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Development and Testing of the Elderly Social Vulnerability Index (ESVI): A Composite Indicator to Measure Social Vulnerability in the Jamaican Elderly Population

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FLORIDA INTERNATIONAL UNIVERSITY

Miami, Florida

DEVELOPMENT AND TESTING OF THE ELDERLY SOCIAL VULNERABILITY
INDEX (ESVI): A COMPOSITE INDICATOR TO MEASURE SOCIAL
VULNERABILITY IN THE JAMAICAN ELDERLY POPULATION

A dissertation submitted in partial fulfillment of the

requirements for the degree of

DOCTOR OF PHILOSOPHY

in

COMPARATIVE SOCIOLOGY

by

Donneth Jacqueline Crooks

2009

To: Dean Kenneth Furton
College of Arts and Sciences

This dissertation, written by Donneth Jacqueline Crooks, and entitled Development and Testing of the Elderly Social Vulnerability Index (ESVI): A Composite Indicator to Measure Social Vulnerability in the Jamaican Elderly Population, having been approved in respect to style and intellectual content, is referred to you for judgment.

We have read this dissertation and recommend that it be approved.

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The dissertation of Donneth Jacqueline Crooks is approved.

Dean Kenneth Furton
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University Graduate School

Florida International University, 2009

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DEDICATION

This dissertation is dedicated to my friend Courtney, who never got the chance to complete his.

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The successful completion of a doctoral dissertation is not possible without the assistance and support of numerous persons. My research for this dissertation was made possible by the Derek Gordon data Bank at the University of the West Indies, Jamaica which provided the data. Thanks also to the members of staff at the Sir Arthur Lewis Institute for Social and Economic Studies, Mrs. Nam and the library staff at the Statistical Institute of Jamaica, and Mr. Thorpe and Ms Pink at the Ministry of Labor and Social Security, National Insurance Division.

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ABSTRACT OF THE DISSERTATION

DEVELOPMENT AND TESTING OF THE ELDERLY SOCIAL VULNERABILITY
INDEX (ESVI): A COMPOSITE INDICATOR TO MEASURE SOCIAL
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Miami, Florida

Professor Lois West, Major Professor

Over the last two decades social vulnerability has emerged as a major area of study, with increasing attention to the study of vulnerable populations. Generally, the elderly are among the most vulnerable members of any society, and widespread population aging has led to greater focus on elderly vulnerability. However, the absence of a valid and practical measure constrains the ability of policy-makers to address this issue in a comprehensive way. This study developed a composite indicator, The Elderly Social Vulnerability Index (ESVI), and used it to undertake a comparative analysis of the availability of support for elderly Jamaicans based on their access to human, material and social resources.

The results of the ESVI indicated that while the elderly are more vulnerable overall, certain segments of the population appear to be at greater risk. Females had consistently lower scores than males, and the oldest-old had the highest scores of all groups of older persons. Vulnerability scores also varied according to place of residence, with more rural parishes having higher scores than their urban counterparts. These

findings support the political economy framework which locates disadvantage in old age within political and ideological structures. The findings also point to the pervasiveness and persistence of gender inequality as argued by feminist theories of aging.

Based on the results of the study it is clear that there is a need for policies that target specific population segments, in addition to universal policies that could make the experience of old age less challenging for the majority of older persons. Overall, the ESVI has displayed usefulness as a tool for theoretical analysis and demonstrated its potential as a policy instrument to assist decision-makers in determining where to target their efforts as they seek to address the issue of social vulnerability in old age.

Data for this study came from the 2001 population and housing census of Jamaica, with multiple imputation for missing data. The index was derived from the linear aggregation of three equally weighted domains, comprised of eleven unweighted indicators which were normalized using z -scores. Indicators were selected based on theoretical relevance and data availability.

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LIST OF ACRONYMS

ECLAC	Economic Commission for Latin America and the Caribbean
KMA	Kingston Metropolitan Area
NIS	National Insurance Scheme
PAHO	Pan American Health Organization
PATH	Program of advancement through health
PIOJ	Planning Institute of Jamaica
STATIN	The Statistical Institute of Jamaica
UN	United Nations
WHO	World Health Organization

CHAPTER I

INTRODUCTION

Background and Context

Population aging¹ is now a global phenomenon. For the first time in history the majority of people can expect to reach age sixty-five and having reached that age to live an additional twenty years on average (Fuchs 2002; HelpAge 2002). This trend of population aging is no longer just a feature of developed countries but is also occurring in many developing regions, many of which are aging at a rate more than twice that of developed countries (Kinsella and Velkoff 2001). While this general trend toward population aging represents a victory for humanity, it brings substantial changes to the structure of societies and how they function. At the most obvious level, the changing population structures influence the number of people available to perform different roles in society and how society organizes itself generally to carry out its various functions. On a more complex level, aging societies, particularly those that are aging rapidly, will need to quickly shift their national policy focus from youthful to aging sectors and this may be difficult (Gordon and Longino 2000).

Population aging presents major challenges for all countries but developing countries are faced with additional challenges. In the first place, populations in the developing world are aging faster than are developed countries even though a smaller percentage of their total populations are old (Kaneda 2006). In fact, as a result of decreased fertility and lower mortality rates, the growth rate of the elderly population in

¹ A population is classified as aged when ten per cent or more of its members is 60 years or older

developing countries is more than twice that in developed countries (Kinsella and Velkoff 2001). Further, developing countries are aging faster than developed countries did at their stage of development and therefore have lower levels of per capita income (Shrestha 2000). They therefore have to deal with rapid population aging and development challenges at the same time (Harper 2006; Tout 1989). Indeed, many developing countries, like Jamaica, have very fragile socioeconomic structures, characterized by large informal sectors, flexible labor participation patterns, and inadequate formal social security systems (Marcoux 2001). Since the 1980s, these societies have been made even more insecure by the processes and consequences of contemporary globalization which have resulted in increased risks of social vulnerability (ECLAC 2002).

Although there is no universally accepted definition, the essential notion of social vulnerability is insecurity resulting from a deficiency of assets either through lack or loss, within the context of late modernity and globalization (ECLAC 2002). These concerns about globalization-induced social vulnerability extend to all sections of society, including the elderly for whom the changes generated by both modernization and globalization have particular significance. There is evidence, for example, that decreasing economic opportunities resulting from contemporary globalization processes put pressure on families and also on the elderly in developing countries, many of whom need to work to survive (ECLAC 2004a; Lloyd-Sherlock 2000a). Many developed states have had to reduce their social security provisions, but the situation is more troubling in developing regions where formal social protection programs are not well developed or financed and benefit only a small proportion of the population.

With the unprecedented aging of the population and the emergence of a range of new risks, there is an increasing need to understand and attend to the issues associated with vulnerability in the elderly population. While vulnerability is not limited to the elderly, they are at increased risk for several reasons. Old age is accompanied by physiological and social changes which can impact quality of life. For instance, the risks of certain types of illnesses and impairments increases with advancing age (Hooyman and Kiyak 2005). Old age is also generally marked by a decline in active economic participation (Kinsella and Velkoff 2001). In part, this has to do with reduced employment opportunities (Barrientos, Gorman and Heslop 2003; Lloyd-Sherlock 2000b), but it is also related to reduced functional capacity due to health-imposed restrictions on the activities of the elderly.

Socially, it is generally assumed that the elderly in less developed countries are cared for by their families and the traditional informal support system. In the main this is true, but population aging poses challenges for families and societies (Tracy 1991). Population aging has a profound effect on social institutions such as the family, interrupting family structures and complicating kinship roles (Harper 2004; Settersten and Meyer 2002). In addition, doubt is being raised as to whether the informal support system can be sustained in the face of rapid social changes, including the changing status of women and changing patterns of living arrangements (Lloyd-Sherlock 2000b; Lloyd-Sherlock 2004; Yesudian 2001). Moreover, changes associated with modernization are thought to weaken the institutional forces that support the elderly, thereby altering their status in society. This in turn has implications for their well-being (Cowgill and Holmes 1972; Rosow 1974; World Bank 1994). Ultimately, the elderly, who are often among

the most vulnerable members of society, end up facing increased risk with few resources to deal with these risks, relative to the working age population (Phillipson 2002).

Research Questions and Purpose

The major purpose of this study is the development of a tool to assess social vulnerability of the elderly in Jamaica on a sub-national scale. As used in this study, social vulnerability is conceived as susceptibility to inadequate support as a result of limited access to human, material and social resources. Two main questions guide this study:

1. To what extent is the popular picture of the elderly as vulnerable an accurate portrayal of the Jamaican elderly?
2. To what extent is there variation in vulnerability between segments of the elderly population?

It is expected that there will be variation in social vulnerability according to the age, sex and area of residence of older Jamaicans.

The Elderly Social Vulnerability Index (ESVI) developed in this study, is a composite measure of the availability of support for elderly Jamaicans based on their access to human, material and social resources. The ESVI is a country-level index developed using household data from the 2001 population and housing census. It is derived from the aggregation of three equally weighted domains comprised of eleven normalized, unweighted indicators. In addition to being a tool for theoretical analysis, the ESVI is also a tool to aid policy makers in making decisions and devising strategies to deal with disadvantage in the elderly population by allowing us to:

1. Assess the effect of sociodemographic characteristics (gender, age and place of residence) on social vulnerability in the elderly population
2. Identify the contribution of the different domains, human, material and social resources to social vulnerability in old age
3. Compare different parishes across the country in order to identify the areas with the greatest concentration of vulnerable elders
4. Graphically illustrate the geographic variation in social vulnerability in the elderly population

Significance of the Study

This study is important for several reasons. In the first place, population aging has been steadily occurring in Jamaica since the 1960s (Bongaarts and Lightbourne 1996; ECLAC 2000a). This trend is expected to intensify in the future, and the accompanying sociodemographic changes threaten the traditional social ties and risk-sharing systems. Changes like reduced fertility and transformed family structures, for instance, affect the availability of family members to provide physical care and support (Himes and Fang 2007). These changes are reflected in increasing dependency ratios² which point to the potential for strain on both the formal and informal intergenerational support systems.

Population aging is also usually accompanied by an epidemiological transition, in which the pattern of diseases changes from contagious to chronic and degenerative illnesses, and this transition has already begun in Jamaica (ECLAC 2004b; Kinsella and

² Measures of the portion of youth and elderly to the economically active population, usually between 20 and 64 years old.

Phillips 2005). With increased numbers of elderly persons and the changing patterns of illnesses and diseases, pressures on the health system are likely to increase (Lloyd-Sherlock 2000a; PAHO/WHO 2004; Shrestha 2000). Moreover, population aging is occurring in the context of high poverty rates, a large and burgeoning informal sector, flexible labor patterns and an inadequate formal security system which mean that a significant proportion of the elderly has no income, paid employment or pension and is at risk of a range of negative outcomes (ECLAC 2003). According to a HelpAge International (2008) report, older people in the Caribbean face critical issues such as economic insecurity and poverty, chronic illness, poor housing, social isolation and neglect. This report reveals that many elderly Jamaicans are living in extreme poverty, barely above subsistence level.

Secondly, there is a paucity of data on the Jamaican elderly. This is not a problem that is peculiar to Jamaica but is a part of the general ‘invisibility’ of the aged in society (Schroeder-Butterfill and Marianti 2006). The aged as a category are ‘invisible’ in much public data, as can be seen in the absence of age-disaggregated data, and public policy is not often analyzed from an age perspective (HelpAge 2002). Their contributions and the issues that are of importance to them are also not given much attention. In fact, older people are largely marginalized from development policy which tends to focus on other age groups, particularly the young (Barrientos, Gorman and Heslop 2003; Serrow and Cowart 1998; UNFPA 2007). Older people are also excluded from active participation in many aspects of society’s goals (Gorman 2004). The end result is that older people, as a group, are lost among other priorities (UNFPA 2007).

A third reason for the importance of this study is found in the increasing significance of social vulnerability resulting from recognition of new risks related to the social consequences of economic globalization. Supranational organizations such as the World Bank and the United Nations, along with regional and local organizations, have acknowledged the growing insecurity that is being experienced by individuals and households, especially since the 1990s. So important is this issue that the United Nations dedicated its 2003 report to the issue of social vulnerability, pointing out the profound increase in its causes and manifestations since the 1990s (United Nations 2003). The World Bank has also been focusing on social vulnerability since the late 1990s as they recognize the unavoidability of risk, and the imperative for social protection policy to enable vulnerable groups to prevent, reduce or cope with the risks they face (Holzmann and Jorgensen 1999). Within the Latin American and Caribbean region, there has also been heightened interest in social vulnerability in light of increased social inequality, exacerbated by weak and insecure labor markets, income volatility and the weakening of historically supportive institutions such as the family, resulting from structural adjustment and globalization processes since the 1980s (ECLAC 2002).

The growing concern over social vulnerability has led to a focus on vulnerable populations, a focus that is rooted in the presumption that stresses and shocks impact different groups of people in varying ways. Vulnerable groups are at risk of experiencing negative outcomes because they lack the capability to protect their wellbeing (Hoogeveen, Tesluic, Vakis and Dercon 2001). Essentially, they have greater needs but with fewer resources to address these needs, obligating societies to act on their behalf. Among the groups at risk of social vulnerability, the United Nations (2003) singles out the elderly,

and with good reason, for although vulnerability is neither age-specific nor age-related, features of the aging process constitute risk factors.

Finally, despite acknowledgement of increased social vulnerability overall and the social fragility of elderly individuals, to date there is no comprehensive assessment tool specifically for this phenomenon at the local level. Yet, as Birkmann (2006) asserts, the ability to measure vulnerability is the starting point for reducing its consequences and addressing its sources. In the main, the concept of social vulnerability has been most consistently applied to the discipline of disaster management. This area has seen the development of several assessment tools such as the Social Vulnerability Index which measures vulnerability to environmental hazards in the United States of America (Cutter, Boruff and Shirley 2003) and Vincent's (2004) Index of Social Vulnerability to Climate Change in Africa.

There have also been studies assessing the vulnerability of other population sub-groups as in the study of social vulnerability of Latin American children (Herrera and Gonzalez 2003) or household vulnerability in rural Tanzania (Sarris and Kartakis 2006). The Economic Commission for Latin America and the Caribbean has also been working on the development of a social vulnerability index for the Caribbean sub-region but this index addresses the issue of vulnerability of social structures at national levels as a means of assessing the capacity of countries to achieve sustainable development (St. Bernard 2004).

With regard to the elderly population, the Center for Strategic and International Studies (2003) has recently developed an Aging Vulnerability Index which assesses how vulnerable twelve developed countries are to increasing old age dependency. This index

is based on the old age dependency burden, social and economic conditions, the level of dependence of the elderly on public benefits, and the level of affluence of the elderly compared to the non-elderly. In other words, the Aging Vulnerability Index is a cross-national assessment of the capacity of these countries to meet the challenges of rapidly aging populations. This is a significant development in the area of aging vulnerability. However, in its current form, the Aging Vulnerability Index has limited utility for developing countries as there are significant differences between these countries and their counterparts in developed countries. For instance, most developed countries have high public benefit programs with universal or near-universal public pensions which form a larger portion of the incomes of the elderly. This situation is very different from that which obtains in less developed countries. The unavailability of these kinds of data also makes it difficult, if not impossible to develop an index of this sort for less developed countries.

The Elderly Social Vulnerability Index is different as it is a country-level index which assesses social vulnerability in the elderly population at the sub-national level. This represents a first attempt at an empirical assessment of social vulnerability specifically among the elderly. While the index measures current vulnerability levels, the use of census data invests the index with the potential for longitudinal analysis thus allowing for the evaluation of vulnerability levels over time. The use of census data also facilitates cross-national comparative analyses, not only among Caribbean territories but in other developing countries as well.

Overall, this study has both academic and policy applications. From an academic standpoint, it contributes to the literature on vulnerability in general but more specifically

to the growing area of aging and vulnerability. It also helps to refine the methodology in vulnerability assessment and offers hypotheses for the further development of theoretical perspectives. In terms of policy application, the Elderly Social Vulnerability Index provides a diagnostic tool which can aid policy makers in identifying where the needs are greatest and thus where to target policy efforts. This will allow decision makers to prioritize their immediate interventions and facilitate long term planning in the current economic and social climate which presages increased risks and threats.

In the ensuing chapters, the context, foundation, structure and results of the Elderly Social Vulnerability Index will be presented and analyzed. Chapter two explores the conceptual structure of social vulnerability while chapter three lays the theoretical foundation for the development of the index. Chapter four discusses the methodology of the study and presents justification for its use. Following this, chapter five speaks more specifically to vulnerability in old age, focusing on the risk factors and sources. Chapters six and seven give a broad overview of aging trends in Jamaica and provide the context within which the index is being developed. In chapter eight, the activities and processes used to construct the index are presented. The final chapter presents the results of the index, ending with important conclusions which provide guidelines for future research activities, and make recommendations for its use.

CHAPTER II

THE CONCEPTUAL STRUCTURE OF SOCIAL VULNERABILITY

Since the 1980s, social vulnerability has become a subject of great concern. This notion of social vulnerability has to do with the level of well-being of individuals, households and communities and their susceptibility to harm or danger. While not a new concept, social vulnerability is taking on greater significance amid rapid social changes and increased risk and uncertainty. In part, these changes are related to central features of modernization and globalization which not only exacerbate existing risks but are also sources of new risks. Unlike other types of vulnerability, social vulnerability has to do with the relationship between people and resources. It speaks to people's capacity to respond to risks or threats based on their command of resources. However, the notion of social vulnerability reflects not just individual ownership of resources but also the interaction between these resources and ecological conditions.

This chapter examines the conceptual issues that are important to our understanding of the social vulnerability phenomenon. It dissects the concept of social vulnerability and exposes its underlying principles and components. The chapter also distinguishes risk from vulnerability and provides insight into the relationship between them. The chapter ends by exploring the links between globalization and social vulnerability.

Unpacking the Vulnerability Concept

Conceptualizations of vulnerability vary across disciplines but the fundamental meaning is exposure to risk with limited capacity to manage these risks (ECLAC 2002; Siegel and Alwang 1999). Vulnerability implies risk: so to understand vulnerability therefore requires an understanding of risk. Simply put, risks are potentially damaging events (World Bank 2005). However, modern notions of risk differ substantially from pre-modern notions. Whereas risk was once seen as a natural event in pre-modern societies, modern notions take into account the consequences of human action implying that risk can be monitored or even altered (Powell 2006). Late modern approaches also view risk as uncertainty, unexpectability or loss of trust (Kemshall 2002; Powell 2006; Webb 2006).

As elaborated by Powell (2006), risk results from the breakdown of trust not only between people and state but also from the breakdown of trust in intergenerational relationships. This breakdown takes place as societies change due to modernity, eroding traditional institutions and social values. Webb (2006) further argues that unlike traditional life that was governed by continuity, order and repetition, modern life is characterized by shocks and uncertainties that disrupt familiar patterns and often lead to despair. The essential idea of risk is therefore unexpectability. Luhmann (1993) favors an approach that views risk primarily as the result of decisions taken compounded by dangers that reside in the environment itself.

The risk society thesis of both Giddens (1984,1991) and Beck (1992) proposes that modern society is the source of new risks and these risks are being driven by individualization. In Beck's view, unlike traditional societies that experienced mainly

natural risks or hazards, the risks or hazards in modern risk society are manufactured by the developmental processes of modernization and arise out of the practices of people. As such they are socially rather than naturally produced (Beck 1992). Giddens (1984) links risk in modern society to the variety of choices that modernity offers. This creates a situation of reflexivity in which social practices are constantly reformed, creating a sense of uncertainty. While freedom of choice is generally applauded and highly valued in modern society, the exercise of choice may challenge established social patterns such as attachment to hometowns and families, for example. Giddens (1991) notes for instance the “unbinding of social structure”. As he explains, people no longer work in their places of birth, and family and friends no longer live within close proximity. This stretches the social networks and endangers the socialization process forcing individuals to confront risks as individuals rather than as a collective (Mythen 2004). The processes of individualization and de-traditionalization also lead to the questioning of traditional gender and occupational roles thus weakening the ties of family and community. In the process, support networks dissolve increasing the risk of social vulnerability in some sections of the population.

Despite the varying conceptions of risk, it can be concluded that risk is context-specific. So what is considered to be a risk at one time or in one place may therefore be viewed differently later and in a different place. For instance, the risks of current society are structured by neo-liberalism and individualization which are hallmarks of contemporary globalization (Powell 2006). As Lupton (1999: 30) puts it, “we can only ever know and experience risks through our specific location in a particular sociocultural

context.” Further, risk knowledges are dynamic and there is not always congruence between official and expert notions of risk and those of the public.

Two seminal works on vulnerability outside of the disaster management area of study are those of Chambers (1989) and Moser (1998). Chambers (1989:1) defines vulnerability as “exposure to contingencies and stress, and difficulty in coping with them”. From his point of view, vulnerability has an external side which is the risks and shocks that an individual or household faces, and an internal side which relates to the lack of means to cope with the risks without sustaining damaging loss. It does not mean lack or want but rather defenselessness and insecurity. For Chambers (1989) therefore, security is the opposite of vulnerability. Moser (1998:3) defines vulnerability as “insecurity and sensitivity in the well-being of individuals, households and communities in the face of a changing environment, and implicit in this, their responsiveness and resilience to risks that they faced during such negative times.” Moser’s (1998) approach relates vulnerability to assets, her premise being that the more assets people have, the less vulnerable they are, and the greater the erosion of their assets, the greater their insecurity. From her perspective capacity or capability is the opposite of vulnerability.

Vulnerability is also closely linked to poverty, although many agree that the concepts are not synonymous (Brigguglio 2003; Holzmann and Jorgensen 2003; Brown 2002; Moser 1998; Chambers 1989). Poverty is associated with low assets and is often described as being more static, although Alwang and Siegel (1999) are quick to point out that individuals and households may move in and out of poverty. Vulnerability, on the other hand, is the probability of being poor or experiencing negative threats to social welfare in the future (Tesluic and Lindert 2002; Siegel and Alwang 1998). In essence,

then both poverty and vulnerability are dimensions of deprivation, although vulnerability is variable and more dynamic (Moser 1998; Chambers 1989). Vulnerability and poverty interact with one another and the direction of the causation between them is difficult to determine as poverty may increase vulnerability, and vulnerability in turn creates poverty (UN 2003). In fact, Hoogeveen et al. (2004) argue that poverty can exist without vulnerability, but vulnerability is not an issue where there is no poverty. Not everyone accepts the rigid distinction between the concepts, however. Cafiero and Vakis (2006) are of the opinion that there is no fundamental distinction between poverty and vulnerability, since poverty implies the absence of resources required to manage threats to wellbeing, or risk of vulnerability.

Supranational organizations like the United Nations and World Bank have also acknowledged the growing significance of social vulnerability. From the perspective of the UN (2003), vulnerability results from high exposure to risks and uncertainties with reduced ability to protect oneself against those risks or cope with their negative consequences. Since neither risks nor coping abilities are evenly distributed throughout the society some people are more vulnerable than others. In fact, some individuals or groups may experience multiple or cumulative vulnerabilities (UN 2001). The UN (2001) notes, for instance, the existence of ecological or context vulnerability which is associated with living in high-risk areas. They also note that vulnerability also arises from attributes such as gender, social class and status and role. Further, the UN (2001) distinguishes vulnerability from disadvantage with the argument that disadvantage results from obstacles that inhibit access to society's resources, benefits and opportunities, while vulnerability is related to uncertainty and insecurity. They conclude that while they are

not the same, vulnerability and poverty are not independent since they interact with each other and are mutually reinforcing.

The World Bank's (2001) approach to vulnerability links it closely to poverty and insecurity. In this perspective, vulnerability refers to the possibility of a decline in welfare as a result of a risk or shock. Whereas risks are potentially damaging events, risk exposure refers to the probability of a certain risk occurring. Vulnerability itself is a measure of the likelihood of a risk having a negative outcome. Since vulnerability is largely related to a household's or individual's assets and insurance strategies relative to the risk, the poor are less resilient against shocks and are therefore more likely to become vulnerable. By setting vulnerability apart from risk and risk exposure, it becomes clear that there is no essential relationship among them. The existence of risk does not mean that people are exposed to these risks. Neither does the exposure to risk automatically result in a decline in wellbeing. It is only when these risks materialize that they become shocks or threats to the individual or household (Heitzmann, Canagarajah and Siegel 2001).

In their review of the literature, Alwang, Siegel and Jorgensen (2001) identify several general principles of vulnerability. The most fundamental principle is that vulnerability is the probability of having a negative outcome in the future as a result of uncertain events. This may occur in the near or distant future and is resolvable over time. How vulnerable an individual or household is depends on the characteristics of the risk and the response capacity. So the poor tend to be more vulnerable, largely because they have fewer assets overall. There is also general acceptance that there are many forms of vulnerability and also many sources. Vulnerability is also typically seen as being

dynamic, and so the vulnerability profile of an individual or household is subject to change over time. Notwithstanding, vulnerability also reflects a projected state and can be static as well. Finally, vulnerability is variable since the probability, frequency and severity of exposure to risk is not constant (Alwang, Siegel and Jorgensen 2001).

Although there are different orientations to vulnerability, Rygel, O'Sullivan and Yarnal (2005) believe that there are two underlying perspectives. The first is that vulnerability is a pre-existing condition and thus the focus is on potential exposure to hazards or risks. The other perspective is that of differential vulnerability in that not all the persons exposed to a risk have the same level of vulnerability. A third perspective, the vulnerability of places approach, is gaining popularity. This approach posits that vulnerability can also be viewed from and within geographic locations (Rygel, O'Sullivan and Yarnal 2005). The vulnerability of places approach has been applied to small-island developing states which are often economically, environmentally and socially vulnerable (Briguglio 2003). To some extent, the vulnerability of places approach is linked to World Systems Theory which views the highly stratified world economy as the main cause of inequality among nations.

Social Vulnerability and Social Risks

Social vulnerability, which is the focus of this research, is a sub-category of vulnerability and it is used in reference to groups that are at increased risk of facing adverse situations due to some circumstantial feature or because of some shared practices that expose them to harmful events. It also includes risk due to a shared basic attribute such as age, sex or ethnic group (ECLAC 2002). That is, social vulnerability refers to the characteristics of a

person or group and their situation which determines their susceptibility to damage or injury as a result of their capacity to respond to hazards or shocks in a changing environment (Birkmann 2006). These characteristics include initial well-being, livelihood and resilience, self-protection, social protection and social, political and institutional networks (Birkmann 2006).

Despite the absence of a universal definition of social vulnerability, several of its defining features can be identified:

1. Social vulnerability is a dynamic process. The characteristics as well as the causes change over time.
2. Social vulnerability is multidimensional having various stressors.
3. Social vulnerability is differential. Both the exposure and susceptibility vary within and among social groups.
4. Social vulnerability manifests on more than one scale. The factors that determine vulnerability operate over different time and space scales. They can take place over a long or short period or they may be at the level of the individual, community or even national level.
5. Social vulnerability is often determined by social networks in social, economic, political and environmental interactions.
6. Social vulnerability is rooted in the actions and multiple attributes of human actors and networks (Birkmann 2006; Kok et al. 2006).

Social vulnerability has its roots in the social structure. It is related to and measured by access to resources including cultural, political and social assets, especially

social relations which cover a wide range of relationships between families, peer groups and other social, cultural and political institutions. These social assets or resources act as sources of support and coping mechanisms and their depletion can lead to vulnerability. An individual or household can therefore be described as being vulnerable from a risk or vulnerable to an outcome (Alwang, Siegel and Jorgensen 2001).

Underpinning social vulnerability are social risks. Social risks are associated with social ties and households and originate in the social structure (Siegel and Alwang 1999). The risk approach to social vulnerability which is used by the World Bank is concerned not only with risks and their outcomes but also with the responses or options that individual and households have to manage the risks and reduce vulnerability (Alwang, Siegel and Jorgensen 2001). However, risk or danger alone does not determine vulnerability. Rather, it is the capacities of the individual or household to deal with the risk that indicate vulnerability (Brown 2002). In other words, vulnerability is conditioned by the assets that the individual or household has access to. These assets can be tangible such as savings, capital, physical or financial resources. They can also be intangible and assume the form of social ties and networks (Siegel and Alwang 1999).

Normally, risks are discrete and independent in that they are not thought to overlap or co-vary (Esping-Andersen 2001). However, the nature of social risks challenges this assumption. Devereux and Sabates-Wheeler (2004) propose two broad categories of social risks: structural or contingent. Structural social risks are associated with groups or individuals that have been marginalized or discriminated against. This type of risk inheres in social, political and economic structures. Contingent risks, on the

other hand, are a function of environmental factors such as earthquakes, droughts and floods.

Three main criteria can be used to distinguish social risks: the potential population that is affected, the effects of the risk, and the magnitude or scope of the risk. Esping-Andersen (2000) identifies four types of social risks: universal, group or categorical, life course and intergenerational risks. Whereas universal risks are faced by all, group or categorical risks are more prevalent in certain strata or group such as income poverty in single- mother households. Life course risks occur in a certain stage in the life cycle while intergenerational risks are transmitted from parents to children.

When applied to the situation of the elderly, this way of categorizing risks assists in developing an understanding how vulnerability in old age develops. Generally the elderly are vulnerable to universal risks such as physical declines with increased age, but the degree of risk is not the same for everybody. Life-cycle risks, such as the end of formal employment, age-defined unemployment and ageism are also shared by all, but they are specific to a certain age group or stage in the life course. Widowhood, and loss of age cohort friends and relatives, is also a high probability risk for older adults.

Categorical or class risks are peculiar to certain groups in the society (de Neubourg 2002). For example, older people are subject to general risks like discrimination, caregiver abuse and neglect, but there are also gender-specific risks. So older men and women may be exposed to different risks and they may even experience the same risks differently (Shepherd, Marcao and Barrientos 2004). It is suggested, for instance, that while social isolation is a risk that is relevant to both genders, older females are more likely to experience isolation due their greater longevity, whilst males are more

likely to experience it as a result of weak and inadequate social networks (National Council for Senior Citizens 2003).

Intergenerational risks are the most difficult to address (Esping-Andersen 2001). Endemic poverty, for instance is a major risk that is quite often transmitted across generations. Since support of the elderly is largely provided by the family, if younger cohorts are not able to acquire enough resources to compensate for the decline in size of family networks due to reduced fertility, then this could portend more difficulties for the elderly in the long run (Harper 2006; ECLAC 2003a).

Risks can also be distinguished by their effects and their scope or magnitude. In terms of the former there may be incident effects, which are directly related to an event and are short-lived. Lifetime effects, on the other hand, are related to risks with long-lasting consequences, while intergenerational effects are passed on to the next generation and reproduced. As de Neubourg (2002) points out however, risks can have simultaneous effects and an event can initially have incident effects but later lead to lifetime and/or generational effects.

It is also true that risks can also be idiosyncratic or covariant, repeated or bunched, catastrophic or non-catastrophic (Holzmann, Sherburne-Benz and Tesliuc 2003). Idiosyncratic risks affect only some households in a community while covariant risks hit the whole community at the same time. Events that are catastrophic hit hard and though they might not occur often, when they do they may require continuing flow of resources. Non-catastrophic events occur often, but do not have severe income effects and therefore do not require long-term income transfers. Finally, risks or shocks may be

single or they may follow a recurring pattern. There may also be several shocks following one another (Holzmann and Jorgensen 1999).

Globalization and Social Vulnerability

There is a growing consensus that many new and emerging risks are related to central features of modern society such as modernization and globalization (Dobrenkov 2006; Kirby 2006; Therborn 2006; Stiglitz 2002; Deacon 1999; Sassen 1998). For instance, many developing societies are experiencing rapid social changes as a result of industrialization and modernization and these changes are sources of new risks and vulnerability (Holzmann and Jorgensen 2003). Vulnerability also appears as a widespread social phenomenon due to the new pattern of development based on external openness, the ascendancy of the market and the diminishing role of the state, in other words, contemporary globalization (ECLAC 2002).

This notion of globalization-induced social vulnerability resonates throughout the literature. In theory, globalization has the potential to produce material prosperity and provide better living conditions and there is evidence of this. The World Bank (2001) notes, for instance, that the share of poverty in lesser developed countries has declined with globalization and living standards have improved overall. Despite this, many theorists and analysts agree that there are undesirable political and social consequences which are often under-emphasized (Stiglitz 2005). Among the undesirable social consequences of globalization are increased inequality and impoverishment, increased vulnerability to social risks, and increased chance of exclusion from its benefits for many individuals, communities, countries and regions (Deacon 1999). This is reflected in the

significant between-country variations and the widening gap between the richest and poorest counties (World Bank 2001).

Kirby (2006) has proposed that the impact of globalization on society is best captured by the concept of vulnerability. He argues that whereas the impact of globalization is most commonly assessed in terms of trends in poverty and inequality, this poses problems of definition and measurement. Risk also has limitations in that it is associated with the risk-society thesis which focuses on risks related to modernity while many of the risks that people face worldwide are the result of economic recession and trade and economic liberalization. Finally, according to Kirby (2006), the human security concept in some ways overlaps with vulnerability, but it is conceptually vague and this reduces its analytical usefulness. Vulnerability, on the other hand, is a more comprehensive concept as it focuses on the risk as well as the coping mechanisms, and points to the fact that vulnerability is a feature of the human condition with its roots and solutions in the social order.

Conclusion

The ascendance of social vulnerability as a way to understand and explain the increased sense of uncertainty and insecurity that has characterized the lives of many people since the 1980s is justifiable. From most accounts, social vulnerability is viewed as exposure to risks, without the ability to deal with these risks in a way that reduces the likelihood of danger or injury. Looked at in this way, risk and vulnerability are inextricably linked. Vulnerability is also associated with poverty, although they are not synonymous. As a construct, the social vulnerability concept has many characteristics which make it useful

for understanding risk and insecurity, but a major reason for its superiority over other concepts is its multidimensional and dynamic nature. Unlike other types of vulnerability, social vulnerability stresses the importance of factors within social systems that contribute to the potential for injury or danger. This does not however reduce the relevance of individual factors. Additionally, this approach conceives of social vulnerability as the outcome of the interaction of multiple social factors. By taking account of a range of factors, social vulnerability thus shows itself as broader and more inclusive than other concepts like poverty and inequality. Finally, since social vulnerability encompasses several features of individuals and social contexts, it has the ability to show variation within and among social groups thereby increasing its analytical ability.

