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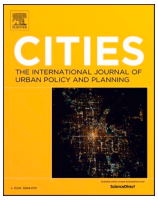

How older people experience the age-friendliness of The Hague: A quantitative study

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ABSTRACT

The municipality of The Hague has been a member of the WHO's Global Network for Age-Friendly Cities and Communities since 2015. The municipality commissioned a survey to investigate how older citizens view the age-friendliness of their city. A cross-sectional survey was conducted among a diverse sample of 393 community-dwelling older citizens. The survey made use of the Age Friendly Cities and Communities Questionnaire (AFCCQ), and multilevel regression techniques to investigate how social groups differ on the domains of the AFCCQ. The Hague scored a satisfied as an overall score (16.9 ± 8.87), and a satisfied on social participation (2.6 ± 2.46), civic participation and employment (1.4 ± 1.34), communication and information (1.4 ± 1.32), respect and social inclusion (1.6 ± 1.59), community support and health services (2.7 ± 2.79), transportation (1.7 ± 1.26) and financial situation (1.9 ± 1.26). The Hague has an above-average score in the field of housing (2.4 ± 1.06). For Outdoor spaces and buildings, the municipality scores a moderate positive score (0.9 ± 1.41). Significant differences were found for sex, age, socio-economic position, receiving care support, and use of mobility aids. The findings show that older people have different perceptions regarding their city's age-friendliness. Policy makers must acknowledge this heterogeneity among their older citizens and adapt city policies accordingly.

1. Introduction

The topic of age-friendly cities and communities came to light from a set of policy initiatives launched by the World Health Organization (WHO) during the 1990s and early 2000s. A central theme running through these policy initiatives is the notion of 'active ageing' (WHO, 2002), which refers to the idea that older people should be able to continue to participate in social, cultural, spiritual, economic and civic matters. This idea, in turn, led to the launch of the WHO's 'Global Age-friendly Cities' project (WHO, 2007a). In many cities around the world, focus groups were conducted in order to identify those factors that make urban environments 'age-friendly'. The project defined an 'age-friendly city' as encouraging 'active ageing by optimizing opportunities for health, participation and security in order to enhance quality of life as people age' (WHO, 2007a; Steels, 2015; Plouffe & Kalache, 2010; Buffel & Phillipson, 2016, 2018; Buffel et al., 2019; Rémillard-Boilard et al., 2021; van Hoof & Kazak, 2018; Marston & van Hoof, 2019; van Hoof et al., 2018; van Hoof, Marston, et al., 2021). The programme saw a launch of the 'Global Network of Age-friendly Cities and Communities' in 2010, in an attempt to encourage implementation of policy recommendations. The Dutch municipality of The Hague has been a member of the WHO's Global Network for Age-Friendly Cities and Communities since 2015.

Prior to the municipality's accession to the global network, a series of

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literature reviews, expert consultation meetings and pilot studies were initiated by the WHO, which led to a report which set forth a framework and set of indicators to monitor and evaluate progress in improving the age-friendliness of urban environments. Core indicators were structured around three key principles: equity, accessibility of the physical environment, and inclusiveness of the social environment (WHO, 2015). In assessing a city's strengths and deficiencies, older people will describe how the accompanying WHO checklist of features (WHO, 2007b) matches their own experience of the city's positive characteristics and barriers. They should play a role in suggesting changes and in implementing and monitoring improvements (WHO, 2007a).

In order to create age-appropriate living environments, it is of the utmost importance to involve older people in the design of their living environment, particularly because the importance given to neighbourhoods in old age can vary greatly (Fabian et al., 2019). One of the main questions to many older citizens in cities that are members of the global network is this membership of the WHO network and its recommendations mean for them? In short, how can older people or city administrators really tell that their city is age-friendly? Therefore, many cities have tried to evaluate the age-friendliness through a wide set of methodologies, particularly qualitative approaches (Barrie et al., 2019; Rémillard-Boilard et al., 2021; Ronzi et al., 2020; Sterns et al., 2020; van Hoof, Dikken et al., 2020), sometimes by using the recommended core indicators (WHO, 2015). A systematic quantitative approach to the evaluation and assessment of the age-friendliness of cities was lacking in most approaches (Dikken et al., 2020; Torku et al., 2020; Orpana et al., 2016). The lack of numerical data hampers cities to steer actions towards disadvantaged neighbourhoods or sub-populations, including older people with financial challenges or of (ethnic) minority groups. That is why Torku et al. (2020) stressed the need to adopt new assessment methods and instruments.

The municipality of The Hague commissioned a quantitative survey among its older citizens to investigate how a representative sample of its older population view the age-friendliness of their city. This survey is a quantitative extension to previous qualitative studies (van Hoof, Dikken, et al., 2020; van den Bergen et al., 2017; van Hoof et al., 2018). One of the notions of the activities of the Global Network for Age-Friendly Cities and Communities is that older people can stay independent and healthy for as long as possible if support is offered in a number of domains that pertain to every aspect of daily living. Based on this notion, the WHO (2007a) proposed eight domains in which cities would encounter challenges and in which actions are needed. These eight domains are (1) outdoor spaces and buildings; (2) transportation; (3) housing; (4) social participation; (5) respect and social inclusion; (6) civic participation and employment; (7) communication and information; and (8) community support and health services. As the municipality wished to map the age-friendliness of The Hague in its entirety, covering all the traditional domains of the WHO, the novel 23-item Age-Friendly Cities and Communities Questionnaire (AFCCQ) (Dikken et al., 2020) was used for this study.

