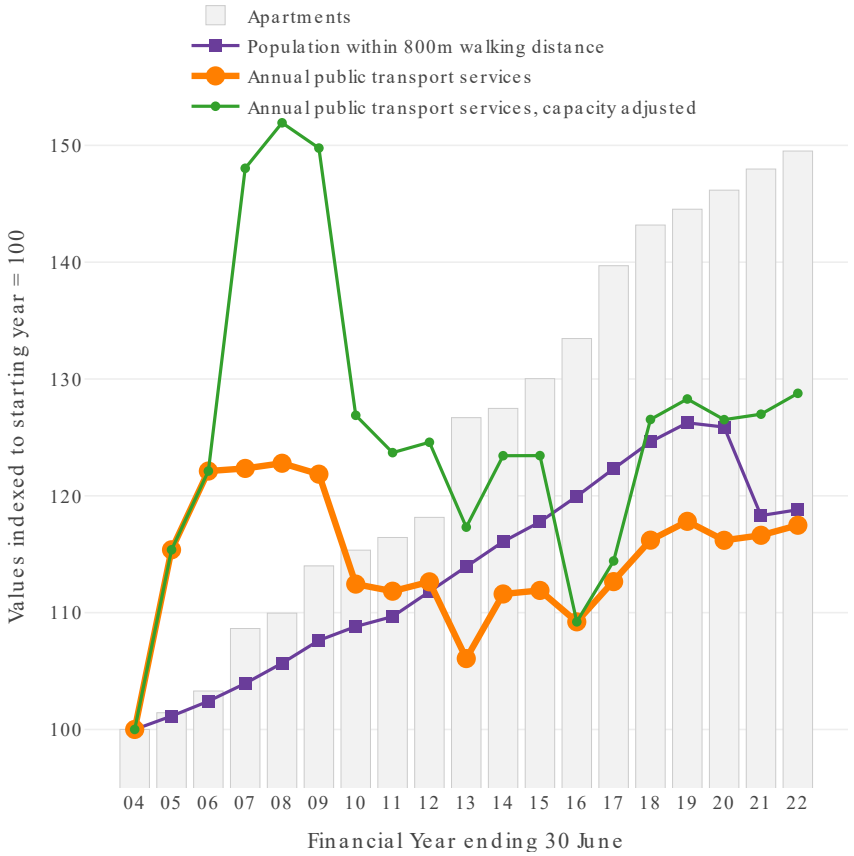
- 'Number of services' shows the plot from Appendix 2, where 'annual services' are the number of services.
- 'Service km' shows the alternative plot where 'annual services' are the number of services multiplied by the distance run on the route.

