รูปแบบและปัจจัยที่ส่งผลต่อการอยู่อาศัยของผู้สูงอายุในประเทศเวียดนาม ปี พ.ศ. 2011

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จุฬาลงกรณ์มหาวิทยาลัย
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The pattern and determinants of living arrangement among elderly in Vietnam, 2011

Mrs. Van Thi Truong

A Thesis Submitted in Partial Fulfillment of the Requirements
for the Degree of Master of Arts Program in Demography
College of Population Studies
Chulalongkorn University
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วัน ธิ ตรอง : รูปแบบและปัจจัยที่ส่งผลต่อการอยู่อาศัยของผู้สูงอายุในประเทศเวียดนาม ปี พ.ศ. 2011 (The pattern and determinants of living arrangement among elderly in Vietnam, 2011) อ.ที่ปรึกษาวิทยานิพนธ์หลัก: รศ. ดร. ปังปอนด์ รักอำนวยกิจ, 83 หน้า.

ความเป็นมาและความสำคัญ: รูปแบบของการอยู่อาศัยมีบทบาทสำคัญต่อความอยู่ดีมีสุขของผู้สูงอายุ โดยเฉพาะอย่างยิ่งในประเทศเวียดนามที่หน้าที่ในการดูแลผู้สูงอายุจะตกอยู่ที่ครอบครัวเป็นส่วนใหญ่ ในบริบทของประเทศเวียดนามที่ก็ได้ก้าวเข้าสู่สังคมสูงวัยอย่างรวดเร็ว การเปลี่ยนแปลงรูปแบบของการอยู่อาศัยของผู้สูงอายุจะเป็นประเด็นที่สำคัญต่อการรัฐบาลและสังคมโดยรวมเป็นอย่างมาก ดังนั้น การศึกษาเรื่องการอยู่อาศัยของผู้สูงอายุจึงเป็นเรื่องสำคัญ ในปัจจุบัน การศึกษาเรื่องการอยู่อาศัยของผู้สูงอายุในประเทศเวียดนามมีไม่มากนักในขณะที่การศึกษาที่มีส่วนใหญ่เป็นการศึกษาเชิงพรรณนา มีจำนวนน้อยที่ศึกษาเรื่องปัจจัยที่ส่งผลต่อการอยู่อาศัยของผู้สูงอายุ และมีจำนวนน้อยมากที่ศึกษาปัจจัยจากบุตรที่ส่งผลต่อการอยู่อาศัยของผู้สูงอายุ

วัตถุประสงค์: การศึกษานี้อธิบายถึงรูปแบบของการอยู่อาศัยของผู้สูงอายุในเวียดนามและศึกษาผลกระทบของปัจจัยต่างๆที่ส่งผลต่อการอยู่อาศัยของผู้สูงอายุในเชิงลึกโดยเปรียบเทียบกับการศึกษาที่มีก่อนหน้านี้

วิธีวิจัย: การศึกษาในครั้งนี้ใช้ข้อมูลแบบสำรวจระดับชาติเกี่ยวกับผู้สูงอายุในประเทศเวียดนาม ปี 2554 สถิติในการศึกษาครั้งนี้ ผู้ศึกษาประยุกต์ใช้การวิเคราะห์ถดถอยโลจิสติกเพื่อสำรวจปัจจัยที่ส่งผลต่อการอยู่อาศัยกับบุตรหลานเปรียบเทียบกับการอยู่อาศัยกับบุคคลอื่นๆ และใช้การวิเคราะห์การถดถอยโลจิสติกพหุกลุ่มเพื่อทดสอบปัจจัยที่ส่งผลต่อการอยู่อาศัยในหลายรูปแบบที่รวมถึงการอยู่อาศัยกับบุตรหลาน การอยู่อาศัยโดยลำพัง การอยู่อาศัยกับคู่สมรสเท่านั้น และการอยู่อาศัยกับบุคคลอื่น

ผลการศึกษา: จากผลการศึกษา พบว่า การอยู่อาศัยในแถบภาคใต้ การอยู่อาศัยในเขตเมือง การมีบุตรหลานที่ยังไม่ได้สมรสหรือบุตรชายที่สมรสแล้วของผู้สูงอายุส่งผลให้ผู้สูงอายุมีโอกาสที่จะอยู่อาศัยกับบุตรหลานมากขึ้น นอกจากนี้ พบว่า เพศ การศึกษา ความเป็นเจ้าของบ้าน การมีงานทำของบุตรส่งผลให้ผู้สูงอายุมีโอกาสที่จะอยู่ตามลำพัง อยู่อาศัยกับคู่สมรสเท่านั้น และอยู่อาศัยกับบุคคลอื่นเพิ่มขึ้น

สาขาวิชา ประชากรศาสตร์ ลายมือชื่อนิสิต .....

ปีการศึกษา 2558 ลายมือชื่อ อ.ที่ปรึกษาหลัก .....

5786854951 : MAJOR DEMOGRAPHY
KEYWORDS: LIVING ARRANGEMENT / THE ELDERLY / VIETNAM

VAN THI TRUONG: The pattern and determinants of living arrangement among elderly in Vietnam, 2011. ADVISOR: ASSOC. PROF. PUNGPOND RUKUMNUAYKIT, Ph.D., 83 pp.

Background: living arrangement plays an important role for the well-being of older people, especially in Vietnam, where the responsibility to take care of the elderly rest largely on the family. Given the context that the population in Vietnam is aging rapidly, any changes related to living arrangement of the elderly may take it tolls on the government and society. Therefore, study related to living arrangement is important. In Vietnam, numbers of studies regarding living arrangement has increased slightly over the past decades but mostly are descriptive studies and few studies explored the determinants of living arrangement. In addition, very few studies explored the children's characteristics as a component of the determinants of living arrangement among the elderly.

Objectives: this study describes the patterns of living arrangements of the elderly and examines the determinants of living arrangements among the elderly in a greater depth compared to the previous studies in Vietnam.

Methods: data came from a national-representative survey for the elderly in Vietnam in 2011. Logistic regression were applied to explore the factors affecting living with children versus living with others. Multinomial logistic regression were used to examine the factors associated with various types of living arrangement, which include living with children, living alone, living with spouse only and living with other people.

Result: the finding reveals that living in the South or in urban area, having unmarried children or married son resulted in higher the odds of living with children. While gender, education, home ownership as well as employment status of children correlated with higher risk of living alone, living with spouse only and living with other people.

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CHAPTER I
INTRODUCTION

1.1. Background and justification

Statistics show that Vietnam is near the end of demographic transition with the decline in fertility and mortality rate. As a result of this, the young population (Martin) tends to decrease rapidly, all while there has been an increase in the share of older population (age 60 and over) (Vietnam Women Union, 2012). At the same time, with the improvement in better health system, education, nutrition and living standards, the life expectancy of people have proved to be increasing. The life expectancy at birth in 2011 is 72.8 which is higher 4.6 years and 8 years compared to 1999 and 1989, respectively (UNFPA, 2011a). Longer life expectancy means that children and family members will have more time of co-life with the elderly. According to the projection of United State Census, older population in Vietnam will account for 10% of the total population in 2017 (U. S Cencus Bureau). The pace of aging in Vietnam is even higher compared to that of developed countries, or those with higher per capita income (UNFPA, 2011a). The changes in age structures will pose challenges for individuals, families and society and the country will be challenged by the increase of dependent individuals if we do not have strong policy system in place.

Due to the with the changes in age structure of population, social changes such as migration, urbanization and increased female labor participation leads to changes in family structure (Martin, 1989). The modernization model is one of the most common theory to be used in order to explain the changes in the pattern of family support for elderly people. In many societies, the responsibility to take care of elderly parents is expected to be provided by families. It is common for children to care for their elderly parents out of support since they were provided parental support throughout

their childhood (Isabella Aboderin, 2004; UN, 2006). The social norm of filial piety requires that children not only provide for their elderly parents 'daily living but also treat them with respect and love therefore there is an expectation that the children should either live in the same roof with the elderly or live close to them . This norm has existed in many societies throughout the world. The children to co-reside with aged parents often are the oldest or the youngest in the family, son or daughter has varied by countries due to the available of the children and the traditional norm in the society. However, due to the reduction in fertility and smaller family sizes has reduced the number of children and the potential source of social as well as financial support for elderly parents. Adult children with fewer siblings who are assisting their elderly parents may face more problems. Moreover, increased educational opportunities and greater participation of women in the labor force also means that there is steady decline in the support from daughters who have been considered as traditional caretakers in the family system. Furthermore that, the feminization phenomenon is becoming increasingly popular among aging countries with high proportion of female widow. This phenomenon raises the concern that older women may have lower levels of education, lower earning capacity and limited access to the right of land ownership. This translates into women's vulnerability and concerns as they age (Evy, 2002; UNFPA, 2012).

Over the past two decades, there has been a gradual decrease in the number of older persons living with children or their relatives while there has been a rise in the percentage of older people who have independent living throughout the world. This suggests the presence of the global trend of this kind of living arrangement among older population (UN, 2006). Moreover, there has been an increasing trend of skip-generation household that consist of grandchildren and older people, especially in rural areas due to the rural to urban migration of "middle-generation" adults (UNFPA, 2012). Living

arrangement is an important indicator of elderly care provided by family and family support can be given without living together (Martin, 1989) but the decline in family support caused by changes in living arrangement, also possible to create problems in society (UNFPA, 2011a). Some of this issues that it will raise is the concern for Vietnam, where the social expectation and legal regulations are set largely responsible for caring for the elderly by family members. Among the types of living arrangement, the most vulnerable living arrangement is living alone due to their high risk of outside support needed, especially when they have diseases or function impairment. (Casey, Bernard, & Atsuhiro Yamada, 2002). In Vietnam, the living arrangement of the elderly has changed considerably over past decades. The proportion of the elderly living with children decreased significantly in contrast to the gradual increase in independent living and living with spouse only (Giang & Pfau, 2007). The number of elders living in the rural area is higher compared to the urban counterpart. The rural-urban migration is one of the causes that leads to the unbalanced distribution of the elderly across provinces and areas throughout the country (UNFPA, 2011a).

Many studies regarding living arrangement among elderly were conducted in developed countries, but there has been less attention on this topic in developing countries. It is more likely that the responsibility in support and care for elderly rests largely with the family and especially with the children (Audinaryana, J., & Kavitha, 1999). In Vietnam, the number of studies regarding living arrangement has increased slightly over the past two decades but most are descriptive studies and a few studies explored the determinant (Barbieri, 2006; Giang & Pfau, 2007). In addition, very few studies explored the children ‘characteristics as a component of the determinants of living arrangement among elderly. Majority of the explored data was extracted from the old data such as Vietnam Living Standards

Survey (VLSS) in 1992/93 and 1997/98, and the Vietnam Household Living Standards Survey (VHLSS) in 2002 and 2004.

In 2011, Viet Nam Aging Survey (VNAS) was conducted – this is the first national representative data for elderly people in Vietnam. However, data is not available on how living arrangement has changed over time, cross-sectional data can be used to examine the association between many risk factors and living arrangement. With the most newly available data and the depth of information such as health status of the elderly, as well as the characteristics of children, the data enables us to describe the living pattern and analyze the determinants of living arrangements among the elderly in a greater depth.

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1.2. Research questions

This thesis will aim to answer following questions:

1. What are the patterns of living arrangements among the elderly in 2011?
2. What are the factors that affect living with children of the elderly?
3. What are the other factors that affect the other types of living arrangements? (Besides living with children, including living alone, living with spouse only and living with others family members without children)

1.3. Objective of the studies

This study explores the association of demographic and socioeconomic characteristics of the elderly and their own children 'characteristics with the living arrangement, using a cross-sectional data, which was collected in Vietnam in 2011. The objectives of this study are to:

1. Describe the pattern of living arrangements among the elderly in 2011
2. Examine which demographic, socioeconomic characteristic of the elderly and their own children 'characteristics associate with living with children among elderly
3. Explore the determinants of living arrangements among elderly which include: living alone, living with spouse only, living with at least one child and living with others people without children

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CHAPTER II
LITERATURE REVIEW

2.1. Literature review

Many studies of the living arrangement in elderly people have been conducted in Western countries where population aging has taken place many years ago. In some developing countries in Asia, the demographic transition is occurring with predictions of population aging coming to an end. The burden of an aging population is a concern throughout many countries due to policies relating to social security and heath care policies for the elderly. As a result, a number of studies on elderly people in developing countries is also on the rise.

In contrast to situation in the developed countries, where the trend of living alone or those living with a spouse only is common, the majority of older Asian people continue to live with their offspring (Barbieri, 2006; Lei, Meng T, & Yaohui Z, 2011; UN, 2001; UNFPA, 2012). In studying the determinants of living arrangements, a large number of researchers use logit and multinomial regression. Both characteristics of the elderly and their children being tested, especially in the coresidence among elderly and their children but it has varied by the availability of data. However, there is no fixed model regarding the determinants of living arrangement among elderly because it varies from country to country and also by the data available.