CHAPTER III

THEORETICAL APPROACHES TO THE STUDY OF VULNERABILITY IN OLD AGE

The study of vulnerability in old age is supported by a number of theoretical perspectives. Supported by different assumptions and ideologies, these perspectives vary in their emphases and offer explanations at different levels. This chapter reviews four theoretical perspectives that inform our understanding of elderly vulnerability and lay the foundation for later analysis. The aging and modernization theory offers a structural-functional view at the macro level. This perspective explains vulnerability in old age as a consequence of industrialization and other large-scale social changes which lead to a decline in the status of older people in society. Also at the macro level, the political economy approach offers a conflict view of elderly vulnerability. This macro-social theoretical perspective views vulnerability in old age as resulting from structural barriers which are often institutionalized and supported by policy.

Feminist theories provide a framework for explaining and exploring the reasons and the ways in which the lives of older women differ from that of older men. Central to the theoretical perspectives that make up this framework is the issue of gender inequality which consistently disadvantages women. This approach, which is also macro-structural, has salience for the study of elderly vulnerability since women are numerically predominant in this life stage. Both political economy and feminist theories fit within the conflict tradition. Finally, the cumulative advantage/disadvantage approach links both micro and macro approaches in the life-course tradition. This last approach lends to the

study the notion of vulnerability as a process that is produced over the life course as the product of institutional arrangements and individual actions.

Aging and Modernization

The discourse on vulnerability in old age takes place most often within the framework of modernization theory. This theoretical approach proposes a direct relationship between social change and the status of the elderly (Lynott and Lynott 1996). Those who support this approach seek to show that certain values associated with industrialization and modernization weaken traditional norms and values in ways that reduce or erode family support for the elderly. In other words, the processes that transform traditional societies into urban, industrial ones also produce social, cultural and economic conditions that may eventually have a negative impact on the status of the aged. In Rosow's (1974) view, the institutional forces that support the position of the old in traditional societies and simpler societies work against them in modern society leading to a loss of social functions for the elderly. With fewer social functions, the power of the elderly and hence their ability to affect others is weakened.

At the core of the aging and modernization theory which was formally outlined by Cowgill and Holmes (1972), is the assumption of an inverse relationship between the status of the aged and the level of societal industrialization or modernization. Cowgill (1974) identifies modern health technology, modern economic technology, education and urbanization as the four critical aspects of modernization that contribute to the decline in the status of the elderly. Improved health technology reduces mortality and prolongs life at all stages, thereby increasing the proportions of older persons in modern societies.

Population aging is therefore an indicator of modernization. The introduction of modern economic technology also helps to lower the status of the elderly by creating new jobs and transforming existing ones. However, with the large majority of jobs being in high technology industries, older workers are more likely to be in traditional areas of work and so their work gradually becomes obsolete or less valued, thereby reducing their status in society.

Modernization also engenders and gives impetus to rural-urbanization migration leading to intergenerational segregation. In the main, it is the young who fuel the rural-urban drift which, it is argued, breaks down the extended family resulting in the elderly being left behind in the rural areas. Ultimately, this is to the disadvantage of the elderly (Hooyman and Kiyak 2005; Lynott and Lynott 1996). Finally, education also contributes to the lowering of the status of the elderly in modern societies. Geared as it is towards the young, education helps to invert the traditional status by making the young more knowledgeable and skilled than their elders. In this way the power, status and reverence that older people had as a result of their knowledge is eroded. All these factors conduce to lower the status of the elderly in modern society, leading to their marginalization and putting them at risk of experiencing social vulnerability.

While there is much support for the aging and modernization theory, it has been strongly contested nevertheless. According to Tirrito (2003), modernization theory depicts the elderly as negatively affected by modern society, being roleless and devalued, but this cannot be universally established. Using data from thirty-one countries, Palmore and Manton (1974) found that the main factor reducing employment among the aged, and consequently their status was reduction in agricultural jobs. They also found J-shaped

relationships between education and occupation on the one hand and modernization on the other hand. That is, the status of the aged decreases in the early stages of modernization, stabilizes and then rises in advanced stages. Bengston et al. (1975) also did not find an inverse relationship between favorable attitudes to the aged and the degree of modernity or societal modernization in six developing countries. Rhoads (1984) also notes that the modernization and aging theory has not occurred in Samoa perhaps due to their value orientations which among other things, supports the acceptance of dependence in old age and emphasizes the group rather than the individual.

The material constraints theory also presents a strong challenge to modernization theory, especially in the case of developing countries. Like modernization theory, this approach links the status of the elderly to socio-structural changes resulting from industrialization and urbanization, but highlights the effects of material conditions. The main argument is that economic stagnation or decline in many developing countries leads to increased un- and under-employment, increased cost of living and poverty which reduce the resources of younger generations and ultimately diminish family support for the elderly (Aboderin 2006). In other words, reduced family support for the elderly may be the result of incapacity rather than unwillingness (Aboderin 2004).

Political Economy Approach

The political economy approach offers another analytical framework for understanding vulnerability in old age. With its roots in Marxism, conflict and critical theories, the political economy attributes the problems of older people to structural characteristics of the state and economy which determine how resources are distributed. So, unlike other

theoretical perspectives that view the problems of older people as a consequence of individual adjustment to old age, the political economy approach addresses the issue of inequality and disadvantage in old age at the macro-level, highlighting the influence of social, economic and political structures in shaping the lives and experiences of older people (Phillipson 2005). This approach therefore offers a class explanation for the problems of older people in society, rather than an individualistic approach (Lynott and Lynott 1996).

According to this perspective the economic, political and ideological structures create inequality in old age by constructing and reconstructing factors like class, gender, race and ethnicity as barriers (Quadagno 1999). These structural barriers limit opportunities and choices for older people and by so doing reduce the access of older people to valued resources (Hooyman and Kiyak 2005; Bengtson, Burgess and Parrott 1997). Ultimately this increases their risk of vulnerability. Phillipson (2005) notes for instance that the exclusion of older people from employment, which is the major means of economic status in capitalist countries, reduces the economic status of the elderly and puts them at a disadvantage. Both Townsend (1981) and Walker (1981) also emphasize the role of compulsory retirement policies in creating dependency among the elderly in some developed countries. In keeping with its conflict orientation, the political economy approach highlights the major role that the state plays in the creation and fostering of inequality in old age because it has the power to allocate or distribute scarce resources, to mediate between the various classes and groups in the society and to ameliorate social conditions (Estes 2001).

The political economy perspective makes a significant contribution to the study of vulnerability in old age by its focus on inequalities which are established features of society. Not only do inequalities exist in old age, but these inequalities are patterned so that the experience of aging varies according to social class, gender and ethnicity. However, since the inequities in old age are structured and maintained through public policies, the problems of the elderly, including dependency and loss of power, are not of their own making but are in effect created by the interaction of economic, political, social and cultural forces. As Townsend (1981:9) puts it, “society creates the framework of institutions and rules within which the general problems of the elderly emerge and, indeed, are manufactured.” Walker (1981:89) also concludes that “poverty and dependency in old age are not determined by chronological age, but the social construction of age through social institutions and policies and the social division of labor and class structure.”

Several critiques of the political economy perspective can be raised. In the first place, political economy is a macro-level theory which does not address the aging experience at the individual level. It is also felt that the political economy approach is deterministic and focuses on structure to the exclusion of agency (Victor 2005; Bengtson, Burgess and Parrott 1997). It also does not adequately deal with gender or class since it focuses on issues of labor market and retirement which are largely concerns of men and workers in the formal economy. The latter is of critical importance to developing countries where informal employment is pervasive. Bengtson, Burgess and Parrott (1997) also observe that the political economy approach may overstate the socioeconomic status of the elderly by painting a picture of all elders as powerless. They

also refer to evidence of cross-cultural differences in the meaning of old age and dependency, pointing out that dependency in old age is not always seen as negative.

Feminist Theoretical Perspectives

Feminist theoretical perspectives provide a critical point from which to interrogate the issue of social vulnerability in old age, for two main reasons: the feminization of old age and the growing feminization of poverty (Arber and Ginn 2005; Calasanti and Slevin 2001). In many areas of the world women are disproportionately disadvantaged, but the situation is worse in poorer and less developed countries (Estes 2005). The fact that women numerically predominate in old age also demands that attention be given to understanding the situations and experiences of women. Feminist theories highlight the importance of gender as a major factor in trying to understand the experience of aging and old age (Bengston 1997).

Although there are many different feminist theories, one of the core issues addressed by most is gender inequality which takes many forms, depending on the society, but usually refers to the relative disadvantage of women (Lorber 2005). Socialist feminism advances the view that not only is the position of women in society different from that of men, but it is also unequal. This has consequences for women that extend over the life course, leaving many without adequate resources to effectively manage the challenges they face in later life (Hooyman and Kiyak 2005; Stoller 1993). These theories argue that gender inequality is supported by gender cultural systems that have an ideological and a material dimension, and are extremely resilient (Barriteau 1989). In particular, gender inequality is thought to be sustained and perpetuated by the ideology of

patriarchy which associate men with greater status and competence, and thus accord them more power (Ridgeway and Correll 2004).

Most models of gender inequality link the disadvantage of women to the sexual division of labor and power, and the value placed on their work. Unlike men's work which is considered to be in the public domain, much of the work that women do is seen as belonging in the private realm. Work such as unpaid domestic production and informal economic activities that supplement family income does not fit into the narrowly circumscribed outlines of the economy and so are largely unpaid and invisible (Acker 2006). The result of being in the private sphere is that women's work receives less of the social rewards of life (Lengermann and Niebrugge-Brantley 2004).

This practice of public and private work spheres is supported by the male breadwinner ideology which is based on the norm of marriage, and assumes a strict division of labor between husband and wife. According to the male breadwinner model, the husband, as head of the household, has the responsibility to provide for the members of his family through fulltime employment (Sainsbury 1996). In these households, women often do not have an independent source of income and have little control over the resources. They are also at risk of losing access to family assets, if the family does not function as expected, especially in the case of divorce (Yin 2008; Acker 2006; Arber and Ginn 1991). While the male breadwinner model appears to be fairly widespread (Sainsbury 1996), it may not be especially important in societies where marriage is not universal or in some post-colonial societies where women, at least those at the lower levels of society, did not have the luxury of not working (Massiah 1986; Safa 1989; Sutton and Matiesy-Barrow 2001). Moreover, the growth of female-headed households

in many societies, points towards an increasing number of female breadwinners (Calasanti and Slevin 2001) who are excluded from this model.

Occupational segregation and labor market discrimination also impact the situation of women in later life. In most nations, women are concentrated in a narrow range of occupations that are often at the bottom of the organizational hierarchy (Arber and Ginn 1991). They also earn much less than men. This sex-gap in pay has been attributed to differences in skills, productivity, human capital investment and job experience, among others (England 1992). Support for this position can be found in the fact that generally, women are less likely to be employed, more likely to work part-time and to receive lower hourly wages, even despite the large post-war increase in female labor force participation in developed countries (Gornick 1999). However, there is evidence that discriminatory labor market practices also affect the position of women in the work force (Wright 1997).

England (1992) suggests that the persistence of the gender-earnings gap is related to the issues of comparable worth and pay equity. Whereas comparable worth describes the tendency for female-dominated jobs to receive lower pay than male-dominated jobs, pay equity speaks to the tendency for men and women to receive different pay even though they do the same jobs. This occurs even despite Equal Pay laws in many countries and the approximately equivalent levels of education between men and women before entering the labor force (England 1992; Gordon 1996). The bottom-line is that wages are attached to jobs rather than individuals, and so jobs that are stereotyped as female receive lower wages (Acker 2006). In contrast, Gornick (1999) concludes from her analysis of data for developed countries between 1989 and 1992 that the gender gap

in earnings is strongly related to the overall level of earnings inequality in a country. So where wage inequality is high overall, the gender earnings gap is larger.

Gender inequality is also associated with other inequalities such as class and race which intersect to produce differences among women. Several writers (Acker 2006; Estes 2001; Arber and Ginn 1991; Wright 1997) agree that class and gender cannot be separated, although the exact nature of the relationship between them is not easily defined. In fact, Acker (2006) argues that the very development of the idea of class was based on a division of labor that defined work as masculine or feminine depending on whether it was paid or unpaid. Gender therefore plays a central role in creating women's position and sorting people into class locations (Wright 1997).

There are several ways of viewing the relationship between class and gender. Depending on the position taken, one might argue that working class women have more in common with working class men by virtue of their class location. On the other hand, it might be argued that if gender groups cut across social class, then working class women would have more in common with middle class women than they do with working class men. What is clear though, is that in class processes, women and men are differently located, as can be seen in the differences in power, pay and prestige between them (Acker 1989). Gender and class are interconnected not only through the way they affect each other, but they also have interaction effects which can be observed in paid labor practices including employment patterns, hiring processes, employment contracts, and wages (Acker 2006).

The gender gap in workplace authority is also an indicator of the interaction between class and gender. In Wright's view (1997), authority confers status, is a major

way of allocating financial work rewards, and can help to sustain gender inequality in workplaces in general. Wright (1997) concludes from his study of fifteen countries over two decades that while there is evidence of self-selection, much of the gender gap in workplace authority is attributable to discrimination, particularly in the promotion process.

The intersection of class and gender is also evident in social policies. Pensions are a major source of income for older people. However, gender inequities are embedded in the system. For example, government pensions assume that women are homemakers and men are breadwinners, and that women rely on men in heterosexual marital relationships (Calasanti and Slevin 2001). In the main, pensions are shaped by the work experience patterns of men, and middle class workers, which are typically longer and more stable. Thus, the tying of pensions to past earnings, translates into disadvantage in later life for women, and working class members in general, who work fewer years and earn less over the course of their working lives. The result is that many women therefore end up economically vulnerable in old age, having not achieved pay equity nor workplace authority during their working lives (Arber and Ginn 1991).

Cumulative Advantage/Disadvantage and the Life Course Approach

Another theoretical approach which has utility for understanding vulnerability in old age is the cumulative advantage-disadvantage framework which emphasizes the role that early advantage or disadvantage plays in differentiating cohorts over time. This approach which developed within the life course perspective emphasizes the ways in which

people's social location, personal biography and the historical period in which they live shape their experience of the aging process (Stoller and Gibson 1994).

The cumulative advantage/disadvantage perspective applies Merton's (1968) cumulative advantage hypothesis to the study of inequality in old age. Essentially, this approach posits that there is a systematic tendency for increasing inequality in a given characteristic with the passage of time (Dannefer 2003). This divergence and inequality ensue from the interaction of a complex of social forces operating on a population resulting in differential opportunities and consequences. Inequality in the elderly population is therefore not instantaneous nor is it the result of individual characteristics and actions. Rather it results from the interaction of individual actions and institutional arrangements making it a feature of populations rather than of individuals (Douthit and Dannefer 2007; O'Rand 1996).

DiPrete and Eirich (2006) note that cumulative advantage can occur at the level of the population, as well as at the level of the individual. They differentiate between path-dependent and status-based models of cumulative advantage depending on whether the focus is inter-group or intra-group inequalities. Path-dependent cumulative advantage emphasizes within group inequality which is affected by early life resources or liabilities. These are partly independent of personal characteristics. Status-based cumulative advantage, on the other hand, emphasizes inter-group differences which occur when a particular status leads to continued disadvantage relative to some other group. This form of cumulative process is reflected, for instance in widening gender-based inequality over time and can be extended to old age status.

O’Rand (1996) notes that the effects of risk factors as well as advantages, accumulate and compound over time, leading to increased heterogeneity in old age. Crystal (2006:207) stresses the importance not just of early life characteristics but turns the spotlight on the middle years arguing that “while early advantages and disadvantages, such as parental status and formal education, have long-persisting influences, it is the resources and events of mid-life that are immediate precursors of late-life economic and health status.” In youth, educational variation may not make such a difference as starting salaries may be roughly comparative. However, over time those with privileged structural locations may end up better off since certain types of jobs in certain organizations have more resources which improve the odds of achievement and accumulation of resources.

The cumulative advantage-disadvantage approach to inequality in old age has been most consistently applied to the divergence in health with age between those with high and low educational attainment (Lynch 2003; Ross and Wu 1996). According to the theory, education-based resources such as household income, occupation, health lifestyle, social support and sense of personal control accumulate through time and compound with age. This results in a wider socioeconomic gap in health at older ages (Lynch 2003). Generally, the relationship between education and health is mediated by economic variables such as income and occupation and the effect of education on health strengthens with age (Lynch 2003).

By hypothesizing that status differences tend to diverge in old age, the cumulative advantage/disadvantage approach stands in contrast to status leveling or redistribution hypotheses which predict a reduction in inequality in old age. Leveling hypotheses

suggest that advanced age levels or eliminates many of the differences among various types of older persons (Kent 1971). According to this approach, the effect of education on health declines as people age since both groups experience similar problems and barriers in old age. For instance, it is felt that poor health and widowhood which often accompany old age cross class and ethnic lines. Support for this hypothesis is also found in developed countries where public transfers have a leveling effect and thus help to reduce inequality in the elderly population compared to younger and adult populations (O'Rand and Henretta 1999). Between these two approaches is the perspective which hypothesizes that old age preserves existing status differences among individuals. Pampel and Hardy (1994) argue that even though the overall economic status of the elderly may be lower in old age, their relative positions in the social system are maintained in old age. So status advantages and disadvantages that are achieved during the working life persist into old age.

Despite seemingly contrasting positions, there is some evidence that the cumulative advantage/disadvantage and the age-as-leveler hypotheses may be reinforcing rather than opposing. Based on their research, Wilson, Shuey and Elder (2007) conclude that early advantages and disadvantages produce health pathways that diverge with age, supporting the cumulative advantage/disadvantage hypothesis. They also found however that the cumulative advantage process is bounded by age in that the health advantages of socioeconomic resources diverge in the middle years but eventually stabilize and converge in later life supporting the age-as-leveler hypothesis. Dupre (2007) also suggests that the cumulative advantage/disadvantage hypothesis and the age-as-leveler hypothesis may not be competing approaches but rather that they operate at different

levels. He concluded from the results of his research that cumulative advantage/disadvantage explains educational disparities in health at the individual level, while the age-as-leveler hypothesis explains changes at the aggregate level.

The cumulative advantage-disadvantage theory makes a major contribution to the understanding of inequality but it has been criticized for its failure to show why disadvantage assumes identifiable patterns rather than random distribution (Quadagno and Reid 1999). It does not, for instance, explain the persistent inequality and disadvantage faced by women.

Conclusion

Despite their different orientations, the theoretical perspectives discussed above provide frameworks that assist in an understanding of the phenomenon of social vulnerability in old age. The discussion indicates that a complex social phenomenon such as social vulnerability cannot be adequately explained by any one theoretical perspective. Rather an integrated theoretical approach contributes more to elucidating the subject. As indicated by the literature, vulnerability or disadvantage depends on both macro level and micro level conditions. In other words, vulnerability is related to an individual's circumstances, which are shaped by the wider social context. As such there is variation in the extent to which members of the population will experience disadvantage, and be at risk of social vulnerability. However, disadvantage in the older population is not just an individual experience: it is also a gender issue as well as a class issue. Disadvantage or vulnerability, also does not begin in old age, but represents the continuity of disadvantage over the life course.

CHAPTER IV

AGING AND VULNERABILITY

There is wide agreement that old age is a period of increased vulnerability (Joseph and Cloutier-Fischer 2005; Shi and Stevens 2005; Grundy 2006; Schroeder-Butterfill and Marianti 2006). This view that old age is associated with vulnerability is strongly associated with normative expectations of ill-health and increasing need for health care with advancing age (Joseph and Cloutier-Fisher 2005). Aging is also associated with various social and economic changes including the end of work, reduced income, and widowhood for many (Arber, Davidson and Ginn 2003). It is the interaction of these various age-related changes that help to construct old age as a time of risk and uncertainty for many. However, older people vary considerably in their biological, physiological, psychological and social situations (Settersten 2006; Hooyman and Kiyak 2005), and this lays the groundwork for the study of differential vulnerability in old age.

In most vulnerability studies, the elderly are unfailingly presented as being among the high-risk populations, even though vulnerability is neither age-specific nor age-related. Vulnerable sub-populations, like the elderly, are at risk of experiencing negative outcomes because they lack the capability to protect their wellbeing. Essentially, they have greater needs but fewer resources to address these needs. This focus on the elderly as a vulnerable group is not unfounded, since some features of the aging process constitute risk factors. Moreover, the relentless push of globalization, in tandem with the growing numbers of elderly persons, points to the potential for increased social vulnerability in the elderly segment of the population.

This chapter explores the characteristics of vulnerability in old age. It begins with the suggestion that aging and old age constitute vulnerability risks from an individual as well as a societal standpoint. Following that, the chapter examines the shape of elderly vulnerability and probes different models. The chapter then moves to a discussion of the risk factors for vulnerability in old age ending with a generalized profile of vulnerable elders.

Aging, Old Age and Risk

Old age is the last of a series of stages and transitions that make up the life course (Clausen 1996). This stage begins officially at age sixty as established by the General Assembly of the United Nations (UN Resolution 35/129, December 11, 1980). In practice, old age is a broad term encompassing the “young-old” whose ages range between 60 and 74 years, the “old-old” who are between ages 75 and 84 years and the “oldest-old” who are over 85 years old (Restrepo and Rozental 1994). Unlike other life course stages, old age is basically open-ended, spanning more than thirty years and covering distinct age cohorts (Arber, Davidson and Ginn 2003). This contributes to the great diversity that characterizes this stage of life.

Although the terms aging and old age represent different conditions and processes, they are often used interchangeably, making it difficult to differentiate aging as a process, from age as a stage of the life course. It also confounds the distinction between aging as the changes that occur at the end of the lifespan, and the socially and constructed situation of older adults (Fry 2002). Typically, definitions of old age take biological, psychological, and social processes into account, but in Western societies

chronological age is the major marker. On the other hand, in many non-western societies old age is defined in functional terms rather than based on chronological age. Dein and Huline-Dickens (2002) suggest, for instance, that many societies divide the aged into categories: those who are no longer economically productive but are still able to care for themselves and those who are totally dependent and require custodial care and supervision. The meanings of old age also vary across historical time periods. Neugarten and Neugarten (2002) note the blurring of the distinctions between middle age and old age in the US and Europe as retirement from the labor force and the need for custodial care no longer coincide, giving rise to the young old, or the “third age” as described by Bass (2000).

Old age can be viewed as a risk in that it compromises people’s capacity to meet their basic needs (HelpAge 2002). The form that this risk assumes, however, is determined by the characteristics of the individual and the household, extending to the community on occasion (ECLAC 2002). One major way in which aging poses risk is that it increases susceptibility to incapacities and chronic illnesses in particular. This reduces the ability of the elderly to earn an income and increases their probability of experiencing poverty and vulnerability, particularly where official income transfers do not exist or are inadequate. Social isolation, uncertainty and inadequate care and support are also risks associated with aging (Brown 2002; World Bank 2001).

In addition to the risks associated with the individual aging process, both modernization and globalization generate social changes that affect the aged and influence how aging is experienced. Powell (2006) opines, for instance, that in modernity growing old becomes an individual rather than a collective experience as

neo-liberalism spills over into the social context, shifting roles and responsibilities and reshaping personal identities. Globalization is also observed as the source of a range of new risks which have implications for old age. Walker (2006) mentions, for instance, the new risk of being unemployable after age fifty as a result of the rate of technological changes which quickly makes skills obsolete. He also notes that changes in the nature of the labor market mean that geographic mobility, as well as skills mobility, is important to remaining employable. Both of these are challenges for older adults. There is also rapid growth in new forms of work which are insecure and offer little or no social protection leading to increased risk of vulnerability in old age. Finally, longevity itself leads to the emergence of new risks, long-term care being one of the issues. Unless there are significant alterations to the aging process, larger number of elderly persons will translate into an increased demand for support services.

The fact is that aging is a complex process that is a feature of individuals as well as societies. At the level of the individual, aging is accompanied by declines and losses in physical, cognitive, psychological, and social capacities (Settersten 2006; Hooyman and Kiyak 2005). Changes in body composition, organ systems and sensory functions mark physiological aging, while processing and response speeds, both of which decline with age, indicate changes in the cognitive domain (Hooyman and Kiyak 2005; Friedrich 2001; Grundy 1991). Psychological changes also occur as older people redefine their self-image in keeping with role changes that accompany aging (Hooyman and Kiyak 2005; Baltes and Baltes 2000). Whereas biological and psychological aging reflect changes at the individual level, social aging has to do with the changing roles and relationships of individuals within society based on age (Harper 2006). In other words,

the social aspect of aging refers to the nature of social interactions of older persons with family, work, environment and community (Atchley 1985). Social old age is therefore fairly uniform, despite individual differences in chronological, physical and functional age (Rosow 1974).

Societal aging, on the other hand, has to do with the structural, cultural and other transformations that take place in society as a result of the increase in number and proportion of persons over 60 years old (Harper 2006; Weeks 2002). In other words, societal or population aging involves not only an increase in the share of the elderly in the population, but it also means that the elderly themselves are getting older. The aging of society is characterized by a number of features which raise serious issues and concerns. For instance, with population aging the oldest age groups experience the most rapid growth rates. Population aging also raises concerns about poverty in old age as older people have lower incomes than the rest of the population, especially in developing countries. Changes in living arrangements are also often consequential upon population aging (Gavrilov and Heuveline 2003).

A very significant consequence of population aging is the shift it causes in the gender dimension of society. Greater female longevity increases the ratio of females to males with advancing age leading to the “feminization of aging” (Weeks 2004). The feminized nature of later life warrants important consideration as older women are often disadvantaged in terms of pensions and personal incomes (ECLAC 2006; Arber 2004). This disadvantage is linked to their interrupted work histories, their tendency to be employed in lower paying jobs, and discriminatory retirement policies (Berger and Denton 2004; Glass and Kilpatrick 1999). Family structure and individual kinship roles

are also impacted by population aging. Since population aging is driven primarily by reduced fertility and mortality, increasing longevity could mean an increasing number of older people who need care. At the same time however, declining fertility means that family and kinship networks are smaller, thus reducing the pool of available support for the elderly (Harper 2006; Kaneda 2006).

The challenges of population aging for society are commonly assessed in terms of a number of ratios which act as indicators of intergenerational support for the elderly. The most common indicator of the changing age structure of a population is the aging index which is a ratio of the number of persons age 65 and over per one hundred youth under age 15 (PAHO/WHO 2002). Currently small in developing countries, the aging index is expected to be greater than that of developed countries eventually (Kinsella and Phillips 2005). Increasing numbers of older persons also increase the ratio between the aged and the working population. This indicator, the old age dependency ratio which measures the number of persons 65 and over to every 100 persons between 15 and 64 years old is also expected to increase, indicating a greater “burden” on the working age population (UN 2002; Marcoux 2001).

Two other commonly used indicators of support are the potential support ratio and the parent support ratio. The potential support ratio which measures the number of persons aged 15 to 64 per 100 persons aged 65 years and over indicates the dependency burden on potential workers, so the higher the value the more favorable (PAHO/WHO 2002; UN 2002; ECLAC 2004c). The parent support ratio on the other hand is an indicator of the need for support by the frail elderly and the availability of care. This ratio measures the number of persons 85 years and over per 100 persons in the 50-64 age

group based on the rationale that it is this latter age group that typically provides care for the elderly (UN 2002; Serow and Cowart 1998).

While population aging represents a victory for humankind it is a source of many challenges with important implications for all societies. At its basic, population aging changes the age structure of societies and produces higher dependency ratios (Harper 2006; Bengston, Putney and Johnson 2005). In many ways the challenge of population aging is greater for less developed countries which are aging faster than developed countries did at their stage of development and have lower levels of per capita income (Kaneda 2006; Shrestha 2000). These less developed economies also have large informal sectors, flexible labor market participation patterns, are largely non-monetarized and lack adequate formal security systems, creating the pre-conditions for the development of social vulnerability (Marcoux 2001). Altogether, these changes have profound implications for the functioning of various aspects of society, not the least of which is care and support for the elderly. At the bottom line, these conditions point to an increased risk of vulnerability in old age which will be discussed in the next section.

Defining Elderly Vulnerability

The development of an all-encompassing definition for elderly vulnerability is necessarily difficult because of the complexity of the phenomenon. By nature, vulnerability is a multidimensional construct. It derives from a number of sources and has varying manifestations, depending on the context. The same is true for elderly vulnerability. Schroeder-Butterfill and Marianti (2006: 4) describe vulnerability in old age as “the interplay between biological and social threats, individual characteristics and

resources, social relationships and wider economic, political and cultural structures.” It represents the interaction of advantages and disadvantages that accumulate over the life course combined with life-stage threats (Cloutier-Fisher 2005). As such, vulnerability in old age is variable, not only because older people face different risks, but also because not all elderly persons who experience risks become vulnerable since some have adequate coping strategies (Heitzmann, Canagaran and Siegel 2001).

Grundy (2006:107) defines vulnerable elders as “those whose reserve capacity falls below the threshold needed to cope successfully with the challenges that they face”. In Grundy’s (2006) view, each individual comes to later life with a ‘reserve’ built up over a lifetime. Included in this “reserve” are income and material resources, family and social support and health status which constitute strategies for security in old age. Whenever the challenges that older people face exceed their reserves or resources, the result is vulnerability. Such a situation could develop because older people have fewer resources and greater challenges, or because there are more catastrophic loss events in old age. It could also occur because they are unable to adequately compensate for the reserve losses that they experience, underscoring the cumulative nature of elderly vulnerability.

A somewhat different approach is offered by van Eeuwijk (2006) who adopts the view of old age vulnerability as the threat of negative outcomes, including inadequate care and support. These negative outcomes are the result of weak support systems and social networks, limited financial and material resources, living in impoverished environments, persistent chronic illnesses and multiple health disorders. Based on his research in an urban area of Indonesia, van Eeuwijk (2006) suggests that vulnerability is strongly influenced by what he calls “a triangle of uncertainty” comprised of social,

economic and health uncertainties. He concludes that “vulnerability to failure in care and support is therefore a function of a person’s personal and social attributes, including their own, their family’s and their communities attitudes, practices and modes of behavior” (van Eeuwijk 2006:77). So, frail elderly individuals are vulnerable to inadequate care not only because of their own constraints, but also because of the constraints of their caregivers and community networks.

Kreager (2006) views elderly vulnerability as the risk of inadequate support which is related to the size and composition of networks upon which older people depend. It is the consequence of those factors that prevent the formation or maintenance of strong network bonds. Kreager (2006) rejects the tendency to define vulnerable elders in terms of aggregate demographic and economic attributes alone such as rural-urban migration and declining fertility rates as simplifications. He notes, for instance, that old age is not equivalent to incapacity or need as people have different life course trajectories. In addition, social networks moderate the effects of aging and urbanization on vulnerability. Resulting from his study of three rural communities in Indonesia, Kreager (2006) concludes that vulnerability in old age is most likely to occur where there is an intergenerational transmission poverty which pushes network members out of the community or prevents them from providing adequate support.

Two main themes emerge from the ideas presented above. Firstly, vulnerability in old age is largely the end result of a cumulative process. Secondly, vulnerability in old age is a function of the resources, including networks, which older people have. These factors lend support to the notion of differential vulnerability. The next section presents the broad outlines of elderly vulnerability as developed in three descriptive models.

Contours of Social Vulnerability in Old Age

The vulnerability of the aged is derived from several sources, some external and some internal. This section describes three conceptual frameworks for understanding elderly vulnerability. Each of these three models has several categories that classify and summarize variables and concepts considered to be attributes of social vulnerability. The models are descriptive and do not offer explanations or directionality.

Table 1: An Individual Social Resources Conceptual Framework of Elderly Vulnerability

<i>DOMAINS</i>	<i>FEATURES</i>
Exposure	Weak socioeconomic status, being single, living alone, childlessness, living in deprived areas, age discrimination, illness and disability
Threats or risks	Declines in health and physical strength, disability, loss of income, loss of spouse or other network members
Coping capacities	Individual capacities such as personal wealth and human capital Social networks comprising family, friends, neighbors and community institutions like religious and voluntary associations Formal social protection including pensions, health and social services
Outcomes	Lack of healthcare and physical care, lack of adequate food and shelter, insecurity, social isolation, loneliness, poverty, loss of autonomy and dependence

Source: Schroeder-Butterfill and Marianti 2006

Schroeder-Butterfill and Marianti (2006) propose a four-dimension framework for the study of elderly vulnerability (table 1). Their model which is more typical of an individual social resources approach builds on Chambers' (1989) model in which individual assets play a significant role. The components of the model include exposure,

threats, coping capacities and outcomes. Exposure or susceptibility refers to the states that predispose or increase the probability of encountering a particular threat. Threats or risks are specific events that could lead to bad outcomes if there are inadequate coping mechanisms. Coping capacities refer to the assets that individuals have to protect themselves from negative outcomes. Finally, outcomes are the negative states to which older people are vulnerable. From the authors' perspective, vulnerability is not an intrinsic personality trait but rather a combination of and interactions among exposure, threats and coping capacity. So while vulnerability reflects threats that are experienced in later life, it also arises from advantages and disadvantages that are accumulated over the life course.

Table 2: A Community-Level Conceptual Framework of Elderly Vulnerability

<i>DIMENSIONS</i>	<i>INDIVIDUAL LEVEL</i>	<i>ECOLOGICAL LEVEL</i>
Predisposing attributes	Demographic characteristics such as age, gender, health status	Demographic composition, community characteristics, geographic location, political, legal and economic systems, cultural and social values and norms
Enabling attributes	Socioeconomic status, individual human capital assets, and mediating factors such as insurance, access to healthcare, formal social security protection	Income inequality, socioeconomic status of the community, median household income, level of education of population, unemployment rates, quality of the environment, accessibility of healthcare and other services
Need attributes	Illness, poverty, social abandonment, lack of income, homelessness	Community characteristics such as trends in health status and health disparities, health behaviors, mortality and morbidity trends, leading illnesses, ageism and age discrimination

Source: Shi and Stevens 2005 (summarized by author)

The model developed by Shi and Stevens (2005) for studying vulnerable populations is a community-level model with three components: predisposing, enabling and need attributes (table 2). Predisposing attributes indicate the propensity for vulnerability, enabling attributes are the resources that are available to individuals to overcome the vulnerability and need attributes are risk factors that imply vulnerability. These factors independently influence vulnerability but they also converge and interact to determine vulnerability status. Vulnerable individuals and communities therefore experience risks in clusters and so those with a combination of risks are more vulnerable. By emphasizing the importance of community determinants of vulnerability, this model implies that vulnerability does not represent personal deficiency but is rather the result of a convergence of multiple risks that are not totally under the control of the individual.

