






## Article

# Elderly Walking Access to Street Markets in Chile: An Asset for Food Security in an Unequal Country

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**Abstract:** Street markets can contribute to food security, since they are a source of fresh food and comparably inexpensive goods, being very relevant for low-income groups. Their relevance is even higher when considering older people, due to their often-constrained financial resources and possibilities to move. To assess the potential contribution of street markets to food security, this paper aims at evaluating to what extent older people have access to such a relevant asset. We consider the case of Chile, an ageing country with an unequal pension system, which makes it relevant for older people to access healthy and inexpensive food. We analyze what proportion of older people (i.e., people over 65) has walking access within 10 min to a street market—*feria libre*—in each Chilean region, with particular detail in the country's four major urban areas. We compare the resulting accessibility maps with census data to identify neighborhoods with higher proportions of older people and examine their socio-economic conditions. Our findings show that while street markets are less accessible to older people in comparison to the general population, the inhabitants who can access them belong mainly to low-income groups. The results provide relevant insights to develop neighborhood-based policies for spreading and strengthening street markets, especially in low-income areas with insufficient levels of access to other relevant urban opportunities.

**Keywords:** street markets; accessibility; walking; older people; food security



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## 1. Introduction

Street markets or open markets are contributors to the material and immaterial well-being of inhabitants in cities. While some academic literature dismissed street markets as an anachronistic form of commerce (see for example [1]), different streams of research recognize the relevance that markets can have for individuals and the settings in which they live. Street markets are primarily places where economic and healthy food are available [2], helping to contrast and even reverse a place's condition as a 'food desert' [3–5]. These markets are also part of the local food supply chain that is most likely better able to meet customers' needs and be more sustainable, at least in parts [6–8]. Moreover, street markets can also be the visible expression of local culture in the public space, involving a collective immaterial dimension that reflects itself in specific forms, rituals, and trade [9]. The manifold relevance that street markets may have for individuals and communities generates several material and immaterial benefits, that can also be quantified in economic terms [10], from vendors' additional income to shoppers' consumer surplus, and from incubated businesses to cultural continuity.

Since street markets contribute to individual and neighborhood well-being, easy access—mainly through walking—becomes a very relevant factor to its level of utility and can contribute to a decrease in social inequities [11]. The possibility to reach street markets by walking implies a walkable distance, for example, of a maximum of 10 or 15 min. Short distances reduce the temporal and monetary costs of the trips and facilitate access to opportunities, enhancing individuals' quality of life and preventing them from being socially excluded [12,13], as well as in relation to basic needs, such as getting food or participating in the interactions implied in street markets' trade. As an active transport mode, walking generates physical and mental health benefits, contrasting the various adverse effects of sedentarism [14,15]. Moreover, travel-related environmental and financial negative externalities are lower compared to using other modes of transport, making walking access to street markets a suitable tool for enhancing urban resilience [16]. Walking access to street markets is even more relevant for impaired mobility groups due to physical, economic, or cognitive barriers. Many of these limitations can be found when considering older people, an especially relevant group in societies that are undergoing massive processes of ageing, where diabetes, cardiovascular diseases, or diseases related to diet are increasing [11,17–24].

Walking to street markets is thus a practice with a positive impact on individuals' health and well-being. While walking itself has beneficial effects, it can also contribute to food security, providing easy access to a place where cheap and healthy food is available [4,25,26]. Drawing on these elements, this paper assesses walking access to street markets, considering their key role as a contributor to an urban population's urban well-being and especially to one of its fragile groups, such as older people. Our research has a geographical focus on Chile, a country where the population is rapidly ageing and elderly issues are gaining more attention, as well as in relation to urban mobility and the issues of urban justice that it raises [27–31]; despite this, public policies for ageing are only starting to be implemented [32]. Moreover, like many other Latin America countries, this is an ageing country with an unequal pension system, which makes it relevant for older people to access healthy and inexpensive food. At the same time, access to food and food security are increasingly examined in Chile, being fundamental for equitable and healthy urban settings [33–35]. In synthesis, Chile is facing several urban challenges related to ageing that anticipate the issues that other rapidly ageing Latin American countries will soon deal with.

We will focus on measuring walking access to street markets (*ferias libres*) in each Chilean region, and in the four major cities of the country: Santiago, the capital city, with about 6 million inhabitants; Concepción, a metropolitan area with about 1 million inhabitants; the Valparaíso metropolitan area, with 1 million inhabitants as well; and Coquimbo–La Serena conurbation, with about 500,000 inhabitants. In Chile, 90% of the population lives in urban areas, and 48% of the national population lives in the four examined cities. While the material and immaterial benefits related to street markets have been highlighted in the context of Chile [36], the geographical availability of such a contributor to well-being has not yet been explored. In fact, in Chile and Latin America, research on accessibility has mainly privileged compulsory activities such as work and education [37]. The paper contributes thus to assess the spatial availability of a crucial asset for food security, which is central for Chile and other Latin American countries, but has not been explored much from a socio-spatial perspective. Moreover, we focus on older people, considering that Chile and Latin America are rapidly ageing [32,38], but nonetheless—like in other Global South settings—this demographic group has received limited attention from academic research. For the purpose of this work, we assume age 65 as an old age threshold, following an established literature that uses this age, especially in ageing countries [39]; moreover, we assume a walking distance threshold of 10 min to a street market, using the existing road network.

The paper starts by outlining street markets as contributors to food security, also discussing their specific relevance in Chile (Section 2). We introduce the methodology for assessing the potential walking access to *ferias libres* in the Chilean regions and the

four metropolitan areas (Section 3) and present the results with a focus on older people (Section 4). The relevance of walking access to street markets is finally discussed in relation to health and social inclusion, also considering what significant policy suggestions emerge from our analysis.

## 2. Ferias Libres and Food Security in an Unequal Country

Walking access to street markets provides a multitude of contributions to people's well-being, an aspect that suggests the relevance of the topic as an object of academic research, but also for urban, transport, and health policy approaches. In particular, in this paper, we focus on the contribution that accessing a street market by foot may provide to food security. Food security can be defined as "access by all people at all times to enough food for an active, healthy life" [28]. The concept also refers to the possibility to physically access food and has been investigated in relation with older people as a significant issue for their well-being [40–42].

As conveyed by the accessibility to food retail, the spatial dimension of food security has been the object of several works devoted to the forms that poverty and food security acquire in different settings. The most relevant example in this sense is probably the famous metaphor of 'food desert', which defines those places with scarce access to fresh, affordable, and healthy food (although at risk of overemphasizing the sole spatial dimension of access; see [43]). Drawing on the hypothesis that disadvantaged communities will have lower levels of access and that this will affect their quality of life, the spatial access to retail and its impact on purchasing practices have been examined to observe underlying socio-spatial patterns of poverty and inequality [44,45]. Several features contribute to defining potentially disadvantaged areas, in both urban and rural settings: income, ethnic or racial composition, and demographic features have been used to detect potential socially excluded areas and observe how they cope with the scarce access to food [46,47]; nonetheless, these features do not necessarily predict lower levels of access to food [48]. Additionally, different forms of food retail provide different contributions to accessibility. For example, introducing a new farmers market or supermarket may reduce the spatial access to food, but may also generate different effects on the prices [4,49]. Moreover, their impact will also change according to individuals' consumption strategies: for example, a supermarket may not be a suitable option for low-income groups [50]. Therefore, the spatial availability of food retail is necessary but not sufficient to grant food security.

Accordingly, the contribution that street markets provide to food security is primarily related to the goods they make available, and in particular, such (fresh) food as fruits and vegetables. Street markets provide easy access to cheap food, both from a spatial and an economic point of view. On the one hand, markets are local trading places that take place in squares, streets (see Figure 1), or in dedicated places, which are locations more easily reachable in comparison to large retail facilities, such as shopping malls and bigger supermarkets, often located at peripheral locations that are accessible mainly through private transport [51]. However, the usually limited opening hours of street markets, active for some hours every week, reduce their temporal availability [52]. On the other hand, street markets can increase the availability of cheap but healthy food, as their presence can actively contribute to decreased food prices, especially compared to supermarkets [2]. The forms of commercial transactions in street markets also provide the opportunity for closer interactions between the client and the vendor, permitting eventual bargain prices, and providing a further possibility for saving money [53]. As Vachani and Smith [54] argue, street markets make it easier for the 'bottom of the pyramid' to access food, groceries, clothing, and other goods required for satisfying one's basic needs.



**Figure 1.** A feria libre, i.e., bi-weekly street market, in the borough of Ñuñoa, Santiago de Chile, at 9 a.m. Street markets provide mainly fresh produce and fresh fish, essential household items (e.g., toilet paper and dish soap) and prepared food such as snacks and lunch. Neighbours also use the feria as a flea market to resell used clothing. Source: the authors.

The contribution of street markets to food security appears to be especially relevant in Chile, a country characterized by substantial socio-economic inequalities in cities [55], and affected by high rates of obesity [56], in which older people are one of the groups that suffer most from the structural socio-economic imbalances of Chilean society [57]. In Chile, ferias libres are part of the traditional ‘commercialization channel’ of food, being crucial for granting social access to food [58,59]. Ferias are crucial for both the local food supply within most neighborhoods and the commercialization of farming production [60]. The central role of ferias for the food trade emerges also from the preferences of Chilean consumers [36] as they provide low prices, variety, and quality products, but also because of their fairly easy spatial access. According to a market survey, 51% of Chileans attend street markets, with a higher incidence in the lower socio-economic groups [61]. Especially middle- and low-income clients buy almost exclusively in street markets [62], while only affluent consumers may prefer supermarkets, despite being more expensive [63,64]; as a result, the spatial distribution of ferias libres and supermarkets is often complementary [35]. Instead, convenience store and local formal stores are not very relevant in relation to the provision of food [65] or may even contribute to unhealthy food environments [66]. The possibility to access cheap food is especially relevant for Chilean older people, whose main goal when buying food is to keep their expenditures as low as possible [67] as a consequence of their harsh socio-economic condition, configuring a different scenario from that of people of the same age in other countries.

