

Review

Transport and Wellbeing of Public Housing Tenants—A Scoping Review

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Abstract: The role of public housing in improving wellbeing for tenants and society is an important public policy issue. Public housing tenants in Aotearoa New Zealand have constrained incomes and their mode of transport has implications for their budgets, their wellbeing, and carbon emissions. Tenants' daily life choices and wellbeing are influenced by the set of transport options available to them and the constraints and opportunities these options entail. What is important for wellbeing is also dependent on culture. Little is known, however, about the specific influences of transport on the wellbeing of public housing tenants and how that is mediated by the culture of particular groups, particularly Māori and Pacific people, who make up the majority of people in public housing in Aotearoa. In this article we review the literature on public housing, transport, and wellbeing, to establish what is known about how transport, and the access it affords, influence the wellbeing of public housing tenants. We searched Scopus and Web of Science for academic journal articles, published in English and available online, about public housing tenant wellbeing with regard to the transportation and location characteristics of public housing. We found that creating highly accessible public housing developments with options of various modes of travel is important for the wellbeing of tenants. We also found that understanding the specific needs and preferences of tenants, ensuring tenants have agency over how they travel, and engaging with tenants during transport decision-making are particularly important and often under-recognised for people in public housing. Finally, we identified substantial gaps in the literature around understanding transport needs and experiences from Māori and Pacific perspectives, emphasising the importance of including indigenous and ethnic minority views in future research.

Keywords: public housing; social housing; wellbeing; transport equity; sustainable transport; Māori wellbeing; Pacific worldviews; accessibility; health



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1. Introduction

The role of public housing in improving wellbeing for tenants and society is an important public policy issue. Public housing tenants have constrained incomes and their mode of transport has significant implications for their budgets, their wellbeing, and carbon

emissions. Tenants' daily life choices and wellbeing are influenced by the set of transport options available to them, which may have cultural implications.

Transport influences wellbeing in a range of ways [1]. Directly, it influences people's access to services and activities, such as healthcare, education, employment, green spaces, and social connections within and beyond one's neighbourhood [2,3]. For most people transport is a means to an end [4], but transport also directly provides opportunities for physical activity and, perversely, can have negative health effects via people's exposure to hazards, such as injury and air pollution [5]. The experience of using transport also affects satisfaction with one's neighbourhood, including effects on community segregation and cohesion [6,7]. Indirectly, transport affects people's wellbeing through its impact on land use and urban form, which influences the time and opportunity costs of travel, and current and future carbon costs and climate destabilisation [7,8].

People differ in their transport needs and these can change over the course of a lifetime. The direct and indirect influences of transport on wellbeing are often inequitably distributed, with those least well off or most vulnerable bearing a disproportionate share of transport-related costs [1,7,9–11]. So careful consideration of the impacts of transport across different socioeconomic and demographic groups is vital for fair transport policy [1].

Aotearoa, once under colonial rule, has a long history of transport and infrastructure issues that disproportionately affect Māori, the indigenous people of Aotearoa. There is ample evidence from the mid-1800s that Māori were induced into land sales on exploitive terms, having been promised, among other things, the building of bridges and roads [12–14]. Land was removed from Māori ownership under laws such as the various Public Works Acts, which allowed for the taking of land for roading (e.g., Marr [15]). The precedent-setting legal case McGuire vs. Hastings District Council [2001/02] shows that, even in the 21st Century, Māori were still fighting to stop the forcible removal of ancestral lands for roading infrastructure [16]. It has also long been the case that Māori have been disproportionately affected by poor access to transport opportunities, which became notable once transport by water was replaced by roading networks and Māori, a largely rural population until 1950, needed to travel to the settler towns for work [17]. Today, Māori remain disadvantaged, by bearing a disproportionate amount of the health burden of the current transport system [9].

Little is known, however, about the specific influences of transport on the wellbeing of public housing tenants and indeed of different cultural groups, including Māori, who make up around 40% of public housing tenants and 50% of those on the public housing waiting list, and Pacific people, who account for 26% of public housing tenancies [18]. With Pacific people identified as experiencing the highest rate of severe housing deprivation in Aotearoa, strong demand for affordable housing from this group is expected to continue for the foreseeable future [19]. We were unable to find any literature review relating to transport and public housing tenants. Therefore, our purpose is to review the literature on public housing, transport, and wellbeing, to establish what is known about how transport, and the access it affords, influences the wellbeing of public housing tenants. This review is intended to provide a context to inform how public housing can be best configured to meet tenants' transport needs, while also helping to reduce their transport-related carbon emissions and identify any gaps in the literature that are important to fill to meet these goals.

Public housing policy, provision, and eligibility criteria differ markedly between countries. For example, in Aotearoa public housing makes up around 4% of the nation's housing stock and is more targeted to people in severe socioeconomic deprivation than public housing in countries with larger proportions of public housing (e.g., Denmark and The Netherlands) [20]. This means that public housing residents in some countries can be relatively better off than those in other countries and this may affect international

comparisons of transport needs and preferences. Therefore, although we have included studies from a range of countries, comparisons should be interpreted with caution.

We first provide some background to the Public Housing and Urban Regeneration Research Programme (PHUR), to which this work contributes, and briefly outline the wellbeing frameworks used to guide the programme. We then present the methods that characterise our literature review and summarise the literature on transport and public housing in terms of influences on tenant wellbeing, as defined by the wellbeing frameworks. We conclude with recommendations for future research relevant to public housing providers on how to support the wellbeing of tenants. Recommendations include developing a better understanding of tenants' transport needs and constraints and applying this to specific public housing development location choices and design decisions.

1.1. Public Housing and Urban Regeneration Wellbeing Frameworks

PHUR is a five-year research programme with the overarching goal of improving the wellbeing of people living in Aotearoa public housing, their whānau (wider family) and communities by providing evidence on what is needed for healthier and more environmentally sustainable development. The programme began in October 2020. Researchers in the programme are studying and comparing how seven different public housing providers approach tenant wellbeing in housing and urban regeneration projects with the aim of providing knowledge of best public housing practice. The programme is evaluating the ability of different housing and community development models to improve the wellbeing of tenants, enable socially inclusive communities and neighbourhoods, contribute to sustainable urban regeneration, and reduce carbon footprints, while also managing to build new public housing efficiently and effectively at scale.

PHUR is guided by Te Tiriti o Waitangi, widely considered to be the founding document of Aotearoa, and the basis for the bi-cultural relationship between the indigenous Māori and the Crown. Part of PHUR's work is to identify and explore approaches and housing models that enhance the wellbeing of Māori. This includes research activities that support and enable the housing aspirations of whānau, hapū (extended family) and iwi (tribe), as well as those of Māori organisations, such as urban Māori authorities that represent pan-tribal interests.

Because of the multidimensionality of wellbeing, three wellbeing frameworks were developed: a general wellbeing framework drawn from the international wellbeing literature; a Māori wellbeing framework; and the identification of principles that underpin Pacific worldviews. The following paragraphs summarise these frameworks and how they apply to transport.

