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Ageing in Place: Older People Identify Barriers to Remaining in Low-Density Areas

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Abstract

Studies involving older people as co-investigators are limited in Portugal. The main objectives of this article are: (I) Analyze the barriers identified by older people living in low-density territories that pose a challenge to ageing in place. (ii) Understand the co-research methodology as an appropriate instrument for increasing the participatory capacity of older people and improving the conditions for ageing in place. (iii) Assess the role of social networks and community support in providing informal assistance to older people in low-density territories. The study involved 14 co-researchers, who had a balanced gender representation and an average age of 64.5 years. All the co-researchers were residents of the study location and volunteered for the research. They were provided training in interview techniques and active listening, prior to the study. A total of three interviews and 23 photographs were analyzed and discussed in five focus group meetings. The participants agreed upon four types of unmet needs and developed proposals to increase their negotiating power, thereby mitigating barriers to their permanence. The co-researchers presented their proposals at two public meetings with decision-makers, managers, and members of the municipal council. The findings were a significant addition to the promotion of the co-research approach and the engagement of older adults in detecting the obstacles that hinder their secure and independent aging in their living environment.

Keywords Ageing in place · Co-research · Older people · Focus groups · Empowerment

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Introduction

Portugal is experiencing a constant and sustained rise in demographic aging. In mainland Portugal, there are considerable regional disparities when it comes to the aging index. Municipalities with lower population density (inhabitants/km^2), such as Oleiros (797.2) and Alcoutim (748.1), have significantly higher values, whereas the Lisbon metropolitan area records minimum values of around 107, like Mafra (107.1) and Alcochete (107.7). In 2021, the population aged 65 and over (23.4%), increased significantly compared to the population aged between 0 and 14 (12.9%), corresponding to a ratio of 182 older adults for every 100 young people. The growth is represented by a figure of + 23.4%. This trend is expected to worsen by 2080, with a forecasted rise of + 13.4% in the population aged 65 years or older, resulting in a number three times higher than that of the 0–14 age group. This is due to total fertility rate close to 1.6, which indicates the average number of births that a group of women has during their fertile life (15–49 years) (Statistics Portugal, 2022).

Ageing must be assumed to be a civilizational achievement, resulting from a combination of multiple factors: (1) improvement of hygienic-sanitary and healthcare conditions in the second half of the twentieth century, reflecting advancements in both general and infant mortality; (2) dietary improvements, in addition to significant advances in the quality of housing; (3) increase in disposable income, which must also be associated with (4) progress in schooling, especially for women; and (5) significant increases in women's autonomy in a range of areas including sexuality, conjugality, employment and social participation (Nossa & Mota-Pinto, 2020). The fact that we have achieved a life expectancy at birth close to 80 years (man: 77.67 years; woman: 83.37 years; Statistics Portugal, 2022) does not negate the need for significant gains in healthy life expectancy, which in Portugal is lower than the European average (Table 1). Our objective, as a society, is to decrease the impact of changes in functional ability and encourage participation among older adults by establishing secure and comprehensive physical and social environments (WHO, 2015).

The main goal of the study is to assess the conditions for the development of active and inclusive ageing in areas of low population density in the Centre of Portugal. The specific objectives set by the academic researchers were: (i) to analyse the potential of residents in creating physical and social environments that protect older adults, and (ii) to increase the level of participation of older residents in decision-making processes that affect their daily lives. In this context, the County Reporters 55+ (CR 55+) project sought to answer the following key questions: (i) What are the main barriers identified by older residents living in low density areas that affect their ability to age in place? (ii) Can the co-research methodology contribute to increasing the participatory capacity of older people and thus improve the conditions for ageing in

Table 1 Evolution of healthy life years by sex (2004–2020)

	Man		Woman	
	2004	2020	2004	2020
EU 27	62	63,5	63,7	64,5
Portugal	55,3	60,8	52,4	58,7

Source: Eurostat

place? (iii) Assessing the role that social networks and community support can play in providing informal assistance to older adults in low-density territories?

Demographic ageing should not be viewed as a risk or threat, but rather as a significant policy challenge that requires appropriate attention. Emphasizing the value of older adults in modern societies is crucial. Thus, innovative research strategies and approaches are needed to identify and meet the needs of this population effectively. Active ageing strategies rely primarily on health concerns, which should be complemented by other objectives and measures emphasizing safety and participation equally (Nossa, 2020). Participation requires consistent effort throughout one's lifespan, including strategies for enhancing health literacy and creating supportive physical, spiritual, and social environments that facilitate integration and active engagement of senior citizens in society and decision-making processes that will impact their future (WHO, 2015; ENEAS, 2017).

In this context, it's also important to discuss the concept of "ageing in place", which in the Portuguese case is operationalised by public, private and associative bodies, with public institutions often defining policies through a hierarchical top-down process and transferring some financial resources to associative or private organisations to implement the actions. The concept of "ageing in place" should therefore be understood in a broad sense as the possibility for people to age in the environment or community of their choice, and in a narrow sense as the possibility for a person to "age at home" if they so wish, while maintaining their quality of life and well-being (Webber et al., 2023).

The project used co-research, a concept advocated by several academics, including Fudge et al. (2007) and Buffel (2015, 2018, 2019). One of the main aims of co-research was to involve older people in the research process in order to identify and address power inequalities in their communities, thereby improving their quality of life (James & Buffel, 2022). In Portugal, there are few research projects using collaborative research methodologies, and very few are designed to listen to the needs of older people about the validity of public responses to their needs.