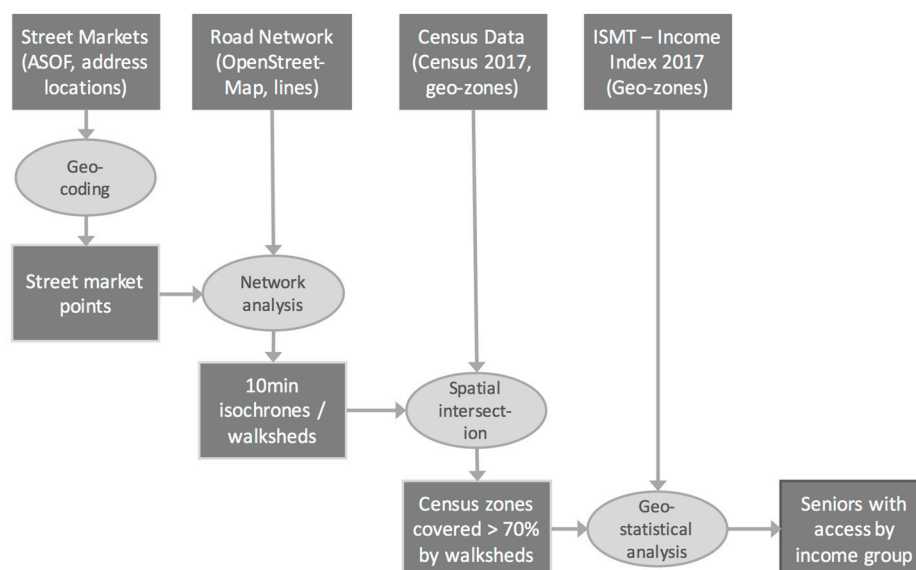
The role of ferias libres for providing a diversity of food becomes even more relevant for Chilean older people, considering their constrained mobility and the generally meager pensions they earn. Endogenous and exogenous factors tend to affect the travel-related abilities of older people [22], limiting their possibility to move freely and, therefore, limiting access to opportunities that they value. Additionally, limited mobility is one factor that makes older people prone to nutritional deficiencies [68]. Since older people may be more or less able and willing to move on their own [69], the possibility to access opportunities at the neighborhood scale is critical for determining an age-friendly neighborhood [70]. Limitations in mobility emerging from ageing, are augmented in low-income subjects, a condition that in Chile affects older people considerably, with an elderly poverty rate of 16 per cent [71]. The local pension system in fact “does not provide the means of subsistence required for the old age. Around half of the retirees nowadays receive a pension lower than a minimum value” [57] (p. 26). Such critical economic conditions worsen the older people’s



already limited possibility of accessing relevant opportunities, affecting their possibility of reaching essential goods such as food, placing them at the risk of food insecurity [72]. These elements make a case for evaluating and securing older people's access to ferias libres, as easily accessible places where economic and healthy food is available.

### 3. Data and Methods

To evaluate the potential spatial access of older people to street markets, we developed a location-based accessibility measure. We based our analysis on a dataset provided by ASOF—the Chilean confederation of street market vendors [56]—and the last Chilean census data [73]. We focused only on spatial access, since temporal access is a relatively minor issue for older people, as their daily and weekly schedules can be assumed to be reasonably flexible. We considered each feria's location as a point, considering that official information is provided in this format and that street markets tend to have one main official point of access. For each point, we calculated a ten-minutes walk isochrone for each feria, assuming a walking speed of 2.5 km/h for an older person, as in other Latin America-based studies, which consider also the generally bad quality of sidewalks [24,74] (Figure 2). These so-called “walksheds” were generated using the free software OpenTripPlanner, which evaluates the OpenStreetMap road dataset, the only detailed road and paths dataset currently available at the country scale. We used a street network validated with fieldwork by local professionals, considering that, in many cases, information is missing and imprecise (see, for example, [75], a recent work on the quality of the cycling infrastructure in Santiago de Chile). The street network has been used for the development of a set of indicators similar to the one here presented [56]. The software/algorithm does not account for the existence of sidewalks, since sidewalk data are not available; however, roads are marked as enabled or disabled for pedestrians. We note that for ferias held in street space, nearby roads often have access restrictions for motorized transport modes, so walking may be considered relatively safe within one to two blocks from the street markets.



**Figure 2.** Process to evaluate spatial accessibility of older people to street markets. Source: the authors.

The walkshed polygons were then intersected with the census data to select only those census blocks covered at least 70% by a feria walkshed. Using the selected census blocks, we counted and summed up the elderly population, i.e., people over 65, living in a region or metropolitan area of Chile. This threshold is defined considering the features of Latin American metropolises and has been already used in other similar analyses (see, for example, [27]). With this information, we analyze the elderly that are covered by street markets in each socio-economic group. The socio-economic information used in

our analysis comes from the Índice Socio Material Territorial-ISMT [76], which groups the population broadly into five major income groups, i.e., from group A, being the highest income level, to groups D and E, representing income groups below the poverty line. The ISMT follows the usual Chilean classification of socioeconomic group according to their purchasing power [77]. Moreover, as no income data is available from the Chilean tax office, the ISMT estimates the socio-economic group as an income proxy, based on the social and educational characteristics of household members and the material quality and maintenance state of the dwelling where the household resides; nonetheless, in the case of older people, the poorest group includes the recipients of basic pensions (approximately \$153 USD) [27]. The ISMT group estimates are available at a census block level. Figure 2 summarizes the process to obtain street market coverage for older people previously described.

#### *Limitation of the Methods*

The proposed analysis must deal with the limited availability of the data that are required to examine several dimensions of walking access to street markets. Despite having at disposal a higher share of information in comparison to other Latin American countries, the available information tends to refer to the main Chilean cities and to Santiago in particular: for example, street types and terrain data are not available for all cities; the level of detail is often not sufficient, as in the case of Digital Elevation Models; and data referred to important features such as the quality of sidewalks is available, but only in some cities and only in an aggregate way [78]. Moreover, it would be better to represent street markets as lines and not only as points, in order to consider also other possible access points. Nonetheless, their linear extension is variable, depending on informal vendors, or variations in the number of official vendors.

## **4. Results**

### *4.1. Potential Access by Older People at the National Scale*

According to our analysis, only a relatively small percentage of the elderly population nationwide has walking access to street markets. At the national scale, approximately 13.1% of the older people—or about 205,000 of them—can reach a street market within a 10-min walk. However, potential accessibility levels are quite different among different administrative regions (Table 1). In the two most extreme regions of the country, there are no records of *ferias libres* within the ASOF database: the two regions are Arica y Parinacota, a zone in the north with a desert climate, and Magallanes y Antártica in the south, a sparsely populated area with a cold climate. A total of 152 of the 315 Chilean municipalities do not have a formal street market registered with ASOF. However, there is a certain chance that a few informal street markets may exist for some smaller municipalities, especially in rural regions or in indigenous communities. Some municipalities have permanent markets, which our database does not account for, since street markets are considered temporary and indeed on a street or plaza. For the other 14 regions, we observe that different older people's shares have walking access to street markets. These shares do not seem to be correlated with the proportion of the regional population living in urban areas: while the Santiago Metropolitan region shows the highest levels of accessibility with 21% of the older people having access, the other three regions hosting a metropolitan area (Biobío, Coquimbo, and Valparaíso) show a much lower level of accessibility, respectively, with only 6.9%, 10.7% and 7.5% of older people having walking access.