Regarding the dependent variable, the categories of living arrangement vary across studies, the classification depend on which analysis method was used and the concern of researchers. Commonly, the categories are created from such following groups: living alone, living with spouse, living with children, living with others. One may concern more about the characteristics of children can classify in more detailed such as coreside with son or daughter, with married child or single child, and so on.

A large number of factors that appear to have effect on living arrangement of the elderly has been examined in the literature. Demographic factors found to have effects on living arrangements include age, gender and marital status. The socioeconomic factors are such as education attainment, working status, occupation, income, pension, area and region of residence (Audinaryana et al., 1999; Barbieri, 2006; Giang & Pfau, 2007; Martin, 1989). Health factors are self-rated health, physical limitation, and diseases (Audinaryana et al., 1999; Gaymu et al., 2006; Hay, 2002). Factors related to children 'characteristics are age of the child, gender, marital status, occupation, income, and educational level (Choi, 2003; Davanzo & Chan, 1994; Lisa Cameron, 2000; Lei, 2011; Zhang, 2014). The factors to be used in the estimation heavily depend on the availability of data. The more detailed of result found on each factor is presented below:

2.1.1. Age: the age of the elderly is a one determining factor of their living arrangements. Using data from more than seven hundred elderly people that are ages 60 and over and are living in rural areas in Bangladesh, Munsur et al (2010) found that there are different trends in living alone among three age groups. Compared to women in age group of 60-69, women aged 70-79 and aged 80 or older have 50 percent higher and 10 percent lower the likelihood of living alone, respectively.. Sometime, the likelihood of living alone shows a clear increasing trend with age but it does not have statistical significance (Audinaryana et al., 1999; Kimuna, 2005; Panigrahi, 2009). According to Audinaryana et al (1999), among married elderly women, the likelihood of co-residing with children is decreased at advanced ages, but age does not always have a significant impact on this status when other possible factors are taken into account. However, a large number of studies have been proved that the probability of living with children decreases significantly when age increases (Barbieri, 2006; Giang & Pfau, 2007; Martin, 1989; Meng & Luo, 2008). For

example, Giang and Pfau (2007) found that the older you are in age, the more likely to live alone or with spouse compared to their younger counterparts. Barbieri (2006) explored the data from 1999 Vietnam Census and 1997-1998 Vietnam Living Standard Survey and suggested that the proportion of those living with a spouse tends to decline at older ages while the number of those living alone increases with age due to rising widowhood. This trend is explained by the assumption of Martin et al (1994): "normally we expect that older persons are more likely to live with children because he or she may need more assistance from children, but the older person is, the older on average will be his/her child is. So may be their children change their residence by getting married or they are more likely to own their house". In case of the children getting married, they have to move to another place that not near the initial location or their parent does not want to move from that community to, so it is not possible to coreside. Another assumption is that when children get older, they are more likely to have their own house so it reflects the need of sharing house for children at younger age with their elderly parents.

2.1.2. Gender: in a large number of studies, males show a greater likelihood to co-reside with children or with others compared to their female counterpart and have statistical significance (Barbieri, 2006; Chaudhuri & Roy, 2007; Gaymu et al., 2006; Giang & Pfau, 2007; Meng & Luo, 2008). According to Martin (1989) "male is somehow more independent economically than female and coresidence represent a flow of resource from the younger to the older generation, so male is expected to less likely to coresidence. On the other hand, to some extent, males have limited experience in housework; they might be dependent on other family members for care, so among two sides, there is no clear expectation about the effect of sex on coresidence". Therefore, studies show that there is no clear pattern of coresidence with regards to gender (Lei et al., 2011; Liang J, Brown JW,

Krause NM, Ofstedal MB, & J, 2005; Martin, 1989; Panigrahi, 2009). In Vietnam, men are more likely to live with children. This finding was proved by Giang (2007) and Barbieri (2006). In his paper, Barbieri finds that, accounting for all factors, including age and marital status; there is a higher likelihood of living with children among the male elderly compared to their female counterparts.. With regards to living alone, some studies find that women are more likely than men to live alone; this difference was explained by the concept that women are normally younger than their husbands and have a longer life expectancy than men. It may be popular in some countries that the husband will remarry after the wife pass away or after a divorce. This goes to say that women are at certain risk of living alone, especially when they do not have any children (UN, 2006).

2.1.3. Marital status: in some studies, marital status was divided into two groups: married versus other while other studies are interested in widowed category. Marital status of a person indicates the presence of a spouse and the likely affects in living arrangement, especially in Asian culture where the responsibility to take care of parents belong to family members. Thus, lacking one source of support (for example, the spouse) might increase the odds of living with other family members. Barbieri (2006) found that within each sex, the odds of living with a child were significantly higher for elderly people who were unmarried. This means that among elderly males who are divorced or widowed are more likely to live with children compared to those who are married. The same pattern was found with female elderly. Result has showed in Lei et al. (2011) in which widowed parents are more likely to co-reside with their adult children. One assumption is that those who are not married should be more likely to coreside with children since there is a lack of emotional, financial and physical support from a spouse (DaVanzo & Chan, 1994). In contrast, Munsur, Tareque, and Rahman (2010) showed that compared to

married elderly women in rural area in Bangladesh, widowed is more likely to live alone and it is statistically significant. There are not many explanations in the variation of living arrangement by marital status.

2.1.4. Educational level: the effect of education on living arrangement varies from country to country. Giang and Pfau (2007) found that among the elderly, the proportion of those who live with children decreased when education levels increased. In other words, the elderly with higher educational levels were more likely to live alone or with spouse than to live with their children. Control for other factors, however, the result does not show statistically significant effects on living arrangement. In this case, education was not an important factor for the elderly to make decisions on living with their children or with others in comparison to those living alone or with a spouse. Similar findings from the studies of Martin (1989), Lei (2011) and Gaymu (2006) were found. In some studies, there is a significant trend of living alone or in an institution among elderly with higher education (Bongaarts & Zimmer, 2001; Chaudhuri & Roy, 2007; Gaymu et al., 2006; Panigrahi, 2009). According to the United Nation 2006, past studies have suggested that social-economic factors such as region of residence and educational levels might affect living arrangements for older people. It is expected that in general, older adults with higher education are in better health and have greater earning power. At some degree, elderly people who are more educated can afford to take care themselves with more privacy, which cannot be clarified in a less educated group. Thus, elderly people with higher amounts of education who are living in urban areas are more likely to live alone or with spouse only (UN, 2006).

2.1.5. Area of residence: the elderly people in rural areas are more likely to live alone than their counterparts in urban areas (UN, 2006) and the

likelihood to co-reside with a child is higher in urban areas than in rural areas (Barbieri, 2006; Giang & Pfau, 2007). With the migration of younger generation moving into the city seeking better jobs and education has caused elderly people to be left behind in rural area with positively economic support and contact from their migrated children (Knodel & Saengtienchai, 2007). Among four countries examined by Martin (1989), only the Philippines shows a significant difference in the trend of coresidence between rural and urban areas. The explanation of older people living with their children in urban areas are more crowded and housing shortages in urban area exist. In rural, the younger generations have tend to move to other cities and leave behind their elderly parents at the place of origin, and as a result, older people are living alone or with others (Giang & Pfau, 2007). Lei et al. (2011) shows a different trend of coresidence with children in China due to older people in urban area are more likely to live alone or with their spouse. Using the 1988, 1995, and 2002 Urban Household Income Distribution Surveys, Meng and Luo (2008) give some explanations in the change of living arrangement among elderly who live in urban areas of China. With the impact of housing reform policy in China during the 1990s, it has caused a large increase in individuals owning a home. In the past, people were concerned about the availability of the homes so they were more likely to live with extended family members. Whether they choose to live alone or with other relatives was a result of whether or not they had their own place.

2.1.6. Region of residence: the difference in the types of living arrangements by region have also been tested in a few studies, but it tends to vary by different cultures and societies. Using the data from 60th round of National Sample Survey of the elderly for Orissa – a state in India, Panigrahi (2009) found that the proportion of elderly people living alone was much higher in the Southern region than the Northern and Coastal region and after

control for other factors, the region is found to be the variable that has the most significance in the explaining model of living arrangements of the elderly in Orissa (Panigrahi, 2009). In Vietnam, the living arrangements vary by region. The coresidence are the least common in Northern of Vietnam, while the Southern region has tended to have higher coresidences which was explained by Confucianism ideology in the North and by more job opportunities in the Southern region (J. Friedman, Knodel, Bui, & Truong, 2003; Giang & Pfau, 2007; Knodel & Truong Si Anh, 2002). Studies by Giang and Pfau (2007) and Barbiere (2006) have also proved the similar finding in which the Northern elderly might be more likely than the Central elderly to live alone or with spouse, while the Southern elderly were less likely to than the Central elderly to live alone or with spouse (Barbieri, 2006; Giang & Pfau, 2007).

2.1.7. Working status and occupation: according to United Nation (2006), older persons who had high income or good work position had higher possibility to stay with children than the others in the nineteenth century. However, the relationship between socio-economic status and coresidence was weakened and changed over the periods. By the 1960s, coresidence was clearly associated with lower socio-economic status (UN, 2006). Giang and Pfau (2007) showed that elderly working in the agriculture sector were more likely to live alone or with spouse than elderly individuals who were not working. However, the results were not statistically significant. Audinaryana (1999) found that the risk of coresidence who had children was lower for the elderly people who engaged in economic activities because they had the ability to pay for themselves and who were also supported by their children to help out with housework, food, and daily care.

2.1.8. Income: there is a higher likelihood of living alone or with spouse only among those who have high earnings. (UN, 2006). Munsur et al (2010)

studied in small rural area in Bangladesh found that income gives women economic satisfaction which help them to have less dependency from others and are more likely to live independently. Higher income levels enable people to purchase private and services such as housekeeping and cooking, that co-residing children would have had to provide. The considerable increase in the income levels in China has also contributed to the changes in higher proportion of individuals living alone or with spouse (Meng X & Luo C, 2008). Audinaryana (1999), however, found a different result, which was that higher family monthly income per adult member resulted in the increased likelihood to live with children.

2.1.9. Home ownership: this factor has been tested in many studies and has proved to be an important variable in determining living arrangements. There is a common finding that those who own a home are more likely to live alone or with spouse (Audinaryana et al., 1999; Chaudhuri & Roy, 2007; Giang & Pfau, 2007; Martin, 1989; Meng & Luo, 2008). It is true that housing assumes to be an essential part when deciding on living arrangements decision since it is profitable property for the elderly to choose whom they would like to live with. (Giang & Pfau, 2007). Privacy can be connected with higher economic status (Martin, 1989).

2.1.10. Health: physical and mental health have proved to influence the living arrangements according to some studies, but there is limited data on the actual direct and indirect effects of health status on living arrangements. To analyze the impact of health on living arrangement, longitudinal data needs to examine the living arrangement at a baseline and see how it changes over time by the effect of health while there is control for other factors. But longitudinal studies is extremely time consuming and must be tested multiple times with the same variables which make these studies extremely limited. Moreover, the

change in living arrangement is not occurring on a frequent basis so the length of time taken in the studies to capture the transition in living arrangements takes a lot of time as well (Liang J et al., 2005). Due to the limited capacity in the longitudinal data, a large number of studies related to health and living arrangement is drawn from a cross-sectional data. Based on the longitudinal data, some studies find have found that those who live with a spouse has provided the best health protection, but for the other types of living arrangements, the self-rated health and health related problem varies by marital status and gender (Hughes & Waite, 2002; Li LW, Zhang J, & J., 2009). Older people who have a physical disability or who rated their health as unhealthy is more likely to live with children since those respondents need direct support from their children (Audinaryana et al., 1999; Chaudhuri & Roy, 2007; Lei et al., 2011). When the elderly' health worsen and their children are responsible for caring, the elderly parents might consider to live closer to their children or live in the same house with them (Hay, 2002). Study parents who lived in separated household before hospitalization, nearly fifty percent moved to live with their children after they have problem with their health (Mickus, Stormmel, & Given, 1997). However, in the study of Jersey et al (2005), none of the physical and mental health measures are associated with living arrangements at the 0.05 level of significance.

