Are older individuals who live alone in Sweden at increased risk of vulnerability? An investigation of personal and community factors

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Abstract

Introduction: In Sweden today a third of all those 60+ live alone and the absolute number will continue to increase because of the aging population. The aim of this thesis was to identify if the subgroup, older individuals living alone, might be more disadvantaged in regard to the four key sources to vulnerability suggested by Mechanic and Tanner (2007): Poverty and low socioeconomic status, personal functions, low social network and lack of support, and physical location. Gender differences were also investigated.

Method: Data was from the Swedish Panel Study of Living Conditions of the Oldest Old (SWEOLD) collected in 2014. The total sample in this thesis includes 987 individuals with an age between 70-105. To estimate the current living conditions in regard to vulnerability among the subgroup, five dimensions of vulnerability were analyzed with multiple logistic and linear regressions.

Results: More disadvantages are found for those men and women living alone in all domains, except in social activity for women where living arrangement made no difference. Significant gender differences can be seen in depressive symptoms and social activity, but not for financial insecurity, mobility problems or living in a disorganized local community.

Conclusion: Men and women living alone are more disadvantaged compared to those living with a partner, according to the four key sources to vulnerability. With this deeper insight it is possible to obtain a greater understanding in where policies to support and strengthen this subgroup should be placed.

Key words

Living alone, vulnerability, older individuals, social isolation, socioeconomic status, functional impairments
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Introduction

The world’s population, as well as Sweden’s population is getting older. Life expectancy is increasing and from the middle of the 19th century life expectancy has increased from 49 years to 84 for women and from 45 years to 80 years for men (Hemström, 2012). As a result, the population of individuals 60+ worldwide is expecting a rapid increase from 900 million in 2015 to 2 billion in the year 2050 (WHO, 2012). The same trend can be seen in Sweden, with an increase from 1.3 million in year 1960 to 2.4 million today (Sundström, 2014). Forecasts also indicate that half of the children born today will live to 100 years, so called “Centenarians” (Christensen, Doblhammer, & Vaupel, 2009).

A study by Christensen et al. (2009) suggests that the aging population partly can be explained by improvements in living conditions, such as income, nutrition and education. Also, that improvement in health care, e.g. having curative and preventive medicine contributes to this development. These contributing factors along with the decrease in mortality among older individuals over the last 50 years have resulted in a significant increase in life expectancy among both men and women (Thorslund, Wastesson, Agahi, Lagergren, & Parker, 2013). A growing aging population is of course impressive and a huge progress, but also a challenge for the individual and for the public health expenses, especially since the number of years lived post-retirement increase accordingly (Sundström, 2014). A clear consequence of the aging population is the increase in absolute numbers of older individuals living alone, a trend which will continue and more individuals will continue to live alone upcoming decades (Sundström, 2014). Because of their older age they might suffer with more social and functional disabilities, which could be a challenge since they are in a greater need for social support and resources in terms of medical and health (Schroder-Butterfill & Marianti, 2006). Because of the aging population and the challenges that goes along with it, this thesis aim to investigate whether older individuals living alone in Sweden are more disadvantages compared to those living with a partner, and further if any differences between gender can be observed.

Trends in living alone

In this thesis living alone is defined as living in a single-person household. The literature review focuses on trends among individuals 60 years and older.
In a review by (Tomassini, Glaser, Wolf, Groenou, & Grundy, 2004) they report that in Europe and in many other high-income countries worldwide the number of older individuals living alone increased after The Second World War. They also suggests that a significant rise of older individuals living alone could be seen especially around the years 1970s and 1990s, and in the following years, this increase began to stabilize. In Sweden today, a third of all individuals 60+ live alone, which makes Sweden a leading country in having single person households (Johansson, 2014).

Tomassini et al. (2004) indicate that patterns in living alone are determined by several factors partly related to socioeconomic status and demography. They also suggest that the new policies with changes in attitudes towards residential care in Sweden do play a role. Today men up to the age of 60 years are more likely to live alone in Sweden, while women are the major group from the age of 80 (Tomassini et al., 2004). This is explained by them according to the fact that women tend to live longer then men, and also living in a partnership with men older then themselves, which in turn generates a higher number of women living alone as widows during their last years. This, they mean, in combination with more rapidly declining mortality rates among women then among men has earlier generated a female surplus, which in turn worsened their chances of finding a partner in later life. Nevertheless, the imbalance between men and women has since year 1970 started to decrease as a result of an upturn in men’s longevity and this development has given older women better chances to remain living in a partnership even later in life (Thorslund et al., 2013). Still, women seem to be the major group living alone at older ages in Sweden (Tomassini et al., 2004). This is an example of the on-going changes in the demographic situation that has contributed to stabilize the rates of older individuals living alone in Sweden (Shaw, Fors, Fritzell, Lennartsson, & Agahi, 2017).