**Table 1.** Elderly population with access to street markets in Chilean regions.

Region	Number of Street Markets	Older People with Access	Older People without Access	% of Older People with Access
Arica y Parinacota	0	0	21,111	0%
Tarapacá	8	2500	18,817	11.7%
Antofagasta	24	4664	34,354	12.0%
Atacama	14	2646	18,370	12.6%
Coquimbo	34	6387	53,036	10.7%
Valparaíso	90	15,202	188,757	7.5%
Metropolitana de Santiago	501	145,760	559,048	20.7%
O'Higgins	103	9732	59,594	14.0%
Maule	28	2038	74,436	2.7%
Ñuble	18	1566	35,430	4.2%
Biobío	52	9895	132,538	6.9%
Araucanía	23	2105	64,787	3.1%
Los Ríos	18	2307	26,631	8.0%
Los Lagos	11	534	51,853	1.0%
Aysén	2	105	5203	2.0%
Magallanes	0	0	15,702	0%

#### 4.2. Potential Walking Access by Older People for Chile's Main Cities

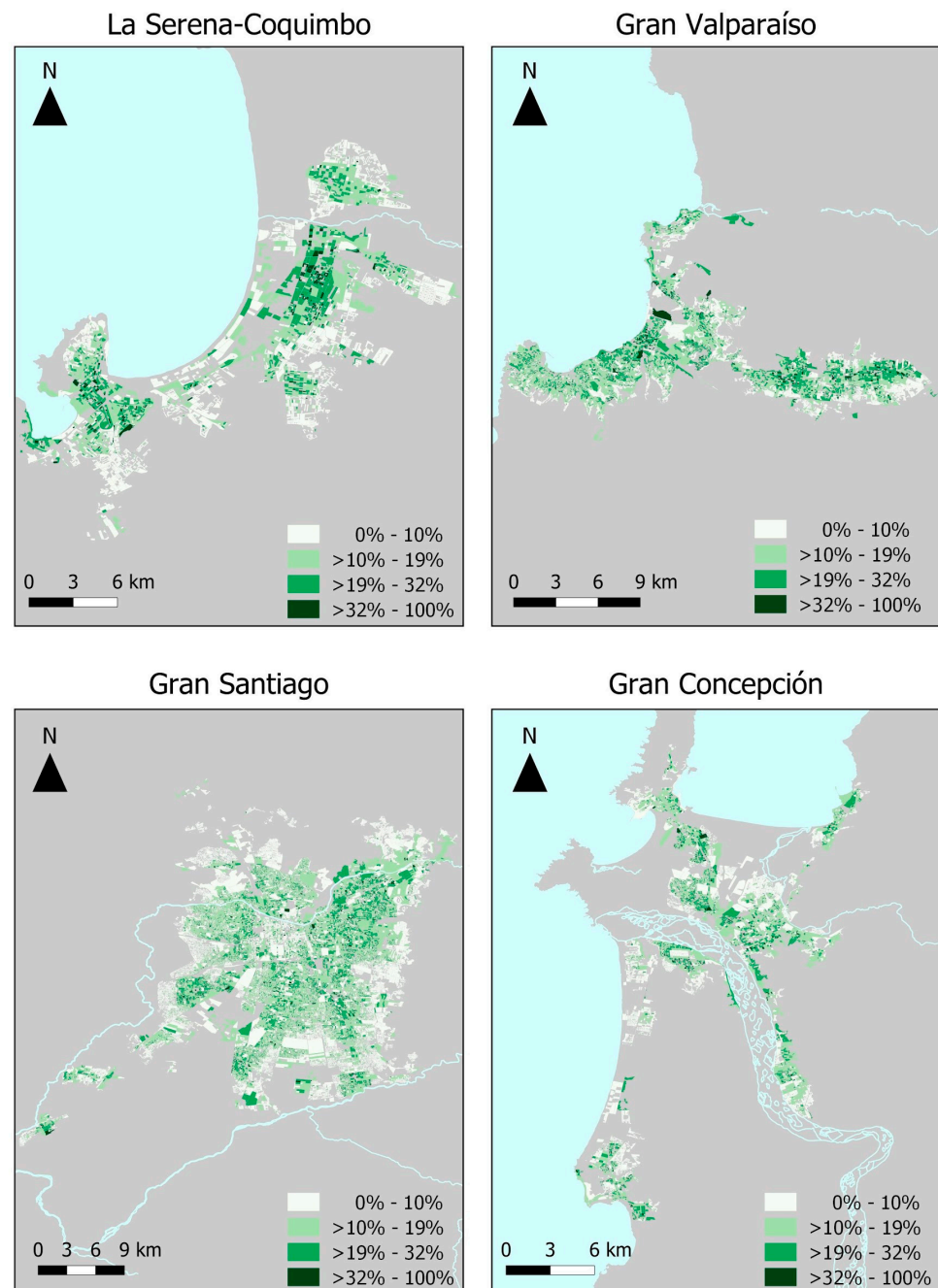
In this part, we focus our analysis on Chile's four major metropolitan areas: Santiago, Concepción, Valparaíso, and Coquimbo–La Serena (see Table 2, and Figures 3 and 4; data for each municipality of the four metropolitan areas is available in Appendix A, Table A1).

**Table 2.** Share of the elderly population and their access to street markets for the four major conurbations in Chile.

Metropolitan Area	Older People in the Metropolitan Area	% Older People in Each Socio-Economic Group *				% Older People with Access to Street Markets, per Socio-Economic Group			
		ABC1	C2	C3	D	ABC1	C2	C3	D
Santiago	664,354	6.6%	20.5%	19.5%	53.5%	0%	1.4%	3.6%	16.9%
Concepción	87,320	6.9%	21.7%	27.4%	44.0%	0%	1.0%	1.3%	5.7%
Valparaíso	118,259	9.7%	14.8%	47.5%	28.0%	0.3%	1.2%	3.6%	1.4%
Coquimbo-La Serena	38,542	7.7%	19.1%	38.5%	34.8%	0%	0%	4.6%	5.7%

\* Data for socio-economic group E are omitted as the ISMT assigns only very few people to this group, basically homeless. Groups A, B, and subgroup C1 are usually pooled into one high-income group “ABC1” for statistics given the low number of people in these groups.

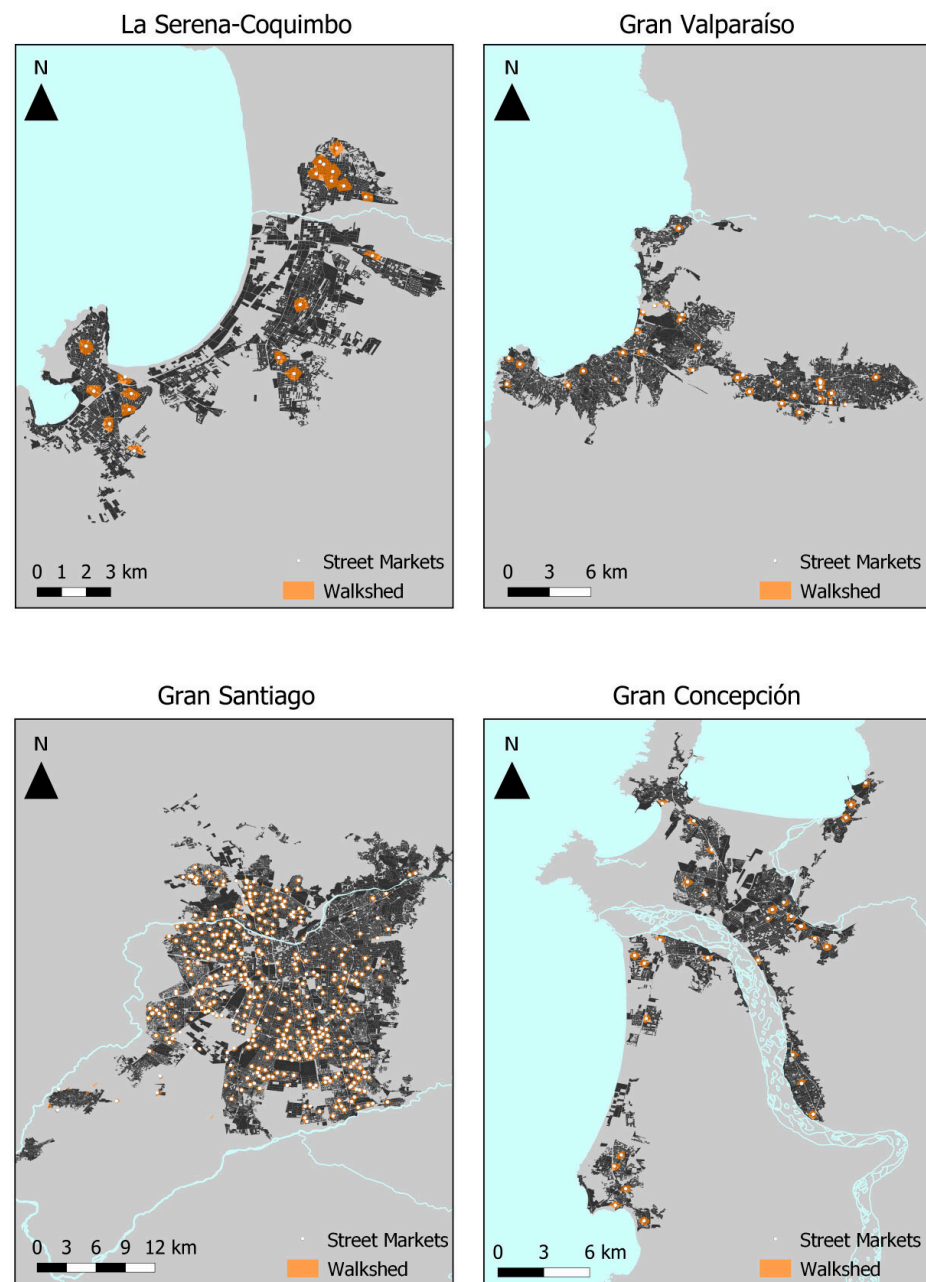
As the national capital, Santiago emerges as the metropolitan area where older people have the best access to street markets within 10 min. The distribution of older people in Santiago shows an interesting concentration in pericentral areas, outside the city centre, but not in a peripheral position. About 21.9% of the older people living in the Greater Santiago Area—the city's consolidated urban area—have walking access to a feria libre, a percentage that is much lower than that of the overall population with walking access—53.4% [79]. The areas with low access are mainly located in the most affluent boroughs of the city, on the eastern border of the Gran Santiago (at the feet of the Andes mountains), and in very peripheral locations. Considering the spatial distribution of street markets in the city, as well as the predominance of low-income older people, remarkably the most disadvantaged group is also the one with the best access to street markets, since approximately one-third (31.7%) of them have walking access to a feria libre. A significant area with no walking access is located in the city's historic centre, mainly a middle-class area (see Figure 5). We assume that no street markets can be found in this part of the city due to historical reasons and its concentration of governmental buildings; the area is also served by La Vega, a major permanent market in the city.