This study is exploratory in nature, as no quantitative approach for measuring the age-friendliness of a city on all domains as defined by the WHO has been done before using a valid and reliable instrument. The analysis was guided by four research questions in order to explore how older people living in The Hague experience the age-friendliness of their city.

1. What are the overall experiences of older people living in The Hague regarding age-friendliness?
2. Do differences exist on domains as defined by the WHO?
3. Do differences exist between districts of the municipality?
4. Do differences exist between social groups (using diverse social-demographic variables) regarding the total age-friendliness and separate domains as defined by the WHO?

With regards to the last research question: Given well-known sex differences in old age for example in life-expectancy, pension income, and health (Edge et al., 2017; Kontis et al., 2017; Raab et al., 2018) we expect to find differences between men and women. There are no expectations regarding the direction of the differences in sex. As there is a large age range in the sample, it is distinguished further in younger-old, medium-old and older-old because needs and also resources differ between these age groups (Tomioka et al., 2017). It is further assumed that older people with a higher socio-economic position score better on the AFCCQ than those with a lower socio-economic position, as previous research has found that one's socio-economic position is correlated, for instance, with higher income and better health (Hoffmann et al., 2018; Manstead, 2018). Ethnicity (or according to the Dutch definition, people with a 'migration background') is used as a fourth socio-demographic variable, as over 30% of the older population in ethnically diverse The Hague has a non-native background. Living alone or with a partner is used as a variable as it is related to one's independence and reliance on professional care (instead of a caregiving spouse), as well as one's financial situation. Finally, we assume that older people with poor health and mobility limitations also score lower on the AFCCQ as the accessibility to their neighbourhood is limited (Bleijenberg et al., 2017) and conditions of individual functioning and frailty may influence the perception of the age-friendliness (Garner & Holland, 2020).

2. Methodology

2.1. Design

The study followed a cross-sectional design. This design followed the intended use of the Age Friendly City and Community Questionnaire (AFCCQ) as a single self-assessment measurement at one point in time to determine how older people experience the age friendliness of their city (Dikken et al., 2020).

2.2. Setting

The study was conducted in the municipality of The Hague (Dutch: Den Haag or 's-Gravenhage), the third largest city in The Netherlands with a metropolitan population of over 1 million people. It is the seat of government of the Netherlands, and as a global city The Hague is known as the home of international law and arbitration, such as the International Court of Justice. The municipality has eight districts (Fig. 1), namely Laak, Haagse Hout, Loosduinen, Ypenburg-Leidschenveen, Scheveningen, Segbroek, Centrum, and Escamp (ranked in order of increasing population). These districts have different levels of overall population density (Fig. 2), with Laak, Centrum and Segbroek being the most densely populated districts.

On January 1st 2020, there were 546,000 inhabitants in the municipality of The Hague (Den Haag, 2020), of whom almost 14% were aged 65 and over. About 95% of these older adults live independently. About 55% of the older people are females. Approximately 31% of older people are of an ethnic minority, particularly from Suriname or Indonesia/former Dutch East Indies, and other Western countries, in particular Germany, the United Kingdom and Belgium (Den Haag, 2020). This percentage is expected to increase to over 36% in 2025. The districts of Loosduinen, Escamp and Scheveningen have the highest populations of older people (52%), and the distribution of older people over the municipality remains stable. Laak and Ypenburg-Leidschenveen have only a 9% share of older people in their respective populations. Approximately 41.4% of the older adults in The Hague live together with a partner. There are 30.4% single-person households for the age-cohort 65–74 years, and 28.2% single-person households for the cohort of people aged 75 and over. According to the municipality, about 88% of the older adults feel reasonably to very happy with their lives. About 63% of older citizens have a (physical) impairment or chronic disease (Den Haag, 2020). According to municipal data, the number of older adults will increase relatively faster than the total