By comparison, the concept of carbon mitigation (decarbonisation) is relatively uncomplicated, even if the attainment of it through changes in transport systems is proving to be challenging. Environmental sustainability (including decarbonisation) is viewed in this paper as complementary to wellbeing. While wellbeing cannot be durably attained without the wider system being environmentally sustainable, human aspirations for wellbeing do not stop at environmental sustainability. Thus, the two sets of goals usually, but not always, reinforce each other. For example, sustainability entails using environmentally sustainable means of travel such as cycling that minimise carbon emissions, while improving wellbeing through physical activity. At the same time, people and whānau will have social and cultural aspirations that in the short term may require forms of transport that are not sustainable, so that alternative mode choices need to be developed and offered [21].

1.1.1. General Wellbeing Framework

The inclusive wellbeing framework described in Grimes et al. [22] establishes the general concepts that underpin the wellbeing analysis of PHUR. The framework proposes that housing and non-housing ‘capability-related’ factors affect different domains of wellbeing—hedonic (positive feelings) and eudaimonic (psychological flourishing or pursuing a meaningful life) wellbeing (which lead indirectly to subjective wellbeing), subjective wellbeing directly, and whānau or collective wellbeing. All of this is set within a time context, with past factors and subjective wellbeing influencing present factors and subjective wellbeing and, in turn, present factors and subjective wellbeing influencing future wellbeing.

1.1.2. Māori Wellbeing Model

The Māori Wellbeing Model describes the processes and factors that are important for wellbeing from a Māori perspective [23]. Centred on the activity of whakawhanaungatanga (making and strengthening connections and relationships—see Table 1 for a glossary of te reo Māori words and phrases used in this article), the model is informed by seven key concepts identified in the literature, with each concept playing a role in supporting Māori wellbeing. The model emphasises the importance of creating opportunities for connectedness between people (present and past), the natural environment and the local and wider economy, with connectedness taking different forms (e.g., physical, emotional, spiritual). The relationships that develop from this connectedness can have positive (mauri ora) or negative (mauri noho) influences on wellbeing. When guided by tikanga (cultural practices and social norms) the influences are positive, resulting in relationships that underpin mauri ora (the state of wellbeing). In the model, whakawhanaungatanga occurs in three domains (1): Te Ūkaipō, a place of cultural nourishment, where cultural connections, identity and practices are cultivated, maintained, sustained and expressed and where Māori wellbeing is maximised; (2) the domain of Whakawhanaungatanga, where interactions with the wider world occur and where meaning and culture are socially constructed and contested; and (3) the domain of Wairuatanga, the realm of interconnected spirituality in all aspects of Te Ao Māori (the Māori world), encompassing the domains of Te Ūkaipō and Whakawhanaungatanga and establishing the foundation of Māori existential beliefs and practices. Overall, the Whakawhanaungatanga Māori wellbeing model emphasises whānau as the focus of wellbeing, highlighting the importance of applying wairuatanga, tikanga and te reo (the Māori language) to relationships in the built environment, having access to ūkaipō to support wellbeing processes, and acknowledging that Māori identity and belonging (key features of Māori wellbeing) are grounded in landscapes and the natural environment.

1.1.3. Principles Underpinning Pacific Worldviews: Insights into Wellbeing

Alongside the Whakawhanaungatanga model of wellbeing [23], a review of literature on Pacific worldviews by Teariki and Leau [24] revealed five commonly shared principles that underpin how Pacific peoples interpret the world. Notwithstanding cultural differences, these principles include holism, the collective family or aiga as the central unit, spirituality, connections with the natural world, and relationships embodied in the concept of Te Vā, which are core to how Pacific peoples view wellbeing. As with the Whakawhanaungatanga model [23], none of these principles stands on its own. Rather, the review highlights the importance of these connections being nurtured to sustain these links over space and time and passed on to future generations.

Table 1. Translations of te reo Māori words and phrases used in this article. Many terms in te reo have multiple meanings. Fitting these concepts together can give a clearer understanding of Te Ao Māori and the meaning the individual words convey.

Te Reo Māori Term	Meaning/Expanded Translation
Hapū	Extended family and also pregnant/to be pregnant.
Hauora	Wellbeing.
Iwi	Tribe, extended kinship group, nation, people.
Kāinga	Village or settlement.
Kaitiakitanga	Stewardship, guardianship, often used in the context of the environment.
Kaupapa Māori	A way of thinking and acting that incorporates Māori knowledge, values, and principles, can be applied to research, education and other practices.
Manaakitanga	Generosity, hospitality and support.
Marae	Traditional social and cultural meeting place.
Mauri noho	A state in which the mauri, or life force, is diminished and lacking vigour. From mauri, life force, and noho, to sit still.
Mauri ora	A state in which the mauri, or life force is vigorous. From mauri, life force, and ora, life and vitality.
Oranga	Health, livelihood, welfare, wellbeing.
Rangatiratanga	Self-determination, autonomy, leadership.
Te Ao Māori	Literally, the Māori world. Used to indicate a Māori worldview.
Te Ao Ōhanga	The world of the economy.
Te Ao Tangata	The world of people.
Te Taiao	The natural environment (can also include the built environment).
Te Tiriti o Waitangi	The Māori language version of the treaty signed by the British Crown and some (over 500) Iwi leaders in 1840. Often referred to as the founding document of New Zealand.
Tikanga	Cultural rules, practices and social norms; doing things in the right way. From tika, correct, right.
Ūkaipō	The ‘real’ home—one’s true home. Also refers to sustenance—the sustainer—U-kai-po literally means to breast feed in the night, inferring maternal connection, devotion and closeness. It is an active term (the real home is not passive, it sustains).
Wairuatanga	Spirituality; the act of being spiritual, recognising the spiritual interconnectedness of all people and things, consistent with and affirming of Māori existential beliefs.
Whakawhanaungatanga	The action of creating and sustaining relationships, creating whānau.
Whānau	Family and birth as well as the verb to give birth/to be born.
Whenua	Land and also placenta—a thing that a person is connected to/an interface/a protector and nourisher in an active sense.

1.1.4. Application of the Wellbeing Frameworks to Transport

Despite the differences in ways of thinking about wellbeing across these three models of wellbeing, there are three main ways transport can be thought of as relating to wellbeing that apply to all three frameworks. Firstly, transport can be thought of as a facilitator of the components that are important for wellbeing. Within the general wellbeing framework described above, this would be covered by the terms ‘accessibility’ or ‘access’—for the purposes of this review, defined as access to general destinations such as employment, education, and so on, rather than site-specific factors restricting the ability of people to get into a building or use a service [4]. Within the Whakawhanaungatanga model and Pacific worldviews, transport can be conceptualised as a process that facilitates connections and relationships with people, the environment, the economy or culturally important places, a critical component of wellbeing.

Secondly, different modes and types of transport generate different by-products, costs and risks that influence the health of people and the environment in different ways across different timescales. These factors include injury risk, air pollution (e.g., NO₂ and particulate matter), carbon emissions, noise and opportunities (or not) for physical activity, and affect people whether or not they are using the transport system [25]. Health is often

considered an important capability for wellbeing in itself [26], but is also a critical factor in one's ability to gain employment, participate in education and other key capabilities that fit within the general wellbeing framework [1]. As emphasised in the Whakawhanaungatanga model and Pacific principles, the ability of public housing residents to form and sustain relationships with people and places that support wellbeing is dependent on opportunities to interact with healthy natural environments and with different social and economic networks. Transport has both positive and negative impacts on the health of people and the environment which must be considered alongside the accessibility benefits it can provide.