According to Costa et al. (2020), based on the proposals of Penchansky and Thomas (1981), access to services can be defined as a set of five dimensions: (1) availability, (2) accessibility, (3) cost, (4) convenience, and (5) acceptance. Availability requires the physical existence of services in the region. Accessibility refers to the relative ease in physically arriving to a service and can be measured through indicators referring to the distance or travel time. It is important to study the costs of accessing health relative to the older people's incomes, as well as the potential user convenience and acceptance regarding available services (Palma et al., 2017: 246).

Literature Review

Since the mid-nineteen eighties, interest has grown in the co-research methodology which focuses on the subject as an active research partner (Osborn, 1985). Fudge et al. (2007) conducted a literature review titled "Involving Older Adults as Research Partners in Health Research." The study analysed projects and reports published in English from 1995 to 2005 that engaged older adults as research partners, rather than

subjects, on topics such as falls, pain management, strokes, and access to e-health. The review emphasizes objectivity and clear, concise language while following conventional academic structure and maintaining neutral, formal language with precise word choice and grammatical correctness. More recently, Buffel (2015, 2018) and Buffel and Phillipson (2019) and James and Buffel (2022) have convinced investigators of the significance of this methodology and increased its visibility, clearly discussing its motivations and potential advantages. Some of the macro-factors that have most contributed to co-investigation include (Buffel, 2019: 538):

1) the increase of self-advocacy in different areas and involving different groups of citizens, with a focus on policy research on service design and access;
2) increasing pressure for community health services to be more inclusive;
3) the emergence of "active ageing" (in Europe) and "successful ageing" (in USA) policies (Pruchno, 2015; WHO, 2015);
4) and the "user engagement" emphasized by funding bodies and political organizations (Buffel et al., 2017).

James & Buffel (2022: 2) have given equal relevance to micro- or local-based factors, which were also defended by Blair and Minkler (2009) as reinforcing the validity of co-investigation:

1) improving the relevance and cultural sensitivity of data collection tools;
2) adding nuance to the interpretation of results and the translation of results into action;
3) tremendous potential for empowering marginalized groups of older people (especially regarding the assumptions and practices of ageism and health discrimination); and.
4) emphasizing and valuing user perspectives.

Chen et al. (2020: 266) emphasized that the term co-researcher refers to members of the research target group (often older people) who adopt the role of active, non-academic researchers during the investigation and knowledge construction process. This approach is commonly known as participatory research, community-based research, or citizen science. Non-academic participants act as research partners by identifying and reflecting on issues that impact their lives, generating potential solutions, and expanding their knowledge, skills, self-confidence, and local social networks (Littlechild et al., 2015). According to Buffel (2019: 539): "What is important in the concept of co-investigation is "expertise by experience": people considered "insiders", [through] their personal experience considered to have information that traditional researchers ("outsiders") cannot access". This entails ensuring the involvement of the older people in the research process, participating in tasks such as: generating research questions, interviewing peers, participating in data analysis, as well as interpreting and disseminating results (Walker, 2007; Buffel, 2015, 2019). This collaborative dynamic, bringing laypeople together with academics, makes the users into co-producers and co-creators (Zuniga, Buffel & Arrieta, 2023: 4). This co-production involves users in implementing preconceived policies and services either through

internal initiative or external request, extending participation to management and evaluation processes. Co-creation refers to an open and creative process in which two or more parties collaborate to create value for themselves or others. Direct action is facilitated by the incorporation of individual, group, and association knowledge and experience to inform public institutions. Co-creation enhances outcomes depending on the level and quality of actors involved, regardless of whether they are lay or academic. It expands the paradigm and promotes participation at all stages of policy-making (Flemig & Osborne, 2019; Zuniga, Buffel & Arrieta, 2023).

Despite the potential gains accruing from this methodology, some difficulties and risks must be considered. Littlechild et al. (2015) stress the need for researchers to guard against the risk of tokenism, distorting or limiting older adult's participation to a merely symbolic level, having little influence on the investigation. Chen et al. (2020: 268) also discuss this risk, signalling that the distribution of power between academics and peer researchers must be adequately balanced. They state: "By employing a peer research approach, the professional researcher acts as a facilitator or enabler to help peers undertake research. It is common in practice for different value preferences, regarding decisions, to lead to conflicts between research partners."

Other ethical and methodological considerations must also be addressed. Snowball sampling, which is often used in peer researcher recruitment, involves recruiting participants who are closer to the social networks of academic researchers. This method increases the likelihood of biased recruitment, giving preference to individuals with similar sociodemographic backgrounds and potentially excluding marginalized groups such as racial minorities and older adults with mental and physical disabilities (James & Buffel, 2022). When engaging in a co-research process, the following precautions must be taken: (1) older adults should be equal stakeholders in research on ageing and old age; (2) equal opportunity to participate in the different stages of a study should be guaranteed; and (3) peer researchers should be given autonomy to participate in research activities of their choice (Chen et al., 2020). Using older adult's co-researchers, despite the advantages discussed, brings specific challenges that must be initially considered. Baldwin et al. (2018) and Gutman et al. (2014) point out the need for academic researchers to take precautions against challenges to some older people's participation. They may find it hard to maintain continuous interest in different tasks, they may have physical limitations, lack of skills or self-management, difficulties in transportation or mobility, as well as the need to comply with family commitments that limit their ability to participate. Researchers, thus, must plan for a greater level of participant dropouts.