2.1.11. Own children 'characteristics: the coresidence decision is not made by one person only, it is a negotiating process involving both the elderly parents and their daughters and sons. Therefore, the children 'characteristics and relationship with their parents may have an impact on the possibility of whether or not they decide to coreside. More in depth studies explore the determining factors that relate to elder's children such as age, ordinary of birth, gender, marital status, educational level, occupation, income, area of residence, number of child, location of residence to elderly parents 'house (Cyrus, Xie., &

Yu., 2011; DaVanzo & Chan, 1994; Lei et al., 2011; Lisa Cameron, 2000; Zhang, Gu, & Luo, 2014; Zimmer & Kim, 2001). Number of alive children shows a significant relationship with living arrangement. By using the data from 134 countries, the United Nation have found that the "kin availability" index was calculated as a ratio of the population aged 20-55 to the population aged 60 years or over, has a negative relationship with the likelihood of living independently and a positive association with on the likelihood of living with child or grandchild (UN, 2006). Audinaryana (1999) found that currently married women are more likely to live with children if son available. Martin (1989) found that Malaysia, the Philippines, and Fij older people have a positive likelihood of living with children when the number of children increases. The probability to co-reside with a son or daughter varies from country and region. In Vietnam, the probability to live with a married son are almost 4 times unlikely than a married daughter which suggests a clear that a son is preferred despite the age and the gender of parents (Knodel & Truong Si Anh, 2002). With regards to marital status, unmarried children may be more likely to co-reside due to the absence of a son or daughter-in-law. The more educated a child is, the more opportunities to expose with a modern lifestyle and is also less likely to co-reside. The preference for an older or younger child, a son or a daughter also varies from country and regions (Lisa Cameron, 2000). It seems that unmarried children are more likely to depend on the support from their parents, and tend to coreside with their parents until they can afford to live independently. In this particular study, Lisa Cameron (2000) used the nested logistic model to explore the reason why coresidence and found that the most vital characteristics of a child is age and marital status. Married children are much less likely to live in the same house with their parents while younger children are more likely to do so. On average, sons are less likely than daughters to live with parents in Indonesia. The effect, however, is not statistically significant. In addition, the effect of children 'income also shows

insignificance. In Vietnam, the study of Friedman showed that the elderly are more likely to live with a married son than with a married daughter (J. Friedman, Knodel, Bui, & Truong, 2002). Besides age, gender and marital status of children, some studies also explored the effect of employment status of children on living arrangements. Using the data from 1993 to 1995 interview wave of a longitudinal data on aging population in United States, Choi (2003) found that the nonworking status of children was positively associated with the coresidence. In a study of Lee and Dyer (1996) based on the National Long Term Care Survey, they suggested that having unemployment child is a strong predictor of the probability to coresidence.

Besides the mentioned factors, , some studies have also examined a number of other possible factors such as the leghth of timethat the elderly living at the current address and religion. The relationships of these variables with the living arrangements vary from country to country and depend on the elderly's socio-economic characteristics.

2.2. Endogeneity issues

The relationship between health and working status and living arrangements may be endogenous. This endogenous issue of work status could arise because the elderly could adjust their employment decision to achieve the preferred living arrangement or the dynamic of current living arrangement, which may be the result of previous health statuses and physical limitations (Teerawichitchainan, Pothisiri, & Long, 2015; United Nation, 2001). With regards to work status, for example, if the elderly prefer living alone or living with a spouse, they may decide to work longer. So the working status and the income from work may not reflect the casual relationship on the current living arrangement (Meng & Luo, 2008). However, the proof of endogeneity issue are limited in cross-sectional data. Regarding health status, some studies has

examined the relationship between living arrangement and health status. On the one hand, given health problems, an elderly may decide to co-reside with children (Mickus et al., 1997). But on the other hand, there are some authors suggest that the choice of living arrangement may have effect on health (Agrawal, 2012; Li LW et al., 2009; Samanta T, Chen F, & Vanneman R, 2014). This is a two-way causality between the two, so bias could exist in the estimate of coresidence.

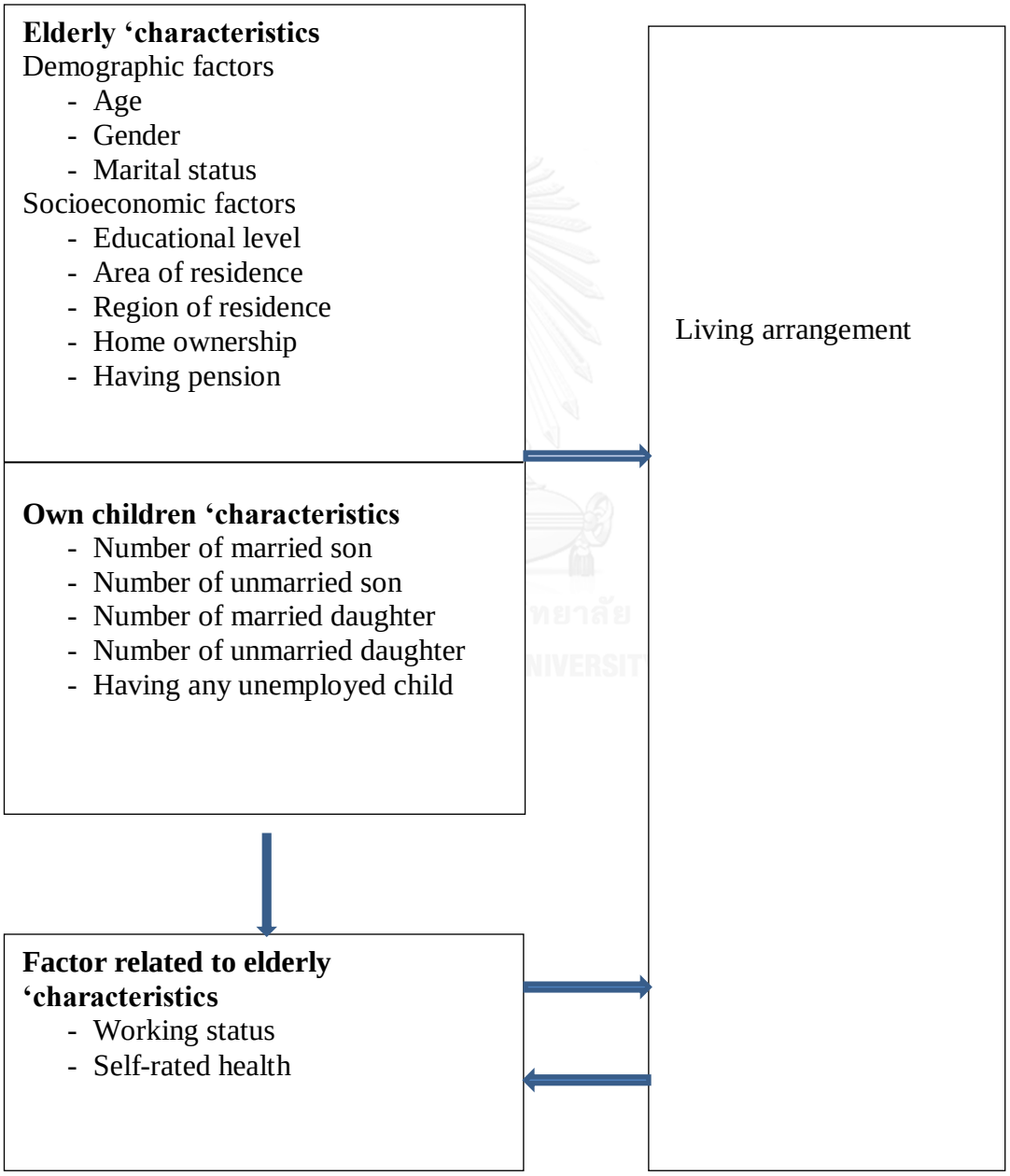
To address the problem of endogeneity issues, suitable instruments should be used to identify the effects of endogenous variables, but few challenges persist in this method. First, it is extremely difficult to find variables that can be used as instruments for this type of model. Moreover, researchers often find that the needed instruments are not available. Lastly, longitudinal data with repeated observations of subjects are vital in sorting out issues of causation due to control for the health and working status at the baseline (Martin & Samuel, 1994). However, until now, studies that address and solve such the endogeneity problem are very rare (UN, 2001).

To handle this endogeneity issue with limited data and no available instrument, we will estimate the likelihood of living arrangements separately for various subsamples, which are stratified by the working status: working and non-working group and by health status which includes two subsamples of self-rated health: poor and good health and the size of each subsample will be reported in each model.

2.3. Conceptual framework

Base on the review of available literature related to living arrangement, combine with the presence data and the endogeneity issue, the conceptual framework is developed as follow:

Figure 1: Conceptual framework of determinant of living arrangement among elderly in Vietnam



CHAPTER III
RESEARCH METHODOLOGY

3.1. Data and the sample size

3.1.1. Data

The data used in this study is the secondary data from Viet Nam Aging Survey in 2011. This is the first-ever nationally representative data for elderly people in Vietnam. Several topics were covered in the survey, including question on demographic, socioeconomic indicators (such as age, gender, marital status, educational level, employment status, living arrangement, source of income…); health status and access to health care service; role of elderly people in families and communities; and right, accessibility to right among elderly people. In addition to the data on the older persons, some information related to their children, both living in the same household with respondent and those living outside, are also answered by older persons.

3.1.2. Sample frame and sampling method

Samples were determined from the Population and Household Survey (PHS) in 2009, using a probability proportional to size (PPS) to ensure the data are national representative for the elderly.. The survey was conducted in 12 provinces, which have been selected randomly in 6 ecological zones in Vietnam, including the urban and the rural area for each region.

VNAS sampling had following steps

Step 1: allocation sample for each region

Base on the previous study in Vietnam about the elderly, the estimated number of people to make the data to be representative for the country is 4000. The sample for each region is based on the proportion of population in each region to the total population in the whole country multiplied by 4000.

Step 2: selected 12 provinces from six ecological zones

Base on the population of the survey that is included total number of people who aged 50 and older at the beginning of fieldwork, each out of 12 provinces was be chosen by PPS method.

Step 3: selected 200 communes from 12 selected provinces

The number of selected communes in each region is defined based on the sample size in each region. Purposely, number of people that are interviewed in each commune is 20 (10 per village and 2 villages per commune) so the number of communes are defined as the total selected sample in each region (result from step 1) divided by 20. Then a sample of 200 communes was selected.

Step 4: in each selected commune, select 2 villages randomly

Step 5: in each village, from the listing of the elderly, 15 people aged 50 and over are randomly selected to interview, in which 10 people were officially interviewed and 5 people were in the reservation list as alternatives (for more detail see Vietnam Women Union, 2012).

3.1.3. Data collection

The data collected in VNAS by face-to-face interview with the structure questionnaire that developed base on indicator system. On the process of developing questionnaire, each question is reviewed carefully by experts and then directly tested in the sample of the respondents. The questions were tested in term of reliability and validity and the selected to be put in the questionnaire.

3.1.4. Analysis sample size

VNAS collected the information regarding 4007 people aged 50 and over. Since this study focus on the elderly, only those who aged 60 and over are selected to include in the analysis. Of those surveyed people, there are

2789 older people (60+). Excluding individuals that have missing value for one or more explanatory variables result in sample size of 2771. Among those elderly, 2682 respondents have at least one living child. Living child in this study refer to biological, adopt and step child. The sample size to be tested in each model will be restricted on certain criteria. Each older person age 60 and over is a unit of analysis in the model.

3.2. Operational definition

3.2.1. Dependent variable

The outcome variable for this analysis is living arrangement, which is inferred from the information regarding the relationship of each household member to the elderly respondent in the household (b3). Living arrangement in this case refer to the household structure of the elderly. One is considered as a member of the household must live under the same roof with the respondent at least 6 months per year. There is a mix variety of options to define the category of living arrangement but it varies by the concern of researchers. One may interest more on the coresidence with children, when the others focus more on the living alone. In the report of VNAS 2011, they created five categories, including living alone, living with spouse only, living with at least one child, living with (great) grandchild with or without spouse and the last category is others. The category that elderly living with (great) grandchild without children is called as skip-generation household. This category may be interesting and may be a topic for another study. In my study, I will divide the living arrangement in to four basic categories. Since two models will be tested in the study, in the model 1, i concern about the factors that affect to the living with children among elderly. In model 2, I would like to explore more deeply about who else the elderly like to live with besides living with children. The outcome of each model is a bit different with the other so the definition is given below:

Model 1: at the elderly level, the outcome is coresidence with at least one child (1) versus not coresidence with children (0). The sample for this model is limited to only those who have at least one living child (N=2682).

Model 2: in this model, the outcome is a four-category variable in which the base outcome is living with at least one child. Multinomial logistic will be applied to examine the factors that are correlated to be a specific type of living arrangement against the base outcome. The sample in this model is 2771. The basic categories of living arrangement are defined as follow:

(1) Living with at least one child: this is the household that the elderly live with at least one child and in this case, the term coresidence will be used. The child include biological child, adopted child or step child.

(2) Living alone: the elderly household does not contain any other person beside the elderly individual.

(3) Living with spouse only: live in household that have only the respondent and his/her spouse.

(4) Living with others: this is the household that the elderly living other people but without children. This type can be included living with spouse but it has other members beside the spouse.

Table 1 presents the distribution of living arrangement among older people in Vietnam. Most older persons in Vietnam are living with one or more of their children (65.88%), in this case the term coresidence is used. Among those who are not coresiding, 5.28% are living alone, 17.37% are living with spouse only and 11.48% are living with others people without children.

Table 1: Living arrangements of older persons in Vietnam

Living arrangement	%
Living with at least one child	65.88
Living alone	5.28
Living with spouse only	17.37
Living with others without children	11.48
Number of observations	**2771**

3.2.2. Independent variables

Factors related to the elderly 'characteristics: The three sets of covariates were included in the analysis. The first group is demographic characteristics which include: Age, gender, marital status. The information regarding age is taken from question b41 in the questionnaire, it was calculated based on the completed age in 2011 (the year that survey conducted) and then divided into three sub groups: 60-69, 70-79 and 80+ (the youngest group is the reference). Gender was dichotomized into female (=1) versus male (=0). Marital status was indicated by married (=1) and unmarried (=0). In this study, the unmarried elderly were defined as those who were divorced, separated, widowed and single. The marital status and gender information is extracted from question b51 and b21, respectively.