The third model, which is also multilevel, is a general vulnerability model developed by Schneiderbauer and Ehrlich (2006). According to this model, social vulnerability is comprised of different vulnerabilities that are connected to different social levels: individual, household, administrative community, cultural community, national and regional (table 3). Individual or household vulnerability is conditioned by the parameters set at the regional or national level. The general vulnerability model highlights the complexity of social vulnerability by its suggestion that not only is vulnerability multi-layered, but also that vulnerability can “trickle-down” from one layer to another.

Table 3: A General Vulnerability Conceptual Framework

<i>SOCIAL LEVELS</i>	<i>PARAMETERS</i>
Individual and household: Contribute to the general capacity to cope and deal with external impacts	Age; income; health; education; savings; insurance; social networks; neighborhood; access to information
Administrative community: Provides the framework for action	Institutional infrastructure; legal regulations; level of urbanization; density of rural population
Country: National government defines policies	Regulatory environment; population structure; economic system; economic dependency infrastructure and services; level of development
Region: Global policies and changes can have an impact on the vulnerability of a whole region	Global policies and changes like structural adjustment which can impact the entire geopolitical region; regional environmental features and threats; external migration; crops and diseases
Cultural community: Cultural values help in determining vulnerability	Status of community; economic disadvantages of social groups; cultural restrictions of racial, ethnic or religious groups; inter-communal conflicts; gender inequalities

Source: Schneiderbauer and Ehrlich 2006

The Construction of Vulnerability in Old Age

The United Nations (2003) suggests that three major sources of social vulnerability threaten the security of the elderly. Firstly, unemployment and job security can result in income security and poverty, posing the risk of poverty and dependency in old age. High rates of un- and under-employment during the productive years have the potential to translate into insecurity in later life. There are also risks in the informal economy which is a major source of employment for older people in developing countries. Working in the informal economy means that the older worker does not have to retire since there is

no age limit. On the other hand, however, workers in the informal economy face high exposure to risky working conditions, have lower levels of income and limited access to formal risk management tools like pensions and insurance. Informal sector workers are therefore less likely to be protected against social risks or to be able to manage these risks (Barrientos and Barrientos 2003; Yesudian 2003).

Secondly, macroeconomic policies combined with trade liberalization and market forces contribute to the increased vulnerability of workers with consequences for the elderly in terms of reduced employment and reduced social sector programs. For the elderly in many developing regions such as the Caribbean, the labor market is a primary source of vulnerability. Decreasing economic opportunities and changes in the labor market structure put pressure on families which indirectly affects the elderly. These changes also directly pressure the elderly, many of whom need to continue working in order to survive (ECLAC 2004c).

Finally, socio-demographic changes challenge both the formal and informal support systems, the latter making access to appropriate care a major source of vulnerability for the elderly. According to Brown (2002), the structure of a population affects its dependency ratios and while these do not confirm vulnerability they may indicate the vulnerability of certain groups. A high aged dependency ratio³ for instance, may point to greater vulnerability of the aged for two main reasons. First, an epidemiological transition usually follows the demographic transition closely and this has implications for health status which can be a buffer against vulnerability or a source of

³ The aged dependency ratio describes the balance between the number of persons age 65 and over to every 100 persons in the 15-64 age group

vulnerability in old age. Second, the changing demographic structure has implications for the care of the elderly as reduced fertility means fewer persons to assume care-giving roles (Harper 2006).

What then are the factors that help to construct vulnerability in old age?

Answering this question often involves identifying general characteristics of the elderly and enumerating their common risks, a universal approach. The underlying assumption of this approach is that there are certain risks and needs that apply across societies and regions. While a universal approach is very useful, the modulating effects of culture and context cannot be ignored. The following section discusses the major risk factors for vulnerability in old age. These risk factors are based on the themes presented in the literature and also on the framework of vulnerability that has been adopted in this paper.

Socioeconomic Status

Socioeconomic status is one of the most significant factors associated with social vulnerability. Generally, higher socioeconomic status is associated with lower levels of social vulnerability. Derived from a combination of variables which traditionally include education, occupation, income and employment status, socioeconomic status is an indicator of social resources and individual capacities (House et al. 1994). In the main, education is the foundation of socioeconomic status and is critical to the ability of older persons to meet their basic needs and maintain a fair standard of living (UN 2002). Through education, individuals acquire skills and abilities to help ward off threats to their social welfare. Not only does education influence occupation and income, but it even determines whether an individual or household invests in pensions, shares and other

assets (Burholt and Windle 2006). Pensions, economic activity, poverty and health status are the variables of interest in this discussion of the socioeconomic status of older adults.

The importance of income cannot be overstated. Having an income, regardless of the amount, represents the ability to earn money and pay for services (Dwyer et al. 2004). Assessing elderly incomes is problematic however, since the elderly, especially those in developing countries, have multiple sources and these may vary monthly or yearly. Where the elderly individual is living with others, it is also difficult to distinguish between the income of the elderly person and the household income (Chan, Ofstedal and Hermalin 2001).

Pensions. In the main, pensions are the primary sources of income for the elderly in many societies. Even in less developed countries where formal social protection systems are not well developed or adequate, pensions still play a critical role in enhancing the welfare of the elderly (UN 2007a; HelpAge 2004). Unlike in developed countries where there is almost universal public pension coverage, only a small proportion of workers in less developed countries are covered and most of these work in the public sector or large private companies (Kaneda 2006; Kinsella and Velkoff 2001). Occupational pension plans are even less widespread being more common among high income and private sector workers. The majority of elderly persons in many less developed countries therefore rely on public non- contributory or social pensions which provide regular cash transfers. Though typically small, these social pensions play a significant role in reducing poverty not only for older people but for their households as well (UN 2007a).

Data from the UN (2007a) indicate that without pensions, the incidence of poverty in Jamaica would increase from 54 percent to 60.6 percent. The effect is even more dramatic in Brazil where without pensions, the incidence of poverty in the elderly population would move from 3.7 per cent to 47.9 percent (table 4).

Table 4: Effect of Pensions on Poverty for Jamaica and Brazil, 2001-2005

<i>COUNTRY/AREA</i>	<i>POPULATION RECEIVING PENSIONS</i>	<i>POVERTY INCIDENCE</i>	<i>POVERTY INCIDENCE WITHOUT PENSIONS</i>
Jamaica	14.0	54.0	60.6
Rural	11.9	52.0	60.6
Urban	17.3	56.4	65.2
Brazil	77.3	3.7	47.9
Rural	85.2	3.5	51.3
Urban	75.7	3.7	47.2

Source: World Economic and Social Survey, UN (2007) Table V.1. p. 94

The importance of pensions for older adults cannot be overstated. There is strong evidence, for instance, that in many developing areas, social pension incomes are used to support children and grandchildren (UN 2008; HelpAge 2007; Kaneda 2006; Lloyd-Sherlock 2000a). This is particularly true for those who live in rural areas or work in the informal sector (Gorman 2004). Social pensions also help stimulate the local economy by financing rural economic activities and investments in farming as has been noted in rural Brazil where older people use part of their pension to buy seeds and agricultural tools (UN 2007a). The health benefits to the elderly are also significant as pensions allow older people to pay for healthcare and medicines. In addition to reducing poverty, social pensions give older people some degree of economic independence and empower them

since they are the income earners (HelpAge International 2007; Kaneda 2006; Marianti 2003). On the other hand, pensions can be a source of inequality in the personal incomes of older people as Burholt and Windle (2006) found to be true in England. One reason is that occupational and private pensions are typically more generous than means-tested noncontributory pensions which oftentimes do not meet the basic needs of the elderly.

Economic Activity. Of pertinence to the social and economic situation of the elderly in a large part of the developing world is economic activity. Generally, economic activity declines with increasing age. Across all nations older workers constitute a smaller proportion of the overall labor force and the participation rate of older workers declines with increasing age. Men also have higher labor force participation rates than women overall (Kinsella and Velkoff 2001). However, there are significant differences between the participation rates of the elderly in developed and developing countries.

In many developing countries more than half of all men are economically active compared to only about two percent in developed countries (Kinsella and Phillips 2005). In fact, many of the elderly in developing countries work until they are no longer able to, mostly in small-scale farming and craft-production and the informal economy (Kalache, Barreto and Keller 2005). This high rate of economic activity among elderly persons in developing countries is thought to be the result of necessity rather than choice (UN 2007a; UNDP 2000; Lloyd-Sherlock 2000).

Poverty. Vulnerability in old age is also strongly related to poverty and low material resources. Generally, poverty is associated with limited resources or assets which reduce

the ability of individuals and households to respond threats that have materialized (World Bank 2001). In the case of older adults, poverty may be linked to lack of income, inadequate family or other social support and inadequate health care. These are in turn linked to access to employment, inequalities in the distribution of public resources, policy priorities and socioeconomic conditions that negatively affect the household and community networks of the elderly (Barrientos, Gorman and Heslop 2003).

Ordinarily, poverty and lack of material security in old age are the result of structural inequalities experienced in earlier stages of the life cycle, although many older persons are pushed into poverty by sudden events like the loss of their main source of support such as a spouse or adult child or major illness which erases all their savings or renders them unable to work (Lloyd-Sherlock 2006; Holzmann and Jorgensen 2000). Older people may experience the same lack of resources as others but they have limited capacity to compensate as a result of reduced income-generating capacity and increased risk of illness making them particularly vulnerable to falling into poverty (ECLAC 2004; Lloyd-Sherlock 2000). So for instance, the elderly with higher levels of education and those who receive pensions experience lower levels of poverty (UN 2007a). This is a salient issue for older people in less developed countries where levels of poverty are often positively related to old age. In these countries, poverty frustrates the attempts of older people to provide for their basic needs and prevents them from participating in society at various levels leading to social exclusion (HelpAge 2002).

The aging contexts in many developing and less developed countries would suggest that elderly poverty is both widespread and intense. However this is very difficult to ascertain since typical poverty line assessments are not enough to identify vulnerable

elders (World Bank 2001). According to ECLAC (2004c), old age poverty is often masked in several ways. Firstly, the incidence of poverty may appear low because poverty is usually determined by 'a basket of goods' which may not cover the basic needs of an elderly person. Also, many older people who are in poverty go to live with children or other relatives that are better off, so their poverty is not visible although their incomes are still low. It may also be true that the pensions and benefits provided by the social security systems are helping to reduce the incidence of poverty in the older population. In their study of aging and poverty in Africa, Kakwani and Subbarao (2005) found that whereas the incidence of poverty among the elderly living alone was not worse than the average, the depth of poverty was greater. They also found that the incidence of poverty rose when the elderly were caregivers and was higher than average when they were household heads.

While poverty is typically measured in terms of income and this is an important resource for combating vulnerability in old age, material resources are also important for well-being. One aspect of the material resources of older people is home ownership. For many older persons home ownership is a significant resource as it provides security and affords greater control. It is associated with higher monthly incomes and thus is a major component of the wealth of older persons. Moser (1998) suggests that the importance of housing as a productive asset for the urban poor is akin to the importance of land as a productive asset for rural poor. In the cash-based urban economy, homeownership reduces the need to spend money on housing monthly. This imputed rent when added to the family income can result in significant differences in household incomes (Lloyd-Sherlock 2006). Additionally, homeownership can itself be sources of income, as some

older residents, at least in less developed countries, take in boarders or sublet parts of their home to help finance themselves (Rawlings 2006).

Health Status. Health is one of the most fundamental resources that older people bring to old age and this speaks to their ability to maintain independent and autonomous lives (Victor 2005). Health status is shaped by the interaction of individual level factors such as genetic make up and individual behavior, as well as macro-level social factors such as gender, social class and the availability of healthcare (Victor 2005). For the elderly in many developing countries, health is their most important asset as it affects their ability to work and maintain a satisfactory standard of living (HelpAge 2002). Generally, both age and health conditions are consistently related to vulnerability, as old age is generally associated with a decrease in earning capacity and an increase in incapacities and illnesses (Dwyer et al. 2004). Other factors that have been shown to affect health status are age and poverty, both of which reinforce one another (Lloyd-Sherlock 2000). In addition, the very old, and especially those with disabilities, may be at increased risk of vulnerability (Rygel, O'Sullivan and Yarnal 2005).

Not only is health associated with socioeconomic status, but it is also related to social support, so those who are low in one domain may also be low in others. Consequently, those persons with poor social support, low incomes and backgrounds in lower occupational categories are most vulnerable in terms of health, as are older women (Grundy 2006). Hermalin and Ofstedal's (2005) research on elderly vulnerability in four Asian countries supports these views. Not surprisingly, they found that those persons who were over 70 years old were disadvantaged on the health and economic dimensions

of vulnerability. They also found education to be a major factor, as those with no formal education also showed significant disadvantage in these areas.

Place of Residence

One of the most commonly studied variables in relation to vulnerability is place of residence. McLaughlin and Jensen (1998) assert that residence matters because there are meaningful variations in the characteristics of persons living in different places and even in the places themselves. These variations affect the well-being of the residents. Overall, rural residence is frequently presented in the literature as a risk factor for social vulnerability because rural areas are poorer than urban areas, and rural residents are often disadvantaged in terms of general service (Krout and Bull 2006). Rural residents also face barriers to health care such as transportation difficulties, limited health care supply, lack of quality health care and geographic isolation (Goins et al. 2005). They also report more functional health limitations and a higher number of medical conditions.

In fact, Joseph and Cloutier-Fisher (2005) describe the many vulnerabilities associated with aging and living in rural areas as a kind of ‘double jeopardy’ for rural elders. Historically under-serviced when compared to national standards and urban communities and with higher levels of poverty and large scale out-migration, rural elderly are at risk of ‘double jeopardy’. Glasgow and Brown (1998) argue further that the increased risk of poverty and other vulnerabilities that rural elderly face is related to aspects of the economic and social structure of rural areas. They reach this conclusion after their analysis of data for the US indicated an increase in the rural-urban poverty rates even after otherwise significant sociodemographic variables were controlled. In

other words, poverty rates were higher among rural elderly, even among those with overall low poverty risks such as whites, those who were married and those with higher education.

Nevertheless it is difficult to generalize about rural elders since there is significant diversity according to demographics, geographic location, community resources and social and cultural patterns (Krout and Coward 1998). There is evidence, for instance that rural elders who live on farms in the US are very different from other elders (McLaughlin and Jensen 1998). Hermalin and Ofstedal (2005) also found that rural elderly in the four Asian countries that they studied showed no disadvantage on either the social or health disadvantage, although economic disadvantage was observed in two of the countries studied.

The contending definitions and views of rurality yield two vastly differing pictures of aging in rural areas. One picture is that of rural elderly residents supported by loving families and extended support from their communities. The other picture is of the rural elderly, poor and abandoned in the countryside as younger generations emigrate to more prosperous areas in search of socioeconomic advancement. Neither picture is totally accurate, however.

On the other hand, urban residence offers many advantages for the elderly, including greater access to services and overall higher socioeconomic levels. Urban residents have the highest educational levels and are more likely to live in households that are above the poverty line (Kinsella and Velkoff 2001; Lee 1998). They also have more diverse employment options. However, as pointed out by the UNFPA (2007), all segments of the population do not benefit equally from urban residence. In fact, urban

residence carries risk for the elderly to varying degrees. Without adequate pensions or opportunities for self-provisioning, many urban elderly residents are totally dependent on the support of their children, but with the erosion of norms and values that underpin support for the elderly, the risk of inadequate support may be increased (UNFPA 2007; Kalache, Barreto and Keller 2005). Aging in place in cities, especially in socially deprived neighborhoods with high crime rates and deteriorating infrastructure, also creates significant risks for older people (Philipson 2004).

Moser (1998) identifies three aspects of the urban environment that help to create vulnerability for the poor. First and foremost is the commoditized nature of urban areas which makes the generation of income critical to the survival of the urban poor. Unlike rural residents, urban residents have to pay for everything and so the ability to work becomes their most important asset and this is a challenge for the elderly. Environmental hazards such as poor sanitation and waste disposal also have a major impact on the health, human capital and well-being of urban residents. Finally, the great heterogeneity of urban areas may weaken community and inter-household systems of trust and collaboration making it harder for urban residents to respond to changes in the external environment. Urban elderly residents may therefore be at a disadvantage compared to their rural counterparts. Van Eeuwijk (2006) further suggests that mobility, physical activity, mental acuity and individual autonomy are critical values for survival in harsh cities and when these conditions cannot be met due to health constraints, vulnerability may ensue. The situation of poor, frail elderly urban residents is further aggravated by the social and economic characteristics of urban areas which commodify care, leaving them vulnerable to inadequate treatment, care and support.

The debate surrounding the differences between rural and urban life is not new in the sociological tradition. Early theorists like Tönnies and Durkheim characterized rural areas as communities in which people are bound closely by kinship and tradition. For Tönnies, rural dwellers had a sense of community or common identity in contrast to urban dwellers who experienced temporary, impersonal ties. Unlike rural areas, urban areas are filled with isolation and tension (Tönnies 1957). Durkheim (1964) also spoke to the characteristics of rural areas with his notion of mechanical solidarity which keeps rural dwellers bound together through the collective conscience. In Durkheim's view rural communities are socially integrated and cohesive. Like Tönnies and Durkheim, Wirth (1938) also supported the idea of polarizing differences between rural and urban areas. Wirth (1938) portrayed urban areas as impersonal and superficial and urban residents as alienated and socially unattached. Overall, rural areas are presented as close, intimate communities in contrast to urban areas that are characterized as impersonal and superficial.

Several authors reject the rural/urban dichotomy as arbitrary, however, arguing that the transition from rural to urban is gradual and that rural areas encompass a variety of residential settings and characteristics (Ocaña-Riola and Sánchez 2005; McLaughlin and Jensen 1998). Wenger (2001) also points out the invalidity of the dichotomy in the context of social change. Others, like Scharf (2001), believe that while it may be important, comparing the situations of rural and urban elderly tends to overemphasize the differences between rural and urban areas in terms of infrastructure and services, for example, with the urban areas being presented as the model for rural areas. There is also

a tendency for rural studies of aging to produce distorted views of older people in rural areas, resulting in over-simplified categorizations and generalizations.

Ultimately, it is not clear whether rural communities hold more disadvantages for the elderly than urban areas. Lee (1998) concludes that common stereotypes of rural elders safely ensconced in close family networks, and urban elders isolated and without support are not supported by the data. What is clear, however is that there are differences between rural and urban elderly persons. As Kinsella and Velkoff (2001) show, rural elders are more likely to be involved in community and voluntary activities while urban residents are advantaged in terms of health and other supportive services. Lloyd-Sherlock (2006) also notes that since urban households are in the market economy, they have a greater need for income. So while the rural elderly are more likely to be below the poverty line than those in urban areas, they do not necessarily find it harder to survive. Finally, while the tendency is to highlight the loss of support that rural elderly experience as a result of rural-urban migration, many elderly in urban areas may also be at risk as they age in cities without family support or a strong social network (Bengston, Putney and Johnson 2005). In other words, rural elders may be income-poor but better off in terms of social capital than urban elders.

Household and Living Arrangements

Patterns of household and living arrangements of the elderly are important because they are believed to affect help and support of older people. These living arrangements are determined by a number of factors including cultural and social values, as well as financial and material circumstances (Victor 2005). As such, the patterns can be

expected to vary across countries, and even within countries. For example, there are observed differences in living arrangements according to age, gender, marital status and socioeconomic status (UN 2007b).

Co-residence. In developing countries, co-residence is one kind of transfer that the kin group or family provides to the elderly (Palloni 2000). In fact, it is the major means by which families meet the needs of the elderly, and especially in situations of economic hardship and poverty (ECLAC 2004c; De Vos 2003; Velkoff 2001). The underlying assumption of this position is that spatial proximity is necessary to promote social contact and, by implication, social and practical support (Victor 2005; Schroeder-Butterfill and Kraeger 2005). In the main, the UN (2005b) found that elderly in developing countries who co-resided with children generally had higher levels of wellbeing, but it depended on the age of the children, as those who lived with children over 25 years old were better off than those who lived with younger children. One explanation for this pattern is that younger children may be dependent, so they are more likely to be on the receiving end, while older children may give more care than they receive (De Vos 2003).

Bongaarts and Zimmer (2002) found variation in the living arrangements of older people by age and gender in developing countries, and also between levels of schooling and living arrangements. Generally, older women are less likely to live with a spouse, but more likely to live with adult children. Those with higher levels of education are more likely to live in smaller households with fewer children or alone. Overall, older adults in developing countries with higher levels of socioeconomic development are less likely to live in extended households. For the most part, having an independent source of income decreases the probability of the elderly living with children or grandchildren,

although high income is not always negatively associated with co-residence of the elderly in developing countries (UN 2005b). The situation is different in developed countries where high income is generally associated with living apart from children. However, Himes and Fang (2007) found that despite separate living arrangements, there is a tendency for children to settle near their aging parents' home or for parents to move closer to their children's residence which facilitates the provision of care.

Children are an important aspect of the reserve of the elderly, and the core of their kin support system (Grundy 2006). Ofstedal's (2005) study of four Asian countries confirmed the importance of children for the wellbeing of the elderly, as those elderly without living children showed consistent social disadvantage in all countries they studied. This led them to conclude that co-residence is more important for the support of the elderly than the existence of children in itself. The gender of the children also plays a role in the issue of co-residence as Bongaarts and Zimmer (2001) found a preference for living with male children in Asia, but no preference in Latin America. On the other hand, Himes and Fang (2007), suggest that the gender of the children help shape care arrangements for the elderly in the US, as daughters are more likely to provide care, while sons are more likely to organize care and deal with financial and legal issues. However, the supply of kin is affected by fertility, mortality and migration patterns, and the existence of children does not mean that they are available to provide old age support (Aboderin 2006). The ability to provide support depends on a number of characteristics including their employment, spatial proximity to the parents and their stage in the life cycle, including their age, marital status and whether they have children of their own (Harper 2006; Palloni 2000).

The importance of children for the wellbeing of the elderly brings into focus the issue of childlessness and its implications for vulnerability in old age. As Schroeder-Butterfill and Kreager (2005) point out, childlessness involves more than reproductive failure. They draw attention to the matter of *de facto* childlessness, or the lack of support from children, the causes of which could be migration of children, divorce, estrangement due to conflict or the existence of handicapped children. They further observe that in many situations where childlessness exists, there are functional substitutes through informal adoption and remarriage, for example. It is also suggested that the increase in stepchildren as a result of high divorce rates could make up for fertility declines, thereby increasing the number of available kin and ultimately increase support for the elderly (Velkoff 2000).

While children are critical for the support of the elderly, they are by no means the only source, and De Vos (2003) cautions about exclusive focus on the parent-child bond. She argues that many older people in developing countries live in extended families, but this does not mean that an elderly woman had children or that the elderly person must be living with a child. This is because other relatives such as siblings, nephews, nieces and even cousins are important sources of support for never-married older persons.

Grandchildren are particularly important sources of support in some areas such as parts of Africa where child-fostering is common. This practice of sending children to live with others, often but not always grandparents, is also observed in Afro-Caribbean societies. Barrow (1996) notes a pattern of children-shifting or fosterage where children are sent to live with an older, and most often more economically secure relative who may have no

biological children. This act of 'raising children' forms close and enduring bonds which may be just as strong as 'real' kinship ties (Gordon 1996).

Skipped-generation households are also a common living arrangement for many elderly in parts of Africa, Latin America and the Caribbean, and often involve older women (UN 2005b). These households often result from the practice of fosterage discussed above, but they are also partly the result of HIV/AIDS epidemic on the middle generations in Africa (Harper 2006; Merli and Palloni 2006). In the case of the Caribbean this household form is often a consequence of migration. Typically, skipped-generation households are more common in rural rather than urban areas and among uneducated older persons (UN 2005). Older people who live with grandchildren rather than children have lower levels of material assets

Independent Living. Many elderly persons also live independently, meaning that they live in couple-only households or live alone (De Vos 2003). Generally, independent living arrangements are more common in countries that are in the advanced stage of the demographic transition (UN 2005b). Himes and Fang (2007) found that elders in the US prefer independent living arrangements, although as health declines and disability increases, the likelihood of elderly co-residence increases. Lower incomes and non home-ownership also increase the risk of co-residence. Many elderly persons in developing countries also live in couple-only households, despite the prevalence of co-residence. Most commonly, these households are built on marriage, which is important as the marital relationship has been shown to confer various benefits to the elderly.

The protective effects of marriage have been noted by several researchers (Marmot 2004; Davidson, Daly and Arber 2003; Gierveld 2003; Goldman 2003; Rowe and Kahn 1998;). International data show that married people have lower mortality rates (Marmot 2004). One reason for this is that marriage is a potential source of support, and social support has important psychological and physiological effects (Rowe and Kahn 1998). Marriage also provides support in the case of physical and mental challenges (UN 2007b). Overall, older people who are more socially integrated are healthier than those who are not, as social networks influence health-promoting behaviors and promote cognitive and emotional states such as self-esteem, social competence and self-confidence (Berkman and Glass 2000). On the other hand, lack of social relationships can increase the risk of diseases by weakening resistance (Marmot 2004).

On the other hand, solitary living, which is on the increase, is associated with a number of disadvantages in old age. Since household members are the main source of social support, living alone increases the risk of isolation and may indicate vulnerability among the elderly (UN 2007b; Hermalin and Ofstedal 2005; Dwyer et al 2004). While solitary living is disadvantageous for all elderly, men are believed to be particularly vulnerable because of their smaller social networks and less frequent contact with kin and non-kin (Gierveld 2003). Men also tend to engage less in health promoting behaviors when they are socially isolated, contributing to their higher mortality rates (Eng et al. 2002). According to Davidson, Daly and Arber (2003), women play a pivotal role in maintaining family networks and so without spouses, single men tend to engage in less social interaction. The situation is even worse for divorced and separated men, compared to those who are widowed.

Victor (2005) observes however, that the rise in solo living is not unique to older people, but is part of a wider social trend. He suggests that it is therefore not safe to infer social isolation and family neglect from the increase in solitary living, just as co-residence of older people cannot be used to infer support and care. In fact, he argues that solitary living may be an indicator of autonomy, independence and overall successful aging. Indeed, there is evidence that those elderly who live alone are physically and mentally healthier and more economically secure (Grundy 2006). In a review of the literature on trends in co-residence of elderly with their children, Palloni (2000) identifies several factors that are thought to influence the observed changes in both co-residence and solo living. These factors include higher real incomes, social and other transfers, preferences, cultural diffusion, health status of the elderly and demographic availability of kin. He concludes, however, that the relationships are not always straightforward or consistent.

Two other aspects of living arrangements that are important for the wellbeing of the elderly are the size and structure of the households in which they live. Whereas larger households may promote intergenerational support and reduce isolation, it should not be assumed that larger households mean more support for the elderly as they often correlate with poverty, overcrowding, abuse and economic constraints (Lloyd-Sherlock 2000). In addition, living with young grandchildren or ill relatives may be more of a burden than a benefit as the flow of support may in fact be from the elderly to the grandchildren rather than the other way around (de Vos 2003). The status of the elderly within the household is also an important indicator of wellbeing, as is the gender of the co-resident child or children (Zimmer and Dayton 2003).

Despite the importance of living arrangements, information on living arrangements of the elderly says nothing about the nature of intergenerational relationships and whether they enhance overall well-being of the elderly (Velkoff 2000; Lloyd-Sherlock 2000). In fact De Vos (2003) and Himes and Fang (2007) point to the practice of “pseudo-residence” where children set up independent households close by their elderly parents, as an adaptation that provides benefits equal to co-residence. Ginn and Arber (1991) also found that co-residence does not always mean that all family members share a common standard of living. Finally, the absence of direct physical support does not mean that there is no support or that the elderly are at absolute risk of vulnerability. In fact, modern technology permits the exchange of support across geographic distances and facilitates more varied forms of reciprocity and exchange (Phillipson 2003; Litwak et al 2003). Also, Kinsella and Velkoff (2001) caution about inferring too much about solitary living since it could be a sign of good health and economic well-being rather than social isolation and lack of support.

Gender

There is a well-established relationship between gender and disadvantage in the literature. Generally, women, tend to have reduced access to resources than men which translates into higher rates of poverty. Vartanian and McNamara (2002) found that women in the US who had low hours of paid work in midlife spent more time in poverty in old age. They described the persistence of poverty among older women as a general phenomenon. Women also have lower levels of schooling, higher rates of illnesses, are less likely to be

married and more likely to live alone (Knodel and Ofstedal 2003). For these reasons, among others, older women are portrayed as being more vulnerable than men.

While acknowledging that older women have many disadvantages, Knodel and Ofstedal (2003) question whether gender is a universal marker of disadvantage. They note that women are not universally disadvantaged and that there are indeed gender-specific influences such as smoking and drinking that disadvantage men. They also cite regional differences, including the fact that in some areas of Latin America and the Caribbean, the proportion of older men in poverty is greater than that for women. Gibson (1996) concurs, suggesting that although women experience many disadvantages in old age, there are often many advantages to being a woman in old age, but these are often ignored and are sometimes reconstructed to appear as disadvantages. For example, widowhood is mostly seen as the absence of a partner and associated with social isolation while the great strength of older women's social networks is rarely emphasized. It has been suggested that because older women are more likely to be economically dependent they end up getting more family and community support, while older men may face rejection when they are no longer productive (HelpAge 2002).

Gender affects vulnerability in many ways, both directly and through its interaction with other indicators. In many societies, women have lower labor force participation rates than men (Gordon 1996; Gornick 1999). They are also more likely to work part-time, to be employed in the informal sector and to hold low status jobs, all of which exclude them from the benefits of occupational pensions (ECLAC 2006). The interrupted work histories of women, which are often related to their care-giving roles, may also increase their risk of vulnerability in old age (Rygel, O'Sullivan and Yarnal,

2005; Arber and Ginn 1991). The overall result is that a higher proportion of women has no income of their own nor receives any benefits or pensions, and often receive survivors' benefits at lower than regular rates (UN 2008). In addition, their greater longevity may result in more chronic illnesses. These conditions make elderly women very vulnerable to poverty overall, but the risk is greater for divorced or separated women who have been found to have fewer resources and lower incomes in developed countries, especially the US (Yin 2008).

Men, on the other hand, may be more vulnerable to social isolation and inadequate care as a result of weak and small social networks (National Council for Senior Citizens 2003; Scott and Wenger 1995). This is especially true where the older male becomes widowed. Older men are also sometimes marginalized when they can no longer work. Since their status in the household and community is linked to their ability to bring in an income, when their earning capacity is removed or reduced, their status also declines (HelpAge 2007). In analyzing later life inequalities in the British population, Arber and Ginn (1991) made several observations. They found that the men were advantaged in all socioeconomic categories and married men had the greatest advantage of all. One of their conclusions was that marriage is an advantage for elderly men but a liability for older women since it was found to increase the pension-earning capacity for men while it decreased it for women (Arber and Ginn 1991). However, women have some advantages as they are more likely to receive support from relatives and the community. In this case, their socialization and strong links with home and family redound to their benefit in old age (ECLAC 2004a).

Gender also interacts with health to create and reinforce vulnerability. Generally, men and women have different patterns of diseases and life expectancies. For instance, it is well documented that although women live longer than men, they suffer more chronic and degenerative illnesses (Hooyman and Kiyak 2005; Kalache, Barreto and Keller 2005; Scott and Wenger 1995; Arber and Ginn 1991). Older women also report more disabilities than older men, and have lower healthy life expectancies (ECLAC 2004; Scott and Wenger 1995). This “morbidity paradox” is complicated and has been explained in several ways. Arber and Cooper (1999) found substantial gender differences in disability among older people in Britain, with a linear increase in the proportion of older British women self-reporting that they were living with long-standing illnesses. They suggest that an explanation for the gender gap in can be found in the greater social and economic disadvantage that women experience over the life-course compared to men. Liang et al. (2008) also find support for the gender gap in disability among older American adults. Not only do women experience a higher level of impairment, but they also experience a faster rate of decline in functional status after age fifty. Moreover, the gender gap in functional status is greater among seventy-five year olds in the sample than among fifty year-olds.

Conclusion

On the basis of the above discussion, who then are the vulnerable elderly overall?

Generally, the poor are more vulnerable. One reason for this is the limited opportunities for paid work in later life which results in dependence on transfers from younger members of the society and past accumulation. However, the precarious job situations of

many poor people in developing countries do not allow them to save for old age. Most research seems to support the hypothesis that women are at greater risk of vulnerability in old age than men due, in part, to their greater longevity coupled with a higher incidence of chronic illnesses and disabilities. Women are also more likely to be poor and disadvantaged in terms of pensions due to their interrupted work history.

Notwithstanding the risks they face, older women have some advantages compared to older men in the form of better social relationships with friends and family members.

Older people who live alone are also more vulnerable. These include those who have never been married and are childless. This is especially true of males and those who have poor health. Finally, rural elders are consistently identified as vulnerable, as on average they have lower socioeconomic statuses than urban elders. They also report more functional health limitations and a higher number of medical conditions.

The evidence presented in this chapter indicates that many factors shape vulnerability in old age and they are not all consequences of the aging process. In fact, while some of the risk factors have their roots in the personal realm, many others originate in the social system. So despite the tendency to view elderly vulnerability as an intrinsic feature of contemporary western society, many of the risks associated with the phenomenon are actually created by social forces. As the literature indicates, vulnerability in old age arises from a variety of sources and takes several forms. It is strongly related to the resources of older people which most often operate jointly rather than individually in creating vulnerability. To a large extent vulnerability in old age is shaped by earlier events, but late life events often play a role in propelling people into

this state. Finally, while there are universal risk factors for vulnerability in old age, the ultimate form that it assumes is influenced by the context.