Finally, as mentioned in the introduction, it is important to discuss a central concept related to the autonomy of older people: ageing in place, which should guarantee the right of older people to make free territorial choices, combining their biographical dimension with issues of identity, topophilia, autonomy and satisfaction of needs. Defending the right to age in place allows people to make life choices that can guarantee their permanence in the environment or community of their choice. According to Fonseca (2020:22), the concept of ageing in place should not be seen as a resource, but rather as the first choice, due to the advantages of social inclusion and emotional reward that are usually associated with it: "Remaining at home during ageing and maintaining as much independence, privacy, security, competence and control over

the environment as possible is the goal to be achieved, without forgetting that the term "place" refers not only to the person's place of residence, but also to their community, made up of the physical environment (surroundings and available local services) and social environment (family, friends, neighbours). We should bear in mind that the relocation of older people, which is common in low-density areas due to the lack of resources, often involves the loss of social relationships, changes in daily routines and abrupt changes in lifestyles, often culminating in a loss of independence and emotional dissatisfaction. As Costa_Font and Vilaplana-Prieto (2022) recognise, older adults' emotional satisfaction plays a significant role in their housing decisions. Emotional attachment to their home and community can influence their desire to "age in place" and resist moving to alternative housing options. On the other hand, housing dissatisfaction, feelings of isolation, insecurity or discomfort can have negative effects on an older person's emotional well-being and quality of life. Additionally, residential enclaves for older adults may. provide more opportunities for supportive social relationships due to shared lifestyles (Golant, 2018).

However, despite its obvious advantages, the prerogative of ageing in place should not be seen as an absolute dogma, but rather in the context of the balance of possibilities offered by territories in relation to the needs of the older adults, bearing in mind that the influence of the environment increases as the functional status of the older people decreases (Fonseca, 2020). For this reason, Iecovich (2014) stresses the importance of creating 'liveable communities', based on a concept that links physical design, social structure and the needs of all generations that share a common place. This aspect is particularly relevant in low-density areas, such as the one analysed here, where there is often a degradation of the means necessary to satisfy needs, as well as a severe impoverishment of the social structure, due to the almost exclusive dominance of older people. While it is clear that the desired independence and instrumental autonomy of older people includes the ability to support social interaction and access to various services that are essential for the fulfilment of needs, it is also true that in areas of low population density the main challenge is related to the ability of public services to guarantee adequate and effective responses to these same needs. However, as Golant (2018: 191) acknowledges, the choice of older adults to age in place has a significant impact on the home care and home remodelling industries, creating job opportunities, and supporting businesses that serve the needs of aging populations. Regarding the provision of services Poulin et al. (2020) emphasise the importance of designing locally adapted healthcare services in rural areas that consider the economic, cultural, and social specificities of the older population. This may include eliminating geographical barriers using mobile clinics, telehealth services, and transport assistance programmes. In addition, the literature suggests that public policies can leverage the role of social networks and community support to benefit the local economic fabric (Pani-Harreman et al., 2021). Several stakeholders can create a supportive environment that enables older people to overcome infrastructural challenges, receive informal assistance, and stay connected to their communities while ageing in place. This collaborative approach enhances the resilience and social integration of older individuals, thereby contributing to successful ageing in their preferred living environment. These measures contribute to the satisfaction and well-being of older people who have chosen to grow old in their place of residence.

Verma and Taegen (2021) also highlight that in the most isolated areas, daily social interaction opportunities are reduced due to the lack of transport options, closure of local shops and services, and declining of functioning capacities of older adults. These issues can be addressed by providing social spaces and information services specifically for older people although they recognise that these spaces are more likely to be used by women, so strategies to involve older men should also be considered.

Research Design

In order to carry out the research project - County Reporters 55+ (CR55+), a research partnership was set up between the University of Coimbra, Portugal, and a social solidarity institution - Cáritas Coimbra, which carries out social support activities for older people in the research area. The partnership established between an academic institution and a social economy institution sought to identify and mobilise agents with social capital capable of promoting active citizenship locally, identifying resources and strategies for solidarity and participation in community life, signalling potential scenarios of isolation and marginalisation of the older people. In this context, particular attention was paid to strengthening the participation pillar. Low-population-density regions face significant obstacles to accessing healthcare services due to physical barriers caused by a lack of building infrastructure and infrequent transportation, as well as fewer health care appointments (Palma et al., 2017). It was also interesting to understand pertinent barriers such as how ageing is seen and how the older adults are treated (WHO, 2015). This project followed the participatory methodology used by Buffel (2015) in Manchester, UK, and which was locally adapted to the needs of this low population-density region.

Study Design and Sampling

A regional assessment led to the choice of Arganil as the site of the CR55+co-investigation project. This municipality in the interior of the district of Coimbra, Central Region of Portugal is marked both by low population-density and a high rate of ageing, and especially so in the three parishes selected for the project: Pomares, Pombeiro da Beira and São Martinho da Cortiça (Table 2).

Table 2 Ageing in the regions under study (2021)

	inhabitants/km^2	age ≥ 65 years (%)	ageing index
Portugal	113.2	23.4	182.1
Centre Region	80	27	228.6
Arganil	36.5	26.1	330.2
Pomares (parish)	*13.7*	*43.6*	*447.6*
Pombeiro da Beira (parish)	*27.7*	*41.1*	*522.5*
S. Martinho Cortiça (parish)	*37.7*	*31.9*	*285.0*

Source: Statistics Portugal

The selection of these parishes was facilitated by the fact that one of the project partners, Caritas Coimbra, carries out several social support activities in Arganil. This connection provided access to support infrastructure and facilitated the dissemination of the project. In addition, it eased the acceptance of the co-investigation proposal among the older population.