Thirdly, the experience of using transport, and the inclusiveness of the design of the transport system and its associated planning and decision-making processes affect wellbeing [27]. In the general wellbeing framework, this might be conceptualised as agency that influences people's psychological flourishing and feelings of pursuing a meaningful life (eudaimonic and evaluative wellbeing), as well as contributing directly to positive feelings (hedonic wellbeing) through a satisfying experience of travel, for example. From the perspective of the Māori wellbeing model, using tikanga to guide actions (e.g., rangatiratanga—self-determination, autonomy, leadership, kaitiakitanga—stewardship, guardianship, and manaakitanga—generosity, hospitality, support) through transport system design, and management decisions, would enhance pathways to mauri ora (vitality/wellness) for both people and the environment. This could include acknowledging and following appropriate tikanga during the planning, design and construction of transport infrastructure, enabling Māori cultural identity and mana to be reflected in and on the transport system, and ensuring that transport systems work in the way whānau need them to work [28–30]. The commonly shared principles underlying Pacific worldviews also emphasise the importance of holistic approaches of transport. Planning and policy development need to involve collaborative arrangements with Pacific communities, through processes of 'talanoa', or discussion, to elicit ways in which transport can facilitate the wellbeing of Pacific peoples.

These three concepts were used to guide the search strategy, the analysis of the literature and the implications we inferred for the wellbeing of public housing tenants.

2. Materials and Methods

We did not publish a review protocol for this study, but instead report all details of the methods used below and have complied with all applicable components of the PRISMA Scoping Review guidelines [31]. To review the literature on the relationship between transport and the wellbeing of public housing tenants, we searched Scopus and Web of Science Core Collection. We searched peer-reviewed and accessible-online journal articles in English, with no time limit on publication date. The search was first carried out in July 2023 and finalised in July 2024. The initial search terms used were: (transport OR transportation) AND ('public hous*' OR 'social hous*' OR 'state hous*') AND (wellbeing OR 'well being' OR well-being). However, this search returned few articles (34 via Scopus, 22 via Web of Science, 36 unique articles in total). After processing these results, only 13 articles remained. To expand the literature covered and to capture articles that may not have used the term 'wellbeing' (or one of its variants) but still included important research on how transport impacts the lives of public housing tenants, we expanded the search term to include relevant concepts that align closely with wellbeing, as outlined in the previous section, that fit within the wellbeing frameworks used for this review. The final search term used to search titles, keywords and abstracts was:

Transport OR transportation

AND

'Public hous*' OR 'social hous*' OR 'state hous*' OR 'community hous*'

AND

Wellbeing OR 'well being' OR well-being OR access* OR health

This search resulted in 302 results (185 from Scopus and 117 from Web of Science) and 218 articles after removing duplicates. We then screened the titles, abstracts and full text (where necessary) against four inclusion criteria: articles were (1) about tenant wellbeing; (2) considered the transportation or location characteristics of public housing; (3) in English; (4) available online. Articles were excluded if they did not specifically consider the wellbeing and transport experiences of public housing tenants; for example, hypothetical modelling studies or simulations. After removing articles that did not fit these inclusion criteria, 42 remained (Figure 1).

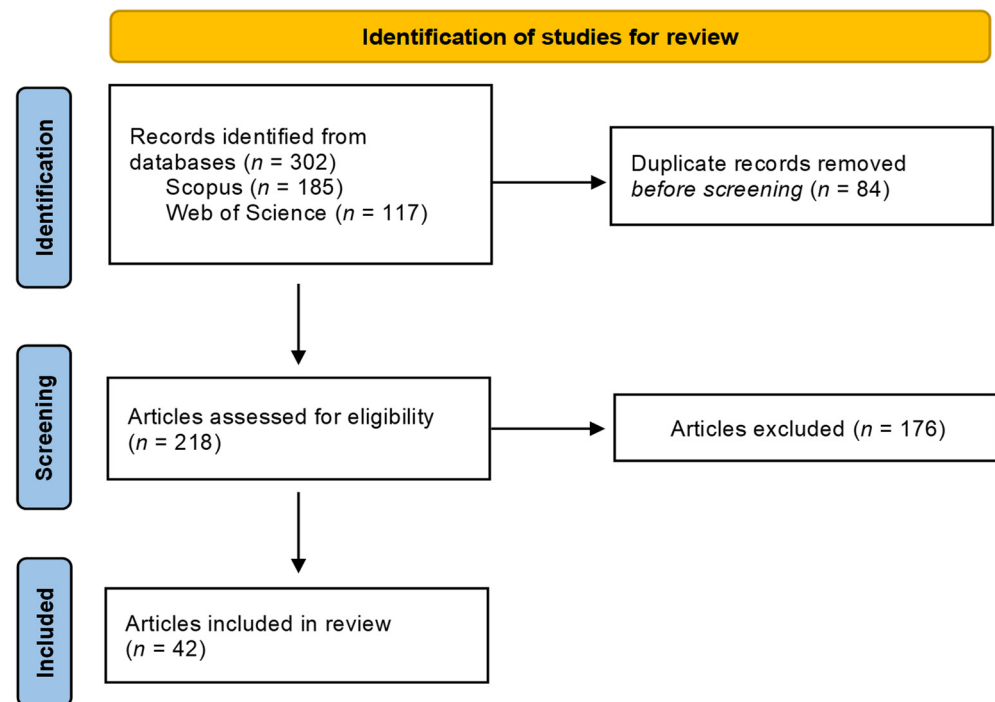


Figure 1. Adapted PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) flow diagram based on Page et al. [32].

To capture any articles related to transport and public housing with respect to Māori or Pacific peoples, we included Māori terms related to wellbeing, specifically 'hauora' (wellbeing) and 'oranga' (health, livelihood, welfare, wellbeing), but found nothing. We also replaced the wellbeing search terms, above, with "Māori OR indigenous OR Polynesian OR Pacific", but returned no additional articles.

Information about each article was charted using an adapted table developed by Chisholm and colleagues [33]. The articles found were coded in an Excel spreadsheet by year of publication, journal, journal subject area (from Scimago), study location, methods used, funding reported, themes related to tenant wellbeing and mode of transport relevant to findings. We summarised key points and findings of the articles. Specific questions considered when reviewing the articles were: did the study assess people's lived experiences of transport?; how did the findings relate to wellbeing or one of the identified key related concepts from the wellbeing frameworks?; were the people studied in public housing?; was the study quantitative (if so, was it cross-sectional or longitudinal, was there a control group?) or qualitative (interviews or focus groups)? Article coding and summarising was carried out by the first author (ER) and checked for accuracy and completeness by co-authors (RC and MK). In line with the PRISMA-ScR guidelines, quality appraisal of the articles was not carried out as the aim was to give a complete overview of the research in

this area [31]. Studies were, however, limited to peer-reviewed journal articles to ensure a certain level of rigour.