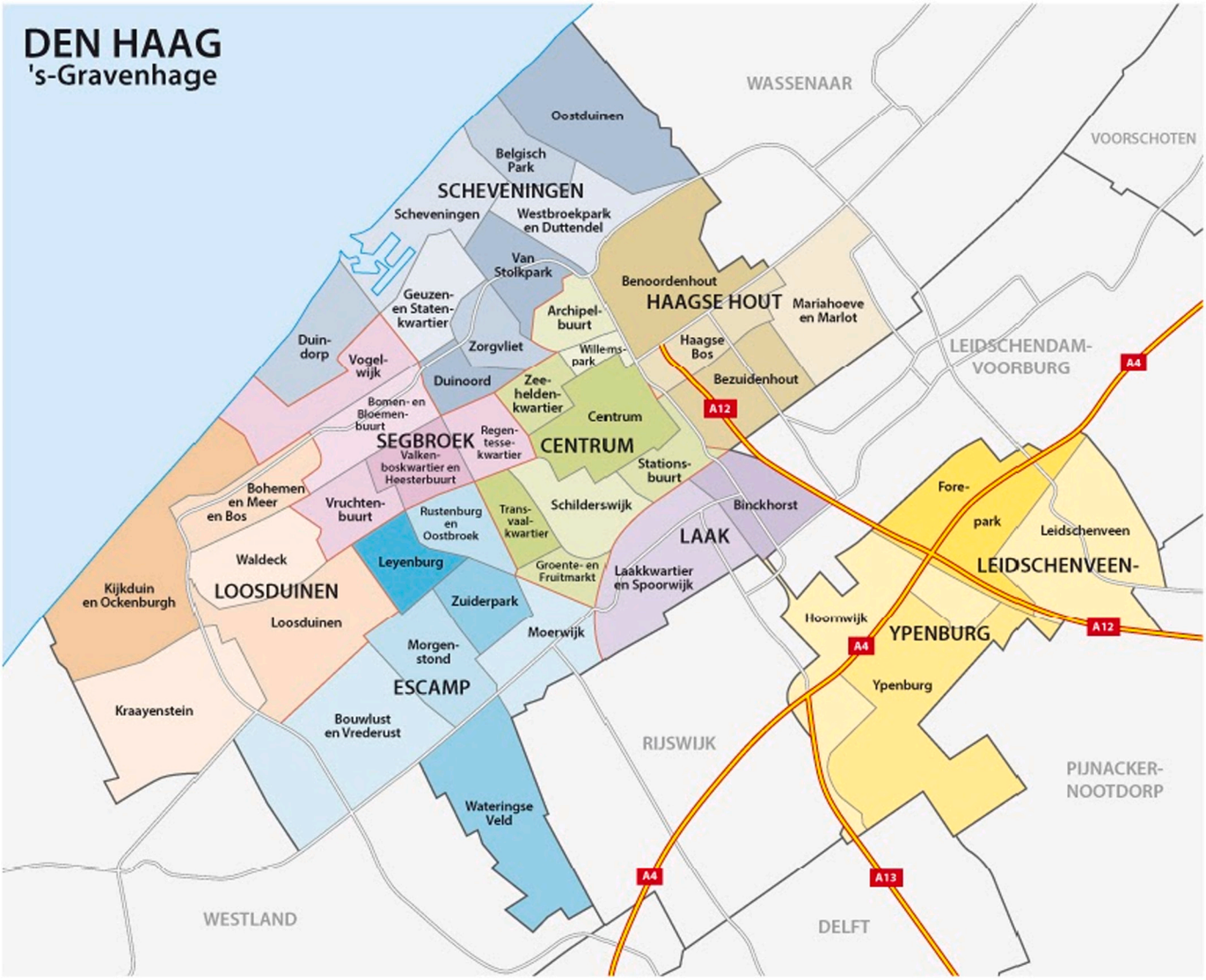

Fig. 1. Administrative and political map of the municipality of The Hague.
Source: Shutterstock stockvector-ID: 684913948. https://www.shutterstock.com/nl/image-vector/administrative-political-map-dutch-city-hague-684913948.

population, especially the number of older males (van Hoof, Hulsebosch-Janssen et al., 2021).

2.3. Recruitment and participants

A representative sample of community-dwelling older people (65 years and over) living in The Hague were recruited to participate in this study, based on the figures of January 2019. Using a margin of error of 5% and a confidence level of 95%, a minimum of 383 respondents was needed to be representative for the municipality of The Hague. Recruitment and participation took place between July and September 2020. There were three inclusion criteria; i) only those aged 65 years or over, ii) who lived in their own home (i.e., not residing in institutional care), and iii) were able to communicate in Dutch were included.

In order for the sample to be representative, the included respondents had to reflect certain demographic characteristics of the older population in The Hague. The ratio between males and females had to reflect that of the municipality, namely 45%–55%. Participants had to come from all districts of the municipality, knowing that older people are not evenly spread across The Hague. A representative distribution across the age cohorts was sought (65–69 (~25%); 70–74 (~32%) and 75+ (~43%)), as well as for the share of the population living in a home that is either rented or owned (~60% were owned by the dweller, and ~40% rented) (Lijzenga et al., 2018). We also recruited people who either lived alone or with a spouse, received care services such as house cleaning or help with personal care, lived with chronic conditions, and used mobility aids (wheeled walker or wheelchair). Furthermore, 31.3% of the sample - ideally - had to have an immigrant background (according to the definitions of CBS—Statistics Netherlands). The largest group of immigrants (~48%) are immigrants from Western countries, followed by people from Suriname (~23%), as well as Morocco, Turkey, Aruba and the former Netherlands Antilles (Curaçao, Sint Maarten, Bonaire, Sint Eustatius and Saba), and other non-Western countries.

The data collection was carried out with a stratified sampling technique using an existing database with older people living in The Hague. This database was made between 2011 and 2015 through a simple random sampling approach using the municipal population database by a research agency (*aha! marktonderzoek en marketingadvies*, Groningen, The Netherlands). From the existing database, a total of 968 potential respondents were invited. This led to the participation of 337 respondents, who completed the survey. These participants made up 86% of the respondents in this study. Then, because some participants with specific group characteristics were underrepresented in the sample, stratification on immigrant background was used in the recruitment by

Fig. 2. Overall population density of the municipality of The Hague.

the research team (n = 56, 14% of respondents in this study). Doing so, resulted in a good reflection of the actual population of community dwelling older people living in The Hague (Table 1).

2.4. Measures

Along with reporting information related to demographic characteristics (Table 1), participants completed the Age Friendly Cities and Communities Questionnaire (AFCCQ) (Dikken et al., 2020). This questionnaire is composed of 23 items that cover all eight domains of age-friendliness as defined by the WHO (WHO, 2015; WHO, 2007a, 2007b) and an additional domain of financial situation which is described as one of the pillars of the core indicators for age-friendly cities (WHO, 2007a, 2007b). The AFCCQ asks participants to express their views on a scale ranging from totally disagree to totally agree (−2 to +2 point Likert scale). This scoring led to a negative score if people largely disagreed with an item and a positive score if people agreed. As we asked for the views of older people, negative scores can be interpreted as dissatisfaction with an item/domain, and positive scores as "satisfaction".