A short presentation was initially produced to be shared locally in community centres and with the social network, with the goal of recruiting participants (co-researchers) aged between 55 and 85 years. The decision to involve subjects younger than 65 derived from the need to sensitize, involve and qualify actors whose age is prior to the statistical-administrative definition of older adult, but who in a short period of time will reach this age. The upper threshold was established at 85 to guarantee that the coresearchers exhibited a self-assessed health status ranging from fair to excellent (Table 3), as well as availability and capacity to actively engage in project phases occurring across various locations within the county. The study included volunteers who had some degree of visual or hearing disability, as well as others who had functional walking difficulties. The selection of co-investigators, as well as the various

Table 3 Characteristics of co-researcher's

Co-researcher code	Gender	Age	Marital status	School level	Self-reported health status (5 grades)	Preretirement occupation / Occupation
001 M	M	74	Married/stable union	3rd cycle (7th – 9th grade)	Reasonable	Building painter
002 M	M	71	Married/stable union	Secondary (High School)	Reasonable	Retired
003 M	M	65	Married/stable union	Secondary (High School)	Very good	Pre retired
004 M	M	60	Married/stable union	Secondary (High School)	Good	Commercial Manager
005 M	M	64	Single	2nd cycle (5th – 6th grade)	Reasonable	Pastry chef
006 W	W	66	Married/stable union	Secondary (High School)	Reasonable	Energy industry-Retired
007 W	W	64	Married/stable union	Secondary (High School)	Good	Retired
008 M	M	71	Married/stable union	3rd cycle (7th – 9th grade)	Reasonable	Retired
009 M	M	63	Married/stable union	1st cycle (1st – 4th grade)	Reasonable	Mechanic
010 W	W	60	Married/stable union	2nd cycle (5th – 6th grade)	Good	Unknown
011 W	W	53	Married/stable union	3rd cycle (7th – 9th grade)	Reasonable	Domestic
012 W	W	70	Married/stable union	3rd cycle (7th – 9th grade)	Reasonable	Retired
013 W	W	58	Married/stable union	College or University	Reasonable	Photographer
014 W	W	64	Married/stable union	1st cycle (1st – 4th grade)	Very good	Domestic

Note – M (Man), W (Woman)

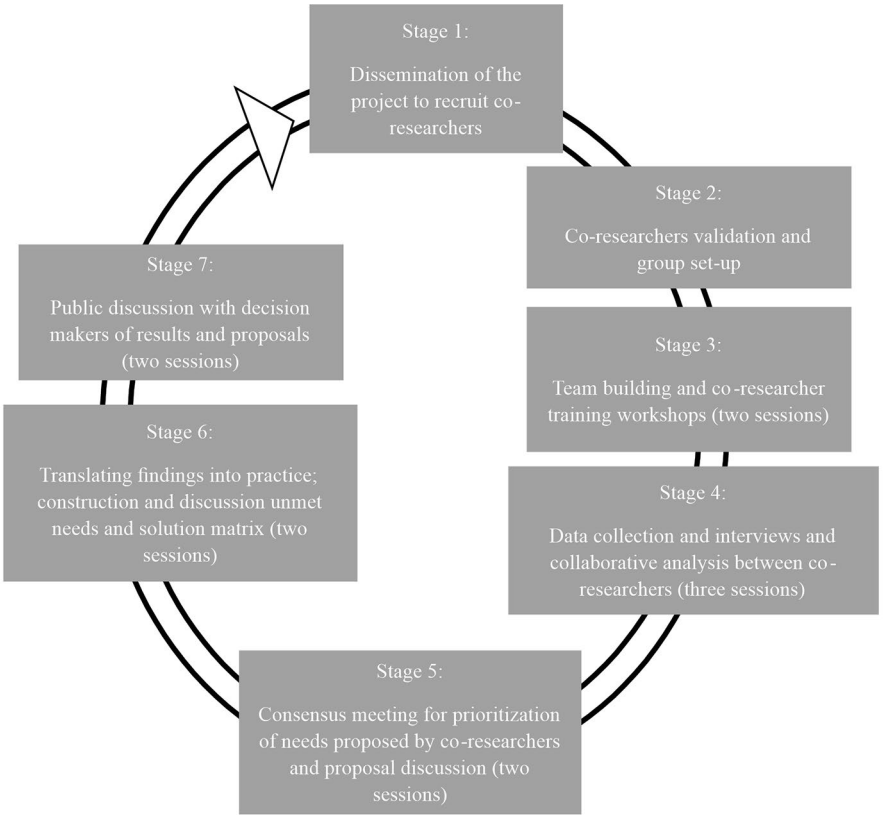

Fig 1 Project stages

phases of the project (Fig. 1), followed Buffel's guidelines (2015; 2018), with minor adaptations to the local context, using a purposive sampling design, combining three strategies for recruiting potential co-investigators: criterion sampling, snowball sampling and maximum variation.

Co-researchers were recruited from a series of networks, ranging from users of local Caritas services, local church volunteer organizations and community social support groups. In addition to age, the main criterion was that participants had to reside permanently in one of the three parishes, to demonstrate good communication and listening skills, to commit to participating in training, research, and information collection as part of the project, with an expected duration of 14 months, a commitment formalized by signing an informed consent.

Once the initial recruitment had identified eight participants, the co-researchers were asked to suggest others who fit the criteria (e.g., snowball sampling). A maximum variation sampling strategy was also used to ensure a diversity of the social, academic, professional and gender of the participants. The project was initially scheduled to start in February 2020, with a first four-week stage for dissemination (stage 1), followed by a validation phase (stage 2) and training of co-researchers in interviewing and active listening techniques (stage 3).

Due to the COVID-19 lockdown that began in March 2020 and was extended in Portugal throughout the first half of 2021, the project launch was postponed until January 2022. Additionally, five sample members had to be replaced due to declining mobility and health conditions.

The project began afresh in February 2022 (stage 3), with the participation of 14 volunteer co-researchers (Table 3), evenly balanced for gender and with an average age of 64.5 years.