3. Results

The 42 articles found were published in a wide range of journals covering broad subject areas, including social sciences and medicine (55% and 52% of articles respectively), environmental science (26%), engineering (10%), nursing (10%), arts and humanities (7%) and psychology (7%).

The articles covered studies from 13 countries, with most based in the USA ($n = 15$) and Hong Kong ($n = 9$). Funding sources were reported in 31. Government and university funding supported 27 articles, 2 were funded by a charity or not-for-profit organisation, and 2 received no financial support. The articles predominantly employed quantitative methods ($n = 28$), with only 11 using qualitative methods and 3 choosing mixed methods. All but one covered accessibility as a key theme/outcome ($n = 41$), with health being the next most common ($n = 13$). Travel experiences were a focus of seven, and agency (i.e., engagement in transport decision-making or control over means of travel) was discussed in four. Public transport was the predominant mode of interest, covered in 23 articles (including all but 1 of the studies from Hong Kong). A substantial number of the articles did not focus on a specific mode of transport ($n = 16$), while 13 focussed on walking, 7 on car travel, and only 1 covered cycling. Seven articles had a specific focus on older adults, two focused on women, and two on children. One article focused on Māori perspectives of transport. The remainder ($n = 31$) did not focus on particular age groups, genders or ethnicities. Table 2 presents a summary of the reviewed articles by location, main wellbeing themes covered, and mode of transport considered. Appendix A Table A1 presents the articles covered in detail, with a summary of the key points of each related to transport and wellbeing of public housing tenants.

Table 2. Summary of articles by location, wellbeing theme covered, and mode of transport considered.

Area	Number of Articles	Wellbeing Themes			Transport Modes				
		Access	Health	Agency and Travel Experience	Car	PT ¹	Walking	Cycling	Non-Specific
Australasia	4 (Australia, 3; NZ, 1)	4	0	2	1	2	0	0	2
Hong Kong	9	9	5	2	0	8	6	0	0
North America	16 (Canada, 1; USA, 15)	15	5	1	4	6	3	0	8
South America	4 (Brazil, 1; Chile, 3)	4	0	1	1	2	0	0	2
UK & Europe	6 (Poland, 1; Portugal, 1; UK, 4)	6	3	3	1	5	4	1	1
Other	3 (India; Nigeria; South Africa)	3	0	0	0	0	0	0	3
Total articles	42	41	13	9	7	23	13	1	16

¹ PT = public transport.

4. Discussion

This review summarises findings from 42 articles on the influence of transport and public housing location on the wellbeing of public housing tenants. This section discusses how these findings relate to the main ways transport interacts with wellbeing as identified in the Introduction: access, health, and travel experience and agency. We also discuss the dearth of research on Māori and Pacific wellbeing and transport and what insights from

wider literature not included in this review might be usefully explored through further research in a public housing context.

4.1. Access

The predominance of studies on access shows that this is a vital issue for public housing tenants and should be a key consideration for public housing providers. Studies have shown that well-placed public housing with easy walking and (low cost and safe) public transport access to amenities improves wellbeing for public housing tenants through better employment, social connection and physical and mental health [34–40].

Studies carried out in car-dependent areas (particularly USA, UK and Australia) found that having access to a car was very important for tenant wellbeing, and correlated with higher and more reliable income and more social connections [35,41–43]. Conversely, tenants housed in inaccessible areas (e.g., suburbs without bus access), were forced to rely on cars, creating a substantial cost for low-income families [43]. Without reliable access to a car in these areas, often compounded by poor or limited public transport, tenants experienced reduced employment opportunities, missed healthcare appointments, and suffered poorer diets, social isolation and greater exposure to cold that was harmful to health [35,41,44–53]. These issues were of particular concern for older people [44,46,47,50].

In high-density areas, such as Hong Kong, tenants studied lived in less car-dependent urban environments with access to low-cost public transport and shops, community resources and other amenities within walking distance. People living in these areas had greater satisfaction with their neighbourhoods and greater social connection compared to people living in newer public housing developments that were less accessible [54,55].

What destinations are useful and important to access, and preferences around how to travel, are not homogeneous. One study in the UK found improvements in public transport access in a neighbourhood benefited private tenants and homeowners more than public housing tenants, possibly due to differing work and commute patterns or public transport affordability [56]. Another study in Chile found that social housing residents faced mobility barriers (predominantly financial) that other residents did not, meaning that despite having the same objectively measured accessibility, social housing residents found it harder to access the services they needed to. This was compounded for women in public housing who often have additional pressures or work, childcare and household management responsibilities [57]. Other studies have found that greater access to resources that residents had identified as important to them led to better community integration and satisfaction, emphasising the importance of public housing and transport planners understanding the needs of the communities involved [36,37,55,58–61].

A number of studies assessed the accessibility of existing public housing developments and found substantial inequities in access to employment, parks and other important services and facilities [62–67]. This was often due to a focus on housing supply and low land and development costs rather than the liveability of the development, emphasising the importance of considering the full needs of the tenants as well as integrating land use and transport policy and planning [63,64,67,68].

Few studies looked at access from the perspective of people living with disabilities in public housing. Occasionally disabilities were mentioned as barriers to access [42], but the lived experience of people with disabilities was not a focus of any of the articles.

4.2. Health

Articles that considered the interactions between transport and health-related outcomes for public housing tenants covered three main aspects. The first and most prominent is the impact on health of a lack of access to health-promoting destinations, particularly

healthy food supplies and healthcare. Reduced access to these services has been found to result in increased food insecurity, and poorer diets among public housing tenants and missed/fewer healthcare appointments [40,45,47,48,50,51,53]. Conversely, one study found that increasing access to healthy food supplies can improve the diets of children in public housing without access to a car compared to children with car access [69].

The second aspect is physical activity. Studies have found that public housing tenants living in areas with diverse land use mix and good public transport connections are more physically active and have lower rates of diseases associated with poor physical activity levels, such as osteoporosis and dementia [38,39,70]. However, the quality and safety of walking environments and the ability to choose other modes if necessary are important in determining whether the overall effects of walking on wellbeing are positive or negative (discussed further in the next section) [41]. Studies have also found that once density, land-use mix and public transport access are high, physical activity decreases, presumably due to people having all the resources they need very close to where they live [38,59,71]. This suggests that there is likely to be an urban form that optimally encourages physical activity via active travel, although optimality characteristics are likely to be context-dependent [38,59,71,72].

The third health aspect covered is the interaction of transport and location with mental health. This includes the mental health burden caused by a lack of access leading to social isolation, found to be associated with increased rates of suicide [73], as well as the stress of using a transport system not well suited to the life situation of public housing tenants. For example, stress can be experienced when travelling with children, having a disability, or making complex trips with multiple connections due to a lack of car access and low-quality public transport networks [41,42,53]. This emphasises the importance of carefully considering the physical accessibility, quality and safety of public transport, including minimising the time spent waiting at stops or stations and the time travelling on the service [42,53]. However, it is also worth noting that studies on the general population (rather than public housing tenants) have found that travelling by public transport can be beneficial for mental health by providing opportunities to connect with people and to use travel time productively; for example, to read, work or relax [74,75]. Another study analysing the longitudinal effects of neighbourhood improvements on mental health warns that built environment improvements alone are not enough to detectably improve mental health of public housing (or other) residents [76].