The second group is the socioeconomic status, which includes educational level (b61), area of residence, region of residence, home ownership (d4) and having pension (f2b). The highest level of education that the elderly attained was divided into such following categories: no schooling, some primary school, primary school, and beyond primary school in which no schooling is the reference group. The information regarding to the province and district that the elderly living in the front-page of questionnaire was used to define the area and the region of residence. Area of residence is rural versus

urban. The regions are the North (reference), the South and the Central region. In case that the respondent or his/her spouse own the house, he or she was coded as own the house, other cases are coded as not own the house (reference). In Vietnamese cultural, it is normal for the elderly to own their house and at certain time when they age, they might give their house to their children but they still live in the same roof with them after that. The other case is that, the children buy a new house and the elderly moved to live with them. However, the home ownership information in the survey is the current status so that we cannot distinguish the real status of owning the house. With regards to pension, this information refers to the source of income/support/asset for older people in daily living and if the respondents reported that their souse of income/support/asset come from retirement source, they will coded as received pension.

The third group is the factors related to own children 'characteristics: in the household profile, the elderly was asked how many living children they have, which include biological, adopted or step children (section B, part 2). With each child, both who live or not live in the same household with the elderly, general information was provided such as age, gender, marital status, educational level, occupational status, having children or not. This information is very helpful in describing more detailed the characteristics of children that the elderly live with. However, because of the some difficulties in creating the variables related to children's characteristic so that in this study, we include number of children, their gender, their marital status and their employment status only. To allow the effect of children differ by gender and marital status, we include the number of married son, number of married daughter, number of unmarried son and number of unmarried daughter. Unmarried child in this study refers to single, divorced, separated and widow child. This information is taken from the combination of several questions, namely b2, b5, b11, b12 and b25. In some studies, the authors use the number of children as a proxy for the

variance in the ages of children. The more number of children the elderly had the more likely that contain the young ones in the household. This is because the younger child is more likely to co-reside (DaVanzo & Chan, 1994; UN, 2001). Besides that, in traditional family in Vietnam, the son is expected to take care of their parents (Knodel & Nguyen, 2015) so it would be valued if we exam the odd of coresidence with son compare to daughter. The norm to live with married son is so common in Vietnam, however, when the child is not married, it is more likely that the child still live in parents 'house. In addition to the factor related to the number of children, occupational status also is tested. We include the variable "having any unemployed child" to refer about the employment status of children (b27).

3.2.3. Subsample classification

Base on the conceptual model and the literature review, we will estimate the likelihood of living arrangement by creating various sub-groups of sample regarding the working status and health status of the elderly.

The elderly were asked two questions regarding the working status: "are you still working? (e2)" and "what type of job are you doing" (e3). Based on the answer for these questions, the working status was defined as dichotomous variable: non- working, working.

The health status is indicated by self-rated physical health status. The elderly were asked to rate their physical health (i1) from 5 point scale (very good, good, fair, poor and very poor). The new categories are created as poor health (very poor/poor health) and good health (grouped from fair/good/very good heath).

Table 2: Description of variables used in multivariate analysis

Name	**Scale**	**Description**		**Measure**	
Living arrangement	Nominal	The current living arrangement	***Logistic regression***		
			Dummy	Yes	No
			Living with at least one child	1	
			Otherwise	0	
			Multinomial logistic regression		
			Living with at least one child (base group)	1	
			Live alone	2	
			Live with spouse only	3	
			Living with others	4	
Independent variables					
Elderly 'characteristics					
Age	Interval	Age in completed year divided into 3 age groups	Dummy	Yes	No
			60-69 (ref)		
			70-79	1	0
			80+	1	0
Gender	Nominal	Sex of the elderly	Dummy	Yes	No
			Male (ref)	0	
			Female	1	
Marital status	Nominal	The current marital status of the elderly	Dummy	Yes	No
			Unmarried (ref)	0	
			Married	1	
Educational level	Nominal	The highest level of education completed	Dummy	Yes	No
			No schooling (ref)		
			Incomplete Some primary school	1	0
			Primary school	1	0
			Beyond primary school	1	0
Area of residence	Nominal	The current place of residence	Dummy	Yes	No
			Rural (ref)	0	
			Urban	1	

Region of residence	Nominal	The current region of residence	Dummy Northern region (ref) Southern region Central region	Yes 1 1	No 0 0
Home ownership	Nominal	The elderly or their spouse own the house or not	Dummy Yes No (ref)	Yes 1 0	No
Having pension	Nominal	The elderly have pension or not	Dummy Yes No (ref)	Yes 1 0	No
Own children characteristics					
Number of children by gender and marital status					
Number of married son	Continuous	Number of married son that the elderly have			
Number of unmarried son	Continuous	Number of unmarried son that the elderly have			
Number of married daughter	Continuous	Number of married daughter that the elderly have			
Number of unmarried daughter	Continuous	Number of unmarried daughter that the elderly have			
Unemployed child	Nominal	Having any unemployed child	Dummy Yes No (ref)	 1 0	

3.3. Data analysis

The methods of data analysis in this study include the description of variables, followed by an examination of the association between independent variables and the outcome variable (bivariate analyses), as well as logistic and multinomial logistic regression given the ***normalized weights*** from the survey. The normalized weight is obtained by rescaling the specified survey weights to add to the total sample size therefore the sample size is still the same with the

original one but the result of analysis is national representative. The unit of analysis in this study is individual who aged 60 and older.

Descriptive statistic is used to describe the pattern of living arrangement among the elderly. For continuous variables, means are reported and for categorical variables, percentages are reported. Chi-square test is conducted when the independent variables are nominal or ordinary.

The first stage, the coresidence with children will be examined as a contrast between two outcomes: coresidence (1) versus otherwise (0). Logistic regression will be used to check the effect of each factor to the odds of coresidence of the elderly parents with children. The factors to be examined include the elderly 'characteristics such as age, gender, marital status, and educational level, area of residence, region of residence, home ownership, having pension and the own children' characteristics include number of children by gender and marital status and employment status of children. Because of the option of living with children so it is not possible for the elderly persons with no surviving offspring, the sample in the first stage of the analysis is restricted to those having at least one surviving child (N=2682)

At the second stage in the analysis will use a multinomial logistic technique that is a generalization of logistic regression with more than two outcomes and the outcomes are not ordered. Multinomial logistic regression is suitable in this case due to the living arrangement in the second stage have four outcomes: living alone, living with spouse only, living with at least one child and living with others. Rather than limiting the sample to only those at risk of all various outcomes as in the first model, a modified multinomial model that allow the effect of all some explained variables to be examined so that the sample in the second model is 2771. The observation in this model include all elderly age 60+ and the predict variables are the same as in first model. The analysis will break the outcome variable down into a series of comparisons

between two categories. If we choose living with children as a baseline comparison group, then the analysis will consist of three comparisons:

- Living alone against living with children
- Living with spouse only against living with children
- Living with others people without children against living with children

3.4. Ethics in research

The research process and the data collection procedure were carefully considered to ensure that the subject of the study was protected under the regulation of the international research ethics. The implementation process of VNAS was carefully reviewed by the Research Council of the Institute of Social and Medical Studies, which is under the authorization of the American Medical Board. The identities of all the respondents and their relatives were kept confidentially.

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CHAPTER IV
RESEARCH FINDINGS

4.1. Demographic characteristics of the elderly

Table 3 shows some characteristics of respondents in this study. It is observed that of those who surveyed, those aged from 60-69 years account for nearly 50%, the mean age of older people in this study is 70.71. Out of total sample, 57.02% are females and 42.98% are males. Regarding marital status, the majority of elderly in this survey are married, followed by widow. The percentage of those, who are single, divorced and separated only account for very small number.

In general, almost of the elderly individuals in this survey were born during the period of war so they are more likely to have low background in education. Roughly a half of elderly people who surveyed just has some primary school or has no schooling and approximately one third of elderly who had completed higher primary education.

In term of area and region of residence, almost two-thirds of the elderly still live in rural area. Close to a half of the respondents in this survey, live in Southern region, followed by the Northern and Central region. A vast majority of either respondents or their spouses own the house at the time of survey. Nearly 40% of respondents are still working. With regards to health status, the elderly, who participated in the survey were asked to rate their physical health. Approximately two-thirds of the elderly reported that they have poor health.

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Table 3: Characteristics of the respondents

Characteristics	%/Mean
Age group	
60-69	45.52
70-79	31.4
80+	23.08
Mean age	70.71
Gender	
Male	42.98
Female	57.02
Marital status	
Married	68.57
Single	3.96
Divorced	0.54
Separated	0.37
Widow	26.56
Education	
No schooling	18.68
Some primary school	31.42
Primary school	17.98
Beyond primary school	31.92
Area of residence	
Urban	32.94
Rural	67.06
Region of residence	
Northern region	34.14
Central region	19.69
Southern region	46.17
Home ownership	
Yes	86.33
No	13.67
Having pension	
Yes	18.08
No	81.92
Currently working[a]	
Yes	38.74
No	61.26
Self-rated health[a]	
Good health (fair/good/very good health)	35.94
Poor health (poor/very poor health)	64.06
Number of observations	**2771**

Note: [a] N=2770

VNAS also provides detailed information about the children who live with parents as well as those who live outside of the household. By gender and marital status of children, on average, in our sample, the older people had number of married sons quite close to number of married daughters (1.97 and 1.82, respectively). In addition, there is not much difference in the number of unmarried sons and number of unmarried daughters. Unmarried child in this study refers to single, divorced, separated and widow child. Almost two-thirds of the respondents have at least one unemployed child at time of conducting survey.

Table 4: Own children 'characteristics

Characteristics	**Mean /%**
Number of children by gender and marital status	
Mean number of married son	1.97
Mean number of unmarried son	0.42
Mean number of married daughter	1.82
Mean number of unmarried daughter	0.47
Percentage has any unemployed child	62.83
Number of observations	**2771**

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4.2. Pattern of living arrangement among the elderly

The living arrangements of the elderly may vary across their socio-economic and demographic background. Table 5 below shows detailed information about four types of the elderly living arrangements. They are: (1) living alone; (2) living with spouse only; (3) living with at least one child and (4) living with others without children, while table 6 shows some selected measures of living arrangement.

It can be seen in Table 5, in 2011 almost two-thirds of the elderly in Vietnam living with at least one child. Among those who live with at least one child, there is an increasing trend with age in which the older ones are more likely to live with children. This can be explained by the fact that the older

persons are, the more they need help from their children the more coresidence might be expected.

By gender, the table shows that the proportion of living with spouse is much higher among men but the percentage of living alone is much higher among women. This result indicates that the male elderly tend to live with spouse than to live alone, while the female elderly tend to live alone. These findings can be explained by the differences in marital pattern and life expectancy between males and females. In term of marital status, it is believed that males are more likely to remarry when his wife passed away or after divorce, whereas this is not popular among females. Besides that, in term of life expectancy, females have higher life expectancy compared to male counterpart so they have higher risk of being widow.

In some studies, the education level of the elderly also plays an important role in determining their living arrangement. In general, older people with lower level of education were more likely to live in traditional extended household than those with better education. In table 5, we can observe that older people who have higher education are more likely to live with spouse only.

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Those living in urban areas have a higher proportion of co-residency with children compared to rural counterpart. It may be the case where cost of living as well as house price is much higher in urban area so that people considered coresidence as a cost-saving mechanism.

Those who own the house have higher proportion of living alone or living with spouse and less likely to co-reside with children. It seems that house play an important role in making living arrangement decision. People who are the owner of the houses probably have more power to choose whom to live with. Interestingly, more than two thirds of those who have pension co-reside with their children.

Table 5: Pattern of living arrangement among the elderly

	Living arrangement			
	Living alone	Living with spouse only	Living with at least one child	Living with others
Age* **				
60-69	3.37	18.93	62.81	14.89
70-79	6.28	19.35	64.16	10.21
80+	7.68	11.59	74.6	6.47
Gender* **				
Male	1.64	23.28	65.86	9.22
Female	8.01	12.92	65.89	13.18
Marital status* **				
Unmarried (single/separated/divorced/widow)	16.26	0	66.44	17.3
Married	0.24	25.33	65.62	8.81
Education* **				
No schooling	8.64	6.94	73.95	10.47
Some primary school	7.3	17.27	64.8	10.63
Primary school	3.48	21.06	68.34	7.12
Beyond primary school	2.32	21.49	60.83	15.36
Area of residence* **				
Urban	2.98	10.5	74.03	12.49
Rural	6.41	20.74	61.87	10.98
Region of residence* **				
Northern region	4.38	25.62	58.95	11.05
Central region	6.88	18.98	62.0	12.14
Southern region	5.25	10.58	72.65	11.52
Home ownership* **				
Yes	5.62	19.58	64.06	10.74
No	3.10	3.40	77.35	16.15
Having pension				
Yes	2.26	20.18	66.26	11.3
No	5.94	16.75	65.79	11.52
Number of observations	**259**	**509**	**1748**	**255**

Note:, **, and *** denote statistically significant difference at 10 percent, 5 percent, and 1 percent significant level, respectively.*

Because of the available information about children of the elderly, so this enables us to compare the extent to which the elderly live with sons or daughters. Table 6 shows the distribution of the elderly 'living arrangement for total sample (N=2771). We can see that, 65.88% of the elderly people live with children, compared to previous studies in Vietnam; it shows a decline trend but the proportion of older people live with children still high. Some recent studies in the past two decades in Vietnam have observed a movement of living arrangement among the elderly in which those who live with children were decreasing in number in contrast to a rising trend of living independently among elderly (Giang & Pfau, 2007). Living independently refers to older people live alone or with spouse only. The change in living arrangement at some extent can be linked to the social change such as migration and urbanization (Martin, 1989).