The facilitators in phases three to seven included investigators from the University of Coimbra (one geographer, two physicians, and two psychologists), and the Cáritas Coimbra team, comprising two social workers. Each session lasted about four hours. Phases four to six consisted of focus groups, guided discussions that highlighted unmet problems and needs. The hierarchy of these issues was established through voting, followed by the development of solution proposals in stage six. In Stage 7, public discussions were held with decision-makers, guided by spokespeople selected from their peers to present and lead the discussion for each problem.

During the initial training session (phase 3), co-researchers engaged in team-building exercises and were provided with tablets equipped with audio and image capturing capabilities. They received instruction on how to effectively utilize these devices during interviews to document user requirements through photography, sound, or video. In the following session, the co-researchers received training on confidentiality issues and interview techniques. This covered how to properly ask questions, how to allow the interviewee to speak, how to handle sensitive topics, and the significance of following leads. Through role-play and role-taking techniques, potential field-work challenges were addressed, and co-researchers learned how to overcome objections and potential difficulties. All researchers and co-researchers participated in these sessions, and the two sessions were led by an academic researcher with a specialization in adult developmental psychology.

Results

The following data resulted from the work carried out by the co-researchers in stages four to six. Stage four consisted of the analysis and discussion of interviews and photographs. The categories of problems and/or unmet needs were then sorted. Academic researchers aided in the data classification, as well as the subsequent organization of focus groups (stage five). Stages four and five comprised five sessions during which the three interviews and 23 photographs were viewed and discussed. The interviews, conducted by four co-researchers, involved older citizens residing in the parishes under study. The data collected and analyzed by the co-researchers yielded four categories of unmet needs and problems that were unanimously agreed upon: (1) health access and care; (2) land and forest management and planning – perceived risks; (3) living in place – topophilia; and (4) community empowerment – inclusion and participation (Table 4). The low number of interviews achieved ($n=3$) was related to the health constraints imposed by COVID-19, as well as the fear of socialisation that persisted for some time after the acute phase of the pandemic had passed, contributing to the weakening of local social cohesion highlighted by the co-investigators

Table 4 Data collected, analyzed, and categorized by co-researchers

	Categories of problems / unmet needs				
	Nº	Health: access & care	Management and planning	Living in place: topophilia	Inclusion and participation
Interviews	3	2	1	-	-
Photos taken and analysed	23	6	8	5	4
Hierarchy of problem categories / unmet needs		level 1 priority	level 1 priority	level 2 priority	level 3 priority

Table 5 Co-researcher framework for: living in place - topophilia

Socio-regional context	**Weaknesses**
Region with a high level of informality and good neighbourly relations Unique landscape (including soundscape) with low levels of pollution and noise Low crime rates against people and property High sense of belonging and connection to the place (topophilia)	Night-time isolation of people living alone Poor mobile network coverage Low home support for residents with low mobility Strong perception of seasonal insecurity due to the high risk of forest fires Shortage of qualified job offers
Unmet needs	**Opportunities & Proposals**
Increasing investment in social support teams for the older people Weak mobile network coverage Reinforcement of proximity policing, especially in isolated parishes Public policies unable to attract new jobs and qualified human resources	Reinvestment in the individual emergency alert system associated with the landline telephone network Pilot project with volunteers to communicate and accompany the older population (e.g., writing buddy, sponsorship of the older adults by young residents) Investments in itinerant public services Reinforcement of the "older adults-friendly police" teams Reinforcement of the public service of home support with differentiated skills

in Table 5. During the project break, from March 2020 to June 2021, the research team attempted to maintain commitment and cohesion among the co-researchers by scheduling remote sessions and interacting remotely. However, only one session was possible, with the aim of building loyalty among the co-researchers and maintaining their involvement. The efficiency of telephone interaction was hindered by poor signal conditions, as mentioned in Table 6, and less proficiency in handling the equipment during the initial phase of the project. Poulin et al. (2020) acknowledge that such limitations are common in rural areas, where limited access to technology and poor-quality internet connections can hinder access to various services.

Under the coordination of an academic researcher, stage five consisted of encouraging co-researchers to comment on the motivation behind their photographs and to justify their categorization as unmet needs and/or problems, as well as to express emotions and feelings associated with the images they selected. A similar procedure was applied to the three interviews. With the collaboration of academic researchers, the reasons evoked, the unmet needs highlighted, and the emotions attributed by the coresearchers were recorded in a table. The reflections, including the narratives and interviews were discussed, interpreted, validated, and summarized by consensus (phase six) so as to draw up a matrix of weaknesses and opportunities for each problem category which would feed step seven, or public discussion involving decision-

Table 6 Co-researcher framework for health: access and care

Socio-regional context	**Weaknesses**
Low number of inhabitants and disperse settlement High percentage of ageing residents (over 65 years old) Progressive disinvestment in public services, particularly health services	High number of low-income retirees Non-equitable offer of public transportation Difficulty in attracting qualified human resources in the health sector Low health literacy High prevalence of chronic diseases and health complications Life-threatening forest fire exposure Social isolation of some older people Possible existence of post-traumatic stress in a large part of the population due to exposure to forest fires
Unmet needs	**Opportunities & Proposals**
Difficulty in accessing primary health care (scheduling appointments, health care, and pharmaceutical services) with long waiting times Some parishes have high travel times to access emergency services (50–60 min.) Weak or non-existent home health services Impossibility of establishing mobile communications in some parts of the region Low level of mental health resources	Extend to all parishes a flexible bus system adapted to the needs of the older people Develop an itinerant health service with home support based on good neighbouring practices Positive discrimination for local/regional attraction of human resources in a health area Differentiated public service schedules adapted to the needs of residents (one size doesn't fit all) Listening to the representatives of the older population in service design

makers and public policy managers, whose presence was facilitated by academic researchers.