No identified studies looked at the relationship between public housing location and exposure to transport-related hazards, such as air pollution or road injury. Importantly, exposure to these hazards has been found to be associated with socioeconomic status in other research, so this might also be an important health issue for public housing tenants [77–79].

4.3. Travel Experience/Satisfaction and Agency

Studies on travel experience and agency have found that having good transport connections and a useable transport network helped public housing residents feel more connected to their neighbourhood and more at home where they lived [37,55]. Conversely, being constrained to walking due to a lack of car access or affordable, effective public transport (i.e., a lack of choice/agency) made people feel more depressed about their neighbourhoods and had a negative impact on family wellbeing. This was particularly a problem for women, who often have to travel with children [41,53,57], and was compounded by walking through run-down areas that felt unsafe [41]. Long and expensive commutes with a lack of mode choice options have also been found to reduce public housing residents' satisfaction with their residence and constrain their ability to reduce their carbon emis-

sions [36,50,54]. Studies also emphasised the importance of engaging with tenants and giving them agency over how they travel, in improving resident satisfaction [36,42,55].

4.4. *Māori Wellbeing and Transport*

Only one article examined Māori public housing tenants' perspectives on transport and wellbeing. This study found that the key contribution transport makes to the wellbeing of Māori public housing tenants is through the connections transport supports and the relationships it facilitates with the surrounding social and physical environments [80]. This is fully consistent with the Māori wellbeing model presented earlier in this article, which has whakawhanaungatanga, or creating and sustaining relationships, as being of central importance to wellbeing [23].

The main findings of Russell et al. are also supported by other research on transport and wellbeing for Māori that is not focused on public housing tenants, which can provide further lessons on transport and wellbeing for Māori more generally [28–30]. We know that Māori are systematically disadvantaged by the transport system in Aotearoa. Māori bear a substantially greater portion of the health burden caused by transport and have considerably higher rates of road injury than non-Māori [9,77]. Māori also face substantial and well-documented transport-related barriers to accessing healthcare [81–83], as well as facing specific challenges to access areas of cultural importance [28,29], and systematic discrimination when driving and using public transport [28]. Access to cars is important for the wellbeing of Māori, as the predominant urban form in Aotearoa promotes car-dependence and there are further barriers to alternative mode use specific to Māori, including the need for culturally relevant travel and the transportation of (often) large intergenerational families [28]. However, for Māori public housing tenants the necessity to use cars can come with significant costs, divert money from other uses and contribute to transport poverty [80]. Sharing transport can lower these costs and provide an important opportunity for whakawhanaungatanga and strengthening knowledge of tikanga and whakapapa (ancestry) [30]. However, due to barriers such as access to technology (such as apps to use a shared transport service) or having a driver's licence, Māori public housing tenants can be excluded from more formal transport sharing initiatives, further increasing transport inequities [80].

Transport barriers influence the ability of Māori to meet cultural obligations and carry out practices related to tikanga, whakawhanaungatanga, kaitiakitanga and cultural identity, and promote mauri ora [28,29]. As Russell et al. put it, “without explicit consideration of equity in transport interventions, those currently excluded face further exclusion from new transport interventions” [80] (p. 7). Therefore, it is vital for the wellbeing of Māori public housing tenants that Māori have meaningful input into the transport provisions of any public housing development. This is even more pertinent when considering the wider context of the long-term disadvantages Māori have had in relation to transport covered in the Introduction.

4.5. *Pacific Views on Transport and Wellbeing*

We did not find any articles covering transport and wellbeing regarding Pacific public housing tenants. As with Māori, Pacific people face a number of disadvantages from transport, including higher rates of road injury and lower access to transport. Shaw and Tiatia-Seath [84] provide a comprehensive account of the travel inequities experienced by Pacific people in Aotearoa. This includes potential unmet need for travel due to lower household income, a lack of access to bicycles and cars, and culturally unwelcoming public transport [84–86]. While this means Pacific people in Aotearoa have lower transport-related

carbon emissions than others, barriers to transport likely hinder Pacific people's ability to foster the interconnected relationships that are fundamental to their wellbeing.

There is some early evidence shedding light on transport–wellbeing links among households in public housing in earlier decades, specifically, a study of Porirua (in Aotearoa) in the 1970s [87]. That study found that among the issues Pacific household members disliked about their housing environment were lack of public transport, and lack of public and civic amenities and cultural features. On the other hand, there were several features of the environment that households liked, including access to beaches. However, as with Māori, the lack of research on the nexus between affordable housing and transportation means that little is known about the determinative effects of these links on the wellbeing of Pacific tenants, indicating the need for investment in such research.

4.6. Policy and Provider Implications

Important implications for public housing policy makers and providers can be drawn from the literature summarised in this scoping review. Firstly, for the benefit of their tenants' mental and physical health, life satisfaction, social connectedness and other aspects of wellbeing, public housing providers should carefully consider the accessibility and availability of transport options offered by both future and existing public housing developments. This should include considering how providers might support their tenants to use more sustainable modes like active and public transport, while still accessing desired destinations. Other than by selecting sites with pre-existing active and public transport connections, creating fit-for-purpose public housing developments will require the integration of land use and transport policy and planning to ensure these key facets of urban development work together to minimise car dependency and increase accessibility for those who need it most.

A vital part of deciding how to support tenants' transport needs is to understand the needs, experiences, barriers and travel patterns of the tenants that providers will be supporting. This particularly matters for indigenous and ethnic minority groups, as well as people living with disabilities, who make up a substantial proportion of people in public housing, are under-represented in research, and experience multiple compounding social and health inequities to which transport and accessibility of housing contribute. This might require providers and policy makers to use novel approaches to establish trust-based relationships with indigenous and ethnic minority groups to ensure these groups are reached and heard from.

4.7. Strengths, Limitations and Future Research

This scoping review is the first review to bring together the literature on transport's influence on the wellbeing of public housing tenants in a systematic manner, giving insights into important aspects of public housing and development, which reduces the risk that inequities are not inadvertently created or worsened. It is also the first article to consider these issues from Western, Indigenous and Pacific viewpoints on wellbeing. Applying three different wellbeing frameworks has allowed a broader, more holistic consideration of the literature and how accessibility and transport provisions affect the wellbeing and sustainability of public housing tenants. It has highlighted the level of agreement between these worldviews, particularly around the paramount importance of access to friends, whānau and support networks (both to receive and provide care). It has also illuminated areas of difference, particularly the need for Māori and Pacific people to have better choices of sustainable modes when undertaking longer trips that are culturally important. Considering the issues from different cultural perspectives has helped identify important

gaps in the literature that, if filled, could benefit a substantial portion of the public housing population who already experience significant health and social inequities.

The inclusion of a broad range of literature from diverse countries and disciplines, using qualitative and quantitative methods, and spanning a wide timeframe, has strengthened this review and provided valuable insights. As the issues of interest are around how transport and its associated impacts affect people's lives, insights from older studies still provide useful and relevant information as many of the contexts from which these studies arose are still applicable to today's housing and transport issues.