Tram route 16

Number of services



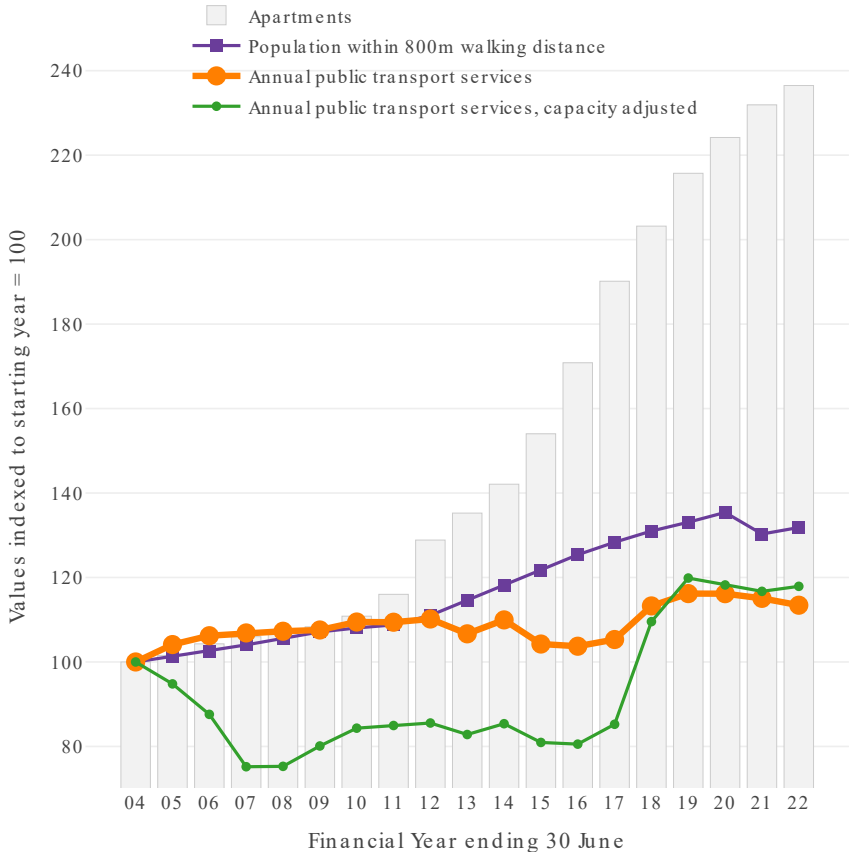
Service km



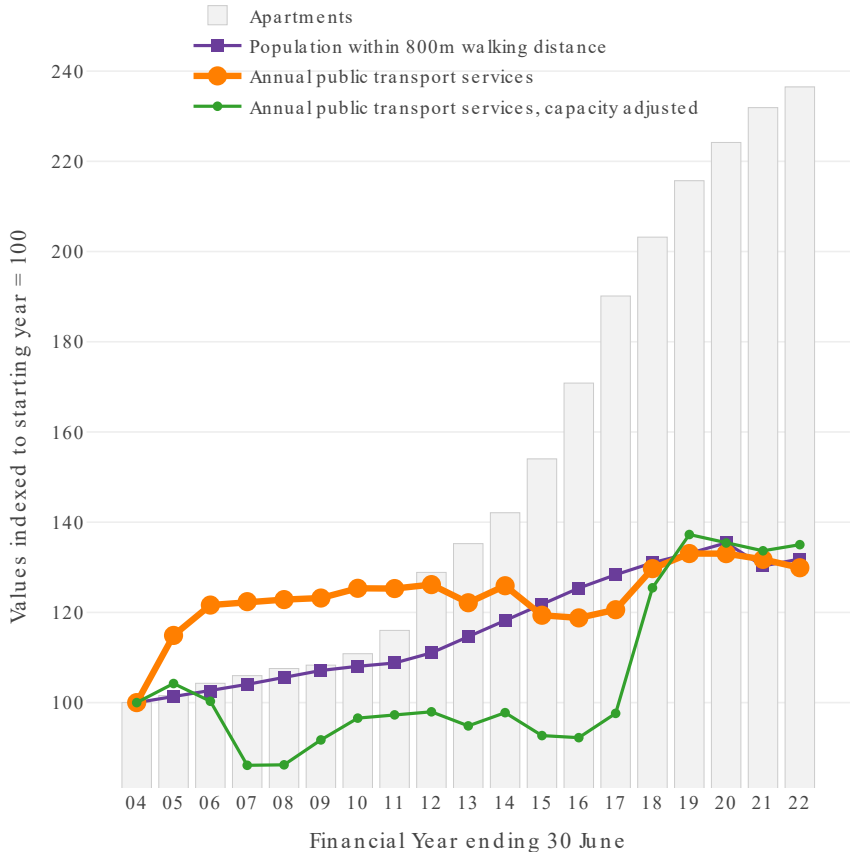
The results show routes 16 (Melbourne University to St Kilda) and 69 (St Kilda to Kew) to October 2004 and then route 16 (Melbourne University to Kew). While the number of services decreased from 2004 to 2006 as a result of the merger, the distance run (service km) increased over those years.