Problems and Unmet Needs

In the fifth phase, the co-researchers classified the categories of problems observed in the parishes where they lived, collaboratively identifying the unmet needs, the underlying causes and, with the help of academic researchers, drawing up proposals capable of mitigating the barriers to ageing in place.

The co-researchers elected and justified, with equal priority, the following categories of problems: 1) health access and care; (2) land and forest management and planning – perceived risks. This simultaneity of priorities derives from the same relevance attributed to unmet needs identified in the two categories, from the risk perceived by coresearchers in the two domains, potential threat to their physical and mental security as residents. It should be noted that this region, in addition to low population density is also marked by high population dispersion and demographic ageing. It is made up of extensive expanses of forest and forest industry and is cyclically subject to violent fires, the last of which in 2017 caused tremendously high economic losses, landscape destruction, and serious negative health consequences including the loss of human life (Félix & Lourenço, 2019). These facts were forcefully brought up by all co-researchers and unanimously described as a grave threat to their lives. Bryant et al. (2014), Hayes et al. (2018) and Pereira et al. (2021) have all pointed to the close association between the occurrence of violent forest fires and the record of serious damage produced in health, especially in terms of mental health, with long-lasting marks and symptoms.

Table 7 Co-researcher framework for: land and forest management

Socio-regional context	**Weaknesses**
The county's economy is highly dependent on forest extraction (wood and derivatives)	Weak investment in forest property management (public and private)
High percentage of land use allocated to agriculture and forest industry	Poor cleaning of forest land, facilitating the spread of fires
Forest area mostly owned by individuals and companies	Seasonal increase in the summer population, increasing the risk of forest fires
Mountainous terrain	High number of fires causing damage to the economy, the environment, and human health
Dispersed population with many hamlets with fewer than 20 inhabitants	Insufficient means for fire prevention
Unmet needs	**Opportunities & Proposals**
Weak enforcement of legal instruments forest management and planning	Expansion of the network of volunteers for forest defence (adoption of good neighbour practices)
Insufficient investment in the maintenance of roads and firebreaks	Local management of technical and financial resources for forest management
Weak application of fire mitigation measures adapted to the local context	Adaptation of fire mitigation strategies to climate change
Insufficient mobile communication network	Effective training of forest vigilant teams including older adult's volunteers
Underfunded forest fire mitigation strategies	

Regarding Health – access and care (Table 6), the co-researchers described the weaknesses and unmet needs in their parishes and drew up some opportunities and solutions.

Problems and/or needs in the domain - Land and forest management and planning. The co-researchers characterized the local scenario of weaknesses and unmet needs, while identifying some opportunities and solutions (Table 7).

In the category Living in Place – topophilia, coresearchers reflected on the level of affiliation they maintain with the place where they reside (topophilia) and identified a set of constraints that have made it progressively more difficult to stay, increasing the risk of depopulation, exclusion, and isolation. (Table 5).

Finally, in the third level of priority and closely associated with the COVID-19 health crisis and consequent lockdown, they placed community empowerment – inclusion and participation. Co-researchers emphatically emphasized that after nearly 18 months of compulsive confinement, levels of individual and community empowerment, social participation, and readiness for community activities were strongly compromised. Associativism, religious practices and celebrations of local culture were now attracting much less participation. These activities had yet to recover their pre-pandemic levels, which contributed to the isolation and risk of exclusion of a part of the residents (Table 8).

Discussion

The unmet needs and weaknesses identified in the sector - Health: access and care domain, have a high impact on health prevention and chronic disease management, which is often present in older populations, as it also conditions expectations of growing old in place. Bambra, Smith and Pearce (2019: 36) recognized that health

Table 8 Co-researcher framework for community-based empowerment: inclusion and participation

Socio-regional context	**Weaknesses**
Returning population movement due to retirement Satisfactory levels of social cohesion, associated with the existence of secular and religious community volunteer groups Existence of Local Improvement Committees that promote cultural, religious, and sports events	Long periods of Covid-19 lockdown Decline of the associative culture due to ageing and/or depopulation Demographic loss Fall in of number of religious celebrations throughout the region
Unmet needs	**Opportunities & Proposals**
Lack of public policies aimed at attracting young people Closure of public services leaving the region underserved Unmarked paths, make hiking and outdoor activities difficult Difficulty in reorganizing public services due to the COVID-19 pandemic Rigorous practices to support relocation after disasters that prevent reconstruction in safer locations	Development of regional marketing strategies with the support of experts Enable the participation of the older population in issues related to rehousing and housing rehabilitation Replication of community volunteer groups (reading clubs and collection of memories and traditions) Development of hiking paths and dissemination of tourism potential Support for a network of flexible and accessible public transport designed to support cultural activities Increase of cultural exchange practices between municipalities

at the level of the place is determined by the nature of the place itself in terms of the economic, social, and physical environment, with direct (environmental pollution, traffic) and indirect effects (access to services, quality of the neighbourhood) existing at the local level. Ferreira et al. (2021) also observed that the older adults, with low education levels and residing in areas with low population density, has lower rates of health care access, which translates into a doubly disadvantageous situation, since these older adults are potentially the most frequent users of these services.

Co-researchers disclosed the increasing difficulty of accessing primary healthcare (PHc) in the place where they resided, which resulted from a combination of multiple factors: (1) continued public disinvestment in low density regions, especially subsequent to the economic crisis of 2009, which has resulted simultaneously in the low rate of replacement and/or less urgency regarding the replacement of health professionals, (2) public transport network unsuitable for the needs of populations and progressively scarcer due to reduced demand; (3) increase in health needs associated with ageing and the occurrence of events with high traumatic potential (forest fires); and (4) the progressive decrease in the economic power of the retired population.