The majority of Vietnamese family followed the patrilineal kinship system in which sons are supposed to take care of their parents (elderly) (Charles & Vu, 1996; UNFPA, 2011b), especially after their marriages. Normally, when a daughter gets married, she will reside with her husband' family so that the difference in the proportion of the elderly who coreside with married son compared with married daughter is expected to be large. This is proved by the result that roughly forty percent (36.82%) of sample live with married son while just well under one-tenth co-residing with married daughter. Furthermore, it is observed that there is small difference among those who live with unmarried son and those who live with unmarried daughter. This reflects the fact that the "gender considerations regarding the appropriateness of coresidence of particular children emerge strongly only following their marriage. It is normatively appropriate for single children of either sex to live in their parental home" (Audinaryana et al., 1999).

Table 6: Selected measures of living arrangements
(for total sample, N=2771)

Indicators	%
Percentage live with at least one child	65.88
Percentage live with at least one son	52.51
Percentage live with at least one daughter	23.94
Percentage live with any married child	47.28
Percentage live with any married son	36.82
Percentage live with any married daughter	07.61
Percentage live with any unmarried child	32.00
Percentage live with any unmarried son	20.06
Percentage live with any unmarried daughter	17.58
Ratio of living with son to daughter	2.19
Ratio of living with married son to married daughter	4.84
Ratio of living with unmarried son to unmarried daughter	1.14

Note: unmarried child refers to single/separated/divorced/widow child

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4.3. Determinants of living with children or not

In the earlier section, the individual influence of some selected background characteristics on the living arrangement of the elderly has been examined cross-tabular analysis but the magnitude of each of these factors hasn't be seen in the interaction with other factors. In this section, logistic regression were applied to examine which factors associated with living with at least one child among elderly and the results are presented in table 7.

The dependent variable in table 7 is a dummy variable in which coresidence with children coded as 1, otherwise coded as 0. Because of the outcome is coresidence with children so it is not possible for those who do not have any living child, the sample in this analysis is restricted to only those who

have at least one living child (N=2682). The odd ratio should be interpreted as the effects of the independent variables on the odds of living with children versus not.

The model for the sample of 2682 respondents will be estimated first (column 1) and then, as discussed in the endogeneity part above, we will estimate additional models of living arrangement determinants by many sub-groups of working status and self-rated health status to avoid endogeneity. Specifically, we split the sample into separate working and non-working group and poor health and good health groups and present the results in column 2, 3, 4 and 5, respectively.

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Table 7: Logistic estimation of living with children or not

		Working status		Health status	
	(1) Total sample	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Age (reference: 60-69)					
70-79	0.936	0.677	1.040	0.938	1.008
80+	1.075	0.573	1.171	1.213	0.749
Gender (reference: male)					
Female	0.975	0.593**	1.408	0.873	1.123
Marital status (reference: unmarried)					
Married	0.752	1.176	0.652**	0.753	0.646
Education (reference: no schooling)					
Some primary school	0.920	0.866	1.020	0.953	0.670
Primary school	1.079	0.604	1.720	1.077	0.567
Beyond primary school	0.627*	0.424**	0.913	0.876	0.245***
Area of residence (reference: rural area)					
Urban	1.719***	1.834**	1.674**	1.723***	1.634*
Region of residence (reference: North)					
Central region	1.031	0.900	1.188	1.327	0.622
Southern region	2.045***	1.834***	2.233***	2.333***	1.679*
Own the house (reference: no homeowner)	0.207***	0.335**	0.191***	0.212***	0.121***
Having pension (reference: no pension)	1.486*	1.573	1.283	1.339	1.397
Number of children by gender and marital status					
Son					
Married	1.124*	1.080	1.139*	1.102	1.175*
Unmarried	1.808***	1.859***	1.607***	1.881***	1.766**
Daughter					
Married	0.914	0.859*	0.944	0.898*	0.909
Unmarried	1.475***	1.479**	1.472***	1.443***	1.719***
Having any unemployed child (reference: having no unemployed child)	0.681**	0.886	0.618*	0.839	0.450**
Pseudo R-square	0.1108	0.1043	0.1185	0.1203	0.1056
Number of observations	**2682**	**985**[b]	**1696**	**1858**[b]	**823**

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Note: Results are reported in the form of odd ratios. The sample in logistic regression restricted to only those who have at least one living (biological, adopted, step) child. The base group is not living with children

[b]*There is one missing value from working status and one missing value from health status.*

, **, and * denote statistically significant at 10 percent, 5 percent, and 1 percent, respectively.*

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The logistic regression for the sample of 2682 respondents is presented in column 1, it appears that the odds of living with children have no relationship with age, gender and marital status.

The factors found to be significant for living with children or not are education, area and region of residence, home ownership, pension, number of children by marital status and employment status of children. Regarding education, we find that, compared to older people who have no schooling, those completed beyond primary school have approximately 38% lower the odds of living with children and the result is significant at 10% level.

With regards to area of residence, we find that living in urban area is strongly correlated with higher odds of coresidence. It can be explained by the fact that those who live in urban area facing with higher cost of living as well as the limited in the availability of land. In reality, it costs much more of money to own a house in urban area. In this case, co-residency may be a solution to cut cost for family members.

Living in Southern region is strongly associated with higher odds of coresidence compared to living in Northern region. It is a bit difficult to explain this result but some previous studies have given some possible reasons. It might be the case that in Southern region, the economic more development than the Northern region so that there is a trend of rural-urban migration, from Northern region to Southern region of young generation to seek for job so more elderly people was left behind in Northern area (Giang & Pfau, 2007). Another explanation is that the difference in the level of success in family reform by regions had resulted in stronger nuclear family in the North compared to the South. Furthermore, it its more common for children in the North to set up of a new household right after they marry while most young couples of the South appear to share a house with their parents after marriage (Bélanger & Danièle, 2000).

Owning a house reduces the odds of living with children compared to reference category and the significance is found to be strong (at 1% level). It suggests that housing has a significant role in making living arrangement decision, when elderly people own the house, they have power to set an independent living if they can afford for their living expenses.

Surprisingly, having pension is positively associated with higher the odds of living with children. It is undoubtedly true that pension is a stable source of income for older person so we expected that if older parents have that source of income, they would prefer living on their own rather than living with children.

Regarding own children 'characteristics, which are presented by number and employment status of children, we find that, if the number of married sons increases by one, the odds of living with children would be 12.4% higher. Furthermore, if there is one more unmarried son, the odds of living with children increases even more (80.7%). The effect of having unmarried daughter on the odds of coresidence is the same direction with having unmarried son. We find that, an increasing in the number of unmarried daughter would increase the odds of coresidence by 47.5%. The effect of having married daughter is negatively associated with co-residing with children, however, the result is not significant. For employment status of children, the result clearly shows that, having any unemployed child is negatively correlated with the odds of coresidence. The variation in the odds of living with at least one child by number of children in each gender and marital status can be explained by the cultural factor. Traditionally, Vietnamese families follow the patriarchal and patrilocal system and there is strong son preference existence. Normally, after marriage, son is supposed to stay with their parents and continue the family lines, while daughter often resides with her husband family. In addition, it is normally for unmarried children, especially never married children of either sex to live with their parents (Knodel, Friedman J, Truong S.A, & Bui T.C, 2000)

After stratifying the sample by working status into working group (column 2) and non-working group (column 3), we find that for working group, female is less likely to live with children compared to male. While among non-working group, there is no relationship between living with children and gender. It can be explained by the fact that, men are more likely to depend on their household members in term of housework, while women probably can provide themselves with such kind of service so that women are less likely to live with children, especially when they are economically independent. For non-working people, being married is negatively associated with coresidence. With regard to education, working elderly, who completed higher than primary school, have lower the odds of living with children than those with no schooling. However, there is no relationship between education and coresidence among non-working elderly. For area and region of residence, those living in urban or living in Southern region is positively correlated with higher odds of living with children compared to those living in rural or those living in Northern region, respectively, regardless of their working status are. In contrast, being an owner of the house reduces the odds of living with children for both sub-groups.

For both the working and non-working elderly, we find that, the effects of having unmarried child on the odds of coresidence is positive and constant over sub-groups. This finding can be explained by the fact that unmarried children are more likely to depend and live with their parents, regardless of their gender. Regarding the number of married children, we find that this variable has a different effect on the odds of coresidence among working and non-working elderly. In particular, the number of married son is positively significant only for non-working elderly while the number of married daughter is negatively significant only for working elderly.

As can be seen in column 4 and 5 in table 7, after splitting the sample into poor health and good health group, we find that factors that do not have

any significant effect on the odds of living with children for both sub-groups, are age, gender, marital status and pension. Compared to the result for total sample, working and non-working group, it appears that the effect of area and region of residence, home ownership and number of unmarried child on the odds of residence does not change much. However, there is a little difference regarding effect of education, region and number of married child. In detail, completing higher than primary school education negatively affects the odds of coresidence only for good health elderly people. Besides, those living in Southern region who are in poor health have higher the odds of living with children than those in good health (2.333 and 1.679, respectively). The effects of having one more married son, are significant in determining the coresidence for elderly with good health only, while effect of having one more married daughter is statistically significant only for poor health elderly.

In summary, the factors that positively affect coresidence are living in urban area, living in the South, having pension, the number of married son and number of unmarried son/daughter.

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4.4. Determinants of other options of living arrangement besides living with children

In section 4.3 above, we explored the factors that associate with the coresidence with children among older persons. In this section, we would like to examine besides living with children, other options of living arrangement, whether they would choose to live alone, with spouse only, or with other people without children using multinomial logistic regression. The sample in this analysis is 2771 respondents.

Table 8, 9 and 10 below reports a part of the results of multinomial logistic regression for the full sample as well as for the sub-groups, which are

divided by working status and health status. The base category (group 1) is the group of those who live with at least one child.

Group 2: those who live alone (one-person household)

Group 3: those who live with spouse only

Group 4: those who live with other people without children

4.4.1. Determinants of living alone versus living with at least one child

As in table 8, for total sample (column 1), we find that the following factors are significantly associated with higher the odds of living alone: home ownership and employment status of children. In particular, either respondents or their spouse are homeowner, they would have seven times more likely to live alone versus living with children. It seems that house play a very important role in making living arrangement decision. With regards to employment status of children, we find that the elderly, who have any unemployed child, are twice more likely to live alone than those without any unemployed child. Being married elderly is negatively correlated with living alone. Furthermore, urbanity as well as number of unmarried daughter decreases the odds of being in group 2 (live alone) but increase the odds of being in group 1 (living with at least one child) and this result is consistent with the finding from logistic regression in section 4.3 above.

After stratifying the sample by working status and self-rated health status, it appears that effect of marital status, home ownership on the odds of living alone is constant over sub-groups and has the same direction compared to the result for total sample. Interestingly, the effect of owning the house on the odds of living alone among good health elderly is much larger compared to those in poor health (52.91 and 6.79, respectively). It seems that, if the elderly

in good health, they will prefer to live alone than to live with children, especially when they have resource to support for their independent living.

The effect of living in urban area on the odds of living alone turns out to be insignificant for both working and non-working elderly. However, for sub-groups of health status, we find that, living in urban area significantly increases the odds of living with children (group 1) compared to living alone (group 2) among poor health elderly. So it seems that people living in urban area are more likely to live with children and this effect even is stronger in the case that the elderly in poor health.

With regard to number of children, it appears that only number of married son and number of unmarried daughter shows the significant effect for the sub-groups but significance is found for some of the sub-groups only. In particular, among the working elderly, the elderly who have one more married son have 24% lower the odds of living alone compared to live with children. Besides that, the number of unmarried daughter also has strong negative effect on the odds of living alone for non-working group. The relationship between employment status of children and the odds of living alone for sub-groups is similar for total sample. However, the statistically significance is found only with the group of working elderly and poor health elderly.

In summary, the factors found to have positively affecting living alone are individuals aged 70-79 and in working group or in good health, those own the house, those have any unemployed child.