CHAPTER V

THE JAMAICAN AGING CONTEXT

The impact of population aging on society is defined in a fundamental way by the social, economic and political context in which it is taking place. Focusing on the increase in the number of older people alone is therefore not enough to understand the challenges that population aging presents for a society. It is obvious, for instance, that in the social realm changes in fertility patterns, family size and structure have implications for aging societies. Similarly, the economic environment is an indicator of the capacity of the society to provide the necessary resources to support its elders and sustain their wellbeing. The economic environment also influences the amount and quality of social protection that the country can afford its older citizens.

This chapter examines the context within which population aging is occurring in Jamaica. The first section gives a broad overview of the macroeconomic context beginning with a synopsis of World Systems theory which provides the backdrop. The macroeconomic environment influences the economic resources available to the elderly in terms of retirement and pension incomes, and earnings from their involvement in the labor force (ECLAC 2000). These can reduce or increase the likelihood of social vulnerability in later life. The macroeconomic environment also conditions the types of policies that can be pursued to enable the elderly to experience healthy, satisfying and productive lives. The second section focuses on the social policy context, with emphasis on social security and healthcare provisions. These are the main vehicles for the enhancement of the health and welfare of older adults. In presenting the context of aging

in Jamaica, this chapter provides the background against which the social vulnerability in old age can be understood and ultimately addressed.

The Macroeconomic Context

World Systems Framework

The structure and performance of the Jamaican political economy can be appropriately analyzed within the world systems perspective which is characterized by interdependence and inequality. World systems theory makes it clear that a nation-state's economy is part of a world system, and so its performance is subject to several worldwide processes (Roberts and Hite 2000). Integral to a nation-state's development is its position in the three-tiered world system. Countries with initial advantages such as those in the core are able to develop greater advantages later, while peripheral countries, like Jamaica, occupy weak and dependent positions (Ritzer and Goodman 2004).

The position of peripheral regions is largely the result of the way they have been incorporated into the world economic system as producers of raw material and cheap labor. Once there is a difference in the strength of the nation-states, then there is unequal exchange. So even though both regions might develop, peripheral countries continue to lag behind core countries. These are by no means new theories, but contemporary World Systems theorists have been using recent data to test and refine the hypotheses.

There is general agreement that the world system experienced high economic growth between 1950 and 1972, but that since the mid 1990s growth has slowed and inequality has increased. In fact, inequality has been growing since the early 1970s. This is a matter of import as the level of global interconnectedness makes it difficult or even

impossible to prevent the global from affecting the national. Bergensen and Bata (2002) suggest that inequalities between core and non-core countries and national inequalities may not be independent. In other words, when the gap between core and non-core countries widens, so does the gap between people within countries (Bergensen and Bata 2002).

The structural perspective of the world system helps to explain the halting development of Jamaica. As Bornschier (2002) argues, peripheral countries have been increasingly marginalized as their role in world production has lost importance, a fact that is borne out by their decreasing share of world trade. World Systems theory also helps us to understand the national situation since the core-periphery hierarchy is replicated within countries. In less developed countries like Jamaica, especially post-colonial states, the primate city dominates the national economy and society. Most development tends to be concentrated in this main city, while other towns and cities are satellites, dependent on it for their own growth and development. The way in which these satellite areas are incorporated into the national economy is also similar to the way it occurs at the world system level.

The Economy

In 2002, Jamaica was classified as a middle income country with a GDP per capita of \$2800 in constant US prices, and a national poverty line of 18.7 percent (PIOJ 2005). Like many small developing countries, the Jamaican economy is characterized by a narrow production base and external openness. The combination of external trade dependence and lack of export diversification makes the economy extremely vulnerable

to external shocks (Escaith 2001). Heavy dependence on external trade, which has its structural roots in the colonial period, has been considered a constraint to economic development (Beckford 1988). The economy is also vulnerable to natural disasters which are serious obstacles to economic development (ECLAC 2006). In 2005, for instance, the economy suffered severe losses as a result of two hurricanes and one tropical storm (PIOJ 2006).

The post-colonial Jamaican economy has undergone many changes in structure and performance. During the 1960s, the major sectors of the economy were agriculture, bauxite mining and manufacturing, mainly the processing of local agricultural products, including sugar (World Bank 1952). Based on Lewis' (1966) model of development with unlimited supplies of labor, the country embarked on a period of industrialization in the 1960s. Underpinning the industrialization movement was the ideology of developing the industrial sector to pull surplus labor from the land since it was felt that agriculture was unable to support the economy (Lewis 1966; Payne and Sutton 2001). The strategy, described as "industrialization by invitation", aimed to attract foreign businesses by providing them with various tax incentives with the hope that the economy would be transformed in the short term. The long term expectation was for the development of local entrepreneurs to succeed foreign investors in the long-run (Levitt and Best 1975). In theory, the industrialization strategy should have diversified the economic base of the country which had up to that point been heavily dependent on two crops, sugar and bananas. Despite its promise, the strategy as pursued did not effectively restructure the economy (Payne and Sutton 2001; Marshall 1998).

Since the 1980s, the structure of the economy has shifted from goods to services as the agricultural and manufacturing sectors have declined while tourism and financial services have expanded (PIOJ 2005). The result is that the leading sectors of the economy are now services including tourism, bauxite and alumina, agriculture and manufacturing, in that order. The changes in the structure of the economy are very obvious when account is taken of the facts. In 1950, agriculture contributed 30 percent of the country's GDP. By 2004 agriculture was contributing 5.7 percent of GDP while tourism was the leading productive sector contributing 9.0 percent of GDP at a value of US\$ 1436.6 million compared to US\$ 147.03 million for agriculture (PIOJ 2005). Despite the decline, agriculture remains one of the leading sectors of the economy, especially in the area of non-traditional exports, and sugar production is also still a major foreign exchange earner and employer.

One of the outstanding features of the economy is the existence of a large and growing informal sector which has been broadly linked to restructuring of the global economy and contractions in the formal economy at the local level (Inter-American Development Bank 2006). In 1997, it was estimated that the informal sector accounted for 35 percent of the country's GDP and employed 27 percent of the labor force (Miller-Stennett 2002). By this account, the contribution of the informal sector to GDP had increased threefold, moving from 12.9 percent of GDP in 1991 (Blavy 2006). Most (60 percent) of the workers in the informal economy are involved in petty trading, retail distribution and agriculture (Inter-American Development Bank 2006).

The phenomenal growth of the informal sector during the last three decades or so has been linked to low levels of economic growth, economic restructuring and

contraction of the formal economy. Together these factors displace workers, and intensify globalization processes putting pressure on low-skilled workers (Carr and Jenn 2002). Substantial rural-urban migration has also helped to fuel the growth of the informal economy which has less prohibitive entry requirements (Becker 2004).

Typically, workers in the informal sector have no access to certain benefits and legal protection offered in the formal economy. Most, for instance, are not eligible for social security benefits, pensions or other forms of social protection (United Nations 2005a). While not all workers in the informal economy receive low incomes, most low income workers are in the informal economy (United Nations 2005a). The fact that more women work in the informal sector, and a high proportion of Caribbean women work in agriculture which is one of the main areas for informal economic activity, strengthens the link between women and poverty, and highlights the prevalence of rural poverty.

In recent years, remittances from abroad have become an important part of the economy and a major source of foreign exchange. Over the period 1990 to 2001, private remittances increased by more than 700 percent from US\$ 136 million to US\$ 967 million (Thomas-Hope 2004). These flows accounted for 10.3 percent of Gross Domestic Product (GDP) and 45 percent of exports and exceeded official development assistance. In 2005, Jamaica had the highest per capita remittances (US\$ 621) in Latin America and the Caribbean (ECLAC 2007b). At the household level, remittances are a key source of income as one-quarter of all Jamaican households receives some remittances. For those households that do, remittances represent more than three-quarters of total income (Kim 2007). This pattern of remittances is replicated at the local level as urban residents also remit cash to their relatives in the rural areas (Witter 2004).

Economic Performance

A cursory reading of the current economic situation might lead to the conclusion that there has been no economic improvement since 1978, since per capita incomes for 2001 are the same as they were in 1978. Indeed, it might even be concluded that the situation has deteriorated as per capita income for 2001 was lower than what it was in 1970 (Thomas 2004). However, a review of the country's post-independence economic performance reveals that the economic fortunes of the country have fluctuated over the period. During the 1960s and early 1970s, the economy enjoyed strong economic growth at rates of 2-8 percent fuelled by the bauxite and alumina industries and low inflation. This pattern changed after the 1973-1974 oil shock which led to fluctuating commodity prices and negative rates of growth between 1974 and 1980 (Naranjo and Osambalo 2004). Under the direction of the International Monetary Fund and World Bank, the country began a structural adjustment program in 1980 in order to stabilize the economy. The ultimate aim of the program was macroeconomic and structural reform to increase the international competitiveness of the economy and thus enhance economic growth.

With the structural adjustment program of the 1980s, the economy became more deeply integrated into the global economy. The economy revived and experienced GDP growth rates reaching up to 7.8 percent in the latter part of the 1980s, as the apparel industry expanded phenomenally, to become one of the economy's leading sectors. However, inflation rates fluctuated widely during this period, peaking at 31.2 percent in 1984, and the exchange rate experienced significant devaluations and depreciations (Downes 2004). The 1980s also saw the large-scale decline of the agricultural sector and the expansion of the services sector led by tourism.

Since the 1980s, the economy has experienced sporadic growth, related, in part to contemporary globalization. In the latter half of the decade, the economy grew by five percent annually as a result of the liberalization strategies that were pursued, along with the growth in tourism and the decline in world oil prices (Witter 2004). The 1990s, however, were marked by stagnant economic growth and high inflation which reached a high of 80 percent in 1991 (Naranjo and Osambela 2004). In this decade, exports from the apparel industry which had been a high growth sector declined dramatically with the diversion of trade to Mexico in search of cheaper labor and lower operational costs (Boodhoo 2002; Ramesar 2002). By 2005, the sector had almost collapsed, having suffered an 83 percent decline over 2004, with earnings declining from US\$213.4 million to US\$ 37.8 million (PIOJ 2006). The financial sector also went into crisis and this negatively affected the economy and helped to fuel external debt accumulation (Artana and Navajas 2004). Overall, real GDP growth for most of the 1990s was 0.3 percent with negative growth for the latter part of the decade (Thomas 2004). Following years of negative or no growth, the economy started growing again in 2000, registering a 1.5 percent increase in 2002. Inflation also fell in that year but started rising again and almost doubled between 2002 and 2003 before declining in 2004 and 2005 (PIOJ 2006).

While recent economic performance has improved, the country has a high debt stock. Jamaica began the new millennium with a debt stock more than twice what it was in the 1980s. At the end of 2005, the external debt was US\$5.4 billion or 42 percent of total debt. Equally important is the domestic debt which now stands at 144 percent of GDP (PIOJ 2005). The impact of the national debt is best understood in terms of its relationship to GDP. In 2003, debt as a portion of GDP was 56.5 percent and 123.7

percent of exports. Interest payments on foreign debt alone consume roughly 16 percent of GDP. Overall, the country spends 62 percent of its budget on debt servicing, which means that very little is left for everything else. As pointed out by Downes (2004), the high level of debt diverts resources from productive activity and the provision of essential services to the servicing of debt.

In assessing the performance of the economy, it is also important to look at poverty and inflation rates. After peaking at 80 percent in 1991, the annual inflation rate declined significantly, especially after 1996, when the rate hit single digit figures. However, since 2001, the rate has started to climb again, currently standing at about 15 percent (Naranjo and Osambalo 2004; Zahler 2004; PIOJ 2005). In what is considered paradoxical, poverty rates fell from 45 percent to 16 percent in the 1990s, leading some to theorize a relationship between poverty on the one hand, and the very pervasive informal sector and high level of remittances from abroad on the other (Kim 2007; Artana and Navajas 2004; Witter 2004).

Trends in employment are also important. The Jamaican economy is characterized by chronic unemployment which has been around 16 percent since 1990, falling from a high of 26.8 percent in 1980 (Downes 2004). Generally, unemployment rates are highest in the 20-24 age group. There are also gender differences in unemployment as females are two and one half times more likely to be unemployed as males (Witter 2004). Female long-term (over one year) unemployment rates also show a similar trend, being two to three times that of males (ECLAC 2006). This situation is leading analysts to hypothesize that the high level of foreign remittances is having a negative impact on labor force participation rates (Kim 2007; Bussolo and Medvedez

2007). Ultimately, economic trends such as high rates of unemployment and poverty threaten the wellbeing of the elderly directly by reducing their opportunities for work and also by putting pressure on the informal support system based on the family and kin networks (ECLAC 2003; Aboderin 2006).

Social Policy Context

Human Development

It is now generally accepted that development cannot be narrowly equated with economic growth and progress as measured by GDP and GNP. The Human Development Index therefore moves away from a reliance on these measures, using instead health, education and income as key indicators of the social progress and welfare of nations. Currently Jamaica is ranked 98 out of 177 countries on the Human Development Index, and 21 out of 103 on the Human Poverty Index, placing the country in the medium human development category (UNDP 2005). This indicates that the country has made significant strides in addressing the most basic requirements for human development: health, education and income. Questions remain, however, about the sustainability of these achievements in the absence of stable growth, with some suggestion that the lack of sustained economic growth could reverse the gains that have been made in the area of human development over the years (Bloom et al 2001).

In the area of education, Jamaica has almost achieved universal primary education and 80 percent enrollment in upper secondary education (Handa 2004). On the other hand, unemployment and inequality remain major obstacles to reducing poverty and achieving income security for the majority of the population. In Thomas' (2004) view,

poverty is at the core of Jamaica's social problems and is exaggerated, juxtaposed as it is against high levels of affluence. However, other indications are that income inequality in Jamaica is among the lowest in the region (Gini coefficient⁴ 0.46). While still high at 14.3 percent, poverty rates have declined steadily since 2002, although the poverty rate in the rural areas was twice that in the Kingston Metropolitan Area. Roughly 65.7 percent of those registered as poor lived in rural areas (Planning Institute of Jamaica 2007). Furthermore, not all groups in the society have benefited from the reduction in poverty. Poverty is still high among rural residents and large households, and households whose heads are employed in agriculture and have no more than primary education (Handa 2004). Even nine years of formal schooling, to the grade nine level, does not significantly reduce the risk of falling into poverty, as household heads who had completed the second cycle of secondary education (to grade eleven) and even advanced levels experienced increased poverty rates in 1991 (Handa 2004). These findings indicate low return on schooling even at higher levels, questioning the adequacy of universal primary education to meaningfully address poverty.

In 2000, the World Health Organization ranked Jamaica eighth out of 191 countries on the efficiency of its health system, as measured by the ratio of the achievement of the system to the per capita levels of health expenditure. In other words, the health system has achieved a high level of population health in terms of the expectation of life lived in full health, or disability adjusted life expectancy (DALE), given the amount of money spent on the sector (WHO 2000). The health system also

⁴ The Gini Coefficient is a measure of inequality. It varies between 0, which reflects complete equality and 1, which indicates complete inequality

exhibits pro-poor characteristics, in that government spends more on the poorest quintile than it does on the richest quintile (Suárez-Berenguela 2000).

The next section discusses two of the major public policy issues of concern associated with population aging: retirement and pension incomes and access to healthcare.

Social Protection Provisions for the Elderly

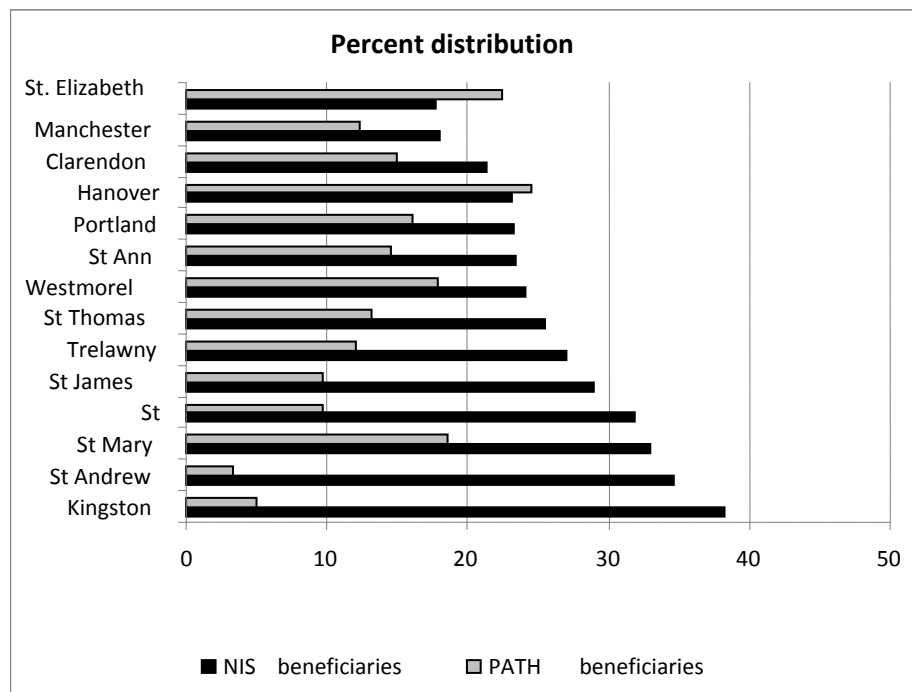
Jamaica has a moderate social security scheme the main feature of which is the National Insurance Scheme (NIS), a publicly financed and managed pay-as-you-go pension system. The National Insurance Scheme, became effective in 1966 and was designed to benefit workers in the formal sector and government employees (ECLAC 2006). As a compulsory program, the NIS covers all employed and self-employed persons as well as voluntary contributors. Under the scheme, full benefits become payable at age 60 for women and age 65 for men, but reduced pensions are payable for contributions below the specified number (ISSA 2004). The system does not allow for early pension, although deferral is possible. Benefits for the elderly include a weekly payment based on the number of contributions and a fixed weekly spouse's supplement for a dependent wife or a disabled husband. The elderly may also qualify for a disability benefit and a survivor pension (ISSA 2004). Some older persons are also in receipt of benefits through various Occupational Pension Schemes and Approved Retirement Schemes. Irvine and Lyn (2007) estimated that only about seven percent of private sector workers are covered under these pension schemes and an additional 18 percent under government programs for the public sector.

In addition to the contributory social insurance system, there is a means-tested social assistance program which targets several categories of poor and vulnerable persons, including elderly persons. The benefits are delivered through the Program of Advancement Through Health and Education (PATH) which was implemented in 2002, as a consolidation of the previously existing Poor Relief Outdoor Program, the Food Stamp Program and the Public Assistance Program (PIOJ 2006). Unlike the National Insurance Scheme, PATH is a conditional cash transfer program that requires compliance for continued receipt of benefits. Eligibility for benefits is established with the use of a means test based on indirect measures of household income or expenditure (PIOJ 2006).

Finally, there are categorical transfers which are directed at specific groups, and aimed at redistribution (ECLAC 2006). The elderly may benefit from three public assistance grants administered by the Ministry of Labor and Social Security: Compassionate Grants, Rehabilitation Grants and Emergency Grants. Compassionate Grants, in particular, provide financial assistance to those who are not eligible to benefit from other schemes. These include funeral grants and assistance for poor older persons (PIOJ 2006).

A comparison of the NIS and PATH programs shows important differences (figure 1 and appendix A). There is more than two times more NIS than PATH beneficiaries. However PATH coverage is higher in rural parishes. In part, this is the result of program design which targets specific sub-populations (PIOJ and STATIN 2006). Overall therefore, the NIS remains the main social security program for the Jamaican elderly.

Figure 1: Distribution of NIS and PATH Beneficiaries



Source: For NIS beneficiaries the source is data from the Ministry of Labor and Social Security, National Insurance Division. For PATH beneficiaries: Economic and Social Survey of Jamaica 2005. Chart by author.

^a Data for NIS beneficiaries refer to 2008

^b Data for PATH beneficiaries refer to 2005.

Several observations can be made about the National Insurance Scheme. In the first place, overall coverage is low. Despite the compulsory nature of the NIS, the majority of older persons do not qualify for NIS pensions. Less than one-third of older persons are in receipt of NIS pensions and most of them are women (60 percent). Nevertheless, for a significant number of older persons the NIS pension is the only source of income (National Council for Senior Citizens 2003). A comparative analysis shows a very wide gap in coverage indicating that there are other sources of support or that a large percent of the elderly population is experiencing difficulty in filling their needs (table 5).

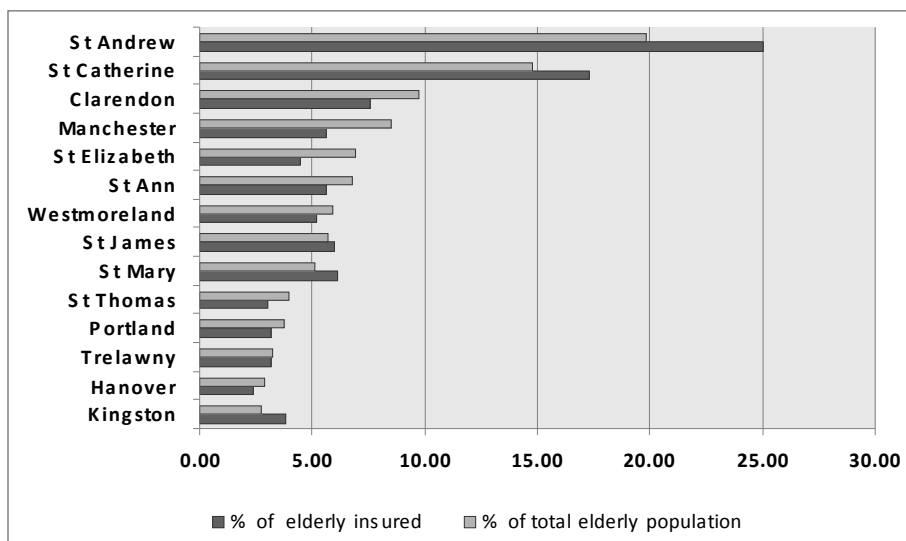
Table 5: National Insurance Pension Coverage of the Jamaican Elderly, 2008

AGE GROUP	PERCENT OF ELDERLY POPULATION	PERCENT RECEIVING PENSION
60-74	66.9	13.9
75-84	23.8	9.5
85+	9.2	3.79

Source: Calculations based on data provided by the Ministry of Labor and Social Security, National Insurance Division.

A second observation is that coverage is higher in urban parishes. When the analysis is done by parish, there is a clear urban bias with one exception. St. Mary which is largely rural has coverage rates similar to those of the Kingston Metropolitan Area and this can be explained in terms of the dominance of plantation banana production in the parish (figure 2).

Figure 2: Distribution of Elderly Population and NIS Pensioners



Source: Calculations based on data from the Ministry of Labor and Social Security, National Insurance Division and census 2001 data. Chart by author.

Notes: Data for percent of elderly insured are for 2001. Data for percent of elderly insured are for 2008.

As figure 2 shows, in only four parishes does the percentage of NIS beneficiaries exceed the percentage of elderly in the parish population. Overall, the parish insurance figures replicate the national pattern with less than one-third coverage on average (table 6).

Table 6: National Insurance Coverage by Parish and Sex, 2008

PARISH	PERCENT MALE	PERCENT FEMALE	PERCENT COVERAGE
Kingston	37.8	62.2	38
St Andrew	33.5	66.5	34
St Thomas	43.2	56.8	25
Portland	39	61	23
St Mary	39.4	60.6	33
St Ann	41.3	58.7	23
Trelawny	42.5	57.5	27
St James	36.8	63.2	29
Hanover	37.9	62.1	23
Westmoreland	44.7	55.3	24
St Elizabeth	44.6	55.4	17
Manchester	41.2	58.8	18
Clarendon	45.2	54.8	21
St Catherine	40.7	59.3	32
Jamaica	39.3	60.7	27.2

Source: Calculations based on data provided by the Ministry of Labor and Social Security, National Insurance Division.

A third observation with regard to the NIS is the noticeable gender bias in coverage: females are more likely to be beneficiaries than males. This pattern is the reverse of what has been observed in other areas where pension systems generally tend to favor men (ECLAC 2006). This anomaly could be reflective of the low marriage rates and high rates of female headship in Jamaica, both of which have a long tradition. In 2001, roughly 47.5 percent of households were headed by females, and these households

were more prevalent in urban areas (PIOJ and STATIN 2006). It could also be related to the types of jobs in which women are employed, in which case it would indicate higher rates of formal sector employment among women than men for which there is anecdotal evidence. The combination of lower coverage and higher age eligibility could be construed as a disadvantage for men. However, higher coverage on the national pension does not necessarily mean that women are better off than men overall, since this analysis does not include occupational and private pensions which might favor men. It could also be argued that the lower age requirements for female access to NIS benefits actually shortens the working lives of women by five years, thus reducing their benefits.

The most critical issues surrounding social security for the elderly are those of coverage and adequacy. In the main, the majority of elderly persons has access only to the state pension, and still most do not receive this benefit. Even where the pension is available, it is for the most part inadequate. Also, the PATH program which is the centerpiece of the social safety net program raises some concerns. First, because the program is means-tested, it discriminates against elderly persons who had acquired consumer goods while they were working which make them ineligible although many of them are income-poor. A second concern is that National Insurance Scheme pensioners are not eligible to receive benefits under PATH even though many would benefit from additional support (NCSC 2003).

There are also occupational and age differences in access to pensions in old age. Generally older, unskilled workers and those in insecure and informal occupation groups have less access. The National Insurance Scheme assumes steady employment in the formal sector over a sustained period. However, the structure of the labor market makes

it almost impossible for some groups to qualify. In particular, the very large informal sector which was estimated to involve more than half of the labor force in 2001 excludes a significant proportion of workers from participating (IADB 2006). The very old (85+) are also disadvantaged in terms of pensions in that the National Insurance Scheme was launched in the 1960s, which would mean they have reduced contributions and benefits. Persons in this age cohort are two and one-half times less likely to receive a National Insurance Scheme pension than the young old. Generally, those persons who do qualify for National Insurance Scheme pensions are more likely to have been workers in the formal sector, in particular the public sector and large private firms and so they usually receive occupational or private pensions as well. The elderly poor on the other hand are eligible for the means-tested social assistance program, PATH which is meant to alleviate poverty and is unlikely to provide adequate benefits.

Access to Healthcare

Healthcare in Jamaica is provided through a network of public and private facilities, including twenty-four public hospitals, six of which are specialist hospitals, and a teaching hospital at the University of the West Indies. Additionally, there are six private hospitals and 348 primary healthcare clinics (PIOJ 2006) (appendix B1 to B2). The facilities are classified according to the level and type of services that they provide. At the bottom of the hierarchy are health centers. Type C facilities are community hospitals which provide general medical care but are not equipped to deal with emergency cases. Type B facilities are described as general secondary hospitals providing at least four major specialties: surgery, obstetrics and gynecology, internal medicine and pediatrics.

Type A facilities have established departments and provide all the services (Wint 2002).

Two observations are worth noting. First, the spatial distribution of these health care facilities demonstrate the advantage of urban dwelling as pointed out before. Two of the three Type A facilities and four of the six private hospitals in the country are located in the KMA. All six specialist hospitals are also located in the KMA. The second observation is that there is no geriatric specialization, indicating that population aging has not yet become a planning issue for the country.

Overall, there are 1.7 hospital beds per 1000 population compared to 2.6 in Brazil and 3.2 in the US (PAHO 2007). In 2001, the network was serviced by 2000 registered physicians, one-quarter of whom were employed to the public sector. Public facilities are used primarily for preventive healthcare, while private facilities are used for ambulatory care (PAHO 2002). In other words, medical conditions that require hospitalization are most often treated in public hospitals, while conditions not requiring admission tend to be treated in private hospitals. However, in 2001 most healthcare seekers, whether for ambulatory care or for the purchase of medication choose the private sector (54.8 percent) compared to 38.7 percent for the public sector. Among the poorest quintile, 61 percent sought healthcare in the public sector, while 60.8 percent purchased medication at private pharmacies (PIOJ 2002).

Jamaica has a national health services system with the government playing a major role in the provision of healthcare. For the financial year 2002/2003, the health sector received 4.8 percent of the total budget compared to 13.7 percent in the US (Lewis 2005; WHO 2000). In that year the contributions of private and public expenditure on health were roughly equal compared to Brazil, where the proportion was 66 percent

private, and 70 percent for developed countries, except the US which was 56.5 percent (Suárez-Berenguela 2000; WHO 2000). The country has a national formulary, a vital, essential and necessary drug list, which ensures the availability of medications for the most prevalent illnesses in the country. A government-owned company, the Health Corporation Limited, is responsible for procurement, warehousing and distribution of pharmaceuticals and other medical supplies on behalf of the government (Barrett and Lalta 2004).

Since 1997, the government has been pursuing health sector reform. The centerpiece of this reform is the decentralization of health services which started with the development of Regional Health Authorities (PAHO 2002). As a result of these changes, user fees for public hospitals were increased in 2005. At the same time government allocation to the health sector was reduced (PIOJ 2006). The implications of these changes for the health status of the poor are great since already those in the lowest quintiles have the lowest health care utilization. Further, results from the Survey of Living Conditions (PIOJ 2006) show that a significant proportion of persons who were ill reported that they did not seek medical care because they could not afford to. Rural residents accounted for 23.8 percent of those who fell in this category. The poorest were also more likely to be adversely affected as 40.9 percent of persons in the poorest quintiles reported that they could not afford to seek health care, compared to only 4.9 percent in the richest quintile. Males were also more likely to indicate that they could not afford healthcare compared to females (PIOJ 2006). In the end, increasing health care costs have the potential to negatively affect health status overall and further disadvantage the poor and vulnerable, raising concern that changes in the health services sector could

work to lower the level of human development that the country has achieved over the years.

Access to healthcare is strongly related to health insurance coverage. In 2000, only an estimated 12 percent of the Jamaican population had private health insurance coverage and this was strongly related to labor market status. Coverage was almost non-existent for the poorest quintile (0.4 percent), and persons aged 60 and over (4.6 percent). The percentage seeking healthcare was lowest among the poorest quintile (55.9 percent), compared to 70 percent or more among quintiles 3, 4 and 5 (PIOJ 2002). Area of residence was also important as health insurance coverage was highest (21 percent) in the Kingston Metropolitan Area, compared with 13 percent in other towns and 6.5 percent in rural areas. For the rest of the population without health insurance, healthcare is provided at minimal cost through the public system (PIOJ 2001). Use of healthcare services was also highest in the Kingston Metropolitan Area (77.4 percent).

Special programs for the elderly include the Jamaica Drugs for the Elderly Program (JADEP), a state-funded direct benefit program which subsidizes prescription drug costs for elderly Jamaicans suffering from several specified chronic illnesses. The program was initiated by the Ministry of Health in 1996 as part of the Government of Jamaica's overall poverty eradication program. In 2005, there were 110,000 (39 percent) elderly persons enrolled in this program (PIOJ 2006). The National Insurance Scheme has also introduced a health insurance benefit for pensioners since 2004. In 2005 there were 48,543 pensioners in receipt of this benefit representing 18.3 percent of the elderly population (PIOJ 2005).

The government of Jamaica is ultimately working towards a National Health Insurance Plan which will provide universal coverage to all Jamaicans. This plan aims to ensure a more equitable healthcare system by providing a basic basket of healthcare services, tests and drugs. In 2003 the first phase of this plan was launched with the development of the National Health Fund which provides financial support to the national healthcare system. The support includes assisting individuals to pay for prescriptions, supporting primary care activities, and helping to fund private and public healthcare projects (Barrett and Lalta 2004).

According to the WHO's (2000) assessment of health systems performance in 2000, the Jamaican health system is performing reasonably well (table 7). The assessments are based on what the system achieves with the resources that are available. In 2000, the Jamaican health system ranked 53rd out of 191 countries, which put it on the 72nd percentile compared to the US which ranked 37th. The health system also performs very well on the health level disability-adjusted life expectancy, better than 95 percent of all health systems assessed by the WHO. However, system performance has been weak in the area of responsiveness as the table shows. This measure assesses the performance of the health system on a number of indicators including prompt attention, respect, and client orientation.

Table 7: Health System Performance for Jamaica and the US, 2000

<i>MEASURES</i>	<i>JAMAICA</i>	<i>US ;.</i>
Overall system performance	53	37
Overall health system attainment	69	15
Health level DALE ^a	8	72
DALE at age 60		
Male	18.9	18.2
Female	15.0	18.4
Responsiveness of system	105-107	1

Source: WHO 2000

Notes: ^a DALE refers to disease-adjusted life expectancy which is the expectation of life in full health

Conclusion

Population aging is taking place in Jamaica against a background of high poverty rates, limited social security coverage, high unemployment rates and overall weak economic performance. All of these have implications for the well-being of the elderly.

Although the country has a fairly good human development rating, economic volatility threatens the continued maintenance of the informal system of social support as high rates of poverty and unemployment among youth reduce the ability of younger generations to acquire enough resources to support older generations. The pressures of global economic restructuring also fuel the growth of the informal sector with its high levels of insecurity. At the local level, the restructuring of the economy in order to remain globally competitive, inhibits the development of an adequate, universal and equitable system of social security to support older adults where the family network is not able to meet this need. Overall, the chapter indicates that the broad context in which

population aging is taking place in Jamaica is being structured by a complex interplay of local and global factors. While the present situation is not formidable, it is unfavorable, and presents a growing challenge at the individual as well as the societal level.

CHAPTER VI

THE STATUS OF AGING AND THE AGED IN JAMAICA

The Jamaican population is aging at a moderate to rapid pace. Like many other less developed countries, Jamaica is in the phase of the demographic transition where the proportions of younger persons in the population are declining as a result of reduced fertility, and the proportion of older persons is increasing but at a rate slower than the youth population is decreasing. During this transitional period commonly described as a “demographic bonus”, the number of working adults is growing faster than the number of children and elderly in the society providing an opportunity for the development and adjustment, where necessary, of policies and programs to meet the needs of an elderly population (Kaneda 2004). For Jamaica, this favorable period is projected to last until 2025, after which the demographic momentum⁵ will begin (Marcoux 2001). By this time, it is estimated that there will be one elderly person to two children under 15 years old (PAHO 2004). It is this changing balance between the young and the elderly that makes vulnerability an issue of concern.