A study in the interior of southern Portugal (Alentejo), whose high level of population dispersion and low population density closely resemble that in the CR55+ (Freitas & da Costa, 2021) revealed that the accessibility to public health care (PHc) is only generally adequate for those Baixo Alentejo residents with their own automobile, since public transport is insufficient. The authors emphasized, however, that, given the economic capacity and physical condition to drive their own car, the issue of accessibility to PHc is not problematic, except when considering the dimension of equity, a critical factor in this type of assessment.

In the case of the three participant Arganil parishes, PHc access is more problematic because some health services, despite having adequate physical infrastructures,

were closed or only worked a few days a month due to a shortage of qualified workers (doctors and nurses) who are either not attracted to the region, or were not replaced in case of retirement, a fact which leaves the population underserved and reduced the region's ability to attract population. As Slater (2013) suggested, we need to think about the place where we live also in terms of life opportunities, understanding why individuals live where they live, why this place has the characteristics it has and how it enhances the process of selective exodus. Bambra et al. (2005: 109) emphasized the same point: "The relationship between health and place - and the health inequalities that exist between places - are to a large degree politically determined: Place matters for health, but politics matters for place".

The co-researchers' proposal for mitigating the local problem of PHc access was similar to that recommended in Freitas and da Costa (2021), which involved the regular provision of flexible transport by the parish council on a copayment basis to ensure transport. For this to happen, however, some PHc facilities had to be reopened or restructured. For regions with identical characteristics, Pisco (2011) and Rita (2021) proposed an integrated reorganization of health care provision, promoting close coordination between PHc and other more differentiated providers, with resources for the telemonitoring of chronic patients and the use of itinerant health teams able to move regularly throughout the region; they proposed the opening of pilot programs. These types of solutions would require an improvement of telecommunication networks to guarantee the safety of both users and providers so as to guarantee telemonitoring and the communication of essential data.

The academic researchers were surprised to observe that the co-researchers equated their needs for health conditions and land and forest management. This type of evidence can only be achieved in a collaborative research context where the co-researcher's perspective is clear and understandable, giving relevance to the methodology used. These co-researchers found that the provision of PHc at the local level is interdependent with policies to attract and fix populations. The effective implementation of such policies would leverage conditions to improve quality of life in these regions, including attracting investment to promote job setting and qualified human resources, as well as the definitive reorganization of essential public services. What was required was proper spatial and forest management and planning, improvement of road and mobile communication networks, and the adoption of a responsible and scientifically informed approach to forest management. Over the past 50 years, the local landscape has increasingly been overrun by pine (*Pinus pinaster*) and eucalyptus (*Eucalyptus globulus*) monocultures, due to a decreasing number of agricultural workers and an exodus of residents. These monocultures pose a significant risk for forest fires. The forest and its extraction are both an economic asset and a source of seasonal threat to these populations, as shown by the cyclical occurrence of large, increasingly frequent, and violent forest fires (Félix & Lourenço, 2019). This typology of needs and the hierarchy signalled by the co-researchers, is aligned with the perspective of quality of life associated with planning discussed by da Costa et al. (2013: 279): "Quality of life is the central objective of sustainable communities, which must seek a better quality of life for all their residents, maintaining the capacity of nature to function over time, minimizing waste, preventing pollution, promoting efficiency and developing local resources

to revitalize the local economy". Any approach, however partial, toward achieving this goal, will improve the permanence and safety of people in place and generate a favourable environment for the more efficient and sustainable provision of essential services. In addition, forest (de)planning and fire risk have a potential impact on the physical and mental health of populations, as the coresearchers emphasized. The fact that they are surrounded by a disorderly and poorly managed forest with a high risk of fire significantly increases residents' levels of stress and anxiety, due to life-threatening events in recent decades.

> *"We live in the mountains, and we are used to fire…but when it gets hot, from late spring until the first autumn rains, our days and nights are restless… the hell we went through with the 2017 fire has been forever etched in our memories!" (Co-researcher, 70 years).*

Research has documented the incidence of *post-traumatic stress disorder* (PTSD) in communities exposed to forest fires (Bryant et al., 2014), following the Victoria, Australia, catastrophe known as Black Saturday. In Portugal, following the 2017 forest fire wave, the very one mentioned by all coresearchers, Pereira et al. (2021) tracked a group of adolescents (n = 1828 young people; 6–18 years old) who were exposed to a traumatic forest fire event, some of whom were from Arganil. Of these, 4.6 per cent (n = 84) showed PTSD, adaptation disorder, separation anxiety and grief, while 2.2 per cent (n = 41) showed a higher risk of failure and school dropout. No research was found dealing specifically with pathology in older adults exposed to forest fires. However, according to Heid et al. (2017), older adults exposed to natural disasters, particularly violent ones, are also likely to show signs and symptoms compatible with PTSD, in severity varying inversely with social cohesion levels in the surrounding community. This stresses the importance of neighbourhood networks as potential factors reducing PTSD incidence. This last point highlights the added value of cohesion and local support networks, directly relating to unmet needs that were pointed out by coresearchers in the domain Living in Place – topophilia. Threats to co-researchers' permanence in place (Table 5) included: night-time isolation of people living alone; poor coverage of mobile communication networks; low levels of domiciliary support for low mobility residents; and a strong sense of seasonal insecurity due to the high risk of forest fires. Participants clearly expressed that the perception of physical and emotional insecurity must be considered if the right of these communities to age safely and remain in place is to be guaranteed. When perceived insecurity is combined with the weaknesses and unmet needs presented in the domain – Community empowerment: inclusion and participation (Table 8), we are faced with a worrisome situation in which a community is potentially less resilient when confronted with adverse events that are highly likely to reoccur. The continued loss of the region's attractiveness particularly to young and adult populations is worsened by apparently inefficient public policies regarding social cohesion and the guarantee of health care provision. This combination not only increases the potential for depopulation, but also compromises the return of former residents, reducing the resilience of these communities.