In a publication by Sundström (2014) he suggest that even though this demographic development indicates that the proportion of individuals living alone has stabilized, or in some cases even declined, the absolute numbers of older individuals living alone have increased. As earlier mentioned, the growing aging population is one explanation to this
In addition to an aging population there are several other mechanisms affecting the living arrangement among older individuals in Sweden. A contributing factor to the increase in living alone is the improved mobility and physical function in this age group that has been shown in some studies (Hossin, Östergren, & Fors, 2017). Improved mobility generates a higher degree of independence and possibilities to engage in activities of everyday life, like going to the grocery store or taking care of the household, which also affect self-confidence and mood (Tomassini et al., 2004). Further explanations to the increase in numbers of older individuals living alone that have arisen in the context of high-income countries, such as Sweden, are the improvements in financial situation among older individuals. Having a good financial situation might be correlated to an increase in living alone because it generates autonomy and encourages individuals to not rely on partners to survive everyday life (Tomassini et al., 2004). The reliance on the other partner relates especially to women who grew up during the first half of the 20th century, where many were still housewives dependent on their husband’s income (Parker & Agahi, 2013).

The changing demographic trends in fertility in Sweden also have a central role for patterns in living alone according to Tomassini et al. (2004). They suggest that family sizes today are declining and that older individuals with fewer children are more likely to live alone at an older age compared to those with more children. Sweden is a typical country representing the social democratic model of welfare state, which is a regime that enables older individuals to live more independently according to Bambra (2009). Meaning that those countries included in the social democratic welfare state model have high levels of both social protection and universal health care, which might affect individuals to rely more on society than their families for help and support. This in turn might lower the degree of social interaction with family since it is replaced with resources supported by the government. That, in combination with policies promoting “Aging in place” (meaning that older individuals should as long as possible continue to live at home and receive help there when necessary), instead of institutional care is also relevant according to a study by Schön,
Lagergren, & Kåreholt (2016). They found that in recent years, when the government developed new policies, the criteria for institutionalization got more stringent and this generated an overall reduction in individuals being institutionalized and as a result of that many individuals continued to live alone at home.

**Consequences of living alone**

Being in good health, having a favorable financial status and a good social network are all related to subjective well being among older individuals, with health status being the number one determining factor for the overall quality of life (Doyle & Forehand, 1984; Easterlin, 2001; Ferring et al., 2004). Results from Schroder-Butterfill and Marianti (2006) show that older individuals living alone do not achieve these factors to the same extent as individuals living with a partner do. Therefore, one might wonder if those living alone do not have an equal opportunity experiencing well being as those living with a partner, because of the lower level of positive factors they are able to utilize. Some studies have taken this question further and examined whether living alone has a negative impact on well being and quality of life or not. Results from those studies suggest that living alone at an older age is related to factors that affect both the physical and the mental health in many different aspects (Kharicha et al., 2007; Pimouguet et al., 2016; Yeh & Sing Kai, 2004).

Some studies point out that individuals living alone are less satisfied with their life compared to those living together. It has also been observed that the degree of satisfaction does not differ significantly between men and women, even though women might face more disadvantages towards having higher rates of living alone and also because they tend to have lower education and income (Gaymu & Springer, 2012). When comparing women living alone with women living with a partner the results show that women living alone report a higher degree of loneliness, have greater mobility problems, are frailer and have more difficulties keeping their balance while walking (Bergland & Engedal, 2011). A study by Mahoney (2000) that investigated in improved function after hospitalization suggests that regardless of gender, individuals living alone are less likely to improve in function after hospitalization compared to those living with a partner. In the study they highlight that difficulties with improving mobility can lead to further problems and also increase the risk for being dependent on support from others and also have a greater need for home nursing
or further hospitalization, having consequences on the level of personal and public health. Being physically active is a factor that has shown many positive effects that minimize further health problems related to diseases and mobility problems at an older age according to Musich, Wang, Hawkins and Greame (2017). They mean that being physically active as an older individual can be seen as a factor linked to positive outcomes for mobility. Unfortunately, there are suggestions that older individuals living alone are less likely to be physically active to the same degree as older individuals living with a partner (Arendt, 2005; Kong & so, 2017; Van Heuvelen et al., 2006). This leads to a vicious circle where those living alone are more exposed to risk factors and therefore less able to live a long and healthy life.