Table 8: Multinomial logistic estimation on living alone versus living with children[a]

		Working status		Health status	
	(1) Total sample	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Age (reference: 60-69)					
70-79	0.937	2.297*	0.690	0.617	4.349**
80+	0.826	2.947	0.748	0.607	3.662
Gender (reference: male)					
Female	1.002	3.098	0.648	1.572	0.416
Marital status (reference: unmarried)					
Married	0.011***	0.011***	0.011***	0.015***	0.005***
Education (reference: no schooling)					
Some primary school	1.006	0.404	1.469	0.969	1.121
Primary school	0.704	0.364	0.966	0.811	1.208
Beyond primary school	0.908	0.663	0.907	0.919	1.229
Area of residence (reference: rural area)					
Urban	0.536*	0.453	0.686	0.374**	0.993
Region of residence (reference: North)					
Central region	1.123	0.609	1.419	0.836	2.213
Southern region	0.675	0.561	0.567	0.669	0.390
Own the house (reference: no homeowner)	7.631***	3.786**	8.755***	6.791***	52.907***
Having pension (reference: no pension)	0.679	0.233	0.898	0.692	0.440
Number of children by gender and marital status					
Son					
Married	0.879	0.764*	0.951	0.926	0.689
Unmarried	0.802	1.232	0.643	0.850	0.550
Daughter					
Married	0.929	0.832	1.020	0.968	0.948
Unmarried	0.591***	0.475	0.579***	0.573***	0.546*
Having any unemployed child (reference: having no unemployed child)	2.266**	2.888*	1.793	2.304**	1.487
Pseudo R-square	0.2513	0.2621	0.2569	0.2715	0.2382
Number of observations	**2771**	**1026**[b]	**1744**	**1917**[b]	**853**

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Note: [a] Reference category = living with at least one child. Results are reported in the form of odd ratios

[b]There is one missing value from working status and one missing value from health status.

, **, and * denote statistically significant at 10 percent, 5 percent, and 1 percent significance level, respectively.*

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4.4.2. Determinant of living with spouse only versus living with at least one child

Table 9 presents the factors correlated with living with spouse only (group 3) compared to living with at least one child (group 1). Column 1 shows the result for total sample, while column 2, 3, 4 and 5 presents the result for sub-groups.

As can be seen in column 1, there are several factors that do not have any significant relationship with the odds of living with spouse only, namely age, gender, working status of children. In contrast, the variables found to have effects on the odds of living with spouse only versus living with children are marital status, education, home ownership, area, region, pension and number of children.

In particular, being married is strongly correlated with higher odds of living with spouse only (group 3) compared to living with children (group 1). With regard to education, having higher primary school is associated with higher the odds of living with spouse only (compared to no schooling). If either the respondents or their spouses own the house, the more likely that they would live with spouse only. It seems that, having higher socio-economic status (education and homeownership) provides elderly more resources to purchase their privacy. For own children factors, we find that, the number of married son, the number of unmarried son or daughter are positively associated with living with spouse only but negatively correlated with coresidence.

Column 2 and 3 presents the estimation for working and non-working elderly, respectively. We find that, the effect of age, gender, education and region on the odds of living with spouse only varies across sub-groups. In particular, working elderly who aged 80+ is significantly associated with the likelihood of living with spouse only (group 3) compared to live with children (group 1). Regarding gender, there is an interesting point is that gender has no

relationship with the odds of living with spouse only for total sample but it turns out to be significant for both sub-groups of working status. In detail, working females have 0.7 times more likely of living with spouse only (group 3) compared to working males. In contrast, non-working females have 47% lower the odds of living with spouse only compared to non-working males. It appears that, working status seem to play an important factor among female elderly in making their living arrangement decision. For the level of education, we find that, there is a strong relationship between having primary education or higher and the odds of living with spouse only among working elderly. However, no significant effect is found for non-working group. With regard to region, non-working elderly living in the South are less likely than working elderly to live with spouse only.

Column 4 and 5 shows the results for poor-health and good-health group, respectively. We find that, the effect of education for poor health and good health group is different for total sample and varies by sub-groups. In particular, compared to no schooling, completing some primary school or higher among good health elderly is positively associated with living with spouse only. In contrast, no relationship with education is found for poor health elderly. In term of area and region of residence, among poor health elderly, who live in urban area or in Southern region, have negatively relationship with the odds of living with spouse only. Having pension among poor health elderly significantly reduces the odds of living with spouse only versus living with children. This result may indicate that, poor health elderly probably need more support and care from their children and in case they have pension as a source of income, they might provide material support to their children as an exchange. With regard to number of unmarried son/daughter, we find that the effect of having one more unmarried child on the odds of living with spouse only versus living with children is negatively significant and remarkably consistent for all sub-groups. However, the number of married son and married

daughter has no effect on the odds of living with spouse only. Having any unemployed child among good health elderly has a significantly positive relationship of being in group 2 (living with spouse only).

In summary, there are three main factors, which positively affect living with spouse only, namely education, marital status and home ownership. However, the effects of education and home ownership are even stronger when individuals are in good health or in working. In addition, there is a positive relationship between working female and living with spouse only.

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Table 9: Multinomial logistic estimation on living with spouse only versus living with children[a]

		Working status		Health status	
	(1) Total sample	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Age (reference: 60-69)					
70-79	1.111	1.420	1.017	1.151	0.917
80+	0.941	2.719**	0.689	0.891	1.341
Gender (reference: male)					
Female	0.904	1.706**	0.530**	0.901	0.981
Marital status (reference: unmarried)					
Married	2.96e+07***	1.02e+07***	1.40e+07***	5.16e+07	7695825***
Education (reference: no schooling)					
Some primary school	1.637	1.833	1.470	1.458	3.483**
Primary school	1.439	3.513**	0.598	1.201	4.784***
Beyond primary school	1.951**	3.001**	1.285	1.345	8.401***
Area of residence (reference: rural area)					
Urban	0.463***	0.415*	0.486**	0.629*	0.280***
Region of residence (reference: North)					
Central region	0.933	0.998	0.804	0.681	1.786
Southern region	0.523***	0.649	0.453**	0.401***	0.807
Own the house (reference: no homeowner)	3.851***	1.841	4.654***	4.112***	4.876*
Having pension (reference: no pension)	0.544**	0.584	0.637	0.532**	0.625

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Table 9 (cont)

		Working status		Health status	
	(1) Total sample	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Number of children by gender and marital status					
Son					
Married	0.847*	0.889	0.848	0.872	0.795
Unmarried	0.402***	0.439***	0.409***	0.454***	0.272***
Daughter					
Married	1.029	1.165	0.946	1.072	0.973
Unmarried	0.571***	0.587***	0.596***	0.655***	0.354***
Having any unemployed child (reference: having no unemployed child)	1.292	0.821	1.665*	0.986	2.227*
Pseudo R-square	0.2513	0.2621	0.2569	0.2715	0.2382
Number of observations	**2771**	**1026**[b]	**1744**	**1917**[b]	**853**

Note: [a] Reference category = living with at least one child. Results are reported in the form of odd ratios

[b]There is one missing value from working status and one missing value from health status.

, **, and * denote statistically significant at 10 percent, 5 percent, and 1 percent significance level, respectively.*

4.4.3. Determinant of living with others people versus living with at least one child

Table 10 presents the effects of our explanatory factors on living with others without children (group 4) compared to living with children (group 1). For total sample, as can be seen from column 1 that, there are several factors that has no relationship with the odds of living with others people, namely gender, education, area, region, home ownership, number of married daughter and employment status of children. On the other hand, all other factors in the model negatively affect the odds of living with others. Regarding age, being older people in age group 80 and over reduces the odds of living with others people around 55%. It is expected that, the older the person is, the more assistance they might need from their children, so they might be less likely to live with other people at older age. Having one more married son and unmarried son/daughter reduces the odds of living with others compared to living with children around 34%, 50% and 40%, respectively.

After stratifying the sample by working status, we find that effect of age, pension turns out to be significant only for the total sample (column 1) and have no significant difference for sub-groups. The effects of education on the odds of living with others, however, change from having no effect for total sample to having positively significant for one of the sub-groups. In particular, working elderly, who complete higher than primary school, have more than 2 times higher the odds of living with others compared to living with children (compared to no schooling). The number of unmarried son or daughter significantly reduces the odds of living with others only for non-working elderly.

For poor health (column 4) and good health group (column 5), the factors found to have different effects across sub-groups and compared to total sample (column 1) are age, gender, education, area of residence, pension, and number of unmarried son. However, among these factors, only education

positively results in higher odds of living with others, while the other factors show negative effects. In detail, completing beyond primary school is associated with about 5 times higher the odds of living with other people among good health elderly, while there is no significant effect of education found among poor health elderly. It appears that, having higher education and being in good health make the elderly somehow less likely to depend on their children. Being female in good health reduces the odds of living with others by roughly 34%. On the other hand, living in urban area or having any unemployed child has negative effects on the odds of living with others among poor health elderly.

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Table 10: Multinomial logistic estimation on living with others versus living with children[a]

		Working status		Health status	
	(1) Total sample	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Age (reference: 60-69)					
70-79	0.790	1.073	0.785	1.005	0.389**
80+	0.445**	0.408	0.601	0.458*	0.526
Gender (reference: male)					
Female	1.163	1.646	0.859	1.604	0.657**
Marital status (reference: unmarried)					
Married	0.653*	0.317***	1.036	0.952	0.345
Education (reference: no schooling)					
Some primary school	1.006	1.902	0.543	0.812	2.411
Primary school	0.670	1.113	0.573	0.706	1.884
Beyond primary school	1.631	3.239**	1.076	1.026	5.616***
Area of residence (reference: rural area)					
Urban	0.727	0.708	0.754	0.536*	1.355
Region of residence (reference: North)					
Central region	1.337	1.767	1.139	1.129	1.548
Southern region	0.771	0.852	0.726	0.769	0.668
	1.099	0.958	0.962	1.369	0.600
Own the house (reference: no homeowner)					
Having pension (reference: no pension)	0.554*	0.596	0.566	0.879	0.422**
Number of children by gender and marital status					
Son					
Married	0.664***	0.697**	0.632***	0.642***	0.732**
Unmarried	0.503***	0.465	0.602*	0.305***	0.868
Daughter					
Married	0.941	0.999	0.929	0.949	0.960
Unmarried	0.606***	0.626	0.614***	0.593***	0.565**
Having any unemployed child (reference: having no unemployed child)	0.770	0.768	0.748	0.596*	1.089
Pseudo R-square	0.2513	0.2621	0.2569	0.2715	0.2382

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Number of observations	**2771**	**1026**[b]	**1744**	**1917**[b]	**853**

Note: [a] Reference category = living with at least one child. Results are reported in the form of odd ratios

[b]There is one missing value from working status and one missing value from health status.

, **, and * denote statistically significant at 10 percent, 5 percent, and 1 percent significance level, respectively.*

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4.5. Summary of the significant results

Table 11: Summary of logistic regression: living with children or not

(1)	Working status		Health status	
	(2)	(3)	(4)	(5)
Total sample	**Working**	**Non-working**	**Poor health**	**Good health**
Positive				
• Living in urban area*** • Living in Southern region*** • Having pension* • Number of married son* • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area** • Living in Southern region*** • Number of unmarried son*** • Number of unmarried daughter**	• Living in urban area** • Living in Southern region*** • Number of married son* • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area*** • Living in Southern region*** • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area* • Living in Southern region* • Number of married son* • Number of unmarried son** • Number of unmarried daughter***
Negative				
• Having higher primary school* • Owning the house*** • Having any unemployed child**	• Being female** • Having higher primary school** • Owning the house** • Number of married daughter*	• Being married** • Owning the house*** • Having any unemployed child*	• Owning the house*** • Number of married daughter*	• Having higher primary school*** • Owning the house*** • Having any unemployed child**

Note:, **, and *** denote statistically significant at 10 percent, 5 percent, and 1 percent significant level, respectively.*

Table 12: Summary of multinomial logistic regression: living with children, living alone, living with spouse only and living with other people without children				
(1) Total sample	Working status		Health status	
	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Living alone				
Positive				
• Owning the house*** • Having any unemployed child**	• Owning the house** • Having any unemployed child*	• Owning the house***	• Owning the house*** • Having any unemployed child**	• Owning the house***
• Negative				
• Being married*** • Living in urban area* • Number of unmarried daughter***	• Being married*** • Number of married son*	• Being married*** • Number of unmarried daughter***	• Being married*** • Living in urban area** • Number of unmarried daughter***	• Being married*** • Number of unmarried daughter*
Living with spouse only				
Positive				
• Being married*** • Having higher primary school** • Owning the house***	• Being in the age of 80 and over** • Being female** • Being married*** • Having primary school or higher**	• Being married** • Owning the house*** • Having any unemployed child*	• Owning the house***	• Being married*** • Having some primary school or higher** • Owning the house* • Having any unemployed child*

Table 12 (cont)

(1) Total sample	Working status		Health status	
	(2) Working	(3) Non-working	(4) Poor health	(5) Good health
Negative				
• Living in urban area*** • Living in Southern region*** • Having pension** • Number of married son* • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area* • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area** • Living in Southern region** • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area* • Living in Southern region*** • Number of unmarried son*** • Number of unmarried daughter***	• Living in urban area*** • Number of unmarried son*** • Number of unmarried daughter***
Living with other people without children				
Positive				
	• Having higher primary school**			• Having higher primary school***
Negative				
• Being aged 80 and over** • Being married* • Having pension* • Number of married son*** • Number of unmarried son*** • Number of unmarried daughter***	• Being married*** • Number of married son**	• Number of married son*** • Number of unmarried son* • Number of unmarried daughter***	• Being aged 80 and over* • Living in urban area* • Number of married son*** • Number of unmarried son*** • Number of unmarried daughter*** • Having any unemployed child*	• Being aged 70 to 79** • Being female** • Having pension** • Number of married son** • Number of unmarried daughter**
Note:, **, and *** denote statistically significant at 10 percent, 5 percent, and 1 percent significant level, respectively*				

CHAPTER V
DISCUSSION

5.1. Discussion

Aging population is becoming an important issue that needs to be given priority in Vietnam. The economic transformation, in combination with a changing condition in urbanization and a trend of declining family size may lead to some changes in living arrangement among older people. Given that family is considered as the basic unit of support for the older persons in Vietnam, any change in living arrangement may put some strains on government and society. Thus, understanding the factors related to the living arrangement among older persons is important.