This chapter analyzes the structure, patterns and trends of population aging as it is occurring in Jamaica. In the first section the growth of the elderly population is charted and the structure analyzed. The distribution of the elderly population is also discussed along with the significance of internal migration in creating the current patterns. The

⁵ Sustained population growth despite reduced fertility due to the large proportion of the population entering their reproductive years.

chapter also investigates commonly used population aging indicators and their implications for Jamaica.

Aging Patterns and Trends

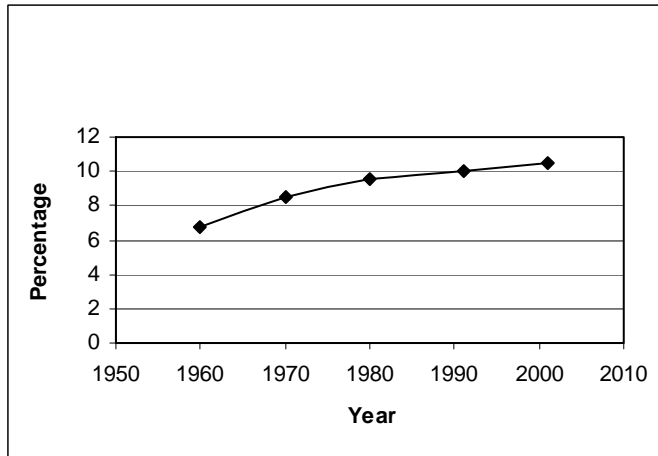
Structure and Growth of Elderly Population

In 2001, there were 264,776 elderly persons in Jamaica representing 10.5 percent of the population. Population aging has been steadily occurring since the 1960s when the elderly constituted just about 5.8 percent of the total population (figure 3). With ten percent of its population 60 years old or more, the country is now classified as an aged society (Gavrilov and Heuveline 2003). Additionally, the growth of the older population is projected to accelerate, as the country experiences one of the fastest rates of aging in the hemisphere (PAHO 2004). Indeed, Kinsella (1992) suggests that rapid population ageing in Jamaica has so far been averted by emigration which has worked to reduce the cohorts reaching old age.

While total population growth has been below one percent since the late 1990s, both the elderly (60+) and the dependent elderly (65+) populations are growing at a faster rate (1.5 percent and 1.2 percent respectively). In fact, the 75+ age group is the fastest growing section of the total population (PIOJ 2006). At this rate, the elderly population is projected to constitute 14.5 percent of the total population by 2025, with a dramatic rise in the median age from 24.3 to a projected 32.7 (UN 2002). As Kinsella (1992) points out however, while the elderly share of the population is expected to remain relatively stable for several years, the absolute number of elders is increasing rapidly. Over the twenty-year period 1982 to 2001, the elderly as a percentage of the population

only increased from 9.96 percent to 10.15 percent. Paying attention to this change alone is misleading however, as it obscures the fact that the actual number of elderly persons increased by 55,865 over the period, an increase of twenty-six per cent.

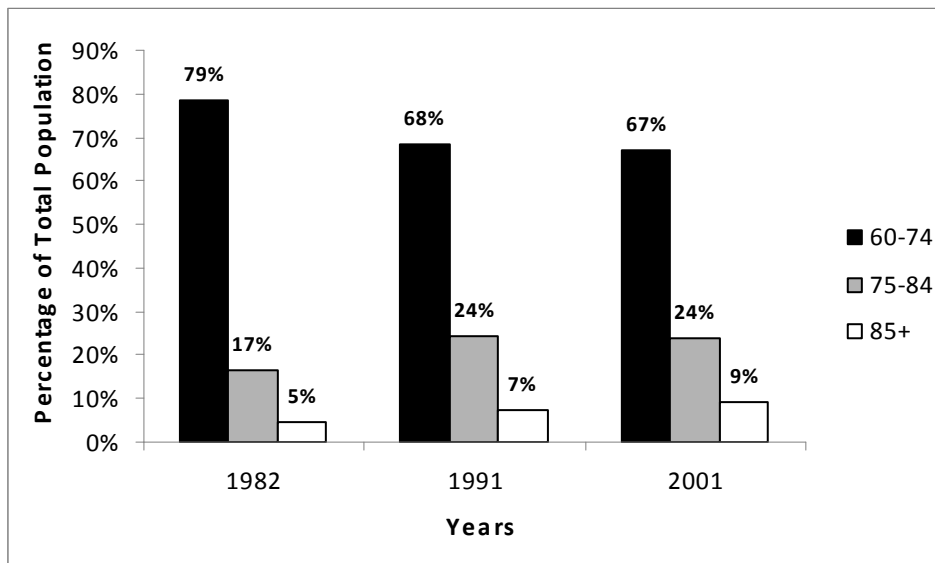
Figure 3: Growth of the Jamaican Elderly Population, 1960-2000



Source: Calculations based on census data for 1960, 1970, 1980, 1990, 2001. Graph by author.

Examination of the age profile of the elderly population shows that the young-old (60-74) constitute the largest share followed by the old (75-84). The oldest-old (85+) is the smallest age group. Further analysis shows noticeable changes since the 1982 census (figure 4). While the young old proportion of the population has been decreasing, the share of the oldest old has been increasing and in fact the size of this population segment has almost doubled over the period.

Figure 4: Age Profile of the Elderly Jamaican Population, 1982, 1991, and 2001



Source: Calculations based on census data for 1982, 1991, and 2001. Chart by author.

Population aging in Jamaica is driven by reductions in fertility and mortality. Since the 1950s, total fertility rates have declined by 42 percent, moving from 4.2 to 2.4 in 2005 (UN 2002). This has the effect of increasing the proportion of the population that is elderly (Weeks 2002). Mortality rates have also declined as indicated by the data, which show dramatic decreases in age specific death rates⁶ between 1960 and 2002/2004 (table 8). For example, whereas there were 48 deaths per thousand in the 70-74 age cohort in 1960, that figure declined to 31 in 2002/2004.

⁶ The number of deaths in a year of people in a particular age group divided by the average number of people in that age group in the population (Weeks 2000:184)

Table 8: Age Specific Death Rates, 1960 and 2002-2004

<i>AGE GROUP</i>	<i>1960^A</i>	<i>2002-2004^B</i>	<i>PERCENT DECREASE</i>
60-64	24.87	14.08	56
65-69	32.45	19.75	60.70
70-74	47.75	30.94	64.79
75-79	62.67	44.59	71.15
80-84	110.80	71.47	64.50
85-89	162.42	96.99	59.71
90+	260.03	176.18	67.75

Sources: ^a Data for 1960 from Registrar General's Report 1960; ^b Data for 2002-2004 from Demographic Statistics 2005

Notes: Column data refers to number of deaths per thousand.

There are also improved survival rates⁷ as marked by changes in life expectancy at birth, which increased from 58.5 years in the 1950s to 75.7 years in the period 2000-2005 (UN 2002) (table 9). Ninety percent of males born in 2002 are expected survive to age 60-64, compared with 68 percent in 1960. The rates for females are higher at 93 and 75 percent, respectively. Not only has life expectancy at birth increased, but so has life expectancy at age 60, which is now 21 years (STATIN 2006). This reduction in mortality rates has lengthened life bringing substantial changes to the structure of the society with implications for many social institutions, including the family.

⁷ The proportion of newborns in a given year who would be expected to survive at age X if current mortality trends were to continue for at least the next X years (United Nations 2002:42).

Table 9: Survival Rates at Selected Age Thresholds, 1959-1961 and 2002-2004

<i>AGE</i>	<i>1959-61^A</i>		<i>2002-2004^B</i>	
	<i>MALE</i>	<i>FEMALES</i>	<i>MALES</i>	<i>FEMALES</i>
60	68.99	74.84	90.61	93.24
75	36.34	47.24	71.57	78.51
85	11.85	19.07	44.35	47.37

Sources: ^a Data for 1959-1961 are from Registrar General's Report 1960; ^b Data for 2002-2004 are from Demographic Statistics 2005

Notes: Figures refer to percent of population that would survive to a given age.

Indicators of Population Aging

Apart from the absolute number of elderly persons, the simplest and most direct way of summarizing the age distribution of a population is the percentage classified as old. The elderly as a proportion of parish populations varies from a high of 12.5 % in the parishes of Portland and St. Elizabeth to a low of 7.6% in Kingston (table 10 and appendix C). St. Elizabeth also has the highest median age while Clarendon has the lowest. Further analysis shows that although St. Elizabeth has the oldest population overall, it is Hanover which has the highest concentration of older persons over 85 years, followed by Portland. Overall though, Jamaica is still a demographically young country since half of its population is below 24.32 years.

Notwithstanding, the overall youthful nature of the population, aging is an issue of current concern and one that will become increasingly important in the future as indicated by a number of aging indicators including the aging index⁸. Generally the

⁸ The aging index is the number of persons 60 years old or older per hundred persons under 15 years old.

aging index increases as the population ages, indicating the change in the balance between children and the elderly over time.

Table 10: Elderly as a Percentage of Parish Population, 2001

<i>PARISH</i>	<i>ELDERLY POPULATION</i>	<i>PERCENTAGE</i>	<i>MEDIAN AGE</i>
Kingston	7313	7.6	22.76
St Andrew	52504	9.4	24.21
St Thomas	10456	11.4	23.35
Portland	10025	12.5	24.21
St Mary	13519	12.1	24.26
St Ann	17914	10.7	23.84
Trelawny	8705	11.9	23.85
St James	15145	8.6	23.75
Hanover	7647	11.4	24.57
Westmoreland	15730	11.3	24.09
St Elizabeth	18378	12.5	25.02
Manchester	22587	12.1	24.66
Clarendon	25685	10.8	22.32
St Catherine	39133	8.1	24.20
JAMAICA	264741	10.1	24.32

Sources: Calculations based on census data for 2001.

In 2001 the national aging index indicated that there were 31 persons over 60 for every 100 persons under the age of 15. This figure represents an increase of almost 100% over the 1950 figure. Based on current patterns, the aging index is projected to double by 2025 (UN 2002). The aging index ranges from a high of 39 in St. Elizabeth to a low of 23 in Kingston. There are also rural-urban differences, indicating that aging is not taking place uniformly across the country (appendix D).

The social and economic impact of population aging is commonly assessed in terms of a number of ratios. The old aged dependency ratio⁹ indicates the level of dependency on the working age population. So, the greater the proportion of persons in the dependent population, the greater is the burden on the working age population. This measure remains a useful indicator of the potential cost of population aging despite criticisms of its assumptions that all the working age population are economically active, and that older persons are inactive and dependent. In 2001, there were 12.8 dependent elderly (65+) for every 100 persons in the working age population (table 11).

Table 11: Jamaica Aging Ratios, 1982, 1991 and 2001

<i>RATIO</i>	<i>1982</i>	<i>1991</i>	<i>2001</i>
Aging Index (AI)	24.8	28.7	31.3
Old Age Dependency Ratio (OADR)	12.6	12.8	12.8
Parent Support Ratio (PASR)	6.5	8.7	10.2
Potential Support Ratio (POSR)	7.9	7.8	7.7

Source: Calculations based on census data for 1982, 1991 & 2001 (analysis by author).

The old age dependency ratio has not changed much since 1982, although the figure almost doubled since 1950 when it was 6.4 (UN 2005). In the main, the explanation for this phenomenon can be found in falling fertility rates which cause the number of working age adults to increase faster than the number of children and elderly (Kaneda 2006). The data indicate that the old age dependency ratio is lowest in the urban

⁹ The old age dependency ratio is the number of persons 65 and over (the dependent elderly) per one hundred persons age 15 to 64 years.

areas and highest in the rural areas reflecting the higher proportion of the working age population in urban areas. Rural areas therefore have a higher burden of support than urban areas (PIOJ 2005). The problem may be particularly significant for Portland which has the highest old age dependency ratio and one of the highest percentages of elderly people of all parishes (appendix D).

Both the potential support ratio¹⁰ and the parent support ratio¹¹ indicate the burden of support of the elderly. More specifically, the potential support ratio indicates the dependency burden on potential workers, so the higher the value the more favorable. In 1950 there were 15.6 persons in the working age population for every elderly person but this declined to 7.7 in 2001 with a projected decline to 3.4 by 2050 (UN 2002). While the potential support ratio is declining, the parent support ratio which measures the availability of caregivers for the elderly is increasing. The parent support ratio measures the 50-64 age group against the oldest old (85+) who are more likely to be in need of assistance and care. Whereas there were 6.5 persons in the 85+age group to every caregiver in 1982, this ratio had increased by 56 percent in 2001. With a parent support ratio of 10.23 Jamaica has reached a ratio similar to that of countries in Europe and more developed regions in Asia (ECLAC 2004a). The parent support ratio is an important measure in developing countries like Jamaica where the bulk of support for the elderly is provided by women about half of whom are household heads and main bread winners (ECLAC 2006). However, while the parent support ratio provides useful information it does not say where this support is located in relation to where the elderly reside. This

¹⁰ The potential support ratio is the number of persons aged 15-64 to every person 65 years and older

¹¹ The parent support ratio is the number of persons 85 and older per one hundred persons 50 to 64 years old

indicator is also dependent on the extent of aging of the oldest old, and so it could actually fall until the younger old enters the oldest old age cohort.

Distribution of the Elderly Population

Gender dimensions. Of the elderly population, 52 percent are female and 48 percent male. Due to their lower mortality at all ages, women exceed men in all categories of the aged (Kinsella and Phillips 2005). On average, Jamaican females outlive their male counterparts by five years (STATIN 2006), and the female advantage in longevity increases with advancing age. So whereas the proportion of males in the elderly population decreases at older ages, the pattern is reversed for females (table 12). Between 1995 and 2005, the annual growth rate of females 65 years and over more than doubled that for males (2.1 percent to 0.9 percent), with even higher growth rates for females 80 years old and over (STATIN 2006).

Table 12: Percentage Distribution of Elderly by Age Category and Sex, 2001

AGE GROUP	60-74 (YOUNG-OLD)	75-84 (OLD-OLD)	85+ (OLDEST-OLD)
Male	48.2	44.36	37.83
Female	51.8	55.64	62.17
TOTAL	100	100	100

Source: Calculations based on census data for 2001 (author's analysis)

The imbalance in the percentage of males and females surviving to old age while often accepted as a given feature of population aging, is neither fixed nor irreversible

(Victor 2005; Kinsella and Phillips 2005). In 2001, the sex ratio¹² of the elderly population was 86.5 compared to 76 in 1960, with a 2.9 percent increase in the years between 1991 and 2001 (STATIN 2006). The sex ratio also varies for different categories of the aged. For instance, whereas there are 93 males for every female in the young old category in 2001, there are only 61 in the category of the oldest old.

Variations exist even at the sub-national level as some parishes¹³, namely the urban parishes have elderly sex ratios below the national figure (table 13). In particular, the parishes of Kingston and St. Andrew which constitute the Kingston Metropolitan Area (KMA) have the largest excess of females over males (STATIN 2003).

Table 13: Elderly Sex Ratios, 2001

<i>PARISH</i>	<i>MALE POPULATION</i>	<i>PERCENT</i>	<i>FEMALE POPULATION</i>	<i>PERCENT</i>	<i>SEX RATIO</i>
Kingston	3103	42	4213	58	73
St Andrew	22304	43	30200	57	73
St Thomas	5022	48	5434	52	92
Portland	4767	48	5258	52	90
St Mary	6564	49	6955	51	94
St Ann	8679	48	9235	52	94
Trelawny	4225	49	4480	51	94
St James	7081	47	8064	53	87
Hanover	3702	48	3945	52	94
Westmoreland	7531	48	8199	52	92
St Elizabeth	8613	47	9765	53	88
Manchester	10791	48	11790	52	91
Clarendon	12437	48	13248	52	94
St Catherine	17968	46	21165	54	85
JAMAICA	122787	46	141951	54	86

Source: Calculations based on census data for 2001.

¹² The number of males per one hundred females in the elderly population (UN 2002: 42).

¹³ Parishes are administrative subdivisions of the country of which there are fourteen in Jamaica

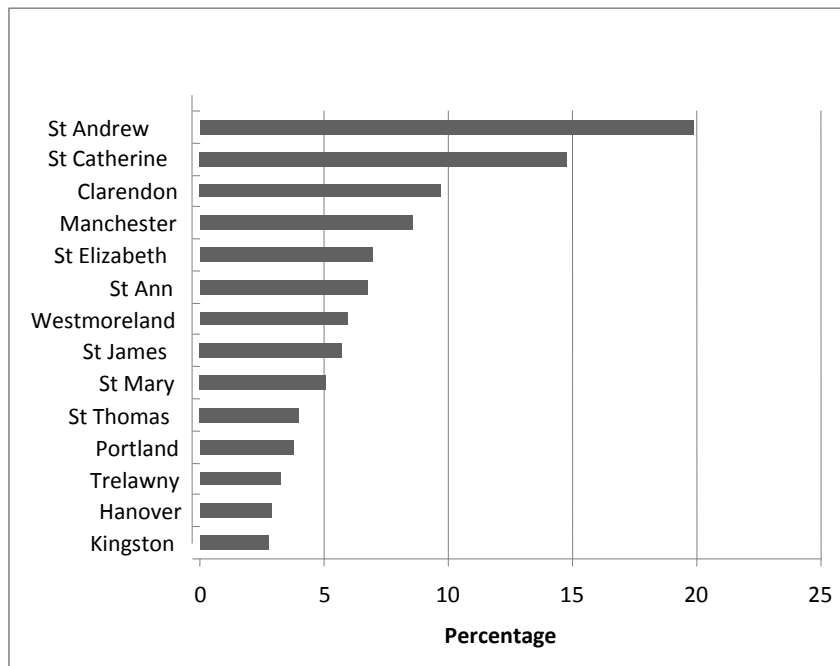
As the sex ratio at older ages increases, the gender gap in longevity is expected to narrow, reflecting the usual pattern of greater gains for men than women (Arber and Ginn 2005; Victor 2005). At least this has been the pattern in developed countries which have lower elderly sex ratios as a result of wider gender differentials in life expectancy at birth. The opposite is expected to happen in less developed countries where the gender gap in life expectancy at birth is relatively smaller, pointing to widening sex ratios in old age (Kinsella and Phillips 2005).

Geographic Distribution. The distribution of the elderly population follows the general population distribution, so the parishes with the largest populations also have the largest concentration of elderly persons. Approximately 43.5 percent of the population of Jamaica lives in the south-eastern parishes of Kingston, St. Andrew and St. Catherine sometimes referred to as the Kingston Metropolitan Region. Analysis of the data indicates that St. Andrew and St. Catherine together account for 35 percent of the elderly population of Jamaica. While St. Andrew has the largest number of elderly persons, Portland and St. Elizabeth have the highest percentages (figure 5 and table 13).

Currently, 46 percent of the elderly population lives in urban areas compared to 52 percent of the total population. However, since more than 70 percent of the residents in nine of the fourteen parishes live in rural areas, the elderly are highly likely to be rural dwellers. Examination of the distribution pattern shows that the parishes with the smallest proportions of elderly are different from those with the greatest proportions in that they are more urban. As shown below, the north-eastern parishes of Portland and St. Mary as well as the south-western parishes of St. Elizabeth and Manchester have the highest

percentages of elderly persons. Only in the parishes that are predominantly urban do the proportions of elderly persons fall below ten percent (table 14 and figure 5).

Figure 5: Distribution of the Elderly Population, 2001



Source: Calculations based on census data for 2001. Chart by author.

The parish of Kingston warrants special mention. Physically the smallest parish, Kingston occupies a prominent position as the national capital, the seat of government, and the main administrative and commercial center of the country. Unlike other parishes, Kingston is completely urban, and would therefore be expected to have a higher standard of living and more advantages than other areas generally, but this is not the case. In the early to mid-twentieth century, Kingston and St. Andrew, referred to as the Kingston Metropolitan Area (KMA), was the major destination for internal migrants and the areas of greatest growth.

Table 14: Urban-Rural Distribution of Elderly Population, 2001

<i>PARISH</i>	<i>ELDERLY POPULATION</i>	<i>URBAN PERCENT</i>	<i>RURAL PERCENT</i>
Kingston	7313	100	0
St Andrew	52504	86.9	13.1
St Thomas	10456	28.2	71.8
Portland	10025	23.4	76.6
St Mary	13519	20.7	79.3
St Ann	17914	26.7	73.3
Trelawny	8705	19.6	80.4
St James	15145	55.1	44.9
Hanover	7647	9.3	90.7
Westmoreland	15730	25.7	74.3
St Elizabeth	18378	14.4	85.6
Manchester	22587	33.5	66.5
Clarendon	25685	30.3	69.7
St Catherine	39133	73.8	26.2
JAMAICA	264741	46	54

Source: Calculations based on census data for 2001.

Due to a confluence of events, the parish of Kingston has been in decline since 1970. Limited space for physical expansion and unregulated, informal development growth, accompanied by increased crime led to the development of New Kingston in the adjoining parish of St. Andrew as the new central business district. This resulted in the gradual depopulation of Kingston as blighting and urban decay set in. In 1970, for instance, Kingston accounted for 6.34 percent of the total population of Jamaica, but this declined to 3.68 percent in 2001. Moreover, Kingston was the only parish that experienced negative population growth (-0.38) between 1991 and 2001 (STATIN 2003 Vol. 1). The early stages of the de-population of Kingston were marked by movement into the adjoining parish of St. Andrew, but as the growth of this parish has slowed, the contiguous parish of St. Catherine has developed to accommodate the overspill

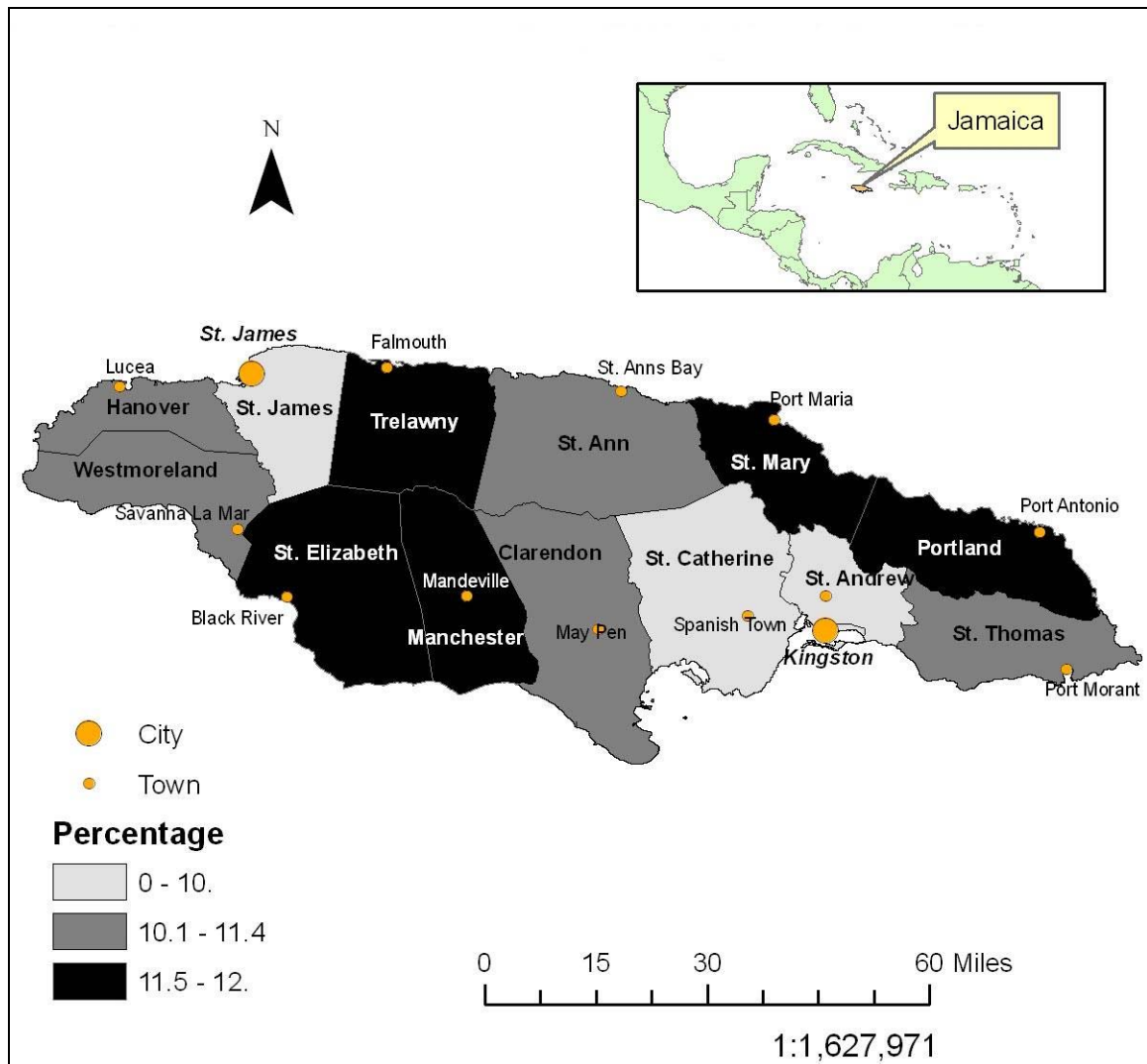
population from Kingston and St. Andrew (Clarke and Howard 2006). Between 1991 and 2001, the population of St. Catherine grew by 26.3 percent, almost doubling over the period as the parish became the premier destination of choice for internal migrants (STATIN 2003). At the other end of the rural-urban spectrum is Hanover, which has the lowest proportion of urban areas and the smallest population of all.

Also worthy of note is the parish of Manchester which although still largely rural has one of the most developed urban centers in the country, outside of the Kingston Metropolitan region in the South-East, and the second city of Montego Bay in the West of the island. Located in the central part of the country, Manchester is the bauxite mining capital of Jamaica, which is an indicator of employment. Mandeville, the capital town of Manchester, is among the most affluent areas of the country and is popularly regarded as a destination for retired returning residents, reputedly because of its location advantages which include higher altitude, lower temperatures and good urban services, but away from the bustle of the two cities.

The distribution of the elderly population is strongly linked to the patterns of internal population movement and, in particular, the movement of people from rural to urban areas. As the number of young people moving into the urban areas in search of educational and employment opportunities increases, the proportion of elderly persons in these areas decreases. Conversely, as the rural-urban drift intensifies, the rural areas become older. One of the results is that population aging manifests earlier and is more advanced in rural areas. Internal population movements also directly affect the level of urbanization and ultimately the rural-urban distribution of the elderly population. The parishes of St. Andrew (86.9 percent), St. Catherine (73.8 percent) and St. James (55

percent) have the highest proportions of urban areas, indicating that they are main receiving areas for rural migrants who are typically younger. These areas therefore have the lowest proportion of elders (STATIN 2003 Vol. 1).

Map 1: Spatial Distribution of the Elderly Population, 2001



Source: Map created by Jill Uhrovic using GIS shapefile. Data from 2001 census.

Internal migration also influences the gender distribution of the elderly. Analysis of the data shows a lower proportion of elderly females in rural areas compared to males (appendix E). This is partly explained by higher migration rates of rural women because of better employment opportunities in urban areas (PIOJ 2005; Weeks 2002). These women eventually remain in the cities. Another explanation is that older adults migrate to join family members in urban areas so that they can access care and support (ECLAC 2000). The structure of the overall population and the demographic profile of some areas in Jamaica are also impacted by international return migration. Between 1991 and 2001 a total of 29,690 elderly Jamaicans who had lived abroad returned to the country. There were slightly more males (51 percent) in this group, most of whom went to the parishes of St. Andrew and St. Catherine (STATIN 2004).

Status of the Elderly

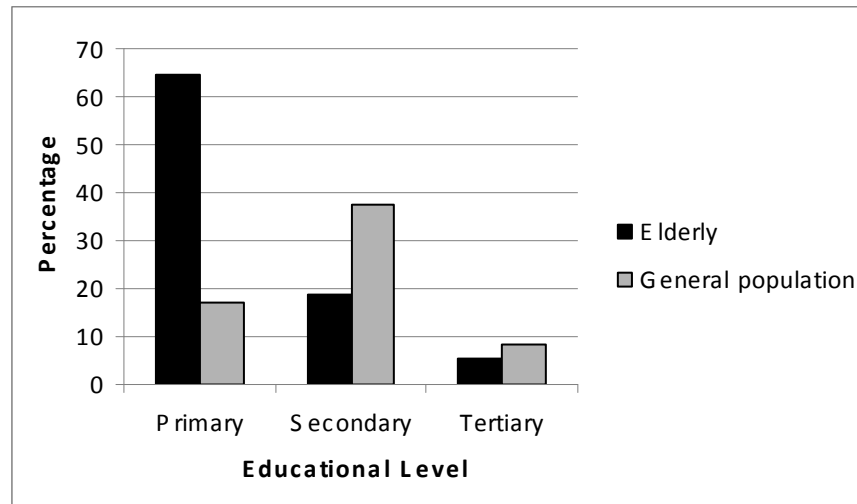
Socioeconomic Status

An assessment of the socioeconomic status of the elderly in Jamaica indicates disparities among various subgroups of the elderly. Three indicators of socioeconomic status are included in this analysis: educational attainment, economic activity and poverty status.

Education. Educational attainment rates vary greatly across all age groups and parishes, but overall elderly Jamaicans have the lowest levels of education. This is not surprising since the expansion in the formal educational system, particularly secondary education, did not take place until the latter half of the twentieth century (Miller 1989). According to the 2001 census data, 64.8 percent of Jamaicans 60 years and over have a

primary education while only 18.9 percent have been educated to the secondary level and 5.6 percent to the tertiary level (figure 6). However, there are substantial differences in educational attainment according to parish.

Figure 6: Educational Status of Elderly Compared to General Population, 2001

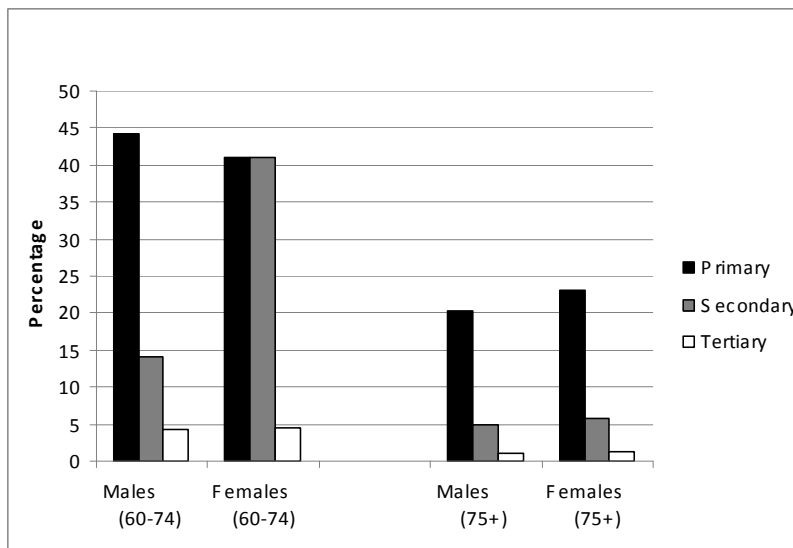


Source: Calculations based on census data for 2001. Chart by author.

In general, the parishes with the main urban areas, including the two cities, have the largest proportions of elderly populations with secondary and post secondary education. On the opposite end, St. Elizabeth with the oldest population has the highest percentage of elderly with no schooling (STATIN 2003 Vol. 1). St. Elizabeth, along with St. Thomas and Hanover, also has the highest proportions of elderly with only a primary school education and the lowest proportions with secondary or tertiary education. The data also show that St. Andrew has the highest secondary and tertiary education completion rate among the elderly, the rate being two and one-half times what it is for the country as a whole (appendix F-1 and appendix F-2).

There are also disparities among age cohorts. The young old (60-74) have higher rates of both secondary (20.25 percent) and tertiary education (16.8 percent) compared to both the old-old (75-84) and the oldest-old (85+) with rates of 6.5 percent and 3.7 percent respectively (figure 7). This situation is very different from what it was in 1960, when only 3.9 percent of the elderly had secondary education and 0.31 percent had tertiary education.

Figure 7: Educational Attainment of Elderly Age Cohorts by Sex, 2001



Source: Calculations based on census data for 2001. Chart by author.

The trend towards a more highly educated older population is expected to continue as 2001 data show that 34.5 percent of 45-59 year olds and 62.4 percent of 30-44 year olds have secondary education. Further, three times more 30-44 year olds have university or other tertiary education than the 2001 cohort of elderly, a significant feature since education is positively associated with a number of variables that have implications

for the wellbeing of the elderly (Hooyman and Kiyak 2005; Kinsella and Velkoff 2001; Rowe and Kahn 1998).

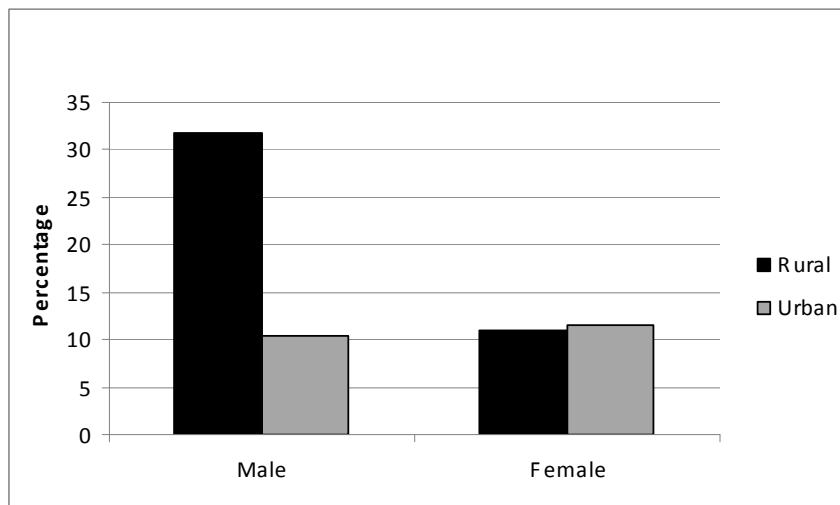
Economic Activity. While occupation is one of the main variables comprising socioeconomic status, most of the elderly are no longer in the labor force. However, for many older adults in less developed countries, work is a major source of income and many remain economically active well into their later years. There are at least two ways of interpreting economic activity in the elderly population. In the first place, economic activity could be an indicator of greater need and more difficult circumstances, the rationale being that the large majority of those who have sufficient means may not need to work and would not choose to. On the other hand, the opportunity and ability to work may help to reduce poverty and vulnerability among the elderly. The assumption in this case is that the economically active elderly would be in worse circumstances if they had no income-earning capacity.