The AFCCQ demonstrated good face-validity and excellent readability and Scale-Content Validity Index/average (S-CVI/ave = 0.95) (Dikken et al., 2020). Furthermore, the AFCCQ proved psychometrically sound after Exploratory and Confirmatory Factor Analyses. Values of the Comparative Fit Index (CFI) and Tucker Lewis Index (TLI) for the final model were 0.937 and 0.923 respectively, both above the 0.9 threshold (Hu & Bentler, 1999). The root-mean square error of approximation (RMSEA) was 0.057, which is lower than 0.08 (threshold for moderate fit) (MacCallum et al., 1996). The Standardized Root Mean Square Residual (SRMR) was 0.057, which is below 0.08 which is considered a good fit according to Hu and Bentler (1999). The internal consistency of the final model emerged from the Confirmatory Factor Analysis was examined by calculating the composite reliability per factor which all demonstrated a value above the threshold of 0.70 (Netemeyer et al., 2003). Finally, the hypothesis that the total AFCCQ and separate domains were highly correlated with the previous developed Age-Friendly

Table 1
Demographics of participants (total = 393).

Sex	
Male	n = 190 (48.3)
Female	n = 203 (51.7%)
Age	
Mean (SD)	74.8 (6.1)
65–69	n = 92 (23.4%)
70–74	n = 119 (30.3%)
75+	n = 182 (46.3%)
Country of birth	
Born in The Netherlands	n = 335 (85.2%)
Born in another country	n = 58 (14.8%)
Educational level	
ISCED 0–2	n = 122 (31%)
ISCED 3–4	n = 99 (25%)
ISCED 5–6	n = 172 (44%)
Type of dwelling	
Owner-occupant	n = 234 (59.5%)
Social housing	n = 111 (28.2%)
Private rent	n = 48 (12.2%)
Living together with a spouse or partner (%)	n = 217 (55.2%)
Receiving care (%)	n = 105 (26.7%)
Living with one or more chronic conditions (%)	n = 192 (48.9%)
Using a wheeled walker or a wheelchair (%)	n = 61 (15.5%)

Environment Assessment Tool (Garner & Holland, 2020) was confirmed ($r = 0.75$, $p < 0.01$), indicating good convergent validity of the AFCCQ.

2.5. Analysis

All participants had no missing values. To investigate which social groups score high and which score low on the AFCCQ linear hierarchical linear regression technique was used with the districts at the upper level and the individuals at the lower level. Ten multilevel regressions were conducted with the AFCCQ (Total score and the nine domains) as dependent variables (the score of the domains was divided by the number of items used for them to increase the comparability between the models) and several socio-economic as independent variables. Sex (male/female) and age-groups (<70/70–75/>75) were included. Following previous research (Hofäcker & Naumann, 2015) socio-economic position was operationalized using the highest educational degree. Education was measured with the International Standard Classification of Education (ISCED) (Steedman & McIntosh, 2001). Three levels of education were included: low (ISCED 0–2), medium (ISCED 3–4) and high (ISECD 5–6). In addition, the type of dwelling was used as a proxy for the socio-economic position (Owner-occupant/Social housing/Private rent), as higher income families often live in houses they own, and, at older age, in a private rent dwelling. Lower income households generally live in social housing. Ethnicity is operationalized by country of birth (The Netherlands/Not The Netherlands). Poor health is operationalized by the occurrences of chronic diseases (yes/no) and limitations of mobility by the usages of wheelchair/wheeled walker (yes/no).

2.6. Ethical consideration

This research followed the Medical Research Involving Human Subjects Act of the Netherlands (Government of The Netherlands, 1998). For non-medical non-intervention studies, conducted with people who are able to express informed consent willingly and consciously, no approval of a Medical Ethics committee is required and informed consent suffices. Participants from the database had consented to their participation by being a part of the panel. The additionally recruited participants were asked to sign informed consent forms prior to filling out the questionnaire.

3. Results

3.1. AFCCQ scores for the municipality of The Hague

The municipality of The Hague in total scores a "satisfied" in seven out of nine domains of the AFCCQ (Table 2 and its footnote for the interpretation of scores). For the domain of Outdoor spaces and buildings, the municipality scores a moderate positive score (neutral to somewhat satisfied). For the domain of Housing, the municipality receives an above average score in terms of satisfaction. The total score on the AFCCQ is 16.9 ± 8.87 (on a scale of −46 to +46), and shows that older citizens are overall satisfied with the age-friendliness of The Hague. This number does not express the perceptions of various subgroups in the society.

3.2. AFCCQ scores for the districts

When looking at the break-down scores for the eight districts of the municipality of The Hague, which were created in 1988, all subscores are positive again. Some districts score higher than others (Table 2). The district of Leidschenveen-Ypenburg scores somewhat lower in various domains, whereas Loosduinen, Haagse Hout and to a lesser extent Scheveningen and Laak, score slightly higher. The district Haagse Hout has the highest average score (18.4), and Leidschenveen-Ypenburg the lowest (14.7) (on a scale of −46 to +46). All these scores express satisfaction, apart from Leidschenveen-Ypenburg which scores neutral to slightly satisfied.