> *"Some of my friends who left with me in the 1970 to look for work and escape the tedium, are afraid to return or, when they do, they don't change their official residence so as continue to guarantee a family doctor in Lisbon." (Co-researcher, 71 years).*

The weakening of solidarity and neighbourhood networks makes communities less resilient, increases the risk of exclusion, and compromises the right to belong. Buffel and Phillipson (2019: 989), citing May (2018), point out that: "If belonging is what connects us to the surrounding world, it stands to reason that the world must allow this connection to take place in order for this sense of belonging to be sustainable. Thus "belonging" entails more than identifying with a particular group – it means being accepted by others as an integral part of a community or society.". Signalling this potential fragility by the co-researchers, highlights the importance of local social networks as essential elements of support for ageing in place.

Finally, the development of Stage 7 - Public Discussion with Decision-Makers - has been instrumental in demonstrating that it is possible to correct or mitigate power imbalances in these areas as well (James & Buffel, 2022), amplifying the voice of residents through the co-investigator process and qualifying them as protagonists of change. The return of results took place in two phases, as a corollary of the CR55+project, both aimed at discussing at regional and local level the identified and unmet needs, as well as the proposals made by older people. The first dissemination of results took place in June 2022, facilitated by academic researchers, and brought together regional health policy managers, service providers and mayors, who listened and reflected, in direct discourse, on the shortcomings and proposals for change and improvement validated by the co-investigators. The second round of feedback took place in October 2022, at the suggestion of Arganil's Social Action Councillor, who invited local security, transport, and health authorities to the discussion, as well as various public and private actors involved in providing social support to older residents. At Stage 7, it has been shown that the training of co-investigators, involving the transfer of knowledge and appropriate training to enable them to be the authors of proposals for substantive change, is a tool that can help to reverse traditional top-down decision-making processes, combat potential levels of ageism and, at the same time, contribute to the cohesion of territories that have accumulated demographic losses, economic losses, disinvestment in public services and, consequently, losses of cohesion over time.

The WHO (2015) recognises people's right to live at home, in the community and to age in place safely and independently. Understanding this concept implies the need to adapt the physical and social environment to daily life, knowing that most older people want to remain in an environment that is familiar to them, preferably staying in the same house, contacting the same neighbourhood, maintaining affiliation with the same community (Iecovich, 2014). The concept of place used here is a multilevel one, which involves housing, the neighbourhood and, in a broader sense, a set of conditions that allows people to enjoy a decent life: access to social networks, transportation, health resources and leisure opportunities (Fonseca & Porto, 2018). It should be noted that the co-researchers recognise as positive the existence of locally based support services, mostly provided by the social sector. These ser-

vices involve both formal and informal carers and contribute to employment and the local economy. Additionally, these services maintain a sense of protection and social cohesion, despite their relative isolation and the inadequacy of some public services, particularly health services. More restrictive public policies may contribute to the weakening of these organisations and make it impossible for the older populations to age in these places with a minimum of dignity, security, and care, resulting in an even faster depopulation of these territories.

Conclusion

The CR55+project successfully achieved its foundational goals through the use of co-investigative methodology. Co-researchers were provided with practical tools for self-advocacy, which included training on need identification and discussion, interview techniques, consensus meeting strategies, and other relevant competencies. Through identifying unmet needs and problems, the co-researchers inquired about decision-making processes, financing, and implementation of public policies, as well as the organization of local services to meet needs and the challenges inherent in their implementation. This accomplishes one of the objectives set forth by Buffel et al. (2017). By establishing the priority of needs and drawing up solutions, the co-research methodology enabled the local and cultural perspective to emerge, signalling interpretive processes that would probably have gone unnoticed by academic researchers, a fact particularly evident in the problems Living in Place – topophilia, and Community empowerment – inclusion and participation.

The project's noteworthy accomplishment was submitting a reflective paper to the municipal managers, detailing the co-researchers' opinions regarding priority areas for local interventions along with their proposed measures. This recognition helps to equalize the influence among stakeholders, thus enhancing the potential of achieving a higher quality of life for older residents. Additionally, it highlights the urgency of developing more coordinated responses at the local level, involving various sectors, and based on a more participatory governance programme.

We can therefore systematize the four lessons learned:

(i) We believe that in the future, once the fear of social contact generated by COVI-19 had been faded, the process of recruiting and signing up co-researchers can be made easier, with the added value of using a locally known partner with a high level of trust, as was the case with Cáritas;
(ii) To consolidate a relationship of trust and freedom expression, it is essential that academic researchers refrain from giving any indication of evaluating or ranking the unmet needs identified by co-researchers. Even in a context of internal disagreement between co-researchers, demonstrating neutrality is a fundamental asset that the academic team must always keep in mind;
(iii) In this type of project, it is absolutely essential to respect local social norms, as well as the periods that people allocate to the project, often modelled on agricultural seasonal calendars, avoiding any overlap with the tasks needed to carry out the project, which requires flexible planning;

(iv) This project can be successfully replicated locally with a small budget if local authorities change the traditional mode of participation based on simple administrative public consultation, provide and train local technicians for mediation tasks and active, non-judgmental listening, and facilitate the contribution of older adults in the design, implementation, and evaluation of results.

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Declarations

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