Many studies in the field suggest that living alone might affect the degree of social interaction, which seems to be lower for those living alone (Kharicha et al., 2007). Relationships and social interactions have been suggested as important factors for happiness, being able to feel safe, as well as other factors that have positive effects on health (Agahi, Lennartsson, Österman, & Wånell, 2010). Social interaction with family and having relatives visiting has also been associated with longer survival among men (Nilsen, Agahi, & Shaw, 2018). Especially for older individuals with impairments, social interaction is an important factor for decreasing the risk of developing further depressive symptoms (Stoeckel & Litwin, 2016). For older individuals’ support and social life, family becomes even more important as their social network narrows with age, meaning that those without children, spouse or other close relatives are more vulnerable in terms of social support and interaction (Kharicha et al., 2007).

Living alone as an older individual is also suggested as one of many risk factors for generating social isolation, which can be defined as “Having low levels of social interaction, little social support, living without companionship and feeling separate from others” (Hawthorne, 2006). Due to the negative results from social isolation, such as mental health problems and depression (Rosania, 2015), the World Health Organization puts social isolation among older individuals as a major target for world health policy (Robins, Hill, Finch, Clemson, & Haines, 2018).

In a study by Schulman, Gairola, Kuder and McCulloch (2002), older individuals living alone have a greater risk for developing depressive symptoms and depression later in life. They
point out that depressive symptoms often are under-diagnosed and many times not treated correctly, and enough, in this group. Also for depressive symptoms, physical activity has been linked with positive effects for minimizing the risks for it (Musich et al., 2017). A study by Wada et al. (2004) mean that depression is a disease and many times it is enough to experience just a few symptoms to have a negative impact. In their investigation about depression they suggest that individuals may suffer from the negative effects of depressive symptoms although they do not have a depression diagnosis, and that symptoms may accumulate and reinforce each other and lead to depression, which further can lead to devastating ends for the individual. Research on gender differences in depressive symptoms show that older women have higher prevalence of depressive symptoms compared to older men (Lin & Wang, 2011).

Even though several studies show the negative impacts of living alone, studies also highlight that living alone not necessarily need to be harmful to life quality or synonymous to social isolation (Gaymu & Springer, 2010; Yeh & Sing Kai, 2004). An argument for that is the relatively strong physical functioning that many older individuals now generally remain, which promotes higher quality of life and independency for those living alone (Tomassini et al., 2004). Still, living alone can lead to fundamental differences in everyday life between those living alone and those living with a partner, for example with regard to taking care of the household, support for going out, or for food preparation and nutrition intake (Gaymu & Springer, 2010; Yeh & Sing Kai, 2004). These factors are in turn important for long-term health and quality of life.

A study by Stahl, Schulz, Beach and Musa (2017) that examined the association between neighborhoods and mental health suggests that it is especially important for older individuals living alone to perceive their neighbors as willing to help. They also found that having access to medical centers, green spaces, feeling safe and trust among neighbors are linked to positive outcomes. Other factors that were important for older individuals were the physical environment, including parks, good infrastructure and feelings of belonging to the society.

Some of the mentioned consequences of living alone might also be reversed, meaning that it may be a selected group who is more likely to live alone later in life. A study by Shaw et al.
(2017) suggests that certain living conditions are associated with living alone among older individuals in Sweden, and that individuals with socioeconomic, social, behavioral and functional disadvantages are more likely to “end up on their own”. Especially men with low education are more likely to live alone later in life.

Four key sources to vulnerability
According to Mechanic and Tanner (2007) there are four main sources to vulnerability, which will be used as a theoretical framework in this thesis. These are: (1) Poverty and low socioeconomic status, (2) personal limitations, (3) low social network and lack of support, and (4) physical location. These sources can arise as challenges both for the individual and within a population, which entails policy interventions from different directions to reduce risk factors generating vulnerability. These four sources, proposed by Mechanic and Tanner (2007), do not focus particularly on older individuals, but are particularly useful and relevant for studying the disadvantages in various subgroups of the older population. Therefore, in this thesis, these four sources are implemented and operationalized into five dimensions of vulnerability to older individuals living alone (Kharicha et al., 2007; Kong & so, 2017; Schröder-Butterfill & Marianti, 2006). These are financial insecurity, depressive symptoms, mobility problems, social activity and living in a disorganized local community.