There are, however, limitations to this work. Firstly, the lack of research involving Māori and Pacific public housing tenants, and the very limited studies on public housing tenants and transport in general in Aotearoa, makes it difficult to provide specific recommendations for policy. To address this, we have included related research on the transport experiences of the wider Māori and Pacific populations. Nevertheless, public housing tenants face unique mobility barriers that other people do not [57], so this is an important area of future research. Related to this was the lack of studies focussed on the access and travel experiences of people living with disabilities in public housing. Having a disability is often one of the eligibility criteria for public housing. Given the large proportion of people in public housing who have a disability, better understanding of the wellbeing implications of transport needs and barriers for these public housing tenants living with disabilities will help providers and planners create more inclusive and supportive built environments.

Secondly, this study is limited to published journal articles and excludes grey literature, such as government or housing provider reports. This means that any perspectives or findings exclusive to the grey literature have been missed. We have attempted to compensate for this by keeping the search and inclusion criteria for journal articles as broad as possible (for example, no time limit on publication date), while still maintaining the focus on transport and wellbeing of public housing tenants and the quality assurance of the peer-reviewed publication process. This has resulted in the inclusion of research from a wide range of disciplines and many different countries, making the review more broadly relevant.

Thirdly, varying eligibility criteria for public housing across the countries included in this review may limit the applicability of specific findings to other jurisdictions. However, including a broad jurisdictional range is important to fully understand the issues faced by public housing tenants. We have also taken this limitation into account when discussing review findings, specifically the heterogeneity of transport needs and preferences across the public housing population. There was also a notable lack of research from mainland China and Southeast Asia, and few studies from Europe, Africa and South America. Further research in these areas is needed to ensure the recommendations apply to these geographical contexts.

Fourthly, the review was conducted by one author and checked for quality and completeness by co-authors. This has the potential to introduce bias as we could not assess inter-rater reliability. However, as we were not assessing article quality and had broad inclusion criteria to give an overview of the research themes and gaps, the influence of bias on the findings is likely minimal.

Several important areas for future research have also been highlighted in this article. The first that would benefit from substantial research investment is better understanding the needs, experiences, barriers, and preferences of indigenous and ethnic minority populations, both in Aotearoa and elsewhere. This review has emphasised the importance, and lack, of culturally inclusive research on transport and wellbeing, particularly for public housing tenants.

Secondly, future studies could explore the link between public housing location and exposure to transport-related hazards. Research on whether public housing tenants are exposed to greater health risk from air pollution and road injury due to the location of their housing compared to the general population might identify important contributors to health inequities for these tenants.

Finally, few of the studies included in this review employed a longitudinal study design to investigate changes in wellbeing from changes in transport infrastructure or housing location. More research investigating how changes in transport or housing infrastructure and policies change the wellbeing of tenants over time could provide valuable guidance to public housing developers and policy makers on how to improve the wellbeing of their tenants. This would also make a valuable contribution to filling the wider research gap on how providers can effectively support their tenants to use more sustainable modes of transport.

5. Conclusions

While this literature review has been limited to articles about public housing residents and influences on their wellbeing, many of these issues are not exclusive to public housing residents and are shared across all people with low income. Here, there is a vast literature base in fields such as transport inequities, transport poverty and social exclusion. From the literature covered in this article, we can see that creating public housing developments with high levels of access to employment, education, healthcare, healthy food, recreation facilities, and friends and family, with options of various modes of travel, is important for the wellbeing of public housing tenants.

However, we can also see that the characteristics of those tenants is important, both in terms of the eligibility criteria for placement in public housing, and the needs and preferences of the tenants. While it is increasingly important to ensure that all public housing tenants benefit from access to sustainable transport choices, access to cars or convenient, frequent, safe, accessible and affordable public transport is still critical to the wellbeing of most public housing tenants, particularly in car-dependent countries such as Aotearoa. Public housing providers need to undertake close engagement to ensure a detailed understanding of tenants' transport needs and constraints, including specific needs (such as access to cultural amenities) of Māori and Pacific tenants.

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Appendix A

Table A1. Reviewed articles.

Article	Country	Theme	Method	Mode	Key Points on Transport and Wellbeing of Public Housing Tenants
Gwyther (2011) [42]	Australia	Access	Qual	Car, PT	A study of the use of transport and communication technologies by Sydney social housing tenants to form and maintain communities. Constraints (e.g., cost, disability, time) on access to a car or public transport hinder tenants in connecting to others and building social networks. Face-to-face communication is vital to tenants.
Fossey et al. (2020) [37]	Australia	Access, travel experience	Qual	PT	A study of housing and neighbourhood experiences of people with mental health issues in Melbourne social housing. Accessibility of local amenities and public transport were particularly important for meeting needs of tenants and for connecting with people. Good access to public transport enhanced participants' connection to place and sense of being at home.
Freund et al. (2022) [44]	Australia	Access	Quant	Non-specific	A study of New South Wales public housing tenants' unmet needs that contribute to wellbeing. Unmet transport need for access to aged care facilities, assistance services, and appointments ranked around the middle of stated unmet needs of tenants; 13–22% of tenants stated they could use help with transportation.
Tomasiello et al. (2020) [67]	Brazil	Access	Quant	Non-specific	A scenario modelling exercise examined job accessibility inequalities under different transport, land use and social housing policies in São Paulo. Transport interventions alone were not enough to address job accessibility inequalities. Emphasises importance of integrating transport and land use policies and carefully considering location of social housing developments.
Sheppard et al. (2023) [61]	Canada	Access, older adults	Quant	Non-specific	An assessment of community support service provision at social housing complexes for older adults in Toronto. Although services were consistently provided at social housing buildings, service utilisation was low. Given significant levels of need within this population, it is likely there were barriers to access other than proximity. The authors recommended a coordinated approach by service providers to assess specific local needs for support services and adjust provision accordingly, plus ensuring tenants are made aware of services available and how to access them.
Martínez et al. (2018) [64]	Chile	Access	Quant	PT	A comparison of accessibility and public transport service provision to areas of social housing, versus other areas in Santiago. A lack of integration between social housing and transport policy has created inequalities in access/travel times and public transport provision, likely reinforcing the segregation of social housing tenants.
Tiznado-Aitken et al. (2022) [66]	Chile	Access	Quant	Non-specific	An analysis of combined housing and transport affordability across Santiago found that people in the lowest income deciles, living in social or subsidised housing, have very limited choice of location and are restricted to peripheral urban areas. This increased transport costs, social segregation and inequalities.
Vergara and Riquelme (2024) [57]	Chile	Access, travel experience, women	Mixed	PT, car	An assessment of objective accessibility (using an accessibility index) and experience of access (using interviews and 'mobile ethnographies') by people in social (low income) and financially supported (middle income) housing in Temuco, to understand impacts of neoliberal housing policies on urban access. While both social and financially supported housing have similar proximity to services, social housing and women face mobility barriers that restrict access. An unreliable public transport system restricts low-income people's access to services and contributes to loss of social connections. Having to manage work, childcare and household management reduced women's perceptions of accessibility, who also faced safety issues around mobility.