When looking at the various domains of the AFCCQ, Housing scores relatively high, whilst domains as Community Support and Health Services, and Outdoor Spaces and Building score relatively low in various districts. The domain of Housing scores more than average satisfaction in all districts. The domain of social participation shows satisfactory scores, with a lower score for Leidschenveen-Ypenburg. The domain of Respect and Social Inclusion scores satisfied in all districts, except for Haagse Hout and Leidschenveen-Ypenburg, which have an above-average satisfaction. In the domains of Civic Participation and Employment, and Communication and Information, all scores are satisfactory. The domain of Community Support and Health Services sees neutral to slightly satisfied scores, or satisfied scores. The lowest scores are found in the districts of Leidschenveen-Ypenburg and Centrum, the highest in Loosduinen and Haagse Hout. The domain of Outdoor Space and Buildings shows satisfactory scores for three districts, whilst five others scored neutral to satisfied. The highest scores are found in Loosduinen and Haagse Hout, the lowest in Leidschenveen-Ypenburg. The domain of Transportation sees satisfactory scores in all districts, with the highest score in Loosduinen. All districts score satisfactory for the domain of Financial Situation, and an above-average satisfaction for the districts of Scheveningen and Haagse Hout.

3.3. Factors associated with AFCCQ scores

The multilevel regression (Table 3) showed the following results: Being female was significantly negatively associated with the Housing (coef: -0.12; S.E: 0.06), Transportation (coef: -0.14; S.E.: 0.07) and Financial Situation (coef: -0.18; S.E.: 0.06). The two older age groups had significantly higher scores on the Financial Situation domain: 70–75 (coef: 0.19; S.E.: 0.08) and >75 (coef: 0.27; S.E.: 0.08). The oldest age group in addition had significantly higher scores on the Total index (coef: 0.13; S.E.: 0.05) as well as the Community support and health services (coef: 0.19; S.E.: 0.07), the Social Participation (coef: 0.16; S.E.: 0.08) and the Outdoor spaces and buildings (coef: 0.37; S.E.: 0.09) domains. Higher education was significantly associated with the Housing (coef: 0.19; S.E.: 0.07) and Respect and social inclusion (coef: 0.22; S.E.: 0.10) domains, but negatively with the Outdoor spaces and buildings domain (coef: -0.20; S.E.: 0.09). Both respondents living in social housing (coef: -0.24; S.E.: 0.08) and private rent (coef:-0.22; S.E.: 0.10)

Table 2
Scores (Mean ± SD) for AFCCQ domains for the municipality of The Hague and its districts (n = number of participants).

	Total AFCCQ	Housing	Social participation	Respect and social inclusion	Civic participation and employment	Communication and information	Community support and health services	Outdoor spaces and buildings	Transportation	Financial Situation
Range	-46 to +46 (23 items)	-4 to +4 (2 items)	-8 to +8 (4 items)	-4 to +4 (2 items)	-4 to +4 (2 items)	-4 to +4 (2 items)	-10 to +10 (5 items)	-4 to +4 (2 items)	-4 to +4 (2 items)	-4 to +4 (2 items)
The Hague Total (n=393)	16.9±8.87 (++)	2.4±1.06 (+++)	2.6±2.46 (++)	1.6±1.59 (++)	1.4±1.34 (++)	1.4±1.32 (++)	2.7±2.79 (++)	0.9±1.41 (+)	1.7±1.26 (++)	1.9±1.26 (++)
Loosduinen (n=68)	17.3±9.00 (++)	2.2±1.03 (+++)	2.6±2.68 (++)	1.5±1.70 (++)	1.4±1.50 (++)	1.3±1.32 (++)	3.0±2.84 (++)	1.2±1.35 (++)	1.8±1.56 (++)	1.9±1.22 (++)
Escamp (n=74)	16.6±9.10 (++)	2.3±0.91 (+++)	2.5±2.43 (++)	1.5±1.66 (++)	1.3±1.42 (++)	1.3±1.42 (++)	2.8±2.63 (++)	1.0±1.39 (+)	1.7±1.48 (++)	1.7±1.31 (++)
Segbroek (n=61)	16.8±7.09 (++)	2.4±1.21 (+++)	2.8±2.15 (++)	1.7±1.28 (++)	1.3±1.18 (++)	1.3±1.24 (++)	2.5±2.54 (+)	0.7±1.41 (+)	1.7±1.32 (++)	2.0±1.10 (++)
Scheveningen (n=69)	17.5±8.30 (++)	2.4±1.23 (+++)	2.9±2.14 (++)	1.6±1.56 (++)	1.5±1.50 (++)	1.5±1.21 (++)	2.7±2.55 (++)	0.7±1.43 (+)	1.7±1.47 (++)	2.2±1.06 (+++)
Centrum (n=39)	15.1±10.53 (++)	2.3±1.03 (+++)	2.7±2.69 (++)	1.6±1.82 (++)	1.4±1.42 (++)	1.2±1.41 (++)	1.8±3.56 (+)	0.9±1.68 (+)	1.4±1.51 (++)	1.4±1.71 (++)
Laak (n=24)	16.5±7.87 (++)	2.2±0.77 (+++)	2.7±2.43 (++)	1.5±1.41 (++)	1.5±1.17 (++)	1.3±0.96 (++)	2.8±2.86 (++)	1.1±1.07 (++)	1.6±1.00 (++)	1.4±1.28 (++)
Haagse Hout (n=48)	18.4±10.13 (++)	2.5±1.00 (+++)	2.7 ±2.68 (++)	2.1±1.64 (+++)	1.5±1.28 (++)	1.4±1.52 (++)	3.0±2.85 (++)	1.2±1.37 (++)	1.5±1.85 (++)	2.2±1.14 (+++)
Leidschenveen-Ypenburg (n=10)	14.7±10.02 (++)	3.0±1.05 (+++)	1.2±2.93 (++)	2.2±1.47 (+++)	1.6±1.34 (++)	1.3±1.33 (++)	1.1±2.42 (+)	0.6±1.34 (+)	1.7±1.82 (++)	2.0±0.94 (++)