Like the elderly in other less developed countries, many older Jamaicans are economically active (ECLAC 2003). In fact, labor force participation rates of the Jamaican elderly are very high in comparison with developed countries, and also in relation to other countries in the region (ECLAC 2004b). In 2001, a significant 29 percent of the dependent elderly (65+) was involved in pensionable employment. Dependent elderly men (65 years and older) were two and one half times more likely to be employed than females in the same category (appendix G-1 and appendix G-2).

Elderly women in Jamaica also have high economic activity rates. According to regional estimates, more than a quarter of elderly women in Jamaica are formally

employed, one of the highest rates in the Latin American/Caribbean region (ECLAC 2006). Given the structure of the labor market and the state of the economy it can be safely assumed, however, that economic activity rates of the elderly are certainly higher since there are indications that many actually work in the largely unmonitored, informal sector which is easier to access (National Council for Senior Citizens 2003; ECLAC 2006). It can also be reasonably assumed that the majority of the pensionable employed elderly are urban residents since this type of employment is typically characteristic of urban rather than rural areas.

Figure 8: Economic Activity in the 65+ Population, 2001



Source: Created using census data for 2001. Chart by author.

There are also rural-urban differences in the employment patterns of elderly Jamaicans. Rural elders are more economically active than their urban counterparts, and this pattern holds across gender categories. However, whereas three times more elderly rural males than females are employed, the ratio in urban areas is two to one (figure 8).

Poverty. At the baseline, the economic well-being of the elderly can be assessed in terms of official poverty data. In 2004, an estimated 16.9 percent of the population was living below the poverty line with the highest incidence in rural areas. This represents the culmination of a steady decrease during the 1990s. The incidence of poverty was highest in St. Ann and lowest in St. Catherine. Overall, the parishes with the largest urban populations have the highest mean per capita consumption, all above the national mean (appendix H).

Although the elderly represented 10.5 percent of the population, they accounted for 11.5 percent of persons living below the poverty line. According to the data, 76 percent of elderly people below the poverty line lived in rural areas compared to 24 percent in urban areas (PIOJ 2005). These trends were confirmed in a recent study conducted by HelpAge International (2008) in several communities in the Kingston, St. Andrew and St. Catherine, the main metropolitan area. Among the findings of the study was the large number of elderly persons living in significant poverty with hardly enough income to meet their daily needs. The study also found that rural residents had to pay almost twice as much as their urban counterparts to access healthcare, pointing to higher levels of hardship (The Jamaica Gleaner, February 29 2008).

Health Status of the Jamaican Elderly

Describing the health status of the elderly often hinges on the concepts of chronic illness and disability. However, it is often difficult to separate the two, since chronic illness is the main cause of disability among the elderly (Hooyman and Kiyak 2005; Suárez-Berenguela 2000). In general, populations in developing countries have a higher

incidence of disability and are likely to live a larger proportion of their lives in disability than their developed world counterparts (Schmid, Vezina and Ebbeson 2008). Much of this disability results from preventable illnesses related to lifestyles, and exacerbated by inadequate healthcare and access to healthcare. For instance, many impairments that could be temporary become long-term disabilities because of a lack of adequate healthcare. Also, the environment in which many residents of developing countries work is hazardous or challenging, thus increasing the risk of injuries and sometimes serious illnesses (Suárez-Berenguela 2000).

Both disability and chronic illness patterns among elderly Jamaicans seem to mirror international trends. The 2001 Population and Housing Census for Jamaica defined chronic illness as any of a number of “long-standing illnesses” including arthritis, hypertension, diabetes, heart disease, kidney disease, asthma, glaucoma and sickle cell (STATIN 2003 vol 1). The data show that as is the case in other parts of the world, females have a higher incidence of chronic illness than males, 63 percent to 37 percent, respectively (appendix I-1). This pattern is replicated across all parishes with the exception of Kingston where elderly females were two and one-half times more likely than males to report a chronic illness (PIOJ and STATIN 2006). With increasing age, the rate of chronic illness also increases so that a higher proportion (62.4 percent) of the dependent elderly reports having one or more chronic illness, the leading illnesses being arthritis (36.5 percent) and hypertension (27.5 percent) followed by diabetes (21 percent). This pattern holds for males and females with a slightly lower incidence of hypertension in elderly females, and a higher incidence of diabetes (STATIN 2003).

Disabilities are also common in the elderly population but with less prevalence than chronic illness. In the context of the 2001 census, disabilities were defined as “any restriction or lack of ability to perform an activity in the manner or within the range considered normal for a human being...as a result of impairment” (STATIN 2007a:8). The data indicate that whereas 48.7 percent of the elderly reported having at least one chronic illness, only 18 percent reported disabilities (appendix I-2). Overall, the elderly represented almost 30 percent of the total population reporting disabilities, with the most commonly reported disabilities for both males and females being sight (27 percent), physical impairment (15.9 percent) and hearing problems (9 percent). As with chronic illnesses, females (56 percent) are more likely to report disabilities than males (44 percent), as well as limitations from these disabilities (appendix I-3). These patterns are consistent with the patterns in the rest of the Caribbean and in developed countries like England and the United States where disability rates are significantly higher for women than men. Worth noting however, is that women in the Caribbean are less likely to become disabled as a result of injury and more likely as a result of a chronic illness (Schmid, Vezina and Ebbeson 2008). Again, inter-parish variation is minimal except for Kingston, where the lowest rates of male disability and the highest rates of female disabilities were recorded. Disabilities seem to have a greater impact on the activity of the elderly than it has on the activity of the rest of the population, as 66.7 percent of them report limitations resulting from their conditions compared to 44 percent of the overall population. Older persons (75+) also suffer more from disabilities than younger persons (appendix I-4).

Another measure of health status is health adjusted life expectancy (HALE). According to this measure, in the period 2000-2005, elderly Jamaicans could expect to spend roughly one-third of their post 60 years in ill-health, with no significant difference between males and females, 35.0 percent and 35.27 percent respectively (ECLAC 2004a). This finding differs from the situation in developed countries where older men are reported to have better physical and mental health. Data presented at the 2004 Caribbean Symposium on Population Ageing (ECLAC 2005), also reflected a pattern different from what was expected as more Jamaican males than females in the 60-74 year old age group died from chronic diseases in 2000. More males in that age group were also discharged from public hospitals, most of them with chronic diseases.

Self-rated health is also often used to assess health status. Despite its subjectivity, self-reported health is a fairly good predictor of subsequent ill-health and mortality (Arber and Ginn 1991; UN 2001b; Verbrugge 1989). According to this measure, older Jamaicans do not on the whole feel positive about their health since only 22.2 percent of males and 14.0 percent of females rated their health as good or very good. The large percentage of adults reporting average to poor health in Jamaica is low compared to other countries (table 15). A gender difference in self-rated health is consistent among older adults and has been well-supported in both the United States and England (Gorman and Read 2006; Arber and Ginn 1991). The pattern of worse self-rated health for women has been explained in a number of ways. It is theorized that men and women suffer from different health conditions and the chronic health conditions afflicting women are typically disabling but not fatal (Kalache, Barreto and Keller 2005; Arber and Cooper 1999). It has also been suggested that men tend to report health conditions only when

they are at more advanced or serious stages, while women may be over-reporting (Case and Paxson 2005).

Table 15: Self-Reported Health Status for 60+ Population in Selected Countries, 1980-1995

<i>COUNTRY</i>	<i>HEALTH STATUS RATING</i>		<i>HEALTH STATUS RATING</i>	
	Males		Females	
	Poor/fair	Good/very good	Poor/fair	Good/very good
Brazil	61.4	38.6	72.8	27.2
Jamaica	78.8	22.2	86.0	14.0
Trinidad and Tobago	59.2	40.8	74.7	25.3
USA ^a (Blacks)	35.1	64.9	34.7	65.3

Source: Data from United Nations, 2001, Living Arrangements of Older Adults, Table 2, p62-63

Notes: ^a Data pertains to the 50-61 age group.

Living Arrangements

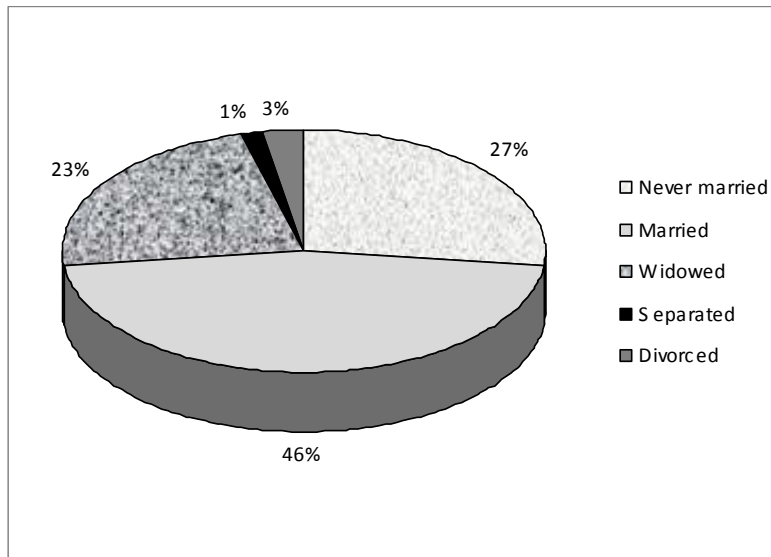
Marital and Union Status

The living arrangements of the elderly are strongly influenced by marital status, which has implications for overall well-being. As discussed in chapter four, marriage demonstrates a protective effect for older adults that includes better health and greater longevity, as well as more financial security and access to caregivers. However, the comparatively low marriage rates in Jamaica imply that elderly Jamaicans might not experience the advantages of marriage collectively. Low marriage and re-marriage rates

are sociocultural features with deep roots. Historical records show the launching of a “Mass Marriage Movement” in the 1940s by the wife of the Governor of Jamaica at the time, the aim of which was to persuade acceptance of legal marriage and the nuclear family form. However, the movement only marginally improved marriage rates from 4.44 per thousand in 1943 to 5.82 in 1946 (Smith 1999). In 1998 the marriage rate was 9.3 per thousand, and this rate fell to 8.5 in 2001 (STATIN 2001 vol.1). This pattern of low marriage rates, explains the high proportion of “never married” (figure 9).

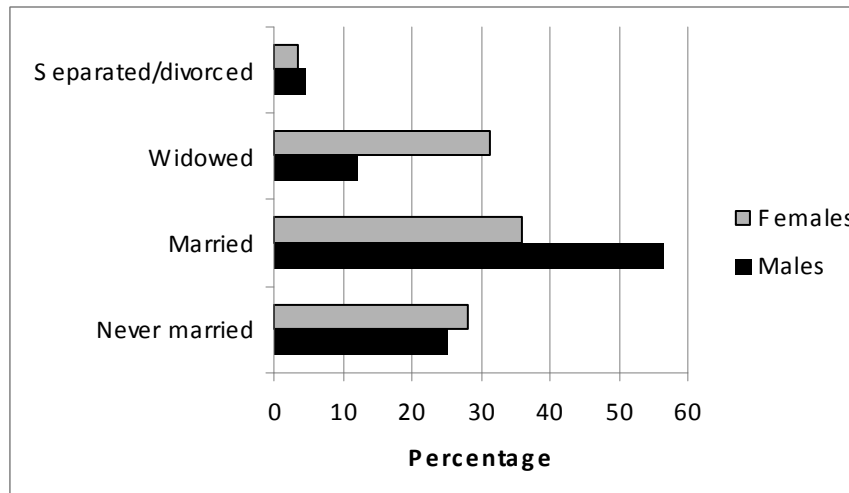
Culturally, the pattern is for marriage rates to increase with age, and so by old age 45 percent of Jamaicans were married in 2001. Nevertheless, a significant proportion (27 percent) falls in the “never married” category (figure 9). This compares with US data which show that only about four percent of the elderly (65 years and older) had never married in 2007 (Administration on Aging 2007). When the marital status figures were broken down by gender, a different pattern emerged. Whereas 57 percent of elderly males were married, only 36 percent of females fell in this category. Elderly females were also more likely to be widowed than males (figure 10). Marital status also varied across parishes. According to the 2001 data, the elderly in Kingston have the highest (50.3 percent) never married population, while Manchester (51.5 percent) and St. Ann (50.3 percent) have the highest proportions of married elders (appendix J-1 to J-3).

Figure 9: Marital Status of the Elderly, 2001



Source: Calculations based on census data for 2001. Chart by author.

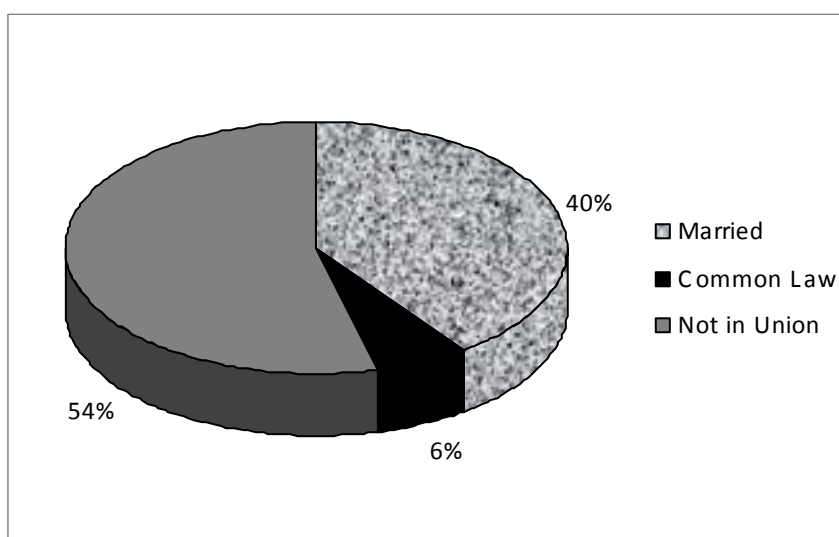
Figure 10: Marital Status of the Elderly by Sex, 2001



Source: Calculations based on census data for 2001. Chart by author.

Another way to analyze the living arrangement situation of the Jamaican elderly is to use “union status” rather than “marital status” to account for those persons in common-law marriages¹⁴. This approach is common among Caribbean scholars because of the presence in the region of conjugal mating patterns which do not include legal marriage (Barrow 1996). Even using this approach it is very clear that a large proportion of elderly persons (55%) are not in any type of union, with a higher proportion of females having this status (figures 11 to 12 and appendix J-4).

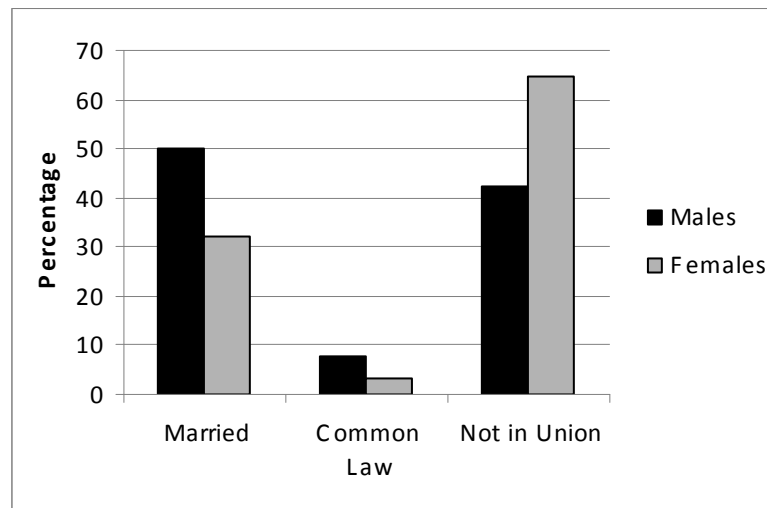
Figure 11: Union Status of the Elderly, 2001



Source: Calculations based on census data for 2001. Chart by author.

¹⁴ In a common-law marriage a couple cohabits but without religious or legal sanction

Figure 12: Union Status of the Elderly by Sex, 2001



Source: Calculations based on census data for 2001. Chart by author.

Household Characteristics

The large majority of Jamaican elderly lived in private households in 2001. Only one percent lived in institutions, a little more than half (55 percent) of whom were females. Household characteristics are important aspects of the analysis, especially in less developed countries where these characteristics influence the living arrangements of the elderly, and are directly related to their overall well-being. The most fundamental feature of household characteristics is size. As fertility declines, average household size is also declining. Currently, the average size of the Jamaican household is 3.48 down from 4.2 in 1991, with no significant inter-parish differences. However, households in the poorest quintiles are larger, and mean household size is higher in rural than in urban areas, reflecting a higher mean number of children and adult males. Urban households, on the other hand, have fewer children and adult males (PIOJ 2006). These patterns are related

to higher rates of rural-to-urban migration among females and lower fertility rates in urban areas (Weeks 2002).

A little more than half of the elderly (52.5 percent) are heads of households with between two and six persons (table 15). Only in St. Catherine where the figure rises to 71.38 percent does the pattern vary (appendix K-1). While the proportion of large households (eight or more persons) is decreasing, the proportion of small households (one to four persons) is increasing (PIOJ 2004). This includes a growing number of single person households which are more likely to be comprised of males than females.

In 2001, single member households accounted for 17.9 percent of all elderly-headed households and 23.9 percent of female-headed households. However, males accounted for almost 60 percent of single member households (table 16). The proportions of male single person elderly households are lowest in urban areas (appendix K-2).

Table 16: Elderly-Headed Households by Size and Sex of Head, 2001

<i>HOUSEHOLD SIZE</i>	<i>MALE</i>	<i>FEMALE</i>	<i>TOTAL</i>
One	26483	17931	44414
Two	24873	16895	41768
Three to six	36353	28989	65342
More than 6	10436	9077	19513
Total	173125	75070	248195

Source: Data from population census 2001, Vol. 1 Country Report tables 8.16 and 8.17 p142-143

The higher proportion of elderly men living alone compared to women is significant, given the greater longevity of women (STATIN 2001 Vol. 5). In fact, the Caribbean region has been noted as the only area in which there is a higher percentage of older men than women living alone (UN 2002). In Jamaica, this pattern has been attributed to the practice of serial monogamy and failure to establish stable families in early and mid-life on the part of Jamaican males (National Council for Senior Citizens 2003).

Table 17: Household Status of the Elderly by Sex, 2001

<i>HOUSEHOLD STATUS</i>	<i>MALE</i>	<i>FEMALE</i>	<i>TOTAL</i>
Head	80.60	53.43	66.03
Spouse/partner	8.43	26.98	18.37
Child	0.84	0.65	0.73
Parent	3.91	11.26	7.85
Other Relative	4.80	6.21	5.55
Non-relative	1.41	1.47	1.44
Total	121655	140510	262165

Source: Data from Population Census 2001.

Not only is the size of the household important, but so too are the composition and structure. This is particularly important for the elderly as it determines their status in the household and could indicate their vulnerability risk. Twenty-three percent of all Jamaican households are headed by elderly people making the vast majority of Jamaican elders (66 percent) heads of their household or spouses (18.37 percent) of the household

heads. However, a significant portion of the elderly (22.6 percent) lives in households where they are other relatives of the household head. There is also an obvious gender dynamic, as males are more likely to report being household heads (80.6%) than women (53 percent) who are more likely to be spouses (25 percent), parents (11 percent) or other relatives (5 percent) of heads (table 17).

Also, the majority of elderly Jamaicans (65.1 percent) who are not household heads live in households where the heads are between 40-59 years old and are roughly equally likely to be male or female (table 18).

Table 18: Percent Distribution of Non-Head Elderly by Sex and Age of Head

<i>AGE OF HEAD</i>	<i>MALE</i>	<i>FEMALE</i>	<i>TOTAL</i>
Under 20 years	0.60	0.52	0.56
20-39 years	32.14	36.19	34.34
40-59 years	67.26	63.29	65.1
Total	100	100	100

Source: Data from Population Census 2001.

The living arrangements of the elderly have several implications for social vulnerability. First, smaller household size is both bane and blessing for the elderly. On the one hand it means fewer persons to contribute to the welfare of the elderly. On the other hand, it could indicate a higher standard of living as larger households, especially those that are headed by the elderly, tend to be poorer (PIOJ and STATIN 2006; HelpAge International 2004). Second, the high proportion of elders not in any type of union raises

concern since spouses and significant others are major sources of support and main caregivers in old age. This is of particular importance to women because, as the data show, they constitute a large proportion of the “never married”, and also because of their greater longevity. However, while they might lack spousal support, older women who have never married may not necessarily be disadvantaged as data from the US and England show that never married women are better off financially than those who are divorced or widowed (Burholt and Windle 2006; Arber and Ginn 1991). Also, the fact that women live longer and are less likely to be involved in any kind of marital union, yet are less likely than men to live alone supports the assumption that older people are cared for by their families (Rawlings 2006). Third, the high rates of headship of the elderly indicate that they are in positions of authority in their households which could mean access to and control of resources to maintain their social welfare.

Conclusion

This chapter shows that the elderly share of the Jamaican population has been increasing since the 1960s. Similar to the patterns observed globally, the 70+ age group is the fastest growing segment of the population. Although reduced fertility and reduced mortality are the main drivers, population movements also play a role in controlling the speed at which the population ages as well as the distribution of the elderly population. On the basis of the analysis it can be concluded that population ageing is not occurring uniformly across the country. Aging is more advanced and more intense in the rural areas whereas the elderly as a percentage of total parish population is lower in the urban areas.

As observed in other societies, urban residence offers several advantages including higher socioeconomic status and related features such as lower levels of poverty, smaller households, higher levels of educational attainment and greater access to the social, cultural and political resources of the country.

Despite the common perception of widespread ill-health among the elderly as measured by chronic illness and disability, this is not the case, although the likelihood of both increases with advancing age. It is also true that there is significant variation by gender as females report chronic illness at a rate more than one and a half times that of males. Other aging patterns observed are reduced mortality rates and marked gender differentials in survival rates. As a result of higher life expectancy, the number of older women exceeds the number of men, suggesting that women will require more resources to meet their needs over a longer period of time. However, there are indications that older adult males may be at higher risk of vulnerability based on a growing trend of solo living on this group. Overall, declining household sizes is altering living arrangements, with potential impacts on the arrangement and provision of care and support for the elderly.

CHAPTER VII

METHODOLOGY

The academic study of any subject requires a methodology in order to arrive at a conclusion. It is through the various methodological procedures that data are produced and analyzed to test and support theories. Although there is a variety of methodologies available, the ultimate choice of a research method is contingent upon the objectives of the study and a range of other considerations including time and resources. The choice of a method itself generates a range of issues that must be addressed and so particular care needs to be taken in this regard. The data for this study come from the 2001 population and housing census of Jamaica, which makes the research a form of secondary analysis. These data are used to construct a composite index which becomes a measurement tool and an efficient analytical device.

In chapter seven, questions are answered about the key areas of sampling and data collection, with an important discussion of methodological issues related to the development of composite indices. The chapter begins with an overview of composite indices and a brief discussion of their challenges followed by an outline of the research design. The data and sample are then described with an explanation of the sampling design for the census, as well as the structure and content of the questionnaire. The chapter concludes with a discussion of data and methodological limitations and the steps taken to address these problems.

Composite Indicators and Measurement

Composite indices have emerged as important tools for the assessment of complex and multi-dimensional constructs such as social vulnerability (Rygel, O'Sullivan and Yarnal 2006; St. Bernard 2005; Vincent 2004; Cutter, Boruff and Shirley 2003; Briguglio 2003). The attractiveness of composite indices resides in part in their ability to take account of several factors in describing a phenomenon. By combining variables or domains based on sets of variables, a composite index provides a summary figure that is easily comprehensible (Moore, Vandivere and Redd 2006). Other advantages of composite indicators include their ability to provide the big picture and to facilitate ranking and comparison across areas and time (Saisana and Tarantola 2004).

Composite indices are not without limitations, however. They are often criticized for their inability to indicate the structure and causes of the phenomenon being studied. While this is a legitimate concern, composite indices are not intended to address these questions. Rather, they report on a situation in a visible way and facilitate discussion and theoretical analyses (Booyesen 2002; Saisana and Tarantola 2002). It has also been suggested that averaging components can reduce the importance of a single factor. So an index may not indicate overall vulnerability, for instance, when there is indeed vulnerability in one critical area (Rygel, O'Sullivan and Yarnal 2005).

The development of a composite index raises two major issues: which indicators to include and whether or not to weight the indicators. In choosing the indicators, the balance between subjective and objective indicators poses a challenge since sole reliance on objective indicators may reduce the legitimacy of the process. Subjective indicators are therefore desirable to get evaluations of the population of their own situation.

Generally, the more complex and abstract the reality the greater the danger that the indicators might not be valid (Vincent 2004). In the end, as Sharpe (2004: 19) points out, the development of an index is a “compromise between the theoretical definition and the empirically possible.”

In addition to the choice of indicators, weighting is one of the most debated issues in index construction. Since all the variables are unlikely to have the same influence on the construct, weighting is often seen as desirable. Weights exert a heavy influence on the index but they are inherently subjective, and without comprehensive understanding of the issues and the context, are often arbitrarily assigned to the indicators (Filmer and Pritchett 2001). For this reason most composite indices use equal weighting, especially where sufficient justification for the weights does not exist (Bradshaw et al 2007; Moore, Vandivere and Redd 2006; Zoppou, Nielsen, Day and Roberts 2004; Saisana and Tarantola 2002; Babbie 2001). However, scaling procedures inherently create some weighting, so the variables end up not being totally unweighted (Booyesen 2002). In the long run, the use or nonuse of weights has not been shown to negatively affect the power of the index or change the results of the relationships between variables (Brigguglio 2003; Neuman 2000). Since there would be no significant advantage in weighting, the decision was taken to use equal weighting for this study. The process is further discussed in chapter eight.

Research Design

The study is designed as an analysis of data collected in the 2001 population and housing census of Jamaica. The census data were collected at the household level, but aggregated

at the parish level for the purposes of this research. The research employs a descriptive rather than an explanatory framework, as it seeks to portray the current level of social vulnerability in the Jamaican elderly population using a composite index developed for the purpose. As a descriptive study, the research focuses on the aged as a category rather than on the process of aging. So while the research identifies risk factors for vulnerability in the elderly population, the goal is not to show how these factors arise or explain how they operate to create vulnerability.

The study is cross-sectional in design which limits the analysis to the situation at one point in time and so cannot capture social processes or change (Neuman 2000). This is consistent with the descriptive nature of the project. As a dynamic concept, vulnerability might be better studied using a longitudinal design. However, since there is no current measure, the results of this research will generate baseline data against which future longitudinal work can be done. In addition, past census data can be used to do retrospective studies of social vulnerability.

Census data are among the primary sources of existing data for secondary analysis for several reasons. First, they provide a vast pool of information that can be used to describe various segments of the population (Sanders and Pinhey 1983). Second, censuses provide data that are representative since they involve complete enumeration of the population, thus allowing for inferences to be made. Census data are also usually widely available and generally of a high quality, despite the problems of coverage and content errors which vary according to the population segment of interest. Both coverage errors which result from undercounting, and content errors which are the consequences of faulty reporting, editing or tabulating can affect the accuracy of the data

(Weeks 2002). These problems are usually addressed through post-enumeration surveys. In the case of the 2001 census, the post-enumeration survey covered five percent of the enumeration districts or primary sampling units and the results indicated an undercount of seventeen percent. The data were adjusted to produce the final census count (STATIN 2007a).

Secondary analysis of existing data as provided by a census is a commonly used research approach for its time and cost advantages, and for the removal of interviewer bias. This method is not without disadvantages and limitations however. In the first place, there may be major conceptual limitations since the concepts and variables measured in the original research do not always correspond to the questions which the current research seeks to answer. Problems also arise when the categories in the original data do not match the needs of the researcher (McTavish and Loether 2002). These issues could restrict the questions that the current researcher can address. Researchers using secondary data often compromise by developing surrogate measures of the variables that are not in the original data with the possibility of variables with weaker validity (Victor 2005). These issues were encountered in the execution of this study and the steps taken to address them are discussed in the section on data limitations.

The researcher's lack of control over the data collection process is also a potential source of errors that could further affect the validity and reliability of the research project. However, exploratory data analysis techniques reveal the underlying structure of the data and provide insights into the relationships between variables (Moore and McCabe 2003). In the end, the researcher makes assumptions about the accuracy of the data, but there may be systematic errors in the initial collection, errors in organizing and

reporting the information, and errors in publishing, all of which reduce measurement validity (Neuman 2000). Finally, the problem of missing data, either due to non-collection or non-reporting is one that researchers using existing statistics have to consistently address. These issues are addressed in a later section.

The Data

The data for this study were taken from the 2001 population census of Jamaica which was conducted on a 'de jure' basis using face-to-face interviewing. The micro-sample in this analysis is a ten percent probability sample of the population, chosen using a stratified multistage cluster design. For the census, the enumeration districts¹⁵ formed the clusters or primary sampling units. In the first stage the enumeration districts were stratified according to rural or urban characteristics. In the second stage, a ten percent sample of the enumeration districts in each parish was selected using proportionate-to-size sampling. That is, the enumeration districts in the sample were selected based on the number of enumeration districts in each parish. Finally, all the households which were the units of inquiry were selected (STATIN 2007a).

Multistage cluster sampling offers many advantages especially when probability-proportionate-to-sampling methods are employed. By refining cluster sampling procedures, probability-proportionate-to-sampling methods control sample size, lead to greater precision, and concentrate fieldwork, thereby saving time, money and labor (Moser and Kalton 1971). One of the problems with this method, however, is the

¹⁵ Enumeration districts are geographic units established for the purpose of data collection in the census. These units are grouped according to constituencies which are political units created for parliamentary representations.

potential for the final sample to be unrepresentative of the population due to the variation in the sizes of the clusters (Babbie 2001). This problem was addressed in the census by making the clusters of equal sizes. Each enumeration district was constructed to constitute 150 dwellings in urban areas and 100 in rural areas (STATIN 2007a).

Table 19: Topics Covered by the 2001 Population and Housing Census Questionnaire of Jamaica

ITEMS INCLUDED IN THE SHORT FORM (90 % COVERAGE)	ITEMS ADDED TO THE LONG FORM (10% COVERAGE)
<i>Population</i> Age Sex Relationship to head of household Religious affiliation Ethnic origin Marital and union status Educational attainment Chronic illness and disability Birthplace and residence	<i>Population</i> Training Economic activity Fertility Mortality Migration Exposure to crime and violence Business activity in household <i>Housing</i> Type of housing unit Material of outer walls Number of rooms Tenure Kitchen, bathroom and toilet facilities Method of garbage disposal Source of water, lighting, cooking fuel Availability of telephone and personal computer

Source: Population Census 2001: Technical Report (STATIN 2007)

Two questionnaires were used to collect the data for the 2001 census: a short form comprised of twenty-seven items administered to the residents of 90 percent of all

enumeration districts (primary sampling units), and a long form which had an additional forty-four questions that was administered to residents in the remaining 10 percent of enumeration districts. The data on which this research was done came from responses to the long form which covered several characteristics of the population (table 19).

The Sample

The population for the study is elderly Jamaicans defined as those persons 60 years and older. The actual sample is a nationally representative, weighted sample comprised of 20,236 elderly Jamaicans with a mean age of 71 years and a median age of 70 years.

One-quarter of the sample is under 65 years old while another quarter is more than 77 years old. Overall, the elderly population is relatively young as the majority fall in the category of the young old or the 60 to 74 year old age group (67 percent). Females constitute a larger share of the elderly population (53 percent). A little more than one half of the sample (57 percent), lives in rural areas compared to 48 percent of the total population, and a little less than two-thirds have been educated to primary school level which represents six years of formal schooling. Roughly one-quarter has secondary or post-secondary education. Rural elders are more likely to have no schooling, while the urban elderly are more likely to have been educated to secondary level or higher. Approximately one-quarter of the sample is still employed and more than one half (55 percent) does not receive a pension.

The large majority of elderly persons in the sample own their homes (81 percent) with two-thirds of them living in households of between two to six persons. Only eighteen per cent of the elderly lives alone. More than one half of the elderly is not in a

marital union or any kind of union (54 percent) and about one-quarter of them has never married. Almost one-quarter is single as a result of widowhood. Most elderly persons are household heads or the spouses of heads (85 percent) and another 13 percent lives with relatives other than a spouse. However, there are four times more females than males who are spouses and two and a half times more females than males live with other relatives. In total, over 60 sixty percent of the sample has a chronic illness¹⁶ but less than one-fifth has disabilities¹⁷. Females are one and one half times more likely to suffer from chronic illnesses than males.

Methods of Analysis

The main purpose of the project was the development of the index. Consequently the central part of the analysis is related to the analysis and presentation of the index results. ESVI scores were calculated and examined using descriptive statistics. These analytical tools were used to explore the characteristics of the data and examine relationships among the variables. The main analyses were carried out at three levels. First, the index was analyzed in terms of its distribution, spread and variation. Next the domains were analyzed. Finally, each indicator variable was explored to understand its contribution to the index.

Mean differences in index scores were examined by sex, age categories and place of residence. T-tests were used to determine whether there were differences in the mean scores of males and females. One-way ANOVA (analysis of variance) tests were also

¹⁶ Permanent or long-term illnesses such as arthritis, asthma, glaucoma, diabetes, hypertension and heart disease which limit activity.