Poverty and low socioeconomic status
Mechanic and Tanner (2007) suggest that low income or an untenable income can affect the individual’s socioeconomic status and make it lower, which in turn is associated with vulnerability. For example, those with lower socioeconomic status might have less ability to resist and compensate for a lifestyle with more physical problems and diseases (Diderichsen, 2007). Socioeconomic status has many consequences during the life course and can affect knowledge, occupation possibilities, nutrition, access to medical care and more according to Mechanic and Tanner (2007), which makes it to a vital factor also later in life for well being, health and life quality. They also suggest that it is more common among older individuals with lower socioeconomic status to suffer from cardiovascular diseases and other diseases such as poorer health in general and even mortality. Low socioeconomic status is crucial for social vulnerability and is also linked to housing disparities, where they
found that individuals with poorer status seem to suffer more with deficient health-enhancing environments, pollution and traffic. Individuals with lower socioeconomic status might also have fewer resources to utilize knowledge, healthy food and physical activity (Diderichsen, 2007).

When older individuals living alone are considered, low income and financial insecurity might be more common for those since they only have one source of income, because they are alone (Schroder-Butterfill & Marianti, 2006). Therefore, older individuals living alone are suggested to be more vulnerable in terms of low socioeconomic status and poverty.

*Personal limitations*

A study by Hajek and König (2016) suggests that individuals with personal limitations, such as mobility and functional problems might suffer with more general problems in everyday life. For example, individuals with personal limitations might increase the risk of poor health and taking care of themselves, such as bathing, dressing and using the toilet. Another study by Rosso, Taylor, Tabb and Michael (2013) found that impairments also are associated with lower levels of involvement outside the home, that those with more mobility problems have lower opportunities to participate in social activities and be active to the same extent as those with a partner as support. In other words, they suggest that individuals with mobility and functional problems are more limited and therefore more vulnerable. Mechanic and Tanner (2007) also indicate that the risks for developing physical and functional impairments increase with increased age, which mean that there is an accumulating risk for older individuals to be more prone to vulnerability in terms of personal limitations with increased age. In addition to the fact that increased age affects the physical and functional risks for vulnerability, they also suggest that the risk increases further with a life characterized by poorer circumstances and a low socioeconomic status. They mean that access to medical and health care are valuable and important to prevent these problems, which on the other hand, can cause inequalities between socioeconomic groups to avoid and cure these problems. As a result, inequalities between the groups can imply that individuals with a lower socioeconomic status might have a poorer health because of a lower access to the health care and also a lower degree of visiting. A study by Westin, Åhs, Brand Persson and Westerling (2004) that have investigated in differences in visiting health
care centers between socioeconomic groups suggest that those with low socioeconomic status in a larger extent refrained from visiting health care centers then those with a higher socioeconomic status. The reasons for it were associated with low economy, confidence and limited availability. As mentioned earlier in this thesis, Musich et al. (2017) argue that physical activity can be seen as a determining factor for the characteristics of the physical and the functional changes that occurs with aging. They suggest that older individuals who are physically active also later in life show better physical function, less depressive symptoms and better health in general compared to those who are not physically active.

Considering older individuals living alone, they seem to face more mobility problems, be less physically active and less likely to improve mobility after hospitalization, which makes them more vulnerable (Bergland & Engedal, 2011; Mahoney et al., 2000; Arendt, 2005; Kong & so, 2017; Van Heuvelen et al., 2006).

Low social network and lack of support

Mechanic and Tanner (2007) suggest that individuals with weaker social network and relationships are often more vulnerable due to the lack of the support that social interactions can generate. Among the oldest old, whose social network often has declined because of illness or death, the risk of social isolation is higher and they are therefore more likely to be lonely and more vulnerable in that sense. Another study by Depp (2010), with almost the same findings, suggest that social network and social relations can provide both emotional and practical help, an they also suggest that social ties play a central role for having a successful coping when dealing with stressors. They mean that successful coping is of importance because it, for example, has been showed that older individuals perceived their aging with more balance and self-acceptance along with effective coping strategies.