The colored zones represent how dissatisfied or satisfied older people are regarding the city as a whole or a specific domain. Scores in the green zones mean that people are neutral to slightly satisfied (+) to very satisfied (++++) based on the interpretation and presentation method presented by Dikken et al. (2020).

had significantly lower scores on the Financial Situation domain than house owners. Those receiving formal care support had significantly higher values on the Community support and health services (coef: 0.15; S.E.: 0.07) and Financial Situation (coef: 0.20; S.E.: 0.08) domains. Having to use a wheelchair or wheeled walker was significantly negatively associated with the Total index (coef: -0.14; S.E.: 0.06), the Social Participation (coef: -0.20; S.E.: 0.10) and Transportation (coef: -0.72; S.E.: 0.12) domains.

4. Discussion and implications

Overall, older people aged 65 years and older residing in the municipality of The Hague experience the age-friendliness of their city as satisfactory in all domains, according to the AFCCQ. Regarding housing, participants are especially satisfied, and less so about the Outdoor Spaces and Buildings. When looking at the results of the multilevel regression analysis, factors as sex, higher age, education, receiving care support, dwelling and mobility limitations have a significant impact on the AFCCQ scores, and/or its nine domains.

4.1. Findings of the AFCCQ

The municipality of The Hague scores a "satisfied" in seven out of nine domains of the AFCCQ, with a slightly lower score for Outdoor spaces and buildings, and a higher score for housing. These scores are explained using the most recent quantitative and qualitative data from the Sixth Municipal Monitor for Older Citizens, as incorporated in van Hoof, Hulsebosch-Janssen et al. (2021). The high scores for housing (2.4 ± 1.06) show that older people are satisfied with their own dwelling. Half have been living in the same house for over 20 years, and about 80% do not want to move in the next two years. Overall, older citizens in The Hague are less inclined to move to another house than other cohorts. Moving is only considered when health is deteriorating or when people are in need of care services. Older people in The Hague live more often in social housing than the average citizen. Of them, 16% reside in a lifetime home. When shifting focus away from housing to the neighbourhood, scores are lower and have a large standard deviation (Outdoor spaces and buildings, 0.9 ± 1.41). Two thirds stated that the quality of the neighbourhood stayed the same in the last year. One fifth saw a deterioration. Older people are satisfied with the level of services such as shops and public transportation, and are dissatisfied about parking options. There is no apparent connection with population density of the districts and the satisfaction levels with the outdoor spaces as part of the Outdoor spaces and buildings domain. Up to 20% of older people have felt unsafe in their own neighbourhood, though the level of feeling safe and secure has risen over the last couple of years. When it comes to transportation (1.7 ± 1.26), the average older person in The Hague makes a transfer twice a day, which is below average. The older a person, the less mobile people tend to be. The main reason for transfers is to go out shopping and for social purposes. Movements are largely made by car (as a driver), on foot or by bicycle. Public transportation, the level of maintenance of roads and bicycle tracks are satisfactory.

When focusing on the social aspects of the age-friendliness of The Hague, scores for social participation (2.6 ± 2.46) are high but with a large standard deviation. Overall, the liveability of the neighbourhood is appreciated by older citizens of The Hague, both in terms of the social and physical qualities. The municipality subsidizes various initiatives for meeting peers and meal services, and some of these services focus solely on older people. Participation depends on the disposable income level (Financial Situation, 1.9 ± 1.26), as about 51% of older people in The Hague are on a low income (€2000 per month or less). This is below the average of all citizens of the municipality. About a quarter of all older people state that their financial situation has deteriorated over the course of the last year, which also meant that people had to cut down on personal expenses. Concerning respect and social inclusion (1.6 ± 1.59), it was found that over half of the older people feel at home in the

Table 3
Multilevel regression of sociodemographic on the AFCCQ (Total and nine domains). Depicted are coefficients and standard errors in parentheses.