Table A1. Cont.

Article	Country	Theme	Method	Mode	Key Points on Transport and Wellbeing of Public Housing Tenants
Cho Yam Lau (2010) [54]	Hong Kong	Access, agency	Mixed	PT	A mixed-methods study using surveys and interviews of unemployed and low-income residents in a public housing “new town” development in Hong Kong. Residents complained of isolation, inaccessible employment, lack of affordable transport choices, high commute costs and long travel times due to the housing development’s location away from employment (despite the provision of rapid-transport (road and rail) infrastructure connecting the development to employment centres).
Wang and Cao (2017) [72]	Hong Kong	Access	Quant	PT, walking	An assessment of built environment variables associated with daily activities and travel choices for private and public housing residents. Built environment variables that influence activity and travel choices of private residents had little influence on choices of public housing residents. This contrasted with public housing policy requiring the co-location of public housing with shops, schools and public transport stops, meaning that transport need could be met generally by short walking trips.
Lu, Chen et al. (2018) [71]	Hong Kong	Access, health, physical activity	Quant	PT, walking	A study of built environment variables associated with physical activity in older adults living in dense social housing. Older adults living in social housing with more close (<1 km) bus stops, or those with a close subway station, walked more for transport. Those living in areas with more recreational facilities (e.g., parks, sports facilities) undertook more moderate/vigorous recreational physical activity. Those living in areas with greater land-use mix walked less and undertook less recreational physical activity, although the authors note that Hong Kong residents rely heavily on walking and public transport, suggesting a threshold effect of land-use mix on physical activity.
Lu, Gou et al. (2018) [59]	Hong Kong	Access, health, physical activity	Quant	PT, walking	A study comparing walking rates in new transit-oriented development (TOD) and pre-TOD urban neighbourhood public housing. Contrary to findings in more car-dominated urban areas (e.g., USA and Australia), people living in newly designed TOD neighbourhoods walked less than those living in older established urban neighbourhoods in Hong Kong. This emphasises the importance of considering local context and the needs and travel patterns of specific public housing tenants during housing design.
Chang et al. (2019) [62]	Hong Kong	Access	Qual	PT	A GIS study of inequities in accessibility of urban parks for private and public housing residents. Found inequities in access to parks for public housing residents due to disparities in accessibility and connectivity of public transport, rather than the distribution of parks. Demonstrates the importance of considering transport provision in public housing development.
Mesthrige and Cheung (2020) [55]	Hong Kong	Access, travel experience, agency, older adults	Quant	PT, walking	A study of factors influencing residential satisfaction and ageing in place for older residents of public housing. Convenient access to transportation, including walkways, matter for ageing in place. Engagement with tenants is important to understand needs around accessibility and infrastructure (e.g., handrails) to ensure tenants feel satisfied with accessibility and available transport options.
Jiang et al. (2021) [73]	Hong Kong	Access, health	Quant	PT	A study of built environment correlates with suicide in public housing tenants. Distance to nearest urban centre and subway stations was associated with increased rates of suicide after controlling for education, income, employment and other socioeconomic/demographic variables.

Table A1. Cont.

Article	Country	Theme	Method	Mode	Key Points on Transport and Wellbeing of Public Housing Tenants
Ho et al. (2022) [38]	Hong Kong	Access, health, older adults	Quant	Walking, PT	A study of environmental correlates with osteoporosis among older adults in public housing. Increased walking was associated with reduced osteoporosis. People living in areas with more public space and within walking distance of health facilities had lower rates of osteoporosis, after adjusting for sociodemographic variables. However, those living very close to public transport facilities had higher rates of osteoporosis; this could be because those with osteoporosis choose to live in these areas.
Ho et al. (2023) [39]	Hong Kong	Access, health, older adults	Quant	Walking	A study of environmental correlates with dementia among older adults in public housing. Areas with greater walkability and accessibility were associated with lower risk of dementia among older adults.
Okitasari et al. (2022) [60]	India	Access	Quant	Non-specific	The location of public housing and proximity to the city centre were the most important factors influencing the satisfaction of social housing tenants after relocating from slums in Mumbai. This was mainly due to tenants' ability to access work.
Ibem (2013) [63]	Nigeria	Access	Quant	Non-specific	A study of accessibility of public housing to basic services and facilities in an urban area of Ogun State. A lack of policy to ensure housing providers consider access to basic services and facilities (e.g., water and electricity supply, waste disposal, healthcare facilities, schools, etc.) when building public housing has led to too much focus on dwelling supply and not enough on residential quality. This resulted in negative impacts on tenant wellbeing and poor performance of housing schemes.
Russell et al. (2024) [80]	New Zealand	Access, travel experience, Māori	Qual	Non-specific	Kaupapa Māori research, in Ōtautahi/Christchurch, using semi-structured interviews to understand Māori social housing tenants' experiences of transport and the role of transport in their wellbeing. Alongside access to essential services, connecting with whānau, friends and culturally important places were vital for Māori social housing tenants. This access and connection are facilitated by a range of modes, usually determined by barriers to particular transport options, including cost, time constraints, accessibility of other modes, and access to technology (smartphones). Participants were interested in moving to more sustainable travel, although participants noted that a shared electric car scheme being trialled came with multiple barriers for tenants, including having a smartphone, linking to a bank account and having a driver's licence.
Radzimski (2023) [65]	Poland	Access, agency	Quant	PT, cycling	A comparison of accessibility by sustainable transport (public transport and cycling) for social housing versus market-rate housing in Poznan. Low-income social housing was situated in areas of lower sustainable accessibility than market-rate housing, constraining opportunities for low-income social housing tenants and restricting options to reduce transport-related emissions.
Abrantes et al. (2015) [34]	Portugal	Access	Qual	Non-specific	Case study of public housing estate renewal in Porto. Restructuring of road networks, removal of physical barriers and other urban design changes improved accessibility for residents and encouraged use of outdoor spaces.
Cheruiyot (2024) [68]	South Africa	Access	Quant	Non-specific	Cross-sectional survey of residents in a new public housing development in Guateng that assessed changes in quality of life and household income and expenditure before and after moving in. While quality of life improved, household transport spending also increased with greater distances for commutes and social activities. Financial wellbeing declined.

Table A1. Cont.