**Figure 3.** Concentration of older people in the four major metropolitan areas in Chile. Source: own elaboration.

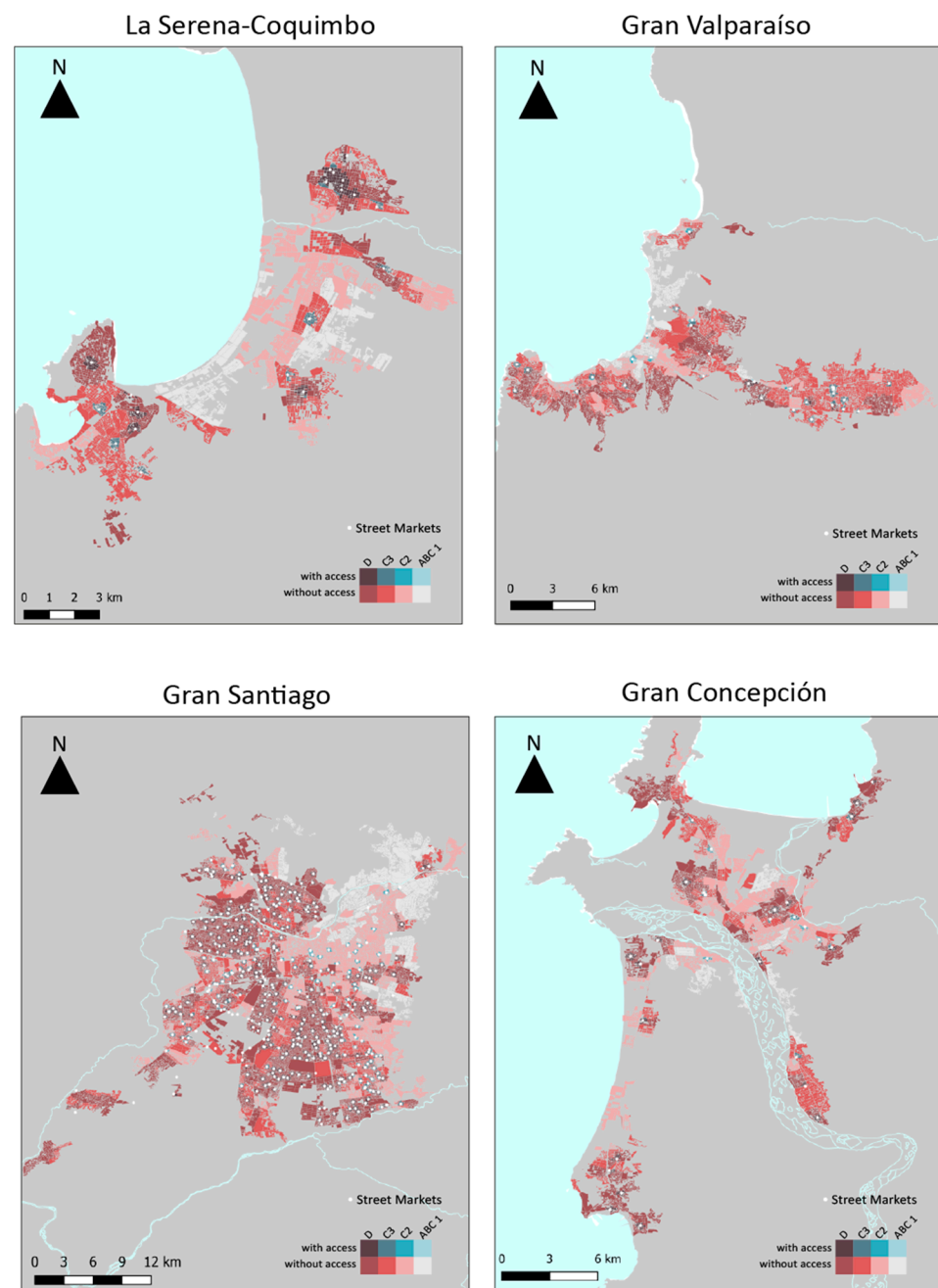
The Greater Valparaíso area, a port and coastal conurbation, shows lower levels of accessibility to street markets than those seen in Santiago. Only 6.6% of the elderly population can reach a feria libre within a 10-min walk in the area, while 17% of the overall population can walk to a street market [79]. Accessibility for this metropolitan area is unevenly distributed. In the municipality of Quilpué (150,000 inhabitants), the share of older people with access to ferias is higher than in the two main cities of the zone with a 13.2%, whereas most central municipalities with about 300,000 inhabitants, such as Valparaíso and Viña del Mar, have a 6.1% and 5.4% share, respectively. Unlike the other major Chilean urban areas, the access in the Great Valparaíso is concentrated in middle-income areas, with some significant presence of low-income groups in the hilly areas (Figure 5).





**Figure 4.** Street markets and their 10-min walksheds for the four major conurbations in Chile. Source: own elaboration.

In the Greater Concepción area, an overall 8% of older people can walk to a street market, compared to the 18.9% of the overall population [79]. Here, accessibility is unevenly distributed over the different municipalities as well. The local capital, Concepción (220,000 inhabitants), with most activities related to the university district and therefore a relatively younger population, shows a percentage similar to the Concepción metropolitan average (7.2%). In contrast, some outer municipalities have higher accessibility levels. For example, in Penco (a coastal municipality with 50,000 inhabitants), 17.2% of the local older people have walking access to a street market. Outside the city of Concepción, most older people belong to the lowest socio-economic group, but at the same time, they have the highest accessibility levels. For example, in residential municipalities such as Penco, San Pedro de la Paz, and Chiguayante, approximately one-fifth of low-income older people have a feria libre within 10-min distance.



**Figure 5.** Areas with and without walking access to street markets, and their socioeconomic conditions, for the four major conurbations in Chile. Source: own elaboration.

In the Coquimbo–La Serena metropolitan area, 13.3% of older people have walking access to street markets; instead, 26.6% of the overall population has access to a feria libre [79]. In La Serena, a colonial city, the area with the highest walking access to street markets is Las Compañías neighborhood, a low-income area where social housing prevails. Instead, in Coquimbo, which hosts the regional port, the historical centre shows good accessibility to markets. Both areas are characterized by low-income older people, who end up having the most access to street markets in the conurbation. Other areas have more scattered access, thanks to the presence of isolated ferias libres.

## 5. Discussion

In Chile, potential walking access to street markets seems to be unequally available to different groups of the elderly population, from spatial, social, and mobility perspectives.

In general, *ferias libres* can be found in the major towns, while smaller municipalities often rely on other local commercial spaces. In the four metropolitan areas that we assessed in more detail, access is higher than the national average, although it still benefits a small share of the elderly population. An exception is the Santiago area, where many *ferias* can be found, especially in middle class and low-income boroughs. In other cases (for example, Valparaíso), topography plays an important role; most services and markets are located in the plain areas, while most of the residential areas are located in zones in the hills with fairly steep slopes, so that in the case of Valparaíso, the possibility to walk for older people is reduced. Interestingly, for all the examined settings, older people who have access to the markets mainly belong to the population's low socio-economic strata. Therefore, while street markets are not accessible to a large share of the elderly population, the inhabitants who can access them belong to the socio-economic group that can benefit most from the availability of *ferias libres*.

The spatial distribution of *ferias libres* and the consequent possibility for low-income older to access them may appear as obvious findings, but in segregated settings such as the Chilean cities these are one of the few services that is not concentrated in central and/or affluent neighborhoods (see for example [34,35,80–82]). The spatial availability of street markets may be a consequence of the wider socio-spatial issues in Chile and its cities. The presence of street markets in Chile does not respond to clearly established rules, since each municipality has its own ordinances that are more focused on regulating the use of the public space occupied by the markets, rather than planning or regulating their locations [83]. However, social segregation affects the different commercial spaces in Chile; not only low-income groups use street markets more, whereas high-income people tend to prefer supermarkets [84], but *ferias* are more likely to be found in segregated poor areas [85]. This element is interesting in at least two senses. First, it confirms forms of sociospatial segregation related to commerce, which are observed also in relation to shopping malls [86]. Second, it suggests that the location of street markets respond more to a bottom-up demand from market traders and/or clients rather than to an institutional planning effort, even if municipal institutions are effective in regulating the activity of *ferias libres*. Moreover, even if the majority of the elderly population belongs to low-income groups [27], a lower percentage of them has access to street markets in comparison to the general population. This difference may be related to the huge disparities in life expectancy among different socioeconomic groups in Chile and in Santiago in particular [87], so that a higher density of older people is found in affluent areas of the city. In conclusion, ageing areas do not correspond exactly to low-income areas, showing the importance of considering what the actual distribution of street markets is.