	Total	Housing	Social participation	Respect and social inclusion	Civic participation and employment	Communication and information	Community support and health services	Outdoor spaces and buildings	Transportation	Financial situation
Sex (ref: Males)										
Females	−0.0754	−0.116*	−0.0224	0.0493	−0.0465	−0.124	−0.0725	−0.0836	−0.144*	−0.175**
	(0.0398)	(0.0550)	(0.0641)	(0.0838)	(0.0703)	(0.0690)	(0.0576)	(0.0711)	(0.0720)	(0.0626)
Age (ref: <70)										
70–75	0.0713	0.0128	0.137	−0.0422	0.0353	−0.0127	0.0882	0.112	0.0363	0.188*
	(0.0520)	(0.0719)	(0.0837)	(0.110)	(0.0918)	(0.0901)	(0.0752)	(0.0929)	(0.0942)	(0.0818)
>75	0.134**	−0.0203	0.155*	0.0568	−0.0490	0.141	0.193**	0.371***	−0.0153	0.270***
	(0.0485)	(0.0671)	(0.0781)	(0.102)	(0.0857)	(0.0841)	(0.0702)	(0.0867)	(0.0879)	(0.0763)
Education (ref: ISCED 0–2)										
ISCED 3–4	−0.0765	0.00921	−0.102	0.100	−0.124	−0.127	−0.141	−0.168	0.0988	−0.111
	(0.0517)	(0.0716)	(0.0833)	(0.109)	(0.0914)	(0.0897)	(0.0749)	(0.0925)	(0.0938)	(0.0814)
ISCED 5–6	0.0288	0.187**	0.0352	0.223*	0.0826	−0.0223	−0.0670	−0.200*	0.0857	0.0739
	(0.0482)	(0.0666)	(0.0775)	(0.101)	(0.0851)	(0.0835)	(0.0697)	(0.0861)	(0.0873)	(0.0758)
Ethnicity (ref: Dutch)										
Non-Dutch	0.0506	0.0403	0.0505	−0.0685	0.180	0.171	0.0410	0.137	−0.0458	−0.0357
	(0.0542)	(0.0749)	(0.0872)	(0.114)	(0.0957)	(0.0940)	(0.0784)	(0.0969)	(0.0982)	(0.0853)
Living (ref: Alone)										
Together	−0.0147	−0.0167	−0.0709	−0.0322	−0.0538	0.0110	0.0256	0.0346	−0.0530	0.0189
	(0.0405)	(0.0560)	(0.0652)	(0.0853)	(0.0715)	(0.0702)	(0.0586)	(0.0724)	(0.0733)	(0.0637)
Dwelling (ref: Owner-occupant)										
Social housing	0.0643	0.00000849	0.0751	0.0733	0.154	−0.00492	0.141	0.175	0.0749	−0.239**
	(0.0492)	(0.0681)	(0.0793)	(0.104)	(0.0869)	(0.0854)	(0.0712)	(0.0880)	(0.0895)	(0.0775)
Private rent	0.0552	−0.0385	0.101	0.0668	0.0805	0.0292	0.135	0.0959	0.0806	−0.222*
	(0.0603)	(0.0835)	(0.0972)	(0.127)	(0.107)	(0.105)	(0.0873)	(0.108)	(0.109)	(0.0950)
Support (ref: No)										
Yes	0.0326	−0.102	0.000199	0.0366	−0.0787	0.0662	0.150*	0.0150	−0.134	0.195*
	(0.0513)	(0.0709)	(0.0826)	(0.108)	(0.0906)	(0.0890)	(0.0742)	(0.0917)	(0.0930)	(0.0807)
Chronic diseases (ref: no)										
Yes	−0.0744	−0.0914	−0.118	−0.0946	−0.102	−0.106	−0.0385	0.0531	−0.0648	−0.118
	(0.0402)	(0.0556)	(0.0647)	(0.0847)	(0.0710)	(0.0697)	(0.0581)	(0.0718)	(0.0728)	(0.0632)
Wheelchair/ wheeled walker (ref: No)										
Yes	−0.137*	0.0509	−0.201*	−0.160	−0.0499	−0.139	−0.00944	0.0406	−0.721***	−0.175
	(0.0624)	(0.0863)	(0.100)	(0.132)	(0.110)	(0.108)	(0.0903)	(0.112)	(0.113)	(0.0982)
N	393	393	393	393	393	393	393	393	393	393
Intercl. correl.	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01

* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

neighbourhood where they live. About 41% state that people do not really know each other on the neighbourhood level. At the same time, about a third have intensive levels of contact with others in the neighbourhood. Overall, older people experience a respectful treatment by others, though up to 14% have experienced mistreatment in the public space. Concerning communication and information (1.4 ± 1.32), it is important for older people to know that certain services and facilities are available in the first place. The Internet, papers and magazines, public libraries, municipal helpdesks as well as a personal network are sources of information. Consultants for older people are available for advice and assistance. Approximately 86% of older people make use of the Internet, but again, the older the less frequently this medium is used. When it comes to civic participation and employment (1.4 ± 1.34), only 7% of people aged 65 years and over in The Hague are involved in paid employment. A third is engaged in volunteering, and 30% as an informal caregiver. Community support and health services (2.7 ± 2.79) are necessary to stay healthy and independent. Over one third of older people in The Hague receive domestic care, and 9% receive personal care. The general rule is the older a person, the more assistance is received.

4.2. Outcomes of the regression analysis

Concerning the outcomes of the regression analysis, it was found that sex is significantly associated with the Housing and Financial Situation, with women having lower scores. The latter is in line with previous research showing a clear gender-pension-gap in the Netherlands (Frericks et al., 2009). Those older than 75 have higher scores on the total

AFCCQ as well as the domains Community support, Social Participation and Outdoor spaces and buildings. Both older age groups report higher values for Financial Situation. A possible explanation for this result is a survivor bias. As life-expectancy is closely correlated with income (Mackenbach & Looman, 2013), it seems plausible that in the older age-groups of the sample the share of those with high income is larger and hence are more satisfied with their financial situation. The survivor bias might also help to understand the higher values of the oldest age-group on the other domains and the total score. An alternative explanation is the 'satisfaction paradox'. Older generations, despite their circumstances, appear to be more satisfied than younger generations once they compare their current situation with their childhood and early adulthood and the generation before them, and experience a sharp contrast between current and past (Hansen et al., 2008). In addition, people compare their own situation with that of other groups in society. According to The Netherlands Institute for Social Research the life situation of older people and in particular of older people aged 75 years and over, has improved in the period 2008–2018, whilst the living conditions of the population in general remained more or less the same (Wennekens et al., 2019). A third explanation could be that older people lower their expectations as the result of the limitations and losses that come with ageing and constraints on economic resources (Hansen et al., 2008) and adopt milder norms and values as they age (Puvill-Strooband, 2017). Thus, they are satisfied with less and have higher scores on the AFCCQ.