When older individuals living alone are considered, it seems like they could be more vulnerable because of the decline in social network and also because they lack the everyday social interaction with a partner, which limit the mental and physical support to e.g. be
socially active outside the home and to deal with stressors (Yeh & Sing Kai, 2004; Gaymu & Springer, 2010)

*Physical location*

In regard to physical location Mechanic and Tanner (2007) suggest that individuals living in areas of high crime, poor environmental conditions with low social network and lacking access to medical centers and transport facilities have a higher risk for vulnerability. Also, that the social climate in the community among the neighbors can be one of many pieces contributing to the individual coping process. In other words they mean that the neighborhood and the recourses in it can facilitate or hinder personal coping or intrapersonal relationships.

In the case of older individuals living alone, they could be more prone to vulnerability in regard to the physical location because they might have a lower income, and therefore have fewer opportunities to live in a community that facilitates transport, close access to medical centers and safe environments (Yeh & Sing Kai, 2004; Gaymu & Springer, 2010). Previous study also suggest that as a result of the loss of support from another person, older individuals living alone might not make use of the socially and environmentally positive factors in the community, e.g. visiting outdoors.
Aim and research questions

Objective
The objective of the thesis is to advance the understanding of the living conditions among older individuals living alone in Sweden in relation to different sources of vulnerability. Particular attention will be paid to the role of gender.

Research question
- Are older individuals living alone more vulnerable with regard to financial insecurity, depressive symptoms, mobility problems, social activity and living in a disorganized local community?

Methods
Data material
This is a cross-sectional study based on data from the Swedish Panel Study of Living Conditions of the Oldest Old (SWEOLD) collected in 2014 (Lennartsson et al., 2014). SWEOLD is a nationally representative survey that covers items related to older individuals such as physical conditions, social relations, activities and cognitive health. It was first carried out in 1992 and has been repeated four times since then, most recently in 2014. SWEOLD was from the beginning a sample of individuals who were included in the Swedish Level of Living
Survey (LNU) but have passed the upper age limit of 75. Special for the data from 2014 is that it consists individuals 70+. SWEOLD includes answers of self-assessed questions, telephone interviews were the goal but when the respondent couldn’t participate other alternatives were offered. The response rate from the surveys in SWEOLD 2014 was 84.3 % of the net sample of 1453 individuals, which generates a total sample of 1226 individuals being included in SWEOLD 2014. In this thesis the main interest was to investigate individuals living in the community, therefore those living in an institution were excluded (n=92). After excluded other individuals with missing data the analytical sample in this thesis included 987 individuals. The dataset was anonymized before analyses for ethical reasons.

Variables

Dependent variables
The dependent variables were chosen on the ground of the theoretical framework by (Mechanic & Tanner, 2007) and the four key sources to vulnerability were operationalized in following way: Poverty and low socioeconomic status was measured by financial insecurity and defined by absence of cash margin. Education is also a common measurement for socioeconomic status but has in this thesis been used as a control variable for the purposes of study the other domains in comparison to educational level. Personal limitation was defined with two different measurements: depressive symptoms and mobility problems. For low social network and lack of support variables including information about participant’s social activity has been used as a measure, and to measure physical location information about whether the participants experienced that they lived in a disorganized local community was used.

The five operationalized outcome variables used in this thesis are financial insecurity, social activity, depressive symptoms, mobility problems and living in a disorganized local community.

Financial insecurity
Information about cash margin was based on the question “If a situation suddenly arose where you had to raise 15.000 SEK in a week, would you be able to manage it?”. Individuals who answered yes were coded into (1) and those who answered no to (0).
Depressive symptoms

Geriatric Depression Scale – GDS-4 is a suitable screening test for depressive symptoms among older individuals (Kørner et al., 2006) and it has been well validated in many environments (D’Ath, Katona, Mullan, & Evans, 1994). It was therefore used in this thesis to observe how participants felt during the previous week. The scale includes four questions: “Are you basically satisfied with your life?”, “Do you feel that your life is empty?”, “Are you afraid that something is going to happen to you?” and “Do you feel happy content most of the time?”. All the questions could be answered by either “Yes” or “No”. A grading score between 0-4 were then calculated, a higher degree indicated more symptoms of depression. Values 1-4 were then dichotomized into (1) which indicates depression symptoms, and value 0 into (0) which indicate no depression symptoms.