The observed spatial distribution of street markets appears to contribute to the Chilean older people's food security, who may benefit more from it, considering their need to access cheap food [67]. The potential availability of street markets goes in hand with the actual use of them, as a recent CEDEUS survey in the area shows ([88]; see also [89,90]). While the analysis presented in this paper estimates that about 22% of the elderly population in Santiago has a street market within a 10-min walk, the CEDEUS survey with about 400 participants (over all age groups) shows that 96% of the population go to *ferias* and markets to buy fresh products and other primary goods. Moreover, 33% of the people surveyed in Santiago declared the street market as their first choice, which is less than supermarkets (43%), but more than mini markets (11%), neighborhood stores (9%), and online shopping (0.5%, before the COVID-19 pandemic), and 72% rate street markets as either their first or second choice. Similarly, this study found that about 7% of older people can walk in 10 min to a *feria* in the Concepción area, whereas the survey by CEDEUS [88] found that 92% go to street markets and markets. However, the *feria* is the first choice for only 7% of the surveyed people in Concepción, and it is the first or second choice for 35% of them. These much lower numbers for Concepción, in comparison to Santiago, are consistent with the lower accessibility to street markets that we obtained analytically.

Our findings and the survey results by CEDEUS [88] emphasize the contribution of street markets to people's food security, especially in the case of older people. Considering the relatively higher levels of access to low income older people, it may be possible to think that people who have more access are also those who need it more, considering, for example, the availability of fresh and cheap food, such as fruits and vegetables. However, to support this statement, we would need to consider the variability of available products and prices according to the examined street markets, since there may be differences depending on different city areas. Moreover, it could be possible to imagine that larger markets tend to offer a wider set of available products, and possibly a higher competition between sellers, leading to lower prices. Another vital contribution of street markets to individual well-being is their space for interactions and encounters, offering an enjoyable walking experience. In the major Chilean cities, the experience of visiting a feria libre is available only to some groups, often precluding high-income older people from taking advantage of an opportunity whose benefits are (at least potentially) indifferent to the socio-economic condition. Therefore, the proposed analysis is a first step towards a more elaborated evaluation of the role that street markets play for the urban quality of life.

## 6. Conclusions

In conclusion, the potential relevance of street markets for the well-being of older people (i.e., people over 65) and the higher accessibility of low-income groups justifies the importance of assessing the current levels of access to this specific urban opportunity that is often overlooked. Considering the results presented in this work, the possibility to walk and access a street market within a reasonable time has significant policy implications. Street markets can contribute to all inhabitants' well-being, from older people to younger groups, and are crucial for healthier and more sustainable food systems. Considering the unequal availability of street markets in the examined regions and cities, a neighborhood-based strategy for spreading and strengthening markets may be necessary, especially in low-income areas with insufficient levels of access to food supply. In fact, in Chile and elsewhere, street markets can provide a contribution to well-being and resilience that can be hardly replaced by other commercial spaces

Our analysis has some limitations that need to be considered to understand the real accessibility of the street markets, as well as their contribution to the food security of older people and the general public. The first issue is that the available data represent street markets as points, rather than as lines. Unfortunately, the geospatial information available at the national level does not allow the analysis to distinguish between large markets that extend over several blocks and smaller markets that occupy only one or two blocks. This limitation affects our results' accuracy and leads, most likely, to an underestimation of walking potential. However, it should not bring into question the overall picture provided, showing that large parts of the studied metropolitan areas do not have street markets available. The second issue refers to the temporal availability of markets, an element increasingly highlighted by the research on the topic [91–93]. Markets are open on different days of the week, i.e., in some cases, once per week, in others, two days or more, and at different hours of the day. The temporal availability of street markets would be an interesting factor to explore, to understand how accessibility changes for certain groups, such as older people, compared with the working population, and comparing, for instance, working days and the weekends. A third issue refers to the importance of considering other commercial spaces, such as fixed markets, supermarkets, kiosks, and shopping malls, in a complementary analysis. To develop public strategies for the promotion of street markets, two elements can be useful: a classification of neighborhoods, considering those areas whose income and commercial spaces would make street markets particularly beneficial; and a better customer's segmentation to understand which groups are more suitably clients of markets, and which groups prefer other places or services to get food, such as supermarkets or delivery services.



Despite their limitations, this study's findings also appear to be relevant to other Latin American and possibly Global South settings. The Chilean street markets' experience is probably similar to other forms of trade, such as Mexico's *tianguis*. Comparative research could help understand the specific role of the urban space and the socio-economic context in different countries of the same region. Moreover, it would be relevant to examine how older people move and access opportunities individually, and to what extent their mobility is related to and motivated by their access to relevant services and equipment. Such analysis would benefit from the use of different research methods, be they walking interviews [29–31], apps [94], surveys [95], or measurements with GPS devices and accelerometers [96,97]. In general, it would be important to consider the access to healthy food as a multi-scale issue, involving not only the metropolitan scale here examined, but also neighborhoods and public spaces like streets and squares. These avenues for further research can help to strengthen the case for street markets, which are relevant to provide proximity access to cheap food and enhance the food security of ageing communities, becoming a potentially fundamental asset for the psychophysical health of urban communities—especially elderly ones.

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## Appendix A

**Table A1.** Share of the elderly population and their access to street markets in the four major conurbations of Chile and their municipalities.

Metropolitan Area and Municipalities	Older People	% Older People in Each Socio-Economic Group *				% Older People with Access to Street Markets, per Socio-Economic Group			
		ABC1	C2	C3	D	ABC1	C2	C3	D
Metropolitan area of Santiago	664,354	6.6%	20.5%	19.5%	53.5%	0%	1.4%	3.6%	16.9%
Calera de Tango	253	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	5.1%
Cerrillos	9264	0.0%	8.7%	30.4%	60.9%	0.0%	0.0%	9.8%	15.3%
Cerro Navia	15,996	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	31.3%
Colina	389	57.1%	0.0%	0.0%	42.9%	0.0%	0.0%	0.0%	0.0%
Conchalí	16,800	0.0%	0.0%	10.1%	89.9%	0.0%	0.0%	2.1%	33.9%
El Bosque	19,305	0.0%	0.0%	18.5%	81.5%	0.0%	0.0%	4.2%	25.3%
Estación Central	16,333	0.0%	11.4%	25.1%	63.4%	0.0%	1.3%	7.6%	23.5%
Huechuraba	9011	8.2%	12.6%	8.5%	70.7%	0.0%	0.0%	0.3%	16.9%
Independencia	10,734	0.0%	0.0%	58.1%	41.9%	0.0%	0.0%	11.8%	17.0%
La Cisterna	12,679	0.0%	3.4%	63.7%	32.9%	0.0%	0.0%	3.2%	15.4%
La Florida	45,113	0.4%	23.9%	35.2%	40.5%	0.0%	1.5%	5.1%	16.1%
La Granja	13,411	0.0%	0.0%	7.3%	92.7%	0.0%	0.0%	0.9%	43.0%
La Pintana	15,372	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	40.5%

Table A1. Cont.

Metropolitan Area and Municipalities	Older People	% Older People in Each Socio-Economic Group *				% Older People with Access to Street Markets, per Socio-Economic Group			
		ABC1	C2	C3	D	ABC1	C2	C3	D
La Reina	13,306	19.2%	62.2%	3.1%	15.5%	0.0%	2.8%	1.3%	5.7%
Lampa	809	3.1%	38.9%	0.0%	58.0%	0.0%	0.0%	0.0%	0.0%
Las Condes	44,805	36.3%	56.8%	0.4%	6.4%	0.0%	1.2%	0.0%	1.8%
Lo Barnechea	7527	46.8%	14.3%	18.8%	20.0%	0.0%	0.0%	2.2%	7.1%
Lo Espejo	11,407	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	31.2%
Lo Prado	13,699	0.0%	4.6%	7.3%	88.1%	0.0%	0.0%	2.7%	31.4%
Macul	16,691	0.0%	33.1%	38.9%	28.1%	0.0%	5.5%	8.4%	6.2%
Maipú	44,748	0.0%	9.5%	50.4%	40.2%	0.0%	0.5%	9.3%	10.9%
Ñuñoa	29,737	2.8%	83.9%	11.2%	2.1%	0.0%	10.6%	3.0%	0.9%
Padre Hurtado	4497	0.0%	6.4%	2.4%	91.2%	0.0%	0.0%	0.0%	0.0%
P. Aguirre Cerda	13,994	0.0%	0.0%	12.3%	87.7%	0.0%	0.0%	3.7%	25.5%
Peñaflor	7783	0.0%	0.0%	24.6%	75.4%	0.0%	0.0%	0.0%	0.8%
Peñalolén	23,925	4.9%	8.2%	10.3%	76.6%	0.0%	0.0%	0.1%	24.7%
Providencia	21,786	40.0%	60.0%	0.0%	0.0%	0.1%	2.5%	0.0%	0.0%
Pudahuel	17,189	0.0%	5.0%	18.1%	76.9%	0.0%	0.0%	2.2%	17.1%
Puente Alto	39,610	0.0%	10.5%	31.3%	58.2%	0.0%	0.4%	9.2%	20.1%
Quilicura	9969	0.0%	9.1%	32.4%	58.5%	0.0%	0.3%	7.7%	26.0%
Quinta Normal	13,976	0.0%	0.0%	17.6%	82.4%	0.0%	0.0%	5.0%	34.5%
Recoleta	19,274	0.0%	3.7%	12.0%	84.3%	0.0%	0.0%	0.6%	28.1%
Renca	14,130	0.0%	0.1%	4.6%	95.3%	0.0%	0.0%	0.1%	35.9%
San Bernardo	23,354	0.0%	3.1%	20.8%	76.1%	0.0%	0.0%	1.1%	11.7%
San Joaquín	13,489	0.0%	4.1%	22.4%	73.5%	0.0%	2.7%	3.2%	20.4%
San José de Maipo	56	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%
San Miguel	13,618	0.0%	57.5%	23.7%	18.8%	0.0%	4.4%	7.0%	1.0%
San Ramón	11,868	0.0%	0.0%	0.0%	100.0%	0.0%	0.0%	0.0%	39.1%
Santiago	28,790	0.0%	49.8%	25.6%	24.7%	0.0%	4.0%	5.9%	7.9%
Talagante	5160	0.0%	0.0%	20.7%	79.3%	0.0%	0.0%	0.0%	0.0%
Vitacura	14,497	64.3%	35.7%	0.0%	0.0%	0.0%	1.9%	0.0%	0.0%
Metropolitan area of Concepción	87,320	6.9%	21.7%	27.4%	44.0%	0%	1.0%	1.3%	5.7%
Chiguayante	9230	9.7%	3.9%	55.0%	31.5%	0.0%	0.0%	2.2%	6.0%
Concepción	25,871	13.1%	37.0%	18.3%	31.6%	0.0%	1.8%	0.9%	4.5%
Coronel	9359	0.0%	3.0%	23.1%	73.9%	0.0%	0.0%	0.2%	10.5%
Hualpén	10,466	0.0%	21.7%	23.0%	55.2%	0.0%	0.0%	2.0%	4.6%
Penco	5283	0.0%	0.0%	27.4%	72.6%	0.0%	0.0%	1.8%	15.5%
S. Pedro de la Paz	10,333	16.4%	32.1%	10.5%	41.0%	0.0%	1.7%	0.1%	9.0%
Talcahuano	16,778	0.1%	18.9%	41.9%	39.1%	0.0%	1.5%	2.1%	0.3%
Metropolitan area of Valparaíso	118,259	9.7%	14.8%	47.5%	28.0%	0.3%	1.2%	3.6%	1.4%
Concón	4240	17.7%	24.4%	45.8%	12.1%	0.0%	3.8%	0.0%	0.0%
Quilpué	19,840	2.0%	8.6%	73.4%	16.0%	0.5%	0.1%	7.9%	4.7%
Valparaíso	33,350	0.0%	12.0%	40.6%	47.4%	0.0%	0.5%	3.8%	1.8%
Villa Alemana	15,064	0.0%	9.1%	74.6%	16.2%	0.0%	0.0%	3.0%	0.0%
Viña del Mar	45,765	22.5%	20.5%	32.5%	24.5%	0.6%	2.3%	2.2%	0.4%
Metropolitan area of Coquimbo-La Serena	38,542	7.7%	19.1%	38.5%	34.8%	0%	0%	4.6%	5.7%
Coquimbo	18,975	5.1%	7.6%	47.4%	39.9%	0.0%	0.0%	4.7%	7.3%
La Serena	19,567	10.2%	30.2%	29.8%	29.8%	0.0%	0.0%	4.5%	10.0%