¹⁷ Physical, sensory or mental impairments.

used to determine whether there were differences in the mean index scores of the three categories of older persons and the scores of the fourteen parishes. Statistical significance for all tests was $<.05$.

Further analysis was undertaken with the development of ESVI quintiles based on the distribution of the scores. Quintiles limit the number of categories while providing enough categories to be representative of the phenomenon being studied (Rutstein and Johnson 2004). The use of quintiles allowed for even more comparisons within and across groups. For instance, *t*-tests were used to compare scores in the lowest quintile with those in the highest quintile. Sensitivity analyses were conducted by comparing the changes in parish ranking based on a range of criteria including calculations with and without imputation, excluding variables and using weighted and unweighted domains. All analyses were carried out using STATA 10 for Windows (StataCorp 2007).

Data Limitations

The availability of accurate and reliable data is often a major challenge for the development of indicators and social research in general. The absence of accurate data can be especially problematic for research at the local level. Billing and Madengruber (2006) highlight a number of limitations in indicator research, some of which were experienced in the execution of this study.

1. Currency of the data: The data used to construct the ESVI are taken from the 2001 census. The index therefore represents vulnerability as it was in that year which means that the situation may have changed since.

2. Missing data: The problem of missing data is one of the most serious threats to the validity and reliability of an index (Saisana and Tarantola 2002; Neuman 2000). Multiple imputation for one variable with more than five percent missing cases was used to resolve this problem. Available case analysis was used for the remaining ten variables which had less than five percent missing cases. This is further discussed in chapter eight.
3. Relevance of data: Since the data were not collected specifically for the intended research project, some variables could not be explored. For instance, the data could not inform about *de facto* childlessness or the availability of support from other than biological children. Personal savings is also an aspect of material resources that is relevant to social vulnerability in later life but could not be explored with this dataset.
4. Accuracy of data: Very often lack of relevant and appropriate data makes it necessary to use proxies which might be less exact or comprehensive than desirable (Birkmann 2006b). In this study for instance, pension was used as a proxy for income and fertility for support from children. These variables themselves were also problematic, as discussed below.

Children are an important variable in studies of elderly vulnerability but for the population census fertility questions were addressed only to women in the childbearing years, as is usual the case. A synthetic approach was therefore used to estimate the number of children a woman would have during her lifetime if her fertility rate conformed to the age-specific fertility rates of a given year (Siegel and Swanson 2004).

The process involved the calculation of total fertility rates for each parish using age-specific fertility rates for five year age groups between 15 and 49 years from vital statistics data produced by the Registrar General's Office (appendix L). Women who were 60 years old in 2001 were born in 1941 and began their childbearing years in 1955 which is consistent given that fertility rates in Jamaica started to decline in the 1960s (Serow and Cowart 1998; Bongaarts and Lightbourne 1996). In the absence of data for 1955, the 1960 census data were used instead with the assumption that there were no significant differences in the fertility patterns of the two periods. While this method provided data that would not otherwise have been available, it created an identification problem in that it could not establish separate fertility for each individual, making it impossible to observe the effect of variation in this variable at finer levels.

The "pension support" variable also proved problematic. As pointed out by the Director of National Insurance, Mr. Denzil Thorpe (telephone interview, April 18, 2008), the term "pension" tends to be loosely used to include any kind of government disbursement. This includes contributory pensions based on contributions, as well as social assistance pensions given to persons who do not qualify for pensions. These categories of pensions are not equivalent, but there was no way of disaggregating this information from the census data. It is reasonable to assume that the same situation might have obtained in the census, if there were no attempts to clarify the differences.

Methodological Limitations

All methodologies have limitations. In the case of composite indicators, two major methodological limitations can be identified. First, it is difficult to establish validity

which is an important criterion for measurement in the social sciences (Neuman 2000). In particular, it was difficult to establish criterion validity which indicates how the scores relate to the criterion of interest, in this case social vulnerability (Singleton and Straits 1999). However, the lack of an external reference eliminates the possibility of testing the model's quality or accuracy. Since it is the absence of a measure of vulnerability that gives rise to the development of the index, there is no tangible benchmark against which to compare the ESVI and no way to establish criterion validity (Schneiderbauer and Ehrlich 2006). As the index cannot yet be tested for consistency and stability, validity was achieved by careful definition of the construct and firmly grounding it in theory.

The second major limitation of the ESVI is that it can only measure vulnerability quantitatively, while some important aspects might not be measurable quantitatively (Cardona 2006). A numerical score as given by a composite indicator might therefore require qualitative inquiry for a fuller understanding of the situation. Grundy (2006) suggests for instance, that solitary living among older people may be a sign of independence or a preference for privacy rather than an indication of vulnerability. This lack of clarity speaks to the perpetual danger of inferring vulnerability from aggregated data. Further, being developed from aggregated data, the ESVI only reflects the situation at the national or parish level while there may be pockets of high or low vulnerability at the community level (Billing and Madengruber 2006).

Conclusion

The choice of a method for studying social problems presents several methodological and practical challenges. Methodological limitations often relate to the

availability of data and the complexity of the task or measurement instrument that is being developed. The chapter shows that the relatively easy availability of secondary data increases the popularity of secondary analysis. However, the limitations which this method imposes in terms of subject areas covered and questions asked can compromise the validity of the research. In the main, measurement in the social sciences often involves complex and abstract variables which preclude direct measurement. The result is that proxies are often used, with the understanding that some aspects of the phenomenon of interest might not be measurable. Even where measurement is possible, it would be impossible to include all aspects of a construct such as social vulnerability in an index.

The chapter also highlighted the benefits and advantages of composite indicators as well as their limitations and challenges. Composite indicators have become tools of choice in measuring abstract, multi-dimensional concepts such as social vulnerability. On the positive side composite indicators are easier to interpret than trying to track trends in several indicators. However, they may hide weakness in one or more dimensions of the index. In the end, it is important to remember that a composite indicator is a diagnostic tool and is not invested with the power to bring about change.

CHAPTER VIII

THE ELDERLY SOCIAL VULNERABILITY INDEX

This chapter presents the Elderly Social Vulnerability Index as a tool to assess and describe the level of vulnerability of elderly Jamaicans to inadequate support. The ESVI is a composite indicator derived from the aggregation of three equally weighted domains or sub-indicators comprising eleven unweighted indicators. The domains represent the aspects of support that older Jamaicans need for their wellbeing: human resources, material resources and social resources. Each domain therefore deals with a distinct dimension of vulnerability. The index assumes a linear additive form in which the indicators in each domain are summed to produce a score for each domain. The scores for each domain are then summed to give an overall score.

The ESVI is derived at an aggregate level from household data collected in the 2001 population and housing census and uses equal weighting and normalization based on z -scores, with imputation for missing values. It is a causal indicator model in that the indicators contribute independently to the domain. The ESVI combines the properties of composite and aggregate indices in that it gives an overall score but it also shows the components of that score. The model on which the index is developed is largely theory-driven but it is also contingent upon the availability of data. The main purpose of the index is to assess elderly vulnerability at the sub-national level, making it possible to identify those areas and dimensions that need special attention.

The chapter details the methods that were used to construct the index. Each step in the process is described starting from the conceptual framework to the analytical

framework. Issues of weighting and aggregation are discussed as well as validity and reliability.

Index Construction

The construction of a composite index is a very involved process which raises several methodological and technical challenges (Cardona 2006; Sajeve et al 2005). From the development of the conceptual framework to the presentation of the results, each step requires serious thought and rigor if the desired outcome is a valid tool capable of creating the big picture, while at the same time being able to provide details at a more elemental level.

Conceptual Framework

As used in this study, “Vulnerable elderly” are defined as those who are at risk of inadequate support as a result of limited adaptive capacity to cope with the social challenges of old age.

Risk refers to internal or external threats that expose the individual to danger which in this case is inadequate support. The elderly are exposed to a number of risks including poverty, social isolation, changing intergenerational relationships and inadequate formal social protection.

Support is used to refer to all the requirements for the elderly to meet their basic needs. This involves a wide range of factors and activities including food, income, physical care, social relationships, housing and assistance with daily activities such as transportation, cooking and shopping.

Adaptive capacity refers to the ability of the individual to draw on the available resources to meet their needs. These resources may be human, material or social and they represent the domains or dimensions of social vulnerability.

The Domains of Vulnerability

As conceptualized in this study, social vulnerability has three core components or dimensions. Each of these components represents resources or assets that are considered essential to allow people to deal with the major challenges of old age.

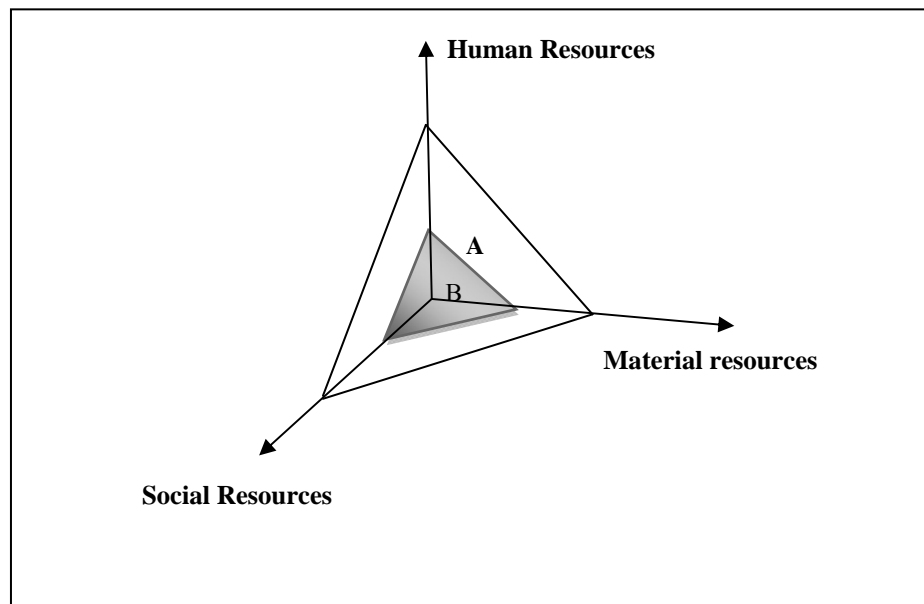
Human Resources. These are productive resources. They determine capacity to acquire skills and knowledge which influence material resources. This domain has two indicators, socioeconomic status and health. These indicators are represented by four variables: educational attainment, place of residence, whether rural or urban, disability and chronic illness.

Material Resources. This domain has two indicators, income security and housing tenure which are protective resources. These resources allow an individual to obtain basic life necessities. The three variables in this domain represent financial independence and security. Irrespective of the actual amounts, income from current employment or intergenerational transfers in the form of pensions is important for the well-being of the elderly. Home ownership represents security and may also be a source of income in the form of rent.

Social Resources. These resources refer to support networks found in the family and kin. They are indicators of support and assistance and are strongly related to overall health and quality of life in old age. This domain has two indicators, kin availability and

living arrangements, and four variables: marital status, fertility, household status and household size.

Figure 13: The ESVI Model



Source: Adapted from Villagrán de León (2001/2006:311).

As illustrated in figure 13, social vulnerability in old age is comprised of three dimensions: human resources, material resources and social resources. According to this model, movement along an arrow out from the center indicates a greater level of a particular resource. So the best outcome for an individual or household is to have high levels of all three resources. Conversely, the lower the levels of these resources, the higher will be the levels of vulnerability. According to the model, B would be more vulnerable than A since B has less of each resource than A. The model also indicates the

dynamic nature of the phenomenon and implies that having high levels in one domain only may not effectively prevent social vulnerability.

Selection of Indicator Variables

The choice of indicators is one of the most critical steps in the construction of an index, since at the most fundamental level the quality of an index is dependent on the choice of indicators (Vincent 2004). Indicators for the ESVI were selected based in the first place, on their theoretical relevance. The primary concern was to select variables that fit the theoretical understanding of social vulnerability. However, the choice of indicators was constrained by the availability of data, which were not collected specifically for the development of the index. The variables were also expected to be related, but not highly correlated as this would indicate redundancy (Jollards, Lermitt and Patterson 2003). Based on these criteria the following eleven variables were selected for inclusion in the index (table 20).

Educational Attainment. Education is an important determinant of SES. Through education people acquire skills and abilities to help ward off social vulnerability in old age. Overall, educated people have more resources and a higher standard of living (House 1994). They also have better health. This variable measures the completion of primary education which requires at least six years of formal schooling and was the standard educational level at the time when the elderly were at that stage of development

Place of Residence. This variable describes the classification of a community based on characteristics such as population size, the availability of modern amenities and utilities and land use (STATIN 2003). A Jamaican community is classified as urban if it

has a population of 2000 or more and has a variety of land use patterns including commercial, industrial, and residential. There were forty-five centers so classified in the 2001 census. Urban areas are associated with higher SES and access to a wider range of services, while rural areas tend to have higher rates of poverty.

Disability. The existence of physical, sensory or mental impairments can make people unable to perform their daily tasks or limit their ability to do so. As measured in the 2001 census, disability included sight, hearing, speech, physical, and mental problems that restrict capability to perform particular activities.

Chronic Illness. This variable refers to the existence of a permanent or long-term illness that can cause changes to the body, thus limiting the kind or amount of a person's activity. The 2001 census identified arthritis, asthma, diabetes, hypertension, heart disease, and glaucoma as the major chronic illnesses affecting the Jamaican elderly.

Work Status. Participation in the work force improves the socioeconomic condition of the elderly. Those who continue to work have reduced experience of poverty. This variable is defined as direct or indirect income-earning activities which may include being employed, self-employed, or an apprentice as well as involvement in a for-profit organization with non-cash benefits.

Pension Support. Pension income accounts for a significant share of older adults' resources. This variable represents the receipt of formal intergenerational transfers in the form of income, including the National Insurance (state pension), private and occupational pensions and social assistance (non-contributory cash transfer benefits given to various categories of elderly persons on a regular basis).

Housing Tenure. Housing is an important asset for older persons. In addition to ensuring secure shelter, housing is a source of income as it generates rent and is commonly used as a base for productive activities. Home ownership also generates savings from “imputed rent” This variable refers to legal ownership of the living quarters.

Marital Status. Marital status is pivotal to the living arrangements, wellbeing and social relationships of older people. The marital status variable refers to involvement in a legal conjugal union. While common-law unions do not carry negative social sanction in general, marriage represents greater security and commitment and is the preferred union status (Safa, 1986).

Fertility. The presence of children is an indicator of resources for the support of the elderly. Generally, more children indicate more resources to support aged parents. This variable measures the number of children born per woman on average for five-year age group birth cohorts, by year. These age cohorts are between ages 14 and 59 which is the reproductive period.

Household Status. The position of the elderly in the household is an indicator of their status and influence as well as their ability to make decisions. The underlying assumption is that headship confers more power and independence in how resources are used. This variable captures the position of the elderly in the household, either as the head or spouse of the household, assuming shared power and equality.

Household Size. This variable measures the number of persons usually resident in a dwelling irrespective of whether they are related by blood. Co-residence is the major means of intergenerational support for the elderly in less developed countries. Using the

mean and standard deviation, a household consisting of between two and five members was calculated to be the optimal size.

Table 20: The Conceptual Structure of the ESVI

DOMAIN	INDICATOR	INDICATOR VARIABLES	DEFINITION OF INDICATOR VARIABLES
Human resources or assets: The variables in this domain measure skills and productive capacities. These are productive resources	Socioeconomic status	Years of schooling	Proportion of elderly population with 6 or fewer years of formal education
		Place of residence	Proportion of the elderly population residing in rural areas
	Health and Functional capacity	Disability	Proportion of the 60+ population with one or more disabilities
		Chronic illness	Proportion of the 60+ population with one or more chronic illness
Material resources or assets: These variables are an indication of financial independence and security. They are protective resources	Income security	Employment status	Proportion of the 60+ population not in paid economic activity
		Pension support	Proportion of the 60+ population not in receipt of a pension
	Housing tenure	Home ownership	Proportion of 60+ population who own their living quarters
Social resources or assets: The variables in this domain indicate social networks and relations among people. These are supportive resources	Kin availability	Marital status	Proportion of 60+ population not in a marital union
		Fertility	Proportion of the 60+ population with no children
	Living arrangements	Household status	Proportion of the 60+ population who are neither the head nor spouse of the household head
		Household size	Percentage of the 60+ population living alone or in households with more than six persons

Treatment of Missing Variables

Exploratory data analysis revealed the problem of missing data due to item nonresponse which resulted from participants failing to provide data for all the variables (McKnight et al. 2007). This is not uncommon in social science research, especially research which uses existing statistics (McKnight et al. 2007; Allison 2002; Neuman 2000). Missing data have a wide range of consequences, including reduced sample size and weakened validity and reliability, with implications for our understanding and explanation of the phenomenon being studied (McKnight et al. 2007). Strategies to address the problem of missing data hinge on the reason they are missing, the pattern of their missingness, as well as the amount that is missing. When data are missing completely at random, there is no pattern in the distribution of the missing data as they are randomly distributed throughout the sample. That is there is no relationship between the missing values on a particular variable and other variables in the dataset and no relationship between the missing values and the values of the variable itself (Peugh and Enders 2004). These are typically eligible for deletion.

On the other hand, data are missing at random when the probability of data not being recorded is influenced by other variables in the dataset but is not related to the individual's score on the variable (McKnight et al 2007; Acock 2005). Under the missing at random assumption, persons with missing data on a variable do not have lower or higher scores than those for whom data are recorded (Allison 2001). Data may also be missing not at random or unignorable, in which case the probability of missing data on a variable is related to the underlying values of the variable (Acock 2005; Little and Rubin 2002). Deleting these values could be problematic.

The amount of missing data is also important in determining how the problem should be addressed. Amount could refer to the number of individuals with missing data, the total number of observations missing from a variable or the total number of missing observations from a dataset (McKnight et al. 2007). All of these have different ramifications. The problem of missing values in multivariate data is typically addressed through complete-case analysis, available-case analysis or imputation (Little and Rubin 2002). So the analyses involve only those cases for which there is complete information. This is the standard method of dealing with missing data and it entails the dropping of incomplete cases or listwise deletion. While this method is simple, it has the potential to lead to loss of information since it discards a large proportion of data and could significantly reduce the sample size (Carlin et al. 2003). This method could also lead to bias if the data are not missing completely at random. On the other hand, since listwise deletion assumes that the data are missing completely at random, the reduced sample size is a random sub-sample of the original data with similar, if larger, standard errors and test statistics (Allison 2001).

Unlike complete-case analysis, available-case analyses omit only cases that do not have data on the variable under consideration. This method therefore uses all the observed data, but the sample size changes for each variable which could be problematic for certain statistical procedures such as those requiring correlation (McKnight et al. 2007; Little and Rubin 2002).

The third general method of dealing with missing data is filling in the missing values or imputation (Little and Rubin 2002). In particular, multiple imputation is now a widely used approach to deal with missing values. Unlike traditional methods, multiple

imputation imputes a number of plausible values, anywhere between 3 and 10, for each missing item, creating several completed data sets. The missing values are developed to reflect variability and uncertainty in the data (King et al. 2001). Multiple imputation is an attractive option because it retains a full sample, it offers the possibility of a complete dataset, and it facilitates comparison by ensuring that the same set of units is used (Schafer and Graham 2002). Nevertheless, imputation carries with it the danger of forgetting that the imputed values are not real (Little and Rubin 2002).

Analysis of the pattern of missing data showed that eighty-one percent of the cases had no missing data. Of the remaining 3,821 cases (19 percent of the data), 15 percent had only one missing variable (table 20). This accounts for almost 96% of the data. All variables, except “social security” had less than five percent missing values (table 21). For these variables, all incomplete cases were dropped which is the general rule of thumb (Garson 2008). The large size of the sample relative to the size of missingness also supported the decision to delete incomplete cases (Little and Rubin 2002).

Table 21: Pattern of Missing Data

<i>NUMBER MISSING</i>	<i>FREQUENCY</i>	<i>PERCENT</i>	<i>CUMULATIVE PERCENT</i>
0	16,415	81.12	81.12
1	3,141	15.52	96.64
2	447	2.21	98.85
3	115	0.57	99.42
4	51	0.25	99.67
5	20	0.10	99.77
6	18	0.09	99.86
7	1	0.00	99.86
8	28	0.14	100.00
Total	20,236	100.00	

Table 22: Distribution of Missing Values

<i>VARIABLE</i>	<i>NUMBER MISSING</i>	<i>PERCENT MISSING</i>
Urban/rural residence	0	0.0
Household status	0	0.0
Marital status	236	1.2
Disability	571	2.8
Household size	48	0.2
Social security	1954	9.7
Chronic illness	963	4.8
Fertility	0	0.0
Housing tenure	252	1.2
Work status	377	1.9
Educational attainment	622	3.1
n = 20,236		

The “social security” variable presented a different situation since the rate of missingness was almost ten percent. In general, data that are missing completely at random should have no systematic effect and so are eligible for deletion (McKnight et al. 2007). *T*-tests of mean differences on two key variables, sex and rural-urban residence, were carried out to determine whether the data for social security variable were missing completely at random. Dummy codes (0 = non-respondents, 1=respondents) were created for the two variables. The *t*-tests revealed that respondents were different from nonrespondents according to sex ($t=6.08$, $p = 0.000$) and rural-urban residence ($t=12.61$, $p=0.00$). This indicated that the data might not be missing completely at random excluding listwise or casewise deletion as an appropriate treatment.

Under the missing at random assumption, multiple imputation using the STATA ICE (Imputation by Chained Equations) program was used to handle item missingness for social security, the only variable with more than five percent missing values. Multiple

imputation is a widely used approach for missing values analysis because of its ability to cope with missing data in all types of data and its simplicity (Carpenter, Kenwood and White 2007; White, Wood and Royston 2007). STATA ICE creates one dataset with several copies of imputed data by regression of the missing variable(s) on a set of predictor variables (Multiple Imputation Using Ice). The program samples from the distribution of the incomplete variable based on the observed values and the explanatory variables included in the imputation model to find a set of observed Y values that are close to the missing values (White, Wood and Royston 2007). These imputed values are then used to fill in the missing observations.

For this study, the social security variable was regressed on place of residence and household status variables. A total of ten imputed datasets were generated through the process. The sample size after imputation was 17,874.

Relationship Between Variables

Obviously there is a relationship between the domains and indicators in an index and this is affected by the type of model being developed. In causal indicator models like the ESVI, the indicators determine the domain and so changes in the domain do not affect the indicators. In other words, the indicators are unrelated and contribute independently to the domain. This is different from effect models in which the variables are dependent on the domain. In these cases the high level of covariance means that changes in the domains affect the variables making up the domain (Bradshaw, Hoelscher and Richardson, 2007).

Table 23: Pearson Correlation Coefficients Among the Eleven Indicators in the ESVI

<i>VARIABLES</i>	<i>EDUCATION</i>	<i>URBAN/ RURAL</i>	<i>DISABILITY</i>	<i>CHRONIC ILLNESS</i>	<i>TENURE</i>	<i>ECONOMIC ACTIVITY</i>	<i>SOCIAL SECURITY</i>
1. Education	1.000						
2. Urban /rural	0.0330 0.0000	1.0000					
3. Disability	0.0525 0.0000	0.0494 0.0000	1.0000				
4. Chronic illness	0.0259 0.0002	0.0501 0.0000	0.1853 0.0000	1.0000			
5. Tenure	0.0345 0.0000	-0.1356 0.0000	0.0130 0.0647	-0.0380 0.0000	1.0000		
6. Economic activity	0.0193 0.0059	0.0007 0.9197	0.1374 0.0000	0.2013 0.0000	-0.0454 0.0000	1.0000	
7. Social security	0.0006 0.9268	0.0111 0.1134	-0.0602 0.0000	-0.0913 0.0000	0.0627 0.0000	-0.1697 0.0000	1.0000
8. Household status	0.0301 0.0000	-0.0609 0.0000	0.1460 0.0000	0.0289 0.0000	0.0872 0.0000	0.0931 0.0000	-0.0056 0.4288
9. Marital status	0.0049 0.4871	0.0115 0.1016	0.0588 0.0000	0.0995 0.0000	-0.0260 0.0002	0.1177 0.0000	-0.1117 0.0000
10. Household size	0.0331 0.0000	0.0284 0.0001	0.0138 0.0503	-0.0380 0.0000	0.0944 0.0000	-0.0322 0.0000	0.0219 0.0019
11. Fertility	0.0577 0.0000	0.3317 0.0000	0.1502 0.0000	0.1443 0.0000	-0.1025 0.0000	0.1587 0.0000	-0.1467 0.0000
<i>Variables</i>	<i>Household size</i>	<i>Material resources</i>	<i>Household status</i>	<i>Fertility</i>			
8. Household size	1.0000						
9. Marital status	0.1180 0.0000	1.0000					
10. Household status	-0.0843 0.0000	0.0912 0.0000	1.0000				
11. Fertility	0.1027 0.0000	0.1597 0.0000	0.0037 0.5982	1.0000			

The results of the pairwise correlation with unadjusted *P*-values show that the variables are weakly correlated. Highest correlations were between fertility and place of residence and fertility and household size (table 23). High correlation among the variables would suggest redundancy which is not desirable in an index (Babbie 2001). On the other hand, the low co-variance indicates that the variables are capturing different aspects of the phenomenon.

Principal Components Analysis

Principal Components Analysis (PCA) procedure was used to estimate the appropriate components or variables for inclusion in the index. Principal components analysis is an exploratory tool to uncover trends in data, a way to identify predominant variables in a large, multivariate dataset (SAS Institute 2008). The underlying assumption of PCA is that some of the variables are correlated and so there is redundancy in the information they provide. The procedure therefore helps to determine which of the variables best represent the structure of the data (Hatcher 1994). To accomplish this, PCA reduces the number of variables to a smaller number of variables or principal components that account for most of the variance. Each variable contributes one unit to the total variance, so total variance is equal to the number of variables. Usually, the first component accounts for the largest variance, while subsequent components progressively account for smaller proportions. Generally, the first few components contribute most to the variance and are therefore the ones that are extracted for analysis (StatSoft 2007).

Garson (2008) discusses four of the criteria for determining which variables to retain from a PCA. Most commonly used is the Kaiser-Guttman rule which selects

factors with eigenvalues greater than 1. Eigenvalues represent the amount of variance accounted for by a particular component. This procedure retained four of the eleven factors which accounted for 48 percent of total variance. While eigenvalues can prove reliable, using this method may result in the wrong number of components being retained, especially where there are eigenvalues that are close to, but not quite 1.

In the end, all eleven indicators were included in the index since all demonstrate conceptual and theoretical relevance to social vulnerability in old age. Further, the lack of statistical relevant correlation among the variables demonstrated a low likelihood of common factors among them, making principal component analysis an unsuitable method to select the variables for the index. This does not mean that these are the only pertinent indicators as it would be difficult to include all the possible representations of a complex concept like social vulnerability (Bradshaw, Hoelscher and Richardson, 2007; Land, Lamb and Mustillo 2001). For instance, communities are sources of support for older adults, especially in rural areas and inner-city communities (Barrientos, Gorman and Heslop 2003; Sutton and Matiesy-Barrow 1986). Membership in interest communities such as religious organizations and other such groups is also likely to bring benefits in terms of social support and help to reduce vulnerability. Once selected, the variables were operationalized (table 24).

Table 24: Operationalization of the ESVI

<i>VARIABLE</i>	<i>INDICATOR VARIABLE</i>	<i>HYPOTHESIZED RELATIONSHIP</i>	<i>VALUES</i>
Socioeconomic status Indicator of the resources that an individual controls and has access to	Educational attainment	The fewer the years of formal education the greater the level of vulnerability	1. < 6 years of schooling 0. 6 or more years of schooling
	Rural/urban residence	The rural elderly are at greater risk of vulnerability than urban elders.	1. Rural residence 0. Urban residence
Health and functional capacity The ability of the individual to perform activities in a manner considered normal	Disability	Having one or more disability increases the risk of vulnerability	1. 1 or more disabilities 0. No disability
	Chronic illness	Having one or more chronic illness increases the risk of vulnerability	1. 1 or more chronic illness 0. No chronic illness
Income security The availability of an independent source of income	Employment status	Employment reduces the risk of vulnerability in old age	1. Not employed 0. Employed
	Pension support	Having a pension reduces the risk of vulnerability in old age	1. No pension 0. State or private pension
Housing tenure Access to secure accommodation	Home ownership	Ownership of living quarters reduces the risk of vulnerability in old age	1. Living quarters not owned 0. Living in own home
Kin availability The existence of family and kin network that are potential sources of support	Marital status	Being in a marital union decreases the risk of vulnerability in old age	1. Single 0. In union
	Fertility	Elderly persons with children have a lower risk of vulnerability in old age	Imputed number of children according to age-specific cumulative fertility rate: values ranged between 4.8 and 6.4
Household and living arrangement The probability of actually receiving support based on proximity	Household status	Being the head or spouse of the household head reduces the risk of vulnerability	1. Other member of household 0. Household head or spouse
	Household size	Living alone increases the risk of vulnerability although a large household is also an indicator of vulnerability	1. Solitary living or in household with >6 persons 0. Co-resident 2-5 persons

Normalization

Since the variables have different units of measurement they were normalized using standardization procedures. Standardization transformed the raw variable scores into z-scores by applying the formula

$$I = (\text{actual value} - \text{mean}) / \text{standard deviation}$$

where the actual value was the individual score on each indicator. This normalization procedure converts the indicators to a common scale with an average of 0 and a standard deviation of 1. Z-scores make it easier to compare the scores of different distributions and the relative positions of cases across different variables (Bernard 2006; Johnson and Christensen 2000). However, since standardization is based on the standard deviation, indicators with extreme outliers have a greater effect on the index (Saisana and Tarantola 2002).

Weighting and Aggregation

The purpose of weighting is to estimate the importance of the variables. However, without theoretical or empirical justification, assigning weights to the indicators is often arbitrary and subjective (Moore, Vandivere and Redd 2006; Saisana and Tarantola 2002). Most composite indexes do not apply weights and the indicators are generally considered to be independent and equally important (Dwyer et al. 2004; Booysen 2002; Babbie 2001). In any event, weighted and unweighted indexes yield similar results (Brigguglio 2003; Neuman 2001).

The ESVI adopts equal weighting for indicators as well as domains. The decision to use equal weighting was influenced by two main considerations. First, the low correlation between indicators suggested that principal component analysis might not be

an appropriate method to assign weights. Second, without knowledge of the relative importance of each factor, equal weighting for all was the best option (Moore, Vandivere and Redd 2006). While there was no explicit weighting, standardization introduced implicit weighting since variables with greater dispersion of values have higher z-scores and therefore have more weight in the composite (Bradshaw, Hoelscher and Richardson, 2007). Based on the assumption that the constituents of the index are important to understanding the overall pattern of vulnerability, equally weighted domains was the preferred choice. However, this raised the possibility of an index with an unbalanced structure as all three domains of the index do not have equal number of variables (Nardo et al 2005). Since it was assumed that all the domains contribute equally to the index, a constant of .33 was applied to each domain to produce the following equation:

$$ESVI = wHR + wMR + wSR$$

where HR, MR and SR are the scores of the human, material and social resources sub-indices or domains and w is the constant coefficient of .33 as a uniform weight for all domains. The overall composite index was derived by summing the three component indices. The operational form of the index is represented below:

$$ESVI = \underbrace{.33 (I_1 + I_2 + I_3 + I_4)}_{\text{Human resources}} + \underbrace{.33 (I_5 + I_6 + I_7)}_{\text{Material resources}} + \underbrace{.33 (I_8 + I_9 + I_{10} + I_{11})}_{\text{Social resources}}$$

Just as there is no one best way to determine weights or no agreed methodology, there are also different ways of aggregating the indicators to produce the final index.

Aggregation serves the purpose of combining the indicators and variables in a meaningful way to represent the theoretical concept that is being modeled. Generally the type of aggregation is related to the method of normalization and linear aggregation. For the ESVI a linear aggregation method was chosen. This method assumes that the indicators have preferential independence. In other words, the indicators are mutually independent and contribute separately to the index. Linear aggregation also implies full compensability which means that poor performance on some indicators can be compensated by higher performance on others (Saisana and Tarantola 2002). The index employs an additive form in which the overall result is the sum of the average scores for each dimension. In using this format the ESVI combines the properties of composite and aggregate indices in that it gives an overall score but it also shows the contribution of the sub-indices to the aggregated index. Use of this approach is based on the assumption that each domain deals with a distinct dimension of social vulnerability and therefore makes a unique contribution to the aggregated composite. In its final form the index is:

$$ESVI = D1_{\text{Human resources}} + D2_{\text{Material resources}} + D3_{\text{Social resources}}$$

Sensitivity and Uncertainty Analysis

Constructing a composite indicator is an inherently subjective process (Booyesen 2002). At different points in the construction of the index judgment is involved, leading to uncertainty. For instance there are uncertainties about how the phenomenon is conceptualized and about the structure and form of the model. There are also technical uncertainties relating to the selection of indicators, weighting and choice of aggregation

methods (Rotmans and van Asselt 2001). Possible errors in the data also create concerns about uncertainty. These have implications for the robustness of the index.

Sensitivity tests and uncertainty assess the robustness of a composite indicator (Saltelli et al 2005). Uncertainty analysis seeks to determine the effect of uncertainty in the input factors on the index. Sensitivity analysis, on the other hand, seeks to determine how much of the variation is attributable to the different sources of uncertainty, including the selection of indicators, the method of aggregation, the weights of the indicators and the categories used in computing the index (Nardo et al. 2005; Saisana and Tarantola 2002). After all, there are many indicators of vulnerability and alternative ways of formulating any index (Baulch, Wood and Weber 2006; Land and Lamb 2001).