Tram route 6 north

Number of services



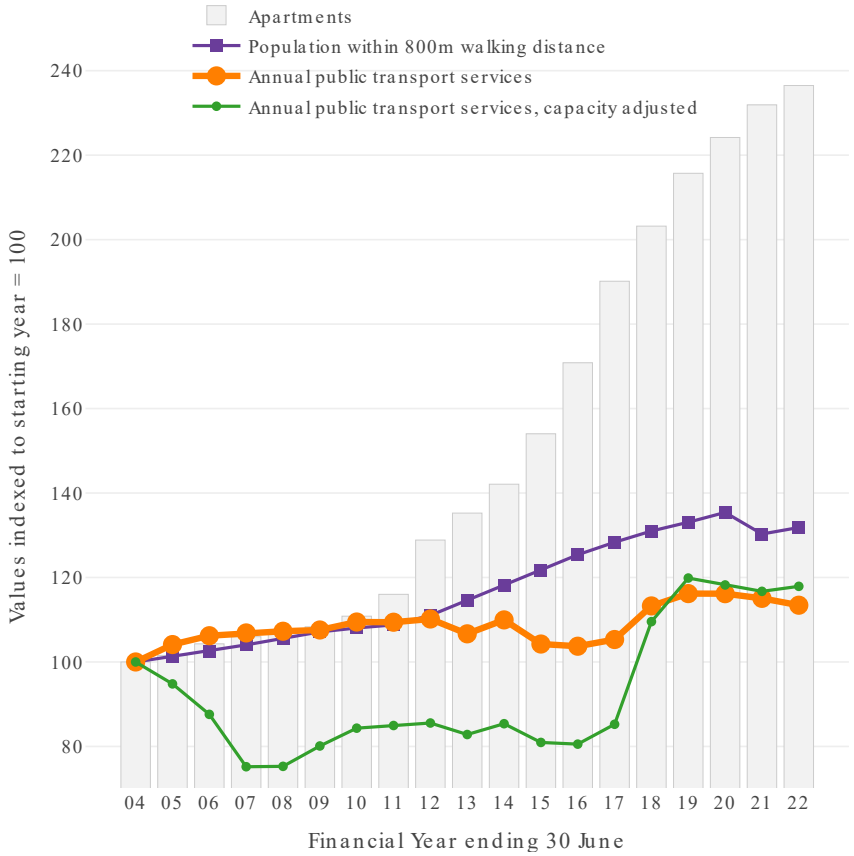
Service km



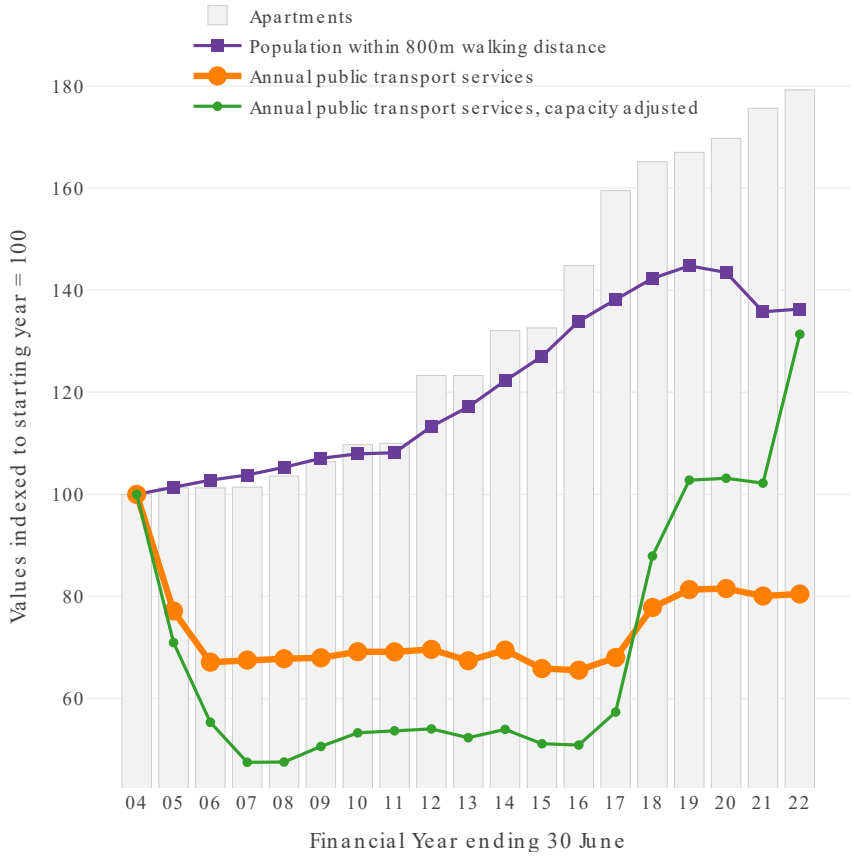
The results show route 22 (Moreland to Arts Precinct) to October 2004, then the northern part of route 8 (Moreland to Domain Interchange) to May 2017, then the northern part of route 6 (Moreland to Domain Interchange). While the number of services decreased from 2004 to 2006 as a result of the merger, the distance run (service km) increased over those years. However, the distance for the period after the merger includes a section between the Arts Precinct and Domain Interchange that is not included in the period before the merger, and this partly explains the increase.

Tram route 58 south

Number of services



Service km



The results show route 8 (Melbourne University to Toorak) to October 2004, then the southern part of route 8 (Domain Interchange to Toorak) to May 2017, then the southern part of route 58 (Domain Interchange to Toorak). The number of services decreased from 2004 to 2006 as a result of the merger. The distance run (service km) also decreased over those years, partly because the distance for the period before the merger includes the section of old route 8 from Melbourne University to Domain Interchange that is not included after the merger and is instead attributed to route 6 north.

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