\* Data for socio-economic group E are omitted as the ISMT assigns only very few people to this group, basically homeless. Groups A, B, and subgroup C1 are usually pooled into one high-income group “ABC1” for statistics given the low number of people in these groups.

## References

- Sherry, J.F. Dealers and Dealing in a Periodic Market: Informal Retailing in Ethnographic Perspective. *J. Retail.* **1990**, *66*, 174–200.
- Larsen, K.; Gilliland, J. A farmers' market in a food desert: Evaluating impacts on the price and availability of healthy food. *Health Place* **2009**, *15*, 1158–1162. [[CrossRef](#)] [[PubMed](#)]
- Cummins, S.; Macintyre, S. "Food deserts"—Evidence and assumption in health policy making. *Br. Med. J.* **2002**, *325*, 436–438. [[CrossRef](#)] [[PubMed](#)]
- Larsen, K.; Gilliland, J. Mapping the evolution of "food deserts" in a Canadian city: Supermarket accessibility in London, Ontario, 1961–2005. *Int. J. Health Geogr.* **2008**, *7*, 1–16. [[CrossRef](#)] [[PubMed](#)]
- Weinberg, Z. No place to shop: Food access lacking in the inner city. *Race Poverty Environ.* **2000**, *7*, 22–24.
- Brunori, G.; Galli, F.; Barjolle, D.; Van Broekhuizen, R.; Colombo, L.; Giampietro, M.; Kirwan, J.; Lang, T.; Mathijs, E.; Maye, D.; et al. Are Local Food Chains More Sustainable than Global Food Chains? Considerations for Assessment. *Sustainability* **2016**, *8*, 449. [[CrossRef](#)]
- Cadilhon, J.-J.; Moustier, P.; Poole, N.; Tam, P.G.; Fearn, A.P. Traditional vs. Modern Food Systems? Insights from Vegetable Supply Chains to Ho Chi Minh City (Vietnam). *Dev. Policy Rev.* **2006**, *24*, 31–49. [[CrossRef](#)]
- Feagan, R. The place of food: Mapping out the "local" in local food systems. *Prog. Hum. Geogr.* **2007**, *31*, 23–42. [[CrossRef](#)]
- Mete, S.; Tomaino, L.; Vecchio, G. Tianguis shaping ciudad. Informal street vending as a decisive element for economy, society and culture in Mexico. *Planum J. Urban.* **2013**, *26*, 1–13.
- Morales, A.; Balkin, S.; Persky, J. The Value of Benefits of a Public Street Market: The Case of Maxwell Street. *Econ. Dev. Q.* **1995**, *9*, 304–320. [[CrossRef](#)]
- Meyer, M.R.U.; Janke, M.; Beaujean, A.A. Predictors of Older Adults' Personal and Community Mobility: Using a Comprehensive Theoretical Mobility Framework. *Gerontologist* **2014**, *54*, 398–408. [[CrossRef](#)]
- Lucas, K. Transport and social exclusion: Where are we now? *Transp. Policy* **2012**, *20*, 105–113. [[CrossRef](#)]
- Lucas, K.; Mattioli, G.; Verlinghieri, E.; Guzman, A. Transport Poverty and Its Adverse Social Consequences. *Proc. Inst. Civ. Eng. Transp.* **2016**, *169*, 353–365. [[CrossRef](#)]
- Lee, I.M.; Buchner, D.M. The importance of walking to public health. *Med. Sci. Sports Exerc.* **2008**, *40*, S512–S518. [[CrossRef](#)] [[PubMed](#)]
- Warburton, D.E.R.; Nicol, C.; Bredin, S.S.D. Health benefits of physical activity: The evidence. *CMAJ* **2006**, *174*, 801–809. [[CrossRef](#)]
- Ferreira, A.; Bertolini, L.; Næss, P. Immutability as resilience? A key consideration for transport policy and research. *Appl. Mobilities* **2017**, *2*, 16–31. [[CrossRef](#)]
- Banister, D.; Bowling, A. Quality of life for the elderly: The transport dimension. *Transp. Policy* **2004**, *11*, 105–115. [[CrossRef](#)]
- Goins, R.T.; Jones, J.; Schure, M.; Rosenberg, D.E.; Phelan, E.A.; Dodson, M.S.; Jones, D.L. Older Adults' Perceptions of Mobility: A Metasynthesis of Qualitative Studies. *Gerontologist* **2015**, *55*, 929–942. [[CrossRef](#)]
- Martens, K. Ageing, impairments and travel: Priority setting for an inclusive transport system. *Transp. Policy* **2018**, *63*, 122–130. [[CrossRef](#)]
- Nordbakke, S. Capabilities for mobility among urban older women: Barriers, strategies and options. *J. Transp. Geogr.* **2013**, *26*, 166–174. [[CrossRef](#)]
- Nordbakke, S.; Schwanen, T. Well-being and Mobility: A Theoretical Framework and Literature Review Focusing on Older People. *Mobilities* **2014**, *9*, 104–119. [[CrossRef](#)]
- Stjernborg, V.; Wretstrand, A.; Tesfahuney, M. Everyday Life Mobilities of Older Persons—A Case Study of Ageing in a Suburban Landscape in Sweden. *Mobilities* **2015**, *10*, 383–401. [[CrossRef](#)]
- Webber, S.C.; Porter, M.; Menec, V.H. Mobility in Older Adults: A Comprehensive Framework. *Gerontologist* **2010**, *50*, 443–450. [[CrossRef](#)] [[PubMed](#)]
- Rojas, C.; la Fuente-Contreras, H.; Díaz-Muñoz, S.; Rueda-Seguel, I.; Olguín-Carrillo, N.; Gallardo, M. Caminando a los Parques Urbanos: Calidad y Acceso Público. *AUS Arquitect. Urban. Sustentabilidad* **2020**, *28*, 69–77. [[CrossRef](#)]
- Sadler, R.C.; Gilliland, J.; Arku, G. An application of the edge effect in measuring accessibility to multiple food retailer types in Southwestern Ontario, Canada. *Int. J. Health Geogr.* **2011**, *10*, 34. [[CrossRef](#)] [[PubMed](#)]
- Short, A.; Guthman, J.; Raskin, S. Food Deserts, Oases, or Mirages?: Small Markets and Community Food Security in the San Francisco Bay Area. *J. Plan. Educ. Res.* **2007**, *26*, 352–364. [[CrossRef](#)]
- Vecchio, G.; Tiznado-Aitken, I.; Castillo, B.; Steiniger, S. Fair transport policies for older people: Accessibility and affordability of public transport in Santiago, Chile. *Transportation* **2022**, 1–27. [[CrossRef](#)]
- Paydar, M.; Fard, A.K. Walking Behavior of Older Adults in Temuco, Chile: The Contribution of the Built Environment and Socio-Demographic Factors. *Int. J. Environ. Res. Public Health* **2022**, *19*, 14625. [[CrossRef](#)]
- Herrmann-Lunecke, M.; Figueroa, C.; Parra, F.; Mora, R. La ciudad del no-cuidado: Caminata y personas mayores en pandemia. *ARQ Santiago* **2021**, *109*, 68–77. [[CrossRef](#)]
- Herrmann-Lunecke, M.G.; Martínez, C.; Salgado, P.V. Caminata y vejez: Explorando el espacio público peatonal de las personas mayores en los instrumentos de planificación urbana en Chile. *Urbe Rev. Bras. Gest. Urbana* **2021**, *13*, e20210128. [[CrossRef](#)]
- Herrmann-Lunecke, M.G.; Figueroa-Martínez, C.; Huerta, F.P.; Mora, R. The Disabling City: Older Persons Walking in Central Neighbourhoods of Santiago de Chile. *Sustainability* **2022**, *14*, 11085. [[CrossRef](#)]