This study provides additional information about how children 'characteristics affect to living arrangement among the elderly in Vietnam. Methodologically, this study has improved the past studies in Vietnam in following aspects. Firstly, it uses the most up-to-date and the first ever-national representative data for the older person so that it can show broader picture of aging society in Vietnam. Secondly, given more available information on the children of the elderly who both live in the same and outside household, so that we have opportunities to examine its effect on living arrangement of the older persons. Thirdly, even though we cannot directly deal with the endogeneity issues of working status and health status, we are able to separate the estimation into different models, so that we can examine the effect of socio-economic factors on these various groups of the elderly more clearly. Keeping in mind that previous studies based on longitudinal studies had confirmed that the effect of demographic and socio-economic factors on living arrangement hardly change over time (Brown et al, 2002), this study shed some light on the factors related to living arrangement of the elderly in Vietnam to a great extent.

Given the results presented in the previous section, we can now compare several results with the previous literature. There are some variables that highly correlated with living arrangement, namely education, area, region, home ownership, the number of married son, the number of unmarried son/daughter and the employment status of children. Especially, the effect of some variables appear to largely unchanged when we separated the original sample by working status and health status, namely marital status, area and region of residence, home ownership, number of child by gender and marital status. This suggests that the models for sub-groups are unlikely to bias the estimates of the impact of some demographic and socioeconomic factors on living arrangement. Moreover, the probability of living alone/with spouse only is more likely associated with those who own the house or have high socio-economic status such as higher education and in good condition (good health or working). A study of Frankenberg, Chan, and Ofstedal (2002), which examined the transition in living arrangement by using longitudinal data in Singapore, Indonesia and Taiwan, found that maintaining independent living arrangement is attractive to older adults who are economically active. Thus, given the social changes happening in Vietnam, we can predict the direction of change in living arrangement because the next older generation would probably have better education and income.

The results from this study are consistent with the previous literature, for example, region and area of residence is a strong predictor for a specific kind of living arrangement. Lei (2011) found that those who live in urban is less likely to with children in China and it attributed to the availability of housing, which is the result of the housing reform in the 1990s and therefore allowed the elderly who would like to live alone to do so. Another example, the studies of Giang & Pfau (2007) and Barbieri (2006) in Vietnam also suggests a strong association between urbanity and living with children or living with others. The number of children has been found to influence on the coresidence in previous

studies (UN, 2006; Audinaryana, J., & Kavitha, 1999; Martin, 1989; Lisa A. Cameron & Cobb-Clark, 2008). And in this study, we found similar effects of the number of children on the coresidence, especially number of children by gender and marital status. In particular, findings from this study suggest that number of married sons increase the odds of living with children while the number of married daughters seems to have reverse direction in the effects on living arrangement of the elderly. However, the number of unmarried sons or daughters has positive effect on the coresidence. This factor has to be understood within Vietnamese context where parents prefer to live with son than daughter, especially after their marriage. From the results, it appears that the availability of spouse reduced co-residing with children but the availability of children reduced living with spouse only. Therefore, in the context that people are now living longer than the past and the fertility is declining, less coresidence among older parents and children might be expected (DaVanzo & Chan, 1994; Martin, 1989).

Besides the similar findings, this study has highlighted a different result on the effect of economic status on living arrangement. Some previous studies in other countries reveal that those with higher income are more likely to purchase privacy in living arrangement (UN, 2006; Meng X & Luo C, 2008). However, our data suggest that non-working or poor health elderly with stable source of income, such as pension, tend to live with children. However, the information related the amount of pension was not collected in the survey. Therefore, we cannot compared the effects on living arrangement regarding income sources or the amount of income from pension.

The study shows the important of demographic attributes of the children in the decision about living arrangement. Although, in the frame of this research, we just examine some of own children characteristics such as number, gender, marital status, working status but based on the significant

finding, the primary results suggest us to conduct further study that include all of children characteristics in the model.

Given the nature of the dataset, causality is difficult to infer and endogeneity issues is hard to address completely, we are trying to examine the effect of other demographic and socio-economic factors on living arrangement without the bias from health status and working status.

5.2. Limitation of the study

We are, however, in recognition of limitations in our studies.

Firstly, the status of current living arrangement may be endogenous with some variables such as health status, working status, and unobserved factors that had effects on living arrangement prior to the survey. Therefore, the relationship between living arrangement and some variables would be biased. Besides working status, there are some other variables might be presented for the economic status of the elderly such as income and household wealth index. However, income of the elderly in this case might also have endogenous relationship with living arrangement like the working status does. With regards to wealth index of the household, we cannot identify clearly which asset in the household is belong to the elderly or their children based on the information collected in the survey so that this index is not included in the model. Thus a more accurate analysis that account for the transition from one living arrangement to another is not possible in this study since this study uses a cross-sectional dataset.

Secondly, because this study is based on cross-sectional data, we cannot interpret the causal relationship between living arrangement and some correlated factors. For instance, we cannot infer whether current living arrangement is cause of health status or those with any health problems may define themselves in a certain type of living arrangement ((Teerawichitchainan,

Pothisiri, & Long, 2015). Another case is that if elders would like to achieve their preferred living arrangement (living alone or with spouse only), they might try to provide themselves with the favorable condition in term of income by continuing work. Thus, the effect of health status and working status on living arrangement might be an interesting topic. However, it is not the primary purpose of this study, so that it would be better for a separated study.

Thirdly, the coresidence is often is a joint decision making process, should take into account all of the factors that related to children and the spouse. The inclusion measures of children such as age, gender, marital status, education, occupation and number of children of each child (Choi, 2003; Frankenberg, Chan, & Ofstedal, 2002; (Smits, Van Gaalen, & Mulder, 2010). Besides that, the spouse 'characteristics include age, education, occupation, income, health status should be taken into consideration (DaVanzo & Chan, 1994; Frankenberg, Chan, & Ofstedal, 2002). However, in our given data, nearly one-third of the sample does not have the spouse so that we cannot examine these effects for the full sample. In addition, in some cases, older persons live with more than one child. So it is hard to determine the effect of own child 'characteristic on the coresidence. Indeed, there is not many studies that has employed the joint decision-making model (Liang J et al., 2005).

5.3. Direction for future research

Future studies should address a number of issues to draw a full picture of the determinants of living arrangement. Like in most studies, I just only include some of the children characteristics in the model in general (Hank, 2007; Lisa Cameron, 2000; Zimmer & Kim, 2001; Brown et al., 2002). The inclusion characteristic of each child in detailed will provide a complete picture of its effect to the living arrangement choices of the elderly. Additional information about individual's spouse and previous statuses of the respondent

is really needed. Longitudinal data will allow for a better understanding the nature of living arrangement determinant than currently evidence based on cross-sectional information.

CHAPTER VI
CONCLUSION

In this study, we examine the pattern and the determinants of the elderly living arrangement. At first, we explored the factors associated with the coresidence among elderly and their children by using logistic regressions and then we examined the factors associated with other types of living arrangement besides living with children using multinomial logistic regressions. Because the current living arrangement might have two ways of relationship with some factors such as health status or working status, we estimate the effect of the demographic, socio-economic and own children characteristics for specific groups that defined by their health or working status.

We find that the majority of elderly people in Vietnam live with their children, even though this proportion is slightly lower compared to finding from previous research in Vietnam (Giang and Pfau, 2007, Babiere, 2006). Further change in living arrangement can be predicted due to the social change such as migration and urbanization. The increasing trend of the young generation who move to cities or other places seeking for better job and education and leave the elderly parents behind at rural area may weaken the family support system. The next older generation may be different from the current older generation; they might have better education, income and preference for living arrangement. The number of older people who are going to choose solitary living may increase. These may take its toll on society and government in providing support and health care, especially when older person living longer and needing more long-term care while the social welfare system is still underdeveloped (Giang, 2013).

The logistic estimation provides a first step of understanding the effect of socio-demographic characteristics of the elderly as well as own children' characteristics on the odds of coresidency. Our results suggest that living in

urban area, living in the South, having pension, the number of married son and number of unmarried son or daughter associated with higher the odds of living with children.

The multinomial logistic regression shows the factors that affect older people to choose the types of their living arrangement besides living with children. The findings suggest that education, working status, homeowner, and number of children by gender and marital status, employment status of children are the key determinants of living alone, live with only spouse and living with other people without children. The result shows that, being in the age group 70-79 and in working group or in good health, owning the house and having any unemployed child is positively associated with living alone. Working females, regardless of their age are more likely to live with spouse only, compared to their male counterpart. Compared to no schooling, older people who reporting good health or currently working and complete primary school or higher are more likely to live with spouse only or live with others without children. Owning the house also increases the odds of living with spouse only among the elderly.

Overall, our approach and results present a more detailed picture of living arrangement among elderly people. With some limitations because of nature of the cross-sectional data provided, we find that future studies on living arrangement would be more interesting if we have longitudinal data with enough years to build a full living arrangement history and its dynamic. Having more complete data would allow us to broaden our analysis and develop more precise framework of living arrangement transition in Vietnam.

CHAPTER VII
POLICY RECOMMENDATIONS

In developing countries such as Vietnam, where majority of people are working on informal sectors, the social security system is not sufficient to afford for elderly people and the funding for aging program is limited. In the light of these finding from study, we would like to suggest some policies and recommendations as followed:

Because the family is a fundamental unit for the provision of care and support for older persons, with limitations in social support system in Vietnam or in similar developing countries setting, keeping older persons in their family or close to their children would bring them the best old age support environment. For this dimension, we should promote coresidencing through housing policies as well as financial incentives for households have older person. In recent years, under the fast expansion of urbanization, there is a huge demand for housing, especially for young couples, who migrated from rural area. Our findings suggest also that elderly people in urban areas are more likely to co-reside with their children. Therefore, in near future, if we would like to promote for the coresidencing, we should give priority for young couples and increase incentive for them to own property therefore promote living with their parents.

Another important finding from our estimation is that the elderly who work or who have higher education are likely to live independently or with their spouses. This suggests that a priority should be given to the elderly who tend to have disadvantages in terms of work status or education level. Furthermore, even though, the support from government such as social allowances for the elderly, who work in informal sector really help them at some extent, but in reality the support is not sufficient compared to their previous earnings before retirement. Thus, we should encourage older people

who are able to work to keep working even after the retirement age. Working not only provides them with money to support themselves, but also keep them active and more likely to be independent. The government should consider extending retirement age for the active elderly who work in formal sectors and support projects that hire elderly to encourage older people to continue to work even in the informal sectors. However, this policy recommendation may have a short consequence for the young population due to a large share of working age group at this time in Vietnam.

A special attention should give to the elderly who are vulnerable such as the poor, the widow, the disable and especially the childless. With the projection of increasing in the trend of living alone or live with spouse only and the changing in disease pattern in the coming years, there is an urgent need of developing and implementing care program, especially long-term cares. Moreover, when designing policies to support long-term cares, one should keep in mind that for Vietnam, it is more likely for the elderly to live with their children when they have a married son or when they have unmarried children. Programs to support coresidencing should keep this cultural context in mind to support those with or without married sons or unmarried children in order to support the two groups of the elderly differently.

With the improvement in mortality and living standard, older people now living longer than in the past, together with the increase in the incidence of chronic diseases, if we do not react to the problem of emerging elderly society today, we will suffer from the burden of health care in the next generations. Therefore, we should encourage young people today to keep learning, doing exercise and preparing themselves to be productive and healthy older persons. These people will become active elderly who are more independent and will be able to support themselves without much help from their children as found in our findings.