As mentioned before, the results for the correlation of education with the AFCCQ show that those with the highest level of education show significant higher scores on the Housing and Respect and social inclusion domains and lower scores on the Outdoor spaces and buildings domain. As higher education correlates with better housing the first finding is to be expected (Naegele et al., 2020). The second can be explained with the higher expectations the respondents with high education have towards the outdoor environment. In line with this is the finding that those living in social housing are more satisfied with the Outdoor spaces and buildings domain; potentially due to their lower expectations. Those living in social housing and in private renting show lower scores on Financial Situation, probably because they have to pay rent and hence have less monthly income to their disposition. In the Netherlands, the rent charged by social housing associations gets indexed on a yearly basis (often based on the rate of inflation). In contrast, older home owners have often paid off their mortgages, and hence see no increase in their basic expenses for housing. Differences in housing costs in relation to disposable income are further magnified by the rising costs of energy (Boerenfijn et al., 2018). Participants who received care support were significantly more satisfied with domains Community support and health services as well as Financial Situation. This can be explained by the fact that those with support actually have the experience of receiving care, have gone through the process of accepting the fact they receive assistance and support, and are more satisfied with, and perhaps grateful for, the assistance and care they receive. Much of the healthcare services offered to community-dwelling older people in The Netherlands is offered through the Municipal Support Act by the municipality in which people live.

In line with our assumptions those with mobility limitations report lower scores on the total AFCCQ as well as on Transportation and Social Participation. The latter shows the strongest effect sizes highlighting the challenges people using a wheelchair or wheeled walker face in terms of their mobility. No significant correlations were found for ethnicity, chronic diseases, and cohabitation.

Comparisons between the outcomes of the regression should be made with caution. The most significant differences between social groups were found for the Financial Situation domain, indicating that there are inequalities in this domain. This also highlights the domain's importance when assessing the perceived age-friendliness of a city (Dikken et al., 2020).

4.3. Strengths and limitations

This quantitative survey using the AFCCQ was the first of its kind. It is cross-sectional in nature, and therefore, shows no causality. The regression analysis showed the diversity between various sub-populations, and to a lesser extent, between districts of the municipality. On the district level, the numbers of respondents are too small to be a truly representative subsample. One of the limitations is the lack of qualitative data that accompanies the quantitative data, which would help in the interpretation of findings. The representativeness of the sample is high, but lacks older people with a Western immigration background, as they did not participate in the study. It is expected that their scores are rather equal to those of native Dutch respondents. Also, the percentage of people living with a spouse in the present sample was 55%, which is more than the 42% of all older people living in The Hague. People living in institutional care were excluded from this study, but do represent a relevant subpopulation among older people living in The Hague. As outlined in Dikken et al. (2020), there have been discussions about whether earlier tools and checklists are the most adequate method to deal with the diversity of cities and heterogeneity of their populations. Such critical reflections by Buffel et al. (2012) and Scharf et al. (2003), addressed the need for adjustment of methods and instruments to highly unequal local contexts, both between and within urban communities. In their study, Garner and Holland (2020) pointed to the relation between individual functioning and frailty and perceptions of environmental age-friendliness, which has also come to the fore in the present survey. Scharf et al. (2003) found that older people's ethnic background has an important influence on their perceptions, which was not confirmed in the present survey. This is yet again proof that the call by Buffel et al. (2012) for the consideration of and accounting for highly unequal local contexts between cities.

4.4. Implications for policy and practice

Building on the notions that the WHO emphasizes the importance of age-friendly cities and communities, and supporting efforts and activities of the Global Network for Age-Friendly Cities and Communities, this quantitative study was conducted in The Hague. The results of this study can be used by age-friendly cities in The Netherlands and beyond to improve the age-friendliness for its older citizens, for instance, by encouraging policy makers and practitioners to improve scores of the nine domains through their social and urban planning policies. Policy makers may also ask for additional research in the fields with lower scores, such as for the domain of outdoor spaces and buildings. As the data are collected among older people themselves instead of their representatives, the outcomes provide a first-hand account of the perceived age-friendliness. The AFCCQ can be used to give a voice to older people and its outcomes may help municipalities and cities to let older people participate in decision-making and redesigning their cities and living environments (van Hoof, Marston, et al., 2021). Implementing age-friendly policies for older citizens as homogeneous group, may overlook the diversity in the older population of the municipality, which encompasses more than ethnic or cultural diversity. By distinguishing between various subgroups which may emerge from a regression analysis, cities can target specific groups in society with dedicated actions, and simultaneously divert actions targeted at more satisfied groups. In addition, we suggest further studies with different methodical approaches that focus on the unmet needs of older people, as well as the effectiveness of policies and interventions to improve the perception of age-friendliness among older citizens around the world.

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Availability of data and materials

The data and supporting files are available from the Chair of Urban Ageing, The Hague University of Applied Sciences, on request and conditional on the permission of the Municipality of The Hague.

CRediT authorship contribution statement

Joost van Hoof: Conceptualization, Methodology, Validation, Formal analysis, Investigation, Writing – original draft, Writing – review & editing, Supervision, Funding acquisition. **Rudy F.M. van den Hoven:** Methodology, Formal analysis, Resources, Investigation, Writing – original draft, Writing – review & editing. **Moritz Hess:** Methodology, Validation, Formal analysis, Writing – original draft, Writing – review & editing. **Willeke H. van Staalduinen:** Methodology, Resources, Investigation, Writing – original draft, Writing – review & editing, Funding acquisition. **Loes M.T. Hulsebosch-Janssen:** Resources, Writing – review & editing, Funding acquisition, Project administration. **Jeroen Dikken:** Conceptualization, Methodology, Validation, Formal analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing.

Declaration of competing interest

The authors declare no conflict of interest.

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