32. Sánchez-González, D.; Rodríguez-Rodríguez, V. *Environmental Gerontology in Europe and Latin America. Policies and Perspectives on Environment and Aging*; Springer: Cham, Switzerland, 2016.
33. Astroza, S.; Guarda, P.; Carrasco, J.A. Modeling the relationship between food purchasing, transport, and health outcomes: Evidence from Concepcion, Chile. *J. Choice Model.* **2022**, *42*, 100341. [\[CrossRef\]](#)
34. Quezada, C.R.; Bascuñán, M.M.; Contreras, H.D.L.F.; Faulbaum, A.S.; Saéz, F.A.; Mella, G.F.; Fuentes, C.P.; Cruz, J.C.M. Accesibilidad a equipamientos según movilidad y modos de transporte en una ciudad media, Los Ángeles, Chile. *An. Geogr. Univ. Complut.* **2019**, *39*, 177–200. [\[CrossRef\]](#)
35. Quezada, C.R.; Widener, M.; Carrasco, J.; Meneses, F.; Rodríguez, T. Accessibility Indicators to Fresh Food: A Quantitative Insight from Concepción, Chile. *Prof. Geogr.* **2022**, 1–16. [\[CrossRef\]](#)
36. Peñaloza, V.; Denegri, M.; Gerhard, F. ¿Vamos a la feria? Un estudio sobre las motivaciones para frecuentar las ferias libres. *Pensam. Gest.* **2015**, *38*, 16–32.
37. Vecchio, G.; Tiznado-Aitken, I.; Hurtubia, R. Transport and equity in Latin America: A critical review of socially oriented accessibility assessments. *Transp. Rev.* **2020**, *40*, 354–381. [\[CrossRef\]](#)
38. González, D.S. Ambiente físico-social y envejecimiento de la población desde la gerontología ambiental y geografía: Implicaciones socioespaciales en América Latina. *Rev. Geogr. Norte Gd.* **2015**, *60*, 97–114. [\[CrossRef\]](#)
39. Scherbov, S.; Sanderson, W.C. New Approaches to the Conceptualization and Measurement of Age and Ageing. In *Developments in Demographic Forecasting*; Mazzucco, S., Keilman, N., Eds.; Springer International Publishing: Cham, Switzerland, 2020; pp. 243–258. [\[CrossRef\]](#)
40. Cheng, Y.; Rosenberg, M.; Yu, J.; Zhang, H. Food security for community-living elderly people in Beijing, China. *Health Soc. Care Community* **2016**, *24*, 747–757. [\[CrossRef\]](#)
41. Quandt, S.A.; Arcury, T.; McDonald, J.; Bell, R.; Vitolins, M.Z. Meaning and Management of Food Security Among Rural Elders. *J. Appl. Gerontol.* **2001**, *20*, 356–376. [\[CrossRef\]](#)
42. Sharkey, J.R. Measuring potential access to food stores and food-service places in rural areas in the U.S. *Am. J. Prev. Med.* **2009**, *36*, S151–S155. [\[CrossRef\]](#)
43. Widener, M.J. Spatial access to food: Retiring the food desert metaphor. *Physiol. Behav.* **2018**, *193 Pt B*, 257–260. [\[CrossRef\]](#)
44. Dubowitz, T.; Zenk, S.N.; Ghosh-Dastidar, B.; Cohen, D.A.; Beckman, R.; Hunter, G.; Steiner, E.D.; Collins, R.L. Healthy food access for urban food desert residents: Examination of the food environment, food purchasing practices, diet and BMI. *Public Health Nutr.* **2015**, *18*, 2220–2230. [\[CrossRef\]](#)
45. Hyman, G.; Larrea, C.; Farrow, A. Methods, results and policy implications of poverty and food security mapping assessments. *Food Policy* **2005**, *30*, 453–460. [\[CrossRef\]](#)
46. Whelan, J.; Millar, L.; Bell, C.; Russell, C.; Grainger, F.; Allender, S.; Love, P. You Can't Find Healthy Food in the Bush: Poor Accessibility, Availability and Adequacy of Food in Rural Australia. *Int. J. Environ. Res. Public Health* **2018**, *15*, 2316. [\[CrossRef\]](#) [\[PubMed\]](#)
47. Zenk, S.N.; Schulz, A.; Israel, B.; James, S.; Bao, S.; Wilson, M.L. Neighborhood Racial Composition, Neighborhood Poverty, and the Spatial Accessibility of Supermarkets in Metropolitan Detroit. *Am. J. Public Health* **2005**, *95*, 660–667. [\[CrossRef\]](#) [\[PubMed\]](#)
48. Eckert, J.; Shetty, S. Food systems, planning and quantifying access: Using GIS to plan for food retail. *Appl. Geogr.* **2011**, *31*, 1216–1223. [\[CrossRef\]](#)
49. Ghosh-Dastidar, M.; Hunter, G.; Collins, R.L.; Zenk, S.N.; Cummins, S.; Beckman, R.; Nugroho, A.K.; Sloan, J.C.; Wagner, L.; Dubowitz, T. Does opening a supermarket in a food desert change the food environment? *Health Place* **2017**, *46*, 249–256. [\[CrossRef\]](#) [\[PubMed\]](#)
50. Peyton, S.; Moseley, W.; Battersby, J. Implications of supermarket expansion on urban food security in Cape Town, South Africa. *Afr. Geogr. Rev.* **2015**, *34*, 36–54. [\[CrossRef\]](#)
51. Reimers, V. Convenience for the car-borne shopper: Are malls and shopping strips driving customers away? *Transp. Res. Part Policy Pract.* **2013**, *49*, 35–47. [\[CrossRef\]](#)
52. Weber, J.; Kwan, M.-P. Bringing Time Back In: A Study on the Influence of Travel Time Variations and Facility Opening Hours on Individual Accessibility. *Prof. Geogr.* **2002**, *54*, 226–240. [\[CrossRef\]](#)
53. Rajagopal. Coexistence and conflicts between shopping malls and street markets in growing cities: Analysis of shoppers' behaviour. *J. Retail Leis. Prop.* **2010**, *9*, 277–301. [\[CrossRef\]](#)
54. Vachani, S.; Smith, N.C. Socially Responsible Distribution: Distribution Strategies for Reaching the Bottom of the Pyramid. Social Science Research Network, Rochester, NY, SSRN Scholarly Paper ID 1116630. 2007. Available online: <https://papers.ssrn.com/abstract=1116630> (accessed on 29 January 2019).
55. OECD. Functional Urban Areas by Country. 2013. Available online: <https://www.oecd.org/cfe/regional-policy/functionalurbanareasbycountry.htm> (accessed on 27 February 2020).
56. Steiniger, S.; Wagemann, E.; de la Barrera, F.; Molinos-Senante, M.; Villegas, R.; de la Fuente, H.; Vives, A.; Arce, G.; Herrera, J.-C.; Carrasco, J.-A.; et al. Localising urban sustainability indicators: The CEDEUS indicator set, and lessons from an expert-driven process. *Cities* **2020**, *101*, 102683. [\[CrossRef\]](#)
57. PNUD. *Desiguales. Orígenes, cambios y desafíos de la brecha social en Chile*; Programa de las Naciones Unidas para el Desarrollo: Santiago de Chile, Chile, 2017. Available online: <http://www.cl.undp.org/content/chile/es/home/library/poverty/desiguales-origenes-cambios-y-desafios-de-la-brecha-social-en-.html> (accessed on 3 December 2018).