Mobility problems

To observe participants level of mobility they were asked the four questions: “Can you walk 100 meters fairly briskly without difficulty?” with the response options “Yes”, “No” and “Bedridden or equivalent”, which was dichotomized into yes (0) and no and bedridden or equivalent (1); “Can you walk 500 meters fairly briskly without difficulty?” with response options “Yes”, “No”, “Bedridden or equivalent” and “Cannot walk 100 meters”, which was dichotomized into yes (0) and other options as (1); “Can you run 100 meters without difficulty?” with given options as “Yes”, “No”, “Bedridden or equivalent”, and “Cannot walk 100 meters or 500 meters”, which was dichotomized as yes (0) and other options as (1); and finally “Can you walk up and down stairs without difficulty?” with answer options as “Yes”, “No” and “Bedridden or equivalent” which was dichotomized to yes (0) and other options as (1). A summary score between 0-4 was calculated and a higher score indicated a higher degree of mobility problems. Values 1-4 were then dichotomized into (1) which indicates mobility problems, and value 0 into (0) which indicate no mobility problems.

Social activity

To investigate participant’s social activities and social interaction the question “Which of the following leisure time activities do you usually do?” was used, followed by six items related to social activities with friends and relatives. “Visiting relatives”, “Socializing with relatives outside the home”, “Having relatives over to visit”, Visiting friends”, “Having friends over to
visit” and “Socializing with friends outside the home”. The response options were “No” (0), “Yes, sometimes” (1) and “Yes often” (2). From these questions a summary score ranging 0-12 were calculated; higher score on the scale indicated a higher degree of social activity among the individuals. Since this was a continuous variable with an index, Cronbach’s alpha was done to measure internal consistency. This was done to investigate if the items included in the index reflect the same factor (Almquist, Ashir, & Brännström, 2014). Social activity has six items included and the result for Cronbach’s alpha test showed (C=0.794), which was above 0,7 and therefore indicated that the items in this variable mirror the same dimension.

Disorganized local community
The section including information about participant’s experiences for their local community was new in SWEOLD 2014 and has never been used in this survey before. However, similar questions have been used in another study as a measurement for social exclusion and vulnerability among older individuals (Dahlberg & McKee, 2016). Four questions about the individual’s local community was asked to measure how they experienced their local community within a walking area of 20 minutes. Trust was measured with the question “Most people in this area can be trusted”. Safety with “People would be afraid to walk alone in this area after dark”. The feeling of being included in the community was examined with the question “I feel really part of this area” and vandalism was measured with the question “Vandalism and graffiti is a big problem in this area”. These claims had response options “Strongly agree”, “Agree”, “Disagree” and “Strongly disagree”. The items were coded so that answers indicating no disorganization of the local community were assigned the value 0, while answers indicating some degree of disorganization of the local community were assigned between value 1 and 3 (depending on the severity). They were then added into a scale between 0-12. A higher score on the scale indicated a perception of living in a disorganized local community. This was a continuous variable with an index and therefore Cronbach’s alpha test was done to see if the items measure the same factor (Almquist et al., 2014). What should be considered is that these four items were selected to represent different “Domains” of area characteristic, for example trust or being a part of the area. The result for the test indicates that the items used in this variable do not reflect the same underlying factor, which means that the internal consistency is low (Cronbach’s Alpha=0.489). This was quite expected and still, it is of interest since this thesis aim to
measure community factors and also, these items are the only ones available in the data set.

*Independent variables*

The main focus in this thesis was to do a comparison between older individuals who lived alone and those who lived with a partner and also to distinguish between men and women. Participants were asked if they lived alone and were given the options “Yes” or “No”. This question was dichotomized into those who answered yes (1) and those who answered no (0). Individuals who lived in an institution were excluded from the sample. Since this thesis also aimed to distinguish between men and women data was stratified by gender in the analysis.

*Covariates*

This thesis controls for age, educational level and self-rated health status, factors all related to the sources for vulnerability according to the theoretical framework used in this thesis. Participant’s age was measured with a question about their year of birth, and had a range between the ages of 70 to 105. Educational level was graded from 1-4 where 1 was categorized as “Compulsory education”, 2 as “Lower secondary education”, 3 as “Upper secondary education” and 4 as “University degree”. Self-rated health status was measured with the question “How would you assess your own general state of health?”. Participants had the response options “Good”, “Neither good or bad” and “Bad”.