Article	Country	Theme	Method	Mode	Key Points on Transport and Wellbeing of Public Housing Tenants
Bostock (2001) [41]	UK	Access, travel experience, agency, women, children	Qual	Car, walking, PT	Interviews with low-income mothers in the Midlands (most of whom are in social housing) found that not only does carlessness restrict access to health, social care, food and other health-promoting destinations, but reliance on walking also has negative effects on family welfare. Walking had contradictory health and wellbeing benefits depending on the walking environment (e.g., deprived environments can feel dangerous and depressing) and whether there is a choice of modes. Concludes that with car-dependent cities, it is important to regenerate the environment around social housing and improve public transport options to reduce social exclusion of tenants.
Jones and Mays (2016) [46]	UK	Access, health, travel experience, older adults	Qual	PT, walking	Interviews with people vulnerable to cold weather, including older people in social housing in the Midlands and the North of England. Found a predominant reliance on public transport with complicated journeys including walking (multiple trip legs and trip chaining) due to scarce nearby facilities. Dependence on public transport and walking was an important source of exposure to cold weather.
Clary et al. (2020) [56]	UK	Access, health, physical activity	Qual	PT, walking	A longitudinal study of effects of changes in the built environment on physical activity in London found that residents of areas with improved walkability (particularly residential density and land use mix) increased their physical activity. Improving access to public transport was mainly beneficial to higher income people and resulted in decreased physical activity for social housing tenants, possibly due to different work patterns between social housing and market-rent tenants.
Ram et al. (2020) [76]	UK	Access, health	Quant	PT, walking	A longitudinal study examining the effects of changes in the built environment on mental health and subjective wellbeing in London. No overall effect on these outcomes was seen in people who moved into a neighbourhood with better access to public transport, better access to parks and better walkability. However, neighbourhood perceptions did improve. This suggests that built environment improvements alone may not be enough to significantly improve wellbeing. However, the authors noted that built environment characteristics were not fully covered and conclusions were at risk of bias (due to poor follow-up).
Dennis Lord and Rent (1987) [58]	USA	Access	Quant	PT, walking	Charlotte, North Carolina. A study of satisfaction among public housing tenants at eight public housing sites across Charlotte. The housing sites with the lowest satisfaction scores had the worst public transport frequency and no shops within walking distance.
Malmgren et al. (1996) [47]	USA	Access, older adults	Quant	Non-specific	Seattle, Washington. An assessment of access to healthcare by older adults (over 62) in social housing in Seattle. Almost half the respondents had unmet need for access to healthcare, with the main reasons being cost of healthcare and problems with transport, demonstrating the importance of locating public housing in areas with nearby healthcare facilities and affordable transport options.
Rosenbaum and Harris (2001) [52]	USA	Access	Quant	PT	Chicago, Illinois. A study of the early changes in wellbeing of tenants moving from public housing high deprivation neighbourhoods to subsidised rental or public housing in lower deprivation neighbourhoods (part of the Moving To Opportunities programme). Those who moved to wealthier neighbourhoods (usually suburban) reported safety gains and better access to local authority-provided facilities, such as parks and playgrounds, but worse access to public transport, shops or healthcare facilities (compared to control group who moved to any neighbourhood).

Table A1. Cont.

Article	Country	Theme	Method	Mode	Key Points on Transport and Wellbeing of Public Housing Tenants
Heinrich et al. (2007) [70]	USA	Health	Quant	Walking	Kansas City, Missouri. A study of built environment correlates with physical activity for public housing tenants. Tenants in areas with greater street connectivity walked more and those in areas with better access to sports and recreation facilities had higher levels of physical activity.
Rosenblatt and Deluca (2012) [43]	USA	Access	Mixed	Car, PT	Baltimore, Maryland. A study of why many Moving To Opportunity (MTO) participants moved back to high poverty neighbourhoods in subsequent moves. One influencing factor was that most MTO families did not have access to a car and found the public transport they relied on was inaccessible in wealthier neighbourhoods. MTO families that did move to low-poverty neighbourhoods usually chose neighbourhoods with good bus access.
Chan et al. (2014) [36]	USA	Access	Qual	Non-specific	Boston, Massachusetts. A GIS and survey study of access to community facilities and community integration among social housing tenants. Greater local access reduced longer-distance travel and increased community integration. This was particularly notable for community features identified as important by respondents, demonstrating the importance of understanding the needs of people involved.
Blumenberg et al. (2015) [35]	USA	Access	Quant	Car, PT	Compared employment and earnings of recipients of subsidised housing vouchers across USA by their access to cars versus access to public transport. Access to cars was associated with better and more stable employment and higher earnings than public transport access. However, public transport was likely important for lower-income households living in denser urban areas. Low-income families use cars less than other groups; their evident need for greater access to economic opportunities may be best served by increased access to cars despite the “conflict with ...sustainability”.
Scammell et al. (2015) [53]	USA	Access, health, travel experience	Qual	Car, PT, walking	Boston, Massachusetts. A study of barriers and opportunities for healthy eating and physical activity among public housing residents. One common barrier to eating healthy food was the long travel time to access food shops, compounded by having to travel with young children. Access to affordable supermarkets often required using multiple modes of transport (walking, PT, taxis) due to the location of public housing and a lack of car access. Participants who owned a car did not nominate transportation as a barrier to healthy food (although did cite fuel costs). Relying on buses involved many barriers, including scheduling, unreliability and difficulty carrying shopping on buses. Walking was the primary form of physical activity, mostly out of necessity. A lack of nearby parks was a barrier to exercise, particularly for children.
Nguyen et al. (2016) [49]	USA	Access	Quant	Non-specific	Charlotte, North Carolina. A study on neighbourhood choice, employment access and location affordability, part of the wider HOPE VI comparison of outcomes for people receiving subsidised private rental vouchers with those in public housing. People receiving vouchers moved to less-deprived neighbourhoods (a requirement of the voucher programme) but had worse employment access and worse affordability than those living in public housing (more centrally located).
Haley et al. (2017) [45]	USA	Access	Quant	Non-specific	Atlanta, Georgia. A study of access to transport and unmet need for medical care among social housing tenants. More frequent barriers to access transport are associated with greater unmet need for medical care. Moving to neighbourhoods with better transport access significantly reduced unmet need for medical care.

Table A1. Cont.

Article	Country	Theme	Method	Mode	Key Points on Transport and Wellbeing of Public Housing Tenants
Petroka et al. (2017) [50]	USA	Access, health, older adults	Qual	Non-specific	Philadelphia, Pennsylvania. Difficulties accessing healthy food due to lack of transport and distance to shops selling healthy food, as well as easy access to unhealthy food were common reasons given for not changing unhealthy diets by older adults in subsidised rental housing.
Martinez et al. (2019) [48]	USA	Access, health	Quant	Car	Baltimore, Maryland. A study of food insecurity, diet and exercise among public housing tenants. Access to a car was associated with reduced food insecurity. No associations between car access and diet or exercise were found.
Pomeroy et al. (2021) [51]	USA	Access	Quant	Non-specific	Virginia. A study exploring ‘public housing’ tenant perspectives (in both public housing and subsidised market-rentals) on access to healthcare. A lack of transportation was the third most significant barrier to accessing healthcare (22.5% of voucher recipients and 25.7% of public housing tenants stated this was a problem). Transport was also the third-most-cited missing neighbourhood resource by both groups.
Wong et al. (2022) [40]	USA	Access	Quant	PT	Los Angeles, California. An assessment of healthcare utilisation by social housing tenants (specifically formerly homeless veterans). Those who lived in neighbourhoods with high public transport use had higher healthcare utilisation rates.
Miller et al. (2024) [69]	USA	Access, health, children	Quant	Non-specific	Los Angeles, California. Before–after study of the effects of opening a supermarket on diet of children living in social housing. Proximity to the supermarket correlated with a relative improvement in diet for children with no access to a vehicle compared to children with vehicle access. Overall, proximity to the new supermarket was not significantly associated with changes in diet.

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