58. Andrade, J.C.Y. Alimentación y nutrición en Chile, siglo XX. Una mirada historiográfica. *Rev. Tiempo Histórico* **2017**, *8*, 107–127. [CrossRef]
59. Zazo-Moratalla, A.; Napadensky-Pastene, A. Las ferias campesinas y su cuenca alimentaria, de lo imaginado a lo real. El caso de la feria de Collao en el Gran Concepción, Chile. *Rev. Geogr. Norte Gd.* **2020**, *75*, 229–249. [CrossRef]
60. Sáez, L.; Torres, V.; Cáceres, L. Caracterización de las ferias libres como canal de comercialización en la Región Metropolitana de Chile. *Econ. Agrar.* **2010**, *14*, 1–7.
61. El Mercurio. Cómo Compran los Consumidores: La Mitad Opta por una Gran Compra Cada 15 Días y la Mayoría en Supermercados. 2017. Available online: <http://www.economiaynegocios.cl/noticias/noticias.asp?id=373043> (accessed on 16 December 2022).
62. Stillerman, J. Chile's Forgotten Consumers: Poor Urban Families, Consumption Strategies, and the Moral Economy of Risk in Santiago. In *Consumer Culture in Latin America*; Sinclair, J., Pertierra, A.C., Eds.; Palgrave Macmillan US: New York, NY, USA, 2012; pp. 67–79. [CrossRef]
63. Bianchi, C. Exploring Urban Consumers' Attitudes and Intentions to Purchase Local Food in Chile. *J. Food Prod. Mark.* **2017**, *23*, 553–569. [CrossRef]
64. Carreño, P.; Silva, A. Fruit and vegetable expenditure disparities: Evidence from Chile. *Br. Food J.* **2019**, *121*, 1203–1219. [CrossRef]
65. Bianchi, C.C. Investigating Consumer Expectations of Convenience-Store Attributes in Emerging Markets: Evidence in Chile. *J. Int. Consum. Mark.* **2009**, *21*, 309–320. [CrossRef]
66. Pinheiro, A.C.; Quintiliano-Scarpelli, D.; Flores, J.A.; Álvarez, C.; Suárez-Reyes, M.; Palacios, J.L.; Quevedo, T.P.; de Oliveira, M.R.M. Food Availability in Different Food Environments Surrounding Schools in a Vulnerable Urban Area of Santiago, Chile: Exploring Socioeconomic Determinants. *Foods* **2022**, *11*, 901. [CrossRef]
67. Lobos, G.; Schnettler, B.; Grunert, K.; Adasme, C. Perceived Resources as a Predictor of Satisfaction with Food-Related Life among Chilean Elderly: An Approach with Generalized Linear Models. *J. Nutr. Health Aging* **2017**, *21*, 1240–1249. [CrossRef]
68. Brownie, S. Why are elderly individuals at risk of nutritional deficiency? *Int. J. Nurs. Pract.* **2006**, *12*, 110–118. [CrossRef] [PubMed]
69. Akhavan, M.; Vecchio, G. Mobility and Accessibility of the Ageing Society. Defining Profiles of the Elderly Population and Neighbourhood. *Tema J. Land Use Mobil. Environ.* **2018**, *2*, 9–22. [CrossRef]
70. Plouffe, L.; Kalache, A. Towards Global Age-Friendly Cities: Determining Urban Features that Promote Active Aging. *J. Urban Health* **2010**, *87*, 733–739. [CrossRef]
71. OECD. *Ageing in Cities*; OECD Publishing: Paris, France, 2015.
72. Bhattacharya, J.; Currie, J.; Haider, S. Poverty, food insecurity, and nutritional outcomes in children and adults. *J. Health Econ.* **2004**, *23*, 839–862. [CrossRef]
73. INE. *Censo de Población y Vivienda 2017*; Instituto Nacional de Estadística: Santiago, Chile, 2018.
74. Pinedo, L.F.V.; Saavedra, P.O.; Jimeno, H.A.C. Velocidad de la marcha en adultos mayores de la comunidad en Lima, Perú. *Rev. Medica Hered.* **2009**, *20*, 133–138. [CrossRef]
75. Tiznado-Aitken, I.; Mora, R.; Oyarzún, G.; Vergara, J.; Vecchio, G. A bumpy ride: Structural inequalities, quality standards, and institutional limitations affecting cycling infrastructure. *Transp. Res. Part Transp. Environ.* **2022**, *110*, 103434. [CrossRef]
76. Observatorio de Ciudades UC. Índice Socio Material Territorial (ISMT). 2018. Available online: [https://ideocuc-ocuc.hub.arcgis.com/datasets/97ae30fe071349e89d9d5ebd5dfa2aec\\_0](https://ideocuc-ocuc.hub.arcgis.com/datasets/97ae30fe071349e89d9d5ebd5dfa2aec_0) (accessed on 17 November 2020).
77. GfK Adimark. *Estilos de Vida de los Grupos Socioecon 'Ómicos de Chile'*; GfK: Santiago, Chile, 2019.
78. INE. Sistema de Indicadores y Estándares de Desarrollo Urbano. Default 2023. Available online: <http://www.ine.gob.cl/herramientas/portal-de-mapas/siedu> (accessed on 17 January 2023).
79. Cedeus. Indicadores Cedeus. Una radiografía a la sustentabilidad en ciudades de Chile. 2021. Available online: <http://indicadores.cedeus.cl/> (accessed on 18 January 2023).
80. Tiznado-Aitken, I.; Muñoz, J.; Hurtubia, R. Public transport accessibility accounting for level of service and competition for urban opportunities: An equity analysis for education in Santiago de Chile. *J. Transp. Geogr.* **2021**, *90*, 102919. [CrossRef]
81. Correa-Parra, J.; Vergara-Perucich, J.; Aguirre-Núñez, C. Towards a Walkable City: Principal Component Analysis for Defining Sub-Centralities in the Santiago Metropolitan Area. *Land* **2020**, *9*, 362. [CrossRef]
82. Bascuñán, M.M.; Quezada, C.R. Geographically weighted regression for modelling the accessibility to the public hospital network in Concepción Metropolitan Area, Chile. *Geospat. Health* **2016**, *11*, 451. [CrossRef]
83. Obreque, G.W. *Ferias Libres: Regulación vigente y proyecto de ley*; Biblioteca Nacional del Congreso de Chile: Santiago, Chile, 2019.
84. Link, F.; Ibarra, M.; Matus, C.; Méndez, M.L.; Ruiz-Tagle, J. The Crisis and Spatiality of Care in a Pandemic: Housing and Neighborhoods in Santiago de Chile. *ARQ Santiago* **2021**, *109*, 86–97. [CrossRef]
85. Linares, L.A. Socio-Spatial Implications of Street Market Regulation Policy: The Case of Ferias Libres in Santiago de Chile. WIDER Working Paper, Working Paper 2011/11. 2011. Available online: <https://www.econstor.eu/handle/10419/54162> (accessed on 17 February 2023).
86. Beiró, M.G.; Bravo, L.; Caro, D.; Cattuto, C.; Ferres, L.; Graells-Garrido, E. Shopping mall attraction and social mixing at a city scale. *EPJ Data Sci.* **2018**, *7*, 28. [CrossRef]

87. Bilal, U.; Alazraqui, M.; Caiaffa, W.T.; Lopez-Olmedo, N.; Martinez-Folgar, K.; Miranda, J.J.; Rodriguez, D.A.; Vives, A.; Diez-Roux, A.V. Inequalities in life expectancy in six large Latin American cities from the SALURBAL study: An ecological analysis. *Lancet Planet. Health* **2019**, *3*, e503–e510. [CrossRef] [PubMed]
88. CEDEUS. *Proyecto Territorios—Encuesta de Percepción del Desarrollo Urbano Sustentable*; CEDEUS: Santiago, Chile, 2019.
89. Señoret, A.; Ramirez, M.; Rehner, J. Employment and sustainability: The relation between precarious work and spatial inequality in the neoliberal city. *World Dev.* **2022**, *153*, 105840. [CrossRef]
90. Valenzuela-Levi, N.; Fuentes, L.; Ramirez, M.; Rodriguez, S.; Señoret, A. Urban sustainability and perceived satisfaction in neoliberal cities. *Cities* **2022**, *126*, 103647. [CrossRef]
91. Widener, M.J.; Metcalf, S.; Bar-Yam, Y. Dynamic urban food environments a temporal analysis of access to healthy foods. *Am. J. Prev. Med.* **2011**, *41*, 439–441. [CrossRef] [PubMed]
92. Widener, M.J.; Shannon, J. When are food deserts? Integrating time into research on food accessibility. *Health Place* **2014**, *30*, 1–3. [CrossRef] [PubMed]
93. Widener, M.J.; Minaker, L.; Farber, S.; Allen, J.; Vitali, B.; Coleman, P.C.; Cook, B. How do changes in the daily food and transportation environments affect grocery store accessibility? *Appl. Geogr.* **2017**, *83*, 46–62. [CrossRef]
94. Steiniger, S.; Fuentes, C.; Flores, D.; Castillo, B.; Vecchio, G.; Walker, J.; Carrasco, J.A. STRIDE—una aplicación Android para recolectar experiencias de peatones para apoyar a las intervenciones con un foco en la caminabilidad. *Estud. Transp.* **2022**, *23*, 1–20.
95. Quezada, C.R.; Sáez, F.A.; Vecchio, G.; Steiniger, S. Perception of Green Spaces Preparedness and Accessibility during COVID-19: An Exploratory Survey in Two Mid-Sized Chilean Cities. *Front. Sustain. Cities* **2022**, *4*, 816688. Available online: <https://www.frontiersin.org/articles/10.3389/frsc.2022.816688> (accessed on 19 January 2023). [CrossRef]
96. Akinci, Z.S.; Delclòs-Alió, X.; Vich, G.; Miralles-Guasch, C. Neighborhood Urban Design and Outdoor Later Life: An Objective Assessment of Out-of-Home Time and Physical Activity among Older Adults in Barcelona. *J. Aging Phys. Act.* **2021**, *29*, 781–792. [CrossRef]
97. Marquet, O.; Maciejewska, M.; Delclòs-Alió, X.; Vich, G.; Schipperijn, J.; Miralles-Guasch, C. Physical activity benefits of attending a senior center depend largely on age and gender: A study using GPS and accelerometry data. *BMC Geriatr.* **2020**, *20*, 134. [CrossRef] [PubMed]

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