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APPENDIX

Survey questionnaire

INDOCHINA RESEARCH & CONSULTING (IRC) and
INSTITUTE OF SOCIAL AND MEDICAL STUDIES (ISMS)

Vietnam National Aging Survey (VNAS)

Questionnaire for Individual

Questionnaire ID_____

Start time (Hour Minute): ___/____

Code

Province/ City _____ ☐

District _____ ☐

Commune _____ ☐

Village _____ ☐

Name of household head (CAPITAL LETTER)
_____ ☐

Household Code _____ ☐

Name of respondent (CAPITAL LETTER)
_____ ☐

Use interpretation during interview?
(yes:.....1; no:....2) ☐

Name of interviewer _____ ☐

Name of supervisor _____ ☐

Day.....Month……..Year 2011
Supervisor

(Signature)

Day.....Month……..Year 2011
Interviewer

(Signature)

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SECTION B: HOUSEHOLD PROFILE – CHILD PROFILE AND GRANDCHILD PROFILE

SECTION B (Part 1): HOUSEHOLD PROFILE

	B1	**B2**	**B3**	**B4**	**B5**	**B6**	**B7**	**B8**
Household member code	List name of regular household member who live under the same roof with the respondent **(at least 6 months per year)**, starting with the respondent.	Gender Male.....1 Female...2	Relationship with the respondent? **(Code B3)**	Year of birth **(if only age stated, convert to year)**	Marital status? Single.....1 Married.....2 Divorced.....3 Separated.....4 Widow.....5	What was the highest grade [.....] completed? **(CODE B6)**	What is [.....] current occupation?(**CODE B7)**	Does [.....] contribute to the household in cash or in-kind? Yes.....1 No.....2
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								

CODE B3: Respondent 1
Spouse.....2
Son 3
Daughter 4
Son/daughter in law 5
Adopted/Step child...6
Parent 7
Parent in law 8
Grandparent 9
(Great) Grandchildren 10
Siblings 11
Other relatives..12
House servant...13
Other (specify)_____96

CODE B6
Still very young 0
No schooling 1
Incomplete primary education.....2
Primary school.....3
Lower secondary education.....4
Upper secondary education 5
Prof. Secondary education.....6
Junior College/University Diploma.....7
Master.....8
Doctor.....9
Other (specify)_____96

CODE B7
Not working 1
Employer.....2
Own account worker in farm..... 3
Own account worker in non-farm 4
Unpaid family worker.....5
Wage worker.....6
Other (specify).....96

SECTION B (Part 2): CHILDREN PROFILE

Introduction to child profile

B9: Now I would like to ask you some information about all of your children including both those who live with you and those who do not. Can you tell me how many living children you have including your own, adopted and step children?

	Own (biological)	In law	Adopted	Step
Sons				
Daughters				
Total				

Interviewer statement: I would like to ask you about each of your living children, including any adopted children and step children that you helped raise. I see you are living with ..... children.

[Interviewer instruction]: - List the first names of all of respondent's children. First list the name of all children ***who do not live in the household*** *and then list (and confirm) the names of co- resident children by looking at the household profile. Confirm names with respondent. If the number of children in the household equals the total number of children, confirm that the respondent has no other children and start the child profile questions*

Ask B10 to B24 one by one for ALL respondent's children

BC	B10	B11	B12	B13	B14	B15
Child code	Name of children (first **list the names of all children who do not live in the household and then list the names of co-resident children)**	Gender? Male..... 1 Female2	[.....] is ? Biological.....1 Adopted.....2 Step.....3 In aw.....4	Year of birth?	Location of child? **(Code B14)** **B14 = 1 → B15;** **if B14 >=2 → B16**	Interviewer writes down Member code from B0 in household profile. (leave B15 blank for children who do not live with the interviewee)
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Code B14: Same household 1
Next door 2
Same village/resident unit.. ...3
Same commune 4
Same district.....5
Same province.....6
Other province..... 7
Other country..... ...8

Interviewer: ask B16 to B24 for all children, including those who LIVE and DO NOT LIVE in respondent's household

BC1	B10b	B16	B17	B18	B19	B20	B21	B22	B23	B24
Child code	Name of child who **do not live** and **live** in respondent's household	[...] have any child? Yes.....1 No.....2	Does [...] frequently help with household chores? Yes.....1 No.....2	Did [.....] give you any money in the last 12 months? Yes ..... 1 No..... 2 Offered but Refused ...3 **(2,3 → B20)**	How much? **(Code B19)**	Did [...] give you gifts/things in last 12 months of total value over 500,000 VND? Yes ..... 1 No..... 2 Unsure of value....3	Did [...] help you with your work (such as business or family farm in past 12 months? Yes.....1 No.....2 **(Code B21)**	Within previous 12 months, did you give money to [...]? Yes.....1 No.....2	How much? **(Code B23)**	Did you give [....] gifts/things in past 12 months of total value over 500,000 VND? Yes.....1 No.....2 Unsure of value 3
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										

Code 19: (in VND)
Less than 500,000.....1
500,000 - <2,000,000 2
2,000,000 - < 5,000,000.....3
5,000,000 - <10,000,000.....4
More than 10,000,000.....5
Don't know the value 98

Code B21:
Yes, frequently 1
Yes, but not frequently.....2
No.....3
Don't need their help.....4
Don't apply.....5

Code B23: (in VND)
Less than 500,000.....1
500,000 - <2,000,000.....2
2,000,000 - < 5,000,000.....3
5,000,000 - <10,000,000.....4
More than 10,000,000.....5
Don't know the amount.....98

Interviewer: ask B25 to B31 only for children who DO NOT LIVE in respondent's household (B14=2,3,4,5,6,7,8)

	B10C	**B25**	**B26**	**B27**	**B28**	**B29**	**B30**	**B31**
Child code	Name of child who **do not live** in household	Marital status **(Code B25)**	Highest grade completed? **(Code B26)**	Current Occupation ? **(Code B27)**	Contribute to the household economically? Yes.....1 No.....2	How often do you and [.....] visit each other? **(Code B29-31)**	How often do you talk with [.....] on the phone? **(Code B29-31)**	How often do you contact [...] by email? **(Code B29-31)**
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
	Code B25 Single.....1 Married.....2 Divorced.....3 Separated.....4 Widow.....5	**Code B26:** Still very young .....0 No schooling .....1 Incomplete primary education.....2 Primary school .....3 Lower secondary education.....4 Upper secondary education .....5 Prof. Secondary education.....6 Junior College/university Diploma.....7 Master.....8 Doctor.....9 Other (specify)_____96		**CODE B27** Not working.....1 Employer.....2 Own account worker in farm.....3 Own account worker in non-farm .....4 Unpaid family worker.....5 Wage worker.....6 Other (specify).....96		**Code B29-31** Rarely/ never .....1 Yearly .....2 Several times per year....3 Monthly .....4 Weekly/several times a month .....5 Daily/several times a week.....6		

SECTION D: HOUSING

Now I would like to ask questions about your housing situation

	Question	Code	Skip
D1	What is total living area excluding storage and kitchen?	_____M2	
D2	What type of housing are you living in?	Villa ..... ….1 Permanent structure - kitchen & bathroom inside ….2 Permanent structure - kitchen or bathroom outside 3 Semi- permanent houses..... ….4 Temporary and other types ..... ….5	
D3	How long have you been living in this place?	_____ months _____ years	
D4	Who owns this house?	Respondent and/or spouse ..... 1 Children/children in-law..... 2 Others, without payment ..... 3 Others, with payment ..... 4 Other, specify_ 6	
D5	What is the main material of dwelling roof?	Tiles ..... 1 Cement/concrete ..... 2 Straw/thatch ..... 3 Bamboo ..... 4 Galvanized tin..... 5 Wood ..... 6 Other 7	
D6	What is the main material of dwelling floor?	Tiles ..... 1 Cement/concrete ..... 2 Earth ..... 3 Wood ..... 4 Other 6	
D7	What is the main source of lighting used in your house?	National power grid ..... 1 Accumulator, power generator ..... 2 Gas, oil, kerosene lighter ..... 3 Others 6	
D8	How satisfied are you with your current housing?	Very satisfied..... 1 Satisfied ..... 2 Neutral ..... 3 Dissatisfied ..... 4 Very dissatisfied 5	
D9	Do you own any piece of cultivable land or house (outside of the land you are living)?	Yes .....1 No 2	**2 D11**
D10	What is total area of land/house?	_____M2	

animal livingden

SECTION E: EMPLOYMENT

[This section is to be asked about the respondent and spouse (if any). Ask respondent first then ask about their spouse]

	Question	Code	Respondent	Spouse	Skip
E1	Main lifetime occupation [spouse]	Not working.....1 Employer.....2 Own account worker in farm.....3 Own account worker in non-farm .....4 Unpaid family worker.....5 Wage worker.....6 Other (specify).....96			1>> E7
E2	Are you still working? [spouse]	Yes ..... 1 No..... 2			2 E7
E3	What types of job do you do? [spouse]	Not working.....1 Employer.....2 Own account worker in farm.....3 Own account worker in non-farm .....4 Unpaid family worker.....5 Wage worker.....6 Other (specify).....96	.....	.....	
E4	No. of working months last 12 months [spouse]	record in Months	☐	☐	
E5	Do you work full time or part time during those months? [spouse]	Whole day ..... 1 Half day..... 2 Others..... 3			
E6	How much do you earn last year from this occupation? [spouse]		..... Thousand VND	..... Thousand VND	
E7	*(If not working)* What is the main reason for not working? [spouse]	Retired..... 1 Cannot find a suitable job ..... 2 Do not know where to find a job 3 Taking care of family..... 4 Health issue..... 5 Encouraged by the family ..... 6 Laid off..... 7 Want to rest..... 8 Others (specific) 9	☐	☐	
E8	How long have you stopped working? [spouse]	_____years	☐	☐	
E9	Would you like to continue working? [spouse]	Yes ..... 1 No.....2	☐	☐	

EP	Assessment of interviewer about the level of external assistance for the interviewee in answering	Never.....1 Some times.....2 Most of the time.....3 This section was answered by the			

SECTION F: FIXED ASSETS, DURABLE APPLIANCES AND SOURCES OF SUPPORT

	Questions	Code	
F1	Please let us know if your household has any of the following items? *[Read each response to respondents]*	Yes	No
	a. Cars, vans or trucks	1	2
	b. Motorbikes	1	2
	c. Bicycles	1	2
	d. Landline telephone	1	2
	e. Mobile phone	1	2
	f. Video players	1	2
	g. Color T.V sets	1	2
	h. Black and white T.V sets	1	2
	i. Radio players	1	2
	j. Electric fans	1	2
	k. Computer	1	2
	l. Cameras, Video cameras	1	2
	m. Refrigerator	1	2
	n. Freezer	1	2
	o. Air-Conditioner	1	2
	p. Washing machines and dryers	1	2
	q. Water heaters	1	2
	s. Gas cookers	1	2
	t. Electric cookers, rice cookers, pressure cookers	1	2
	u. Wardrobes of various kinds	1	2
	v. Beds	1	2
	w. Tables, chairs, sofas …	1	2
	x. Vacuum cleaners, water filters	1	2
	y.Microwaves	1	2
F2	What are the sources of income/support/asset for your daily living? [read each item in the list for the interviewee to choose]	Yes	No
	a. Working	1	2
	b. Retirement source	1	2
	c. Other government social allowance	1	2
	d. Savings	1	2
	e. Parents' support	1	2
	f. Spouse's support	1	2
	g. Children's support	1	2
	h. Sibling's support	1	2
	i. Other relatives	1	2
	j. Friends/neighbors	1	2
	k. Other (specify)	1	2

SECTION I: PHYSICAL, MENTAL AND EMOTIONAL WELL-BEING

	Question	Code	Skip
I1	How would you rate your physical health at the present time? Would you say it is very good, good, fair, poor or very poor?	Very poor.....1 Poor.....2 Fair.....3 Good.....4 Very good.....5	
I2	Compared to **other men [if respondent is a man], women [if respondent is a woman] your age**, would you say your health is much better, somewhat better, about the same, somewhat worse, or much worse?	Much worse .....1 Somewhat worse 2 About the same.....3 Somewhat better.....(4) Much better .....5 Not sure/do not know.....9	

I3 In the **last 30 days**, have you had any of the following health complaints?

	Yes	No	
a) Headache	1	(2)	
b) Dizziness	(1)	2	
c) Vomiting	1	(2)	
d) Diarrhea	1	(2)	
e) Skin problems	1	(2)	
f) Chest pain	1	(2)	
g) Pain in your joints	1	(2)	
h) Fever	1	(2)	
i) Back pain	1	(2)	
j) Trembling hands	1	(2)	
k) Stomach ache	(1)	2	
l) Problems breathing	1	(2)	
m) Coughing	1	(2)	
n) Loss of bladder control	1	(2)	
o) Feeling weak	1	(2)	
p) Constipation	1	(2)	

I4	Type of disease	Have you ever been diagnosed with/told you have?		Did you receive treatment or take medications for it during the last 12 months?	
		Yes	**No next item**	**Yes**	**No**
	a. Arthritis	1	(2)	1	2
	b. Angina	1	(2)	1	2
	c. Diabetes	1	(2)	1	2
	d. Chronic Lung disease emphysema,bronchitis,COPD	(1)	2	(1)	2
	e. Depression	1	(2)	1	2
	f. Blood pressure problem	1	(2)	1	2
	g. Oral health	1	(2)	1	2
	h. Cancer	1	(2)	1	2

VITA

PERSONAL DETAILS

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