*Statistical analyses*

All the analyses were run in SPSS and based on the same analytical sample giving the sample size of 987 individuals included in the thesis, women (n=546) and men (n=442). The sample included an oversample of individuals 85+ years and therefore the analyses were weighted. The variables financial insecurity, depressive symptoms and mobility problems were dichotomized into two possible outcomes and therefore multiple logistic regressions were used. The variables social activity and disorganized local community were continuous variables and normally distributed and therefore analyzed with multiple linear regressions. Since this thesis also investigates the role of gender, interactions between living alone and gender were added into the regressions. This was done to investigate if any significant
difference between the living conditions among older men and women living alone could be found. Results are presented separately in Table 2 for men, and Table 3 for women.

Results

Table 1 presents the prevalence of older men (26.5 %) and women (49.5 %) living alone, and also men (73.5 %) and women (50.5 %) living with a partner in Sweden in 2014. Their age,

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<th>Table 1. Descriptive statistics for living conditions among men and women living alone and living with a partner.</th>
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<td><strong>Men, n = 442 (%)</strong></td>
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<td><strong>Living alone</strong></td>
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<td><strong>Observations</strong></td>
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<td><strong>Age</strong></td>
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<td><strong>Mean age</strong></td>
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<td><strong>Age range</strong></td>
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<td><strong>Self-rated health</strong></td>
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<td><strong>Neither good or bad</strong></td>
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<td><strong>Educational level</strong></td>
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<td><strong>University</strong></td>
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<td><strong>Social activity</strong></td>
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<tr>
<td><strong>Mean</strong></td>
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<td><strong>Range</strong></td>
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<td><strong>Disorganized local community</strong></td>
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<td><strong>Mean</strong></td>
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<td><strong>Range</strong></td>
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educational level and self-rated health status along with living conditions regarding financial insecurity, depressive symptoms, mobility problems, social activity and living in a
disorganized local community are also presented. Table 1 shows that the prevalence of living alone is almost twice as high among women (49.5 %) compared to men (26.5 %) and that women living alone have the highest mean age among the groups (80.6 year).

Regarding self-rated health status, results indicate poorer health among women living alone (13.2 %) compared to men living alone, having almost half as high percent as the women (7.9 %). Regarding educational level, the results show that a larger proportion of men in general have the highest level of education (university degree), and especially men living with a partner have a high educational level (9.4 %). Overall, tendencies are shown for women living alone to be the most disadvantage group when investigating the living condition between men and women. For example, according to both depressive symptoms and mobility problems women living alone have the highest prevalence of the groups (depressive symptoms= 57.2 % and mobility problems = 81.6 %) compared to men living with a partner, which is the most favored group in this context (depressive symptoms= 23.8 % and mobility problems= 52.3 %). Also women living alone seem to put the highest score in living in a disorganized local community.

Key findings in sources of vulnerability

The results are presented for both men and women with regard to the five dimensions for vulnerability; financial insecurity, depressive symptoms, mobility problems, social activity and living in a disorganized local community. They are presented in odds ratios (OR) from the multiple logistic regressions and B Coefficient (B) from the multiple linear regressions. Table 2 shows the association between living alone and vulnerability among men, and Table 3 shows the association between living alone and vulnerability among women. Both Table 2 and 3 include two models. Model 1 is unadjusted and presents the results of how living alone are associated with financial insecurity, depressive symptoms, mobility problems, social activity and living in a disorganized local community separately. Model 2 is adjusted for age, educational level and self-rated health and presents the results of how living alone is associated with financial insecurity, depressive symptoms, mobility problems, social activity and living in a disorganized local community.
Financial insecurity

The results shown in Table 2 and 3 in Model 1, indicate that both men (OR=2.98, CI=1.49-5.96) and women (OR=2.14, CI=1.25-3.66) living alone have higher odds for financial insecurity compared to men and women living with a partner. The results are significant and do not differ considerably when control variables are included in Model 2, (OR=2.41, CI=1.18-5.49, Table 2) for men and (OR=2.36, CI=1.32-4.22, Table 3) for women. For age, educational level and self-rated health no significant results can be presented, except for women in upper secondary school. The result indicate that women in upper secondary school seems to be less likely to have financial insecurity compared to the reference group “Compulsory school” (OR=0.55, CI=0.31-0.98, Table 3, Model 2). No significant differences for financial insecurity between men and women living alone were found (data not presented).