In order to test the robustness of the ESVI, several sensitivity tests were carried out. The measures included: alternately excluding and including indicators, using unweighted and equally weighted indicators, calculating the index with and without imputation for missing data, and using standard deviation and quintiles to develop cut-points for the scores. Table 25 summarizes the changes in ranking resulting from the use of alternative formulations of the index. The results show that rankings remain the same whether the domains are weighted or not. However, there are some changes in ranking when missing values are not imputed. Some sensitivity was also observed for Kingston which moved down five places when the rural-urban variable was excluded and when there was no imputation for missing values. The overall evidence demonstrates that whatever method is used, the parishes at the top and the bottom do not change and there are only a few changes in ranking in the middle (appendix M-1 to M-3). These results

provide evidence that the ESVI is robust, thereby increasing confidence in its ability to assess social vulnerability.

Table 25: Comparative Ranking of Parishes on the ESVI and with Alternative Formulations

<i>ESVI</i>	<i>PARISH</i>	<i>WITHOUT IMPUTATION</i>	<i>EQUAL WEIGHTING</i>	<i>WITHOUT RURAL/URBAN</i>
1	St. Andrew	1	1	1
2	Kingston	7	2	10
3	St. James	2	3	2
4	St. Catherine	4	4	8
5	Westmoreland	3	5	4
6	Manchester	5	6	5
7	St. Ann	6	7	6
8	St. Mary	9	9	3
9	St. Thomas	8	8	7
10	Trelawny	11	11	12
11	Hanover	10	10	9
12	Portland	12	12	11
13	Clarendon	13	13	13
14	St. Elizabeth	14	14	14

Validation and Application of Index

Essentially, validation seeks to confirm the model by testing its performance. This step in the process asks whether the model adequately represents reality and whether it is empirically and theoretically sound (Rotmans and van Asselt 2001). These questions revolve around the issues of validity and reliability which can be especially challenging when an index is being developed at the local level (Bobbitt 2005). As Vincent (2004) quite correctly suggests, the availability of data often impinges upon the choice of indicators, and as such, an index is a function of the indicators that comprise it. Careful selection of indicators based on credible sources and proper grounding in the literature

and theory were used to help improve reliability. In other words, the indicators are judged as reliable because their sources are (Bobbitt 2005). Ultimately, however, consistency over time is the best indicator of reliability.

Validity poses yet another challenge where there are no benchmarks against which a new index such as the ESVI can be tested. With no published instrument designed to measure social vulnerability in the older population, it was not possible to compare the ESVI with another measure and establish criterion validity. Rather, construct validity was established by testing whether the index was able to differentiate subgroups of elderly hypothesized to differ on their level of vulnerability. Construct validity assesses the ability of an instrument to measure complex constructs, such as social vulnerability, that have multiple indicators and are not directly observable (Neuman 2000). The process entails examining hypothesized relationships between the construct and other variables (Babbie 2002). An instrument demonstrates construct validity if the indicators operate in a way consistent with theoretical expectations (Singleton and Straits 1999).

Establishing 'known groups' validity is one way of showing that the instrument has the capability to measure what it says it will. Evidence for the ESVI was sought by examining differences in mean scores across independent samples (Garson 2008). Correlations between total ESVI scores and the constituent domains were also assessed. In time, however, the validity of the ESVI can be assessed against the poverty map of Jamaica which is still in the developmental stage. Using the indicator variables in empirical research will also determine how well it correlates with the experiences of the population (Bobbitt 2005).

In order to answer the research questions and fulfill the objectives, several operations were performed with the derived index. The ESVI was presented in tabular form in ranked order to show the relative position of the parishes. Inverse ranking of the scores makes it possible to easily identify the areas with the smallest and greatest concentration of vulnerable elders. Bar charts were also used to graphically illustrate how the parishes compare. The index scores have also been displayed spatially making it easy for the picture to be seen and aiding interpretation of the observed patterns. Standardized scores were used to create break points that define quintiles. The use of quintiles provided an alternative powerful tool to facilitate across country comparisons and capture within parish differences. Analysis by quintiles also makes it easier to compare the ESVI results with other measures used by the Planning Institute of Jamaica in the Jamaica Survey of Living Conditions.

The results for the index and also for each domain were analyzed according to sex, age category and parish of residence. These analyses were carried out at three levels. First, the overall results of the index were analyzed to present the general picture of vulnerability. The index was then disaggregated according to the component indicators to make the issues underlying social vulnerability more meaningful. Analysis also took place at the level of the domains to identify the contributions of each area to overall vulnerability.

Conclusion

The ESVI provides a useful tool to assess the current situation of the elderly with regard to their level of social vulnerability. The specific advantage of the ESVI lies in its design

and structure which help to make it comprehensive and versatile. Not only can the index indicate overall vulnerability scores but it can also reveal the contribution of each domain and indicator to the score, making it easier for areas of weakness to be identified. This facilitates the development of appropriate measures to address these problem areas.

With the appropriate data the ESVI can be used to perform multi-level vulnerability analysis. So while this particular application of the index is designed for the sub-national level, the ESVI has the potential to assess vulnerability at the individual or community level, giving it wider applicability. It also has the potential to be used for cross-national analysis and to monitor changes overtime, both of which are advantages of using census data. In terms of its structure, the ESVI manages to balance the need for comprehensiveness against the need for parsimony with enough indicators to present a truthful picture but not too many to complicate the analysis. The dimensions are also simple and the methodology easily applicable.

Like other composite indices, the ESVI has limitations one of which is its quantitative nature. The ESVI offers a quantitative approach to the study of social vulnerability, but there is a qualitative side to social vulnerability assessment which cannot be done with the use of figures. Qualitative methods will therefore be helpful in painting the total picture. Another limitation of the ESVI stems from the use of judgment at various stages in the development process. These judgments are based on theoretical and statistical principles, therefore minimizing the potential for negative effects. Despite these limitations, the ESVI is a well-designed and developed instrument with tremendous potential for the study of social vulnerability.

CHAPTER IX

ESVI RESULTS AND ANALYSIS

This chapter presents and analyzes the results of the Elderly Social Vulnerability Index (ESVI). The ESVI is a measure of the availability of support for elderly Jamaicans based on their access to human, material and social resources. The index measures vulnerability on an increasing scale, so higher values are worse than lower values (Jollands 2003). Negative scores therefore indicate lower levels of vulnerability. The main analyses are carried out in several parts. First an overall picture of the index is presented. Next the results are analyzed according to the three domains, human resources, material resources and social resources. Then a series of indicator analyses is conducted. Finally, the results are analyzed using ESVI quintiles. These quintiles represent ESVI scores rather than population. All the analyses examine vulnerability scores for the nation, for sex and age categories and for each of the fourteen parishes. The analyses use *t*-tests and one-way ANOVA to establish whether there are differences in the means. All statistical analyses are carried out using STATA 10 for Windows and Microsoft Office Excel 2007.

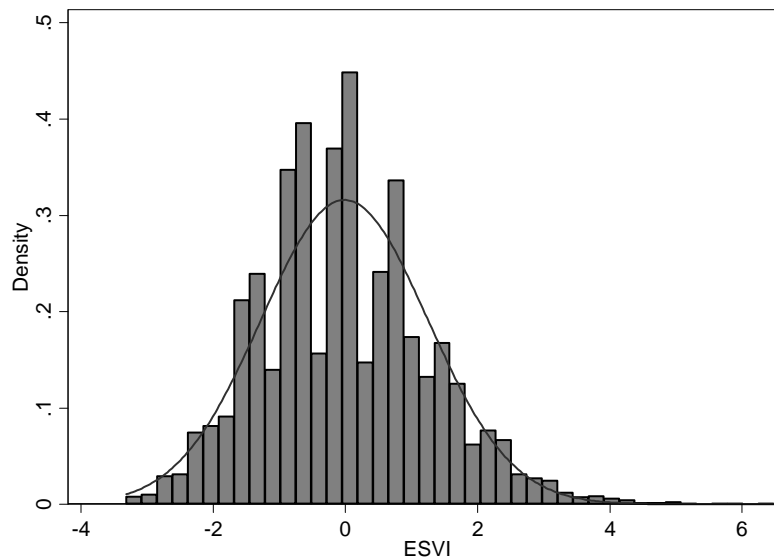
Results of the Elderly Social Vulnerability Index

Overall Picture

The mean value of the ESVI is -0.0139 with a standard deviation of 1.2622, a clear indication of extreme values. The values range between -3.3129 and 6.4777 with a median value of -0.0683. Ninety percent of the scores fall between -2.6398 and 3.2395.

According to the confidence interval, 95 percent of the time the population mean of the ESVI falls between -0.0324 and 0.0045. The ESVI is right-skewed (skewness .3942) with a heavier than normal right tail as indicated by a skewness-kurtosis test (3.2610). Considered jointly, both of these statistics confirm nonnormality ($P = 0.0000$; kurtosis = 0.000). In addition to being skewed, the distribution has a number of peaks since the indicators are proportions based on the presences or absence of a given trait (figure 14).

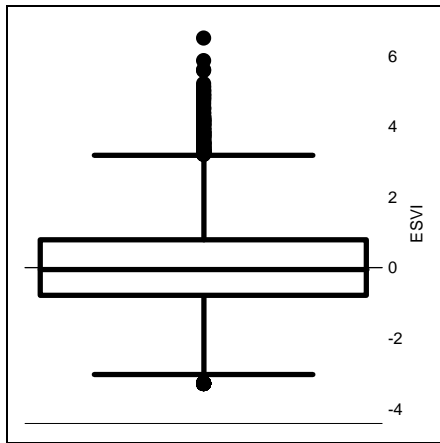
Figure 14: Distribution of the ESVI



The box plot (figure 15) and five-number summary¹⁸ (3.3129 -0.8168 -0.0683 .7810 6.4777) show that ESVI scores are not widely spread as fifty percent fall between -0.8168 and 0.7810. The small interquartile range (1.5978) also indicates the small spread in the scores. However, there are a number of unusual outliers and extreme cases, most of which are above the maximum value.

¹⁸ The minimum value, 25th percentile, median, 75th percentile and maximum value

Figure 15: Box Pot of ESVI

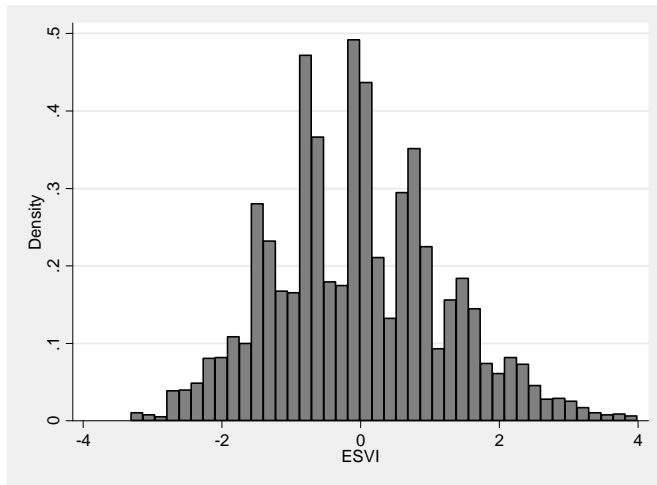


The Outliers

Further analysis shows that there are 63 cases with ESVI scores greater than +4 which is taken as the cut-off point for outliers. A common statistical practice is to drop values that deviate significantly from the rest of the sample to improve validity of the mean of a sample distribution (Sheskin 2004). Outliers may be the result of errors in which case they are corrected or dropped. However, they may be indicating extraordinary observations that need to be investigated. Ultimately how outliers are handled is left up to the researcher's judgment (Moore and McCabe 2003). Given the nature of the phenomenon being studied and the objective of the ESVI to identify special needs areas, it was not considered expedient to drop the extreme values. Instead, they were analyzed and incorporated into the study.

The exclusion of the outliers changed the mean of the ESVI from -0.01398 to -0.02999, and the standard deviation from 1.2622 to 1.2349. Figure 16 shows the distribution of the index without outliers.

Figure 16: ESVI Without Outliers



As shown in table 26, females account for 73 percent of persons with ESVI values above 4.0. This is almost three times the number of males. The table also shows that most of the elderly with extremely high ESVI scores fall in the oldest age group (45 percent), more than twice the number of 60-74 year olds (22 percent).

Table 26: Age and Sex Distribution of Outliers

<i>AGE CATEGORY</i>	<i>MALE</i>	<i>FEMALE</i>	<i>TOTAL</i>
60-74	4	10	14
75-84	7	12	19
85+	6	24	30
Total	17	46	63

Table 27: Parish Distribution of Outliers

<i>PARISH</i>	<i>FREQUENCY</i>
St. Thomas	1
St. Mary	4
St. Ann	9
Trelawny	7
St. James	3
Hanover	2
Westmoreland	6
St. Elizabeth	13
Manchester	3
Clarendon	7
St. Catherine	8
Total	63

Table 28: Indicator Analysis of Outliers

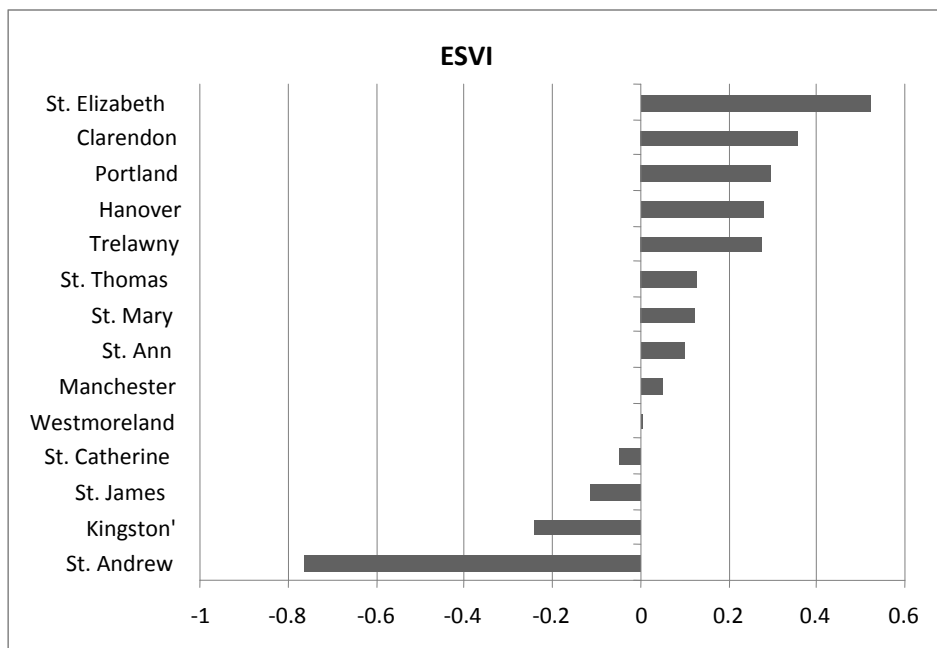
<i>INDICATOR VARIABLES</i>	<i>DESCRIPTION</i>	<i>FREQUENCY</i>	<i>PERCENT</i>
Educational attainment	Less than 6 years of schooling	56	88
Place of residence	Rural residence	56	88
Disability	One or more disability	51	81
Chronic illness	One or more chronic illness	56	88
Employment status	Not employed	63	100
Pension support	No pension	41	65
Housing tenure	Owns home	45	71
Marital status	Married	45	71
Fertility	Number of children per woman per 5 year age groups	4.8	4
		4.9	2
		5.1	7
		5.2	1
		5.7	1
		5.8	7
		5.9	8
		6.0	11
		6.1	8
		6.4	7
Household status	Head or spouse of head	38	60
Household size	Lives alone or with more than 6 persons	39	62

Table 27 indicates that the parish of St. Elizabeth has more outliers than any other parish (13 or 21 percent), while there are none in the parishes of Kingston, St. Andrew and Portland. Table 28 shows how the outliers score on the eleven indicator variables.

Parish Differences in Index Results

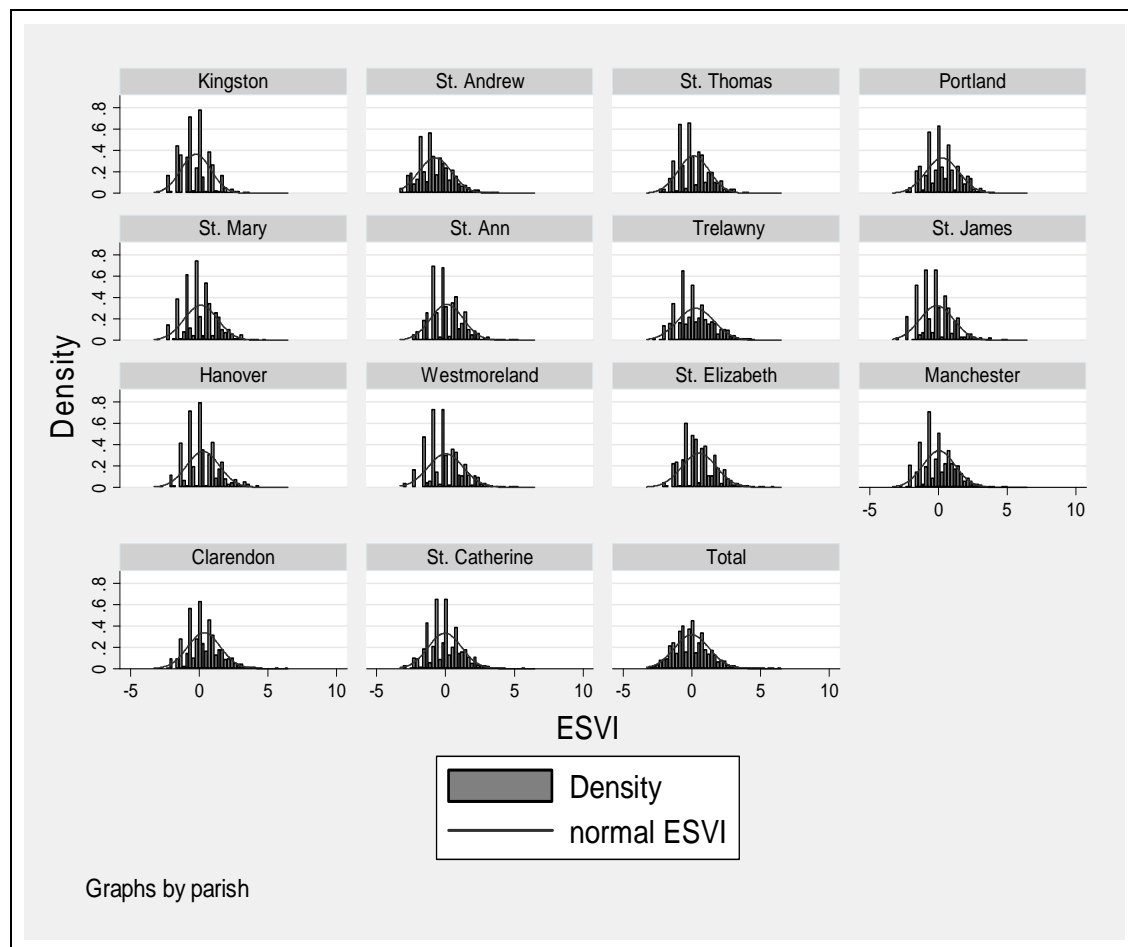
Mean scores (figure 17 and appendix N) show that the elderly in St. Elizabeth have the highest vulnerability scores, followed by Clarendon, Portland and Hanover in that order. At the other end of the vulnerability scale, is St. Andrew which has the lowest level of elderly vulnerability, followed by Kingston and St. James. These areas have in common high rates of urbanization. Kingston and St. Andrew constitute the Kingston Metropolitan Area which holds the nation's capital, while St. James is the location of the second city.

Figure 17: Parish Distribution of ESVI Scores



These results suggest that urbanization, along with its associated advantages, may provide some kind of protection against vulnerability in old age, or at least suppress its development. It is important to note that while St. Andrew and Kingston have the lowest levels of vulnerability, well below the country mean of -0.0139, there is a big difference in their index scores. The results of a *t*-test show that the difference between the scores of St. Elizabeth and St. Andrew are statistically significant ($t = -32.09$, $p < 0.001$).

Figure 18: Comparative Parish Distributions of the ESVI

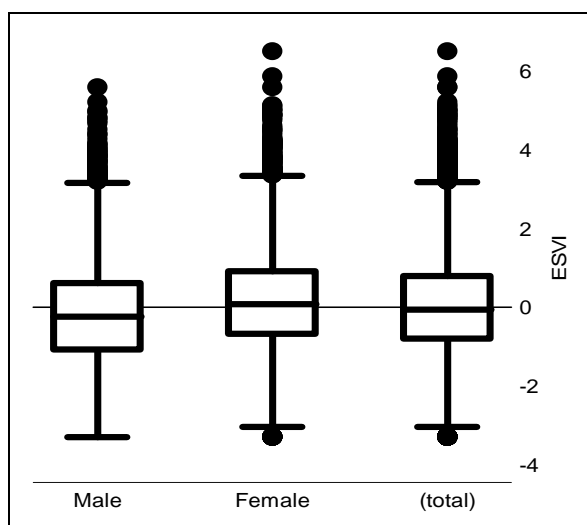


The series of histograms in figure 18 shows the relative frequencies of the ESVI for all parishes. From these images it can be seen that all the distributions are skewed, and that St. Andrew is the most skewed. St. Andrew also has the lowest peaks, while Kingston and Hanover have the highest. The distribution of St. Catherine appears to be the most uniform. Also of interest is where in the distribution the highest peaks fall. In the cases of Portland, Hanover and Clarendon, the highest peaks are on the positive side indicating higher frequencies of high vulnerability scores. The pattern is the opposite for most other parishes being most obvious in Kingston, St. Andrew and Manchester.

Sex Differences in Index Results

According to the mean ESVI scores, males are less vulnerable than females. The box plots in figure 19 show that the lowest overall female score is lower than the lowest male score as are the mean and median. Males have a mean score of -0.2216, a median of -0.2389 and values ranging between -3.3129 and 5.5743.

Figure 19: Box Plot of ESVI Results by Sex



The mean and median scores for females are 0.1689 and 0.0628, with the overall values ranging between -3.3129 and 6.4777. More than one-half of male scores are above the median, while a little more than half of female scores fall below the median value. The results of a *t*-test confirmed that there is a statistically significant difference between the mean ESVI score for males and females ($t = -20.8917$; $p < 0.0001$). In other words, male and female scores are statistically different.

This pattern of lower male vulnerability holds across all parishes with males in St. Andrew having the lowest overall vulnerability. Although females in St. Andrew and Kingston also show low vulnerability levels, their scores are well below that of males and even below the parish mean. Males in other highly urbanized parishes also have better than average scores. The highest vulnerability scores for both sexes are found in St. Elizabeth, but the score for females is striking (0.7020). Explanations may be found in the economic base of the economy which is largely agricultural, and in educational levels. In 2001, St. Elizabeth had the highest proportion of elderly persons with no education or less than primary education of all parishes.

Even in parishes with high relative vulnerability overall, females appear more vulnerable than males (table 29). These parishes, namely St. Thomas, St. Mary, Westmoreland, St. Ann and Manchester have in common a pattern of formal economic activity that is predominantly male which helps to explain their advantage. In the case of St. Thomas and Westmoreland there was large-scale sugar production. St. Ann and Manchester are primary bauxite-producing areas while the economy of St. Mary is built around banana producing plantations.

Table 29: ESVI Results by Sex and Parish

<i>PARISH</i>	<i>MALE</i>	<i>FEMALE</i>	<i>TOTAL</i>
Kingston	-0.5213	-0.0543	-0.2421
St Andrew	-1.0022	-0.5739	-0.7603
St Thomas	-0.0495	0.2867	0.1292
Portland	0.1145	0.4687	0.2971
St Mary	-0.0302	0.2814	0.1245
St Ann	-0.1266	0.3229	0.0993
Trelawny	0.1193	0.4209	0.2761
St James	-0.3392	0.0887	-0.1133
Hanover	0.0365	0.4816	0.2806
Westmoreland	-0.2532	0.2546	0.0049
St Elizabeth	0.3203	0.7020	0.5233
Manchester	-0.1717	0.2586	0.0507
Clarendon	0.1169	0.5818	0.3560
St Catherine	-0.2705	0.1383	-0.0465
JAMAICA	-0.2216	0.1689	-0.0140

Age Group Differences in Index Results

Figure 20 compares the distribution of the ESVI across age categories. Mean scores for the three categories of older adults are -0.3538, 0.5510 and 1.1285, respectively.

According to these results, vulnerability increases with increasing age so that the oldest old (85+) show the highest levels while the young old (60-74) have the lowest levels. As the figure shows, a good proportion of the scores of 60-74 year olds fall below the median value of -0.0683, while all the scores for the oldest old (85+) are above the median value. The results of a one-way ANOVA (analysis of variance) show that ESVI scores vary by age category and the means are statistically different ($p < 0.0001$). The Scheffe test also supported the finding of different means for the three age categories.

Figure 20: Box Plot of ESVI Results by Age Categories

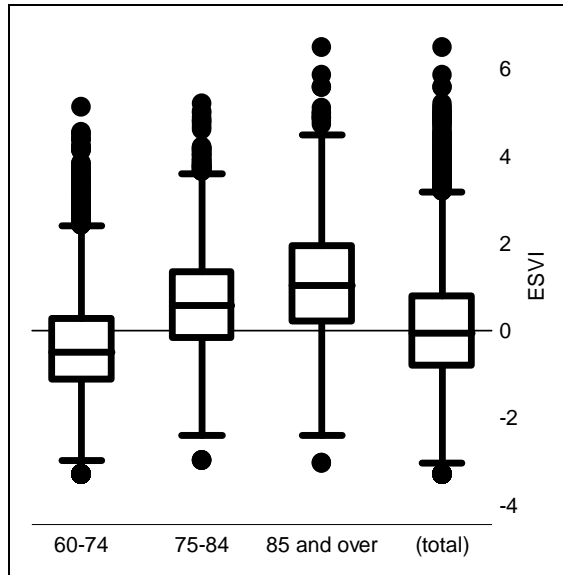


Table 30: ESVI Results by Parish and Age Categories

PARISH	60-74	75-84	85+
Kingston	-0.3318	-0.0862	0.2559
St Andrew	-0.9923	-0.3575	0.1900
St Thomas	-0.2094	0.6846	1.1469
Portland	-0.1260	0.8753	1.1779
St Mary	-0.3292	0.7262	1.4582
St Ann	-0.2595	0.7234	1.2473
Trelawny	-0.0642	0.8391	1.4065
St James	-0.4794	0.6140	1.1224
Hanover	-0.0608	0.7657	1.4121
Westmoreland	-0.4337	0.6446	1.3463
St Elizabeth	0.0776	1.2009	1.8358
Manchester	-0.2912	0.6493	1.0124
Clarendon	0.0612	0.7803	1.4824
St Catherine	-0.3475	0.5540	1.0806
JAMAICA	-0.3538	0.5511	1.1286

The pattern of increasing scores with advancing age holds across all parishes, although the 75-84 year old age-groups in Kingston and St. Andrew also show lower

levels of vulnerability (table 30). These are the only two parishes in which any other age-group except the young old show lower levels of vulnerability. In fact, the mean score for the old-old (75-84) in St. Andrew is better than the overall mean score for the 60-74 year old age group which is the least vulnerable group of all (-0.3575 compared to -0.3538).

Discussion and Summary

This section of the analysis confirms the existence of disparities in social vulnerability among elderly Jamaicans. Three key findings emerge from this analysis. The first important finding is that place of residence is associated with social vulnerability which is consistent with the literature and the way the index is constructed. The findings clearly show that vulnerability scores are lowest in Kingston and St. Andrew (Kingston Metropolitan Area), the premier urban area of the country. St. Andrew which has the lowest overall score, has the second highest level of urbanization (86.9 percent) behind Kingston which is totally urban. St. Elizabeth, on the other hand, has the second lowest level of urbanization (14.4 percent) and the smallest parish capital of all (appendix F).

As discussed in chapter four, overall socioeconomic levels are higher in urban than rural areas. This is often associated with higher incomes from a wider range of economic activities, higher levels of education and better services. Rural areas, on the other hand, tend to have narrower economic bases often built around agriculture and low wages. Kingston and St. Andrew demonstrate urban advantage in several areas. These parishes have the highest rates of National Insurance coverage, the highest rates of health insurance coverage and the highest proportions of their populations with secondary and

post-secondary education. Mean household size is also smaller. In contrast, St. Elizabeth, commonly described as “the bread basket” of the country, is very dependent on agriculture. Almost one-half of workers in this parish were employed in agriculture in 2002, the highest for the country (PIOJ and STATIN 2005). This finding supports the view that rural areas are poorer generally because of their heavy involvement in and reliance on agricultural production which has lower returns.

The second major finding is the relative disadvantage of females. This finding supports the argument that women experience greater social and economic disadvantage than men over the life course (Arber and Cooper 1999). Feminist theory contributes much to the explanation for this finding. Theories of female disadvantage highlight the issue of gender inequality, a widespread feature of many societies. Given that the level of education of elderly Jamaicans is roughly the same for males and females, there is justification for seeking an explanation in the sexual division of labor and labor market practices such as occupational segregation. As Chappel and Havens (1980) suggest, it is the combination of age and gender that put older women at greater risk than their male counterparts. The prevalence of female disadvantage on a very wide scale speaks to the resilience of gender cultural systems (Barriteau 1989) and the potential for continued and perhaps exacerbated difficulties for older women as both old age and poverty have become feminized.

The third important finding to emerge is the positive association between age and vulnerability. That vulnerability scores increase with increasing age suggests the accumulation and compounding of risk factors over the life course, lending support to the cumulative advantage/disadvantage framework (O’Rand 1996; Schroeder-Butterfill and

Marianti 2006). There is wide agreement that old age is a period of increased vulnerability. As shown in the literature, old age is accompanied by a number of changes some of which are related to the individual aging process. Changes like increased incidence of chronic illness and disability reduce income-earning potential, and could increase older persons' risk of vulnerability. There are also societal changes that work to make older people more susceptible to social vulnerability. Broad societal processes such as modernization and globalization influence the opportunities and risks of older persons. These include, but are not limited to reduced work opportunities for both older persons and their families, and loss of support networks often through migration.

Domain Analysis

This section begins to explore the underlying structure of the ESVI by looking at the results of the three domains. The main question this section seeks to answer is which, if any, of the three domains is driving the index. As shown below (table 31), the material resources domains contribute most to increasing vulnerability scores followed by the human resources domain. ESVI scores are lowered by the values on the social resources domain. These results are not unexpected given the Jamaican aging context described in chapters five and six.

Close examination of the data reveals that all three domain scores are right skewed, but those in the human resources domain are stretched more in the positive direction (kurtosis $4.24 > 3$). This means a longer right tail with several positive values which represent lower vulnerability. Although the mean score for the human resources

domain is better than that of the material resources domain, both the standard deviation and the range are wider indicating a wider spread of the scores from the mean (table 31).

Table 31: Selected Indicators of the Three Domains

VALUE	HUMAN RESOURCES	MATERIAL RESOURCES	SOCIAL RESOURCES
Mean	6.55E-09	8.39E-09	-4.37E-09
Standard deviation	0.7224	0.5417	0.7216
Median	-0.3340	0.3003	-0.0772
Skewness	0.8268	0.2085	0.6402
Kurtosis	4.2496	2.9409	2.9024
Minimum	-1.0076	-1.2043	-1.1031
Maximum	3.0015	1.1471	2.5351
Range	4.0091	2.3515	3.6382

Sex Differences in Domain Results

Analyzed according to sex, the results show that males have lower vulnerability scores than females on all three domains of the index. These results are consistent with the overall domain scores in which scores are best for the social resources domain and worst for the material resources domain. However female scores deviate from this pattern, as they are worst in the social resources domain (table 32).

Two of the variables in the social resources domain, marriage and household status, favor males. As the data show, a greater proportion of older males than females is

married (56.6 percent compared to 39.95 percent). More elderly males are also household heads than females (80.60 percent compared to 53.43 percent).

Table 32: Domain Scores According to Sex

<i>SEX</i>	<i>HUMAN RESOURCES</i>	<i>MATERIAL RESOURCES</i>	<i>SOCIAL RESOURCES</i>
Male	-0.0500	-0.0624	-0.0935
Female	0.0435	0.0544	0.0814

Age Group Differences in Domain Results

As established in the first section, scores for the oldest-old (85+) indicate that this age group has the highest level of vulnerability and the young-old (60-74) the lowest. The oldest-old (85+) record their lowest score on the human resources domain. Interestingly, of the three age groups it is the 75-84 year old group that shows the lowest vulnerability level on the material resources domain (table 32). The material resources domain comprises pensions, housing tenure, and employment status. The better scores of the 75-84 year old age group in material resources may represent a cohort effect. First, the social reforms of the 1970s saw the introduction of new subsidized housing programs for lower and middle income earners. In 1975, those in the 75-84 age cohort would have been in their 40s and 50s and would therefore have been in a position to take advantage of these opportunities. Secondly, the National Insurance Scheme started in the 1960s (1966). Individuals in this age group entered old age in 1986, and would therefore have a longer history of contribution to the National Insurance Scheme than the 85+ age group.

On the other hand, many of the 60-74 year olds would still be employed and not eligible for NIS benefits.

Table 33: Domain Scores by Age Categories

<i>AGE CATEGORY</i>	<i>HUMAN RESOURCES</i>	<i>MATERIAL RESOURCES</i>	<i>SOCIAL RESOURCES</i>
60-74	-0.0939	0.0023	-0.2599
75-84	0.1305	-0.0128	0.4463
85+	0.3502	0.0160	0.7527

Parish Differences in Domain Analysis

The preeminence of the KMA is further demonstrated in the domain analysis as both Kingston and St. Andrew have the highest scores in the human resources and social resources domain (table 34). The other highly urbanized parishes (St. James and St. Catherine) also score higher on the human resources domain. Surprisingly, Hanover, a largely rural parish also posts relatively high scores on this domain. On the material resources domain there is an inversion of the general pattern as the KMA and St. Catherine are among the worst performers.

Two other important observations can be made. First, St. James is the only parish with negative values on all three domains. This indicates more balanced structures which is useful if in reality all three domains of the index contribute equally to the development of social vulnerability. The second observation is that Clarendon is the only parish with

positive scores on all three domains, suggesting that the elderly in this parish are not doing well overall.

Table 34: Results of the ESVI for Each of the Three Domains

<i>PARISH</i>	<i>RANK</i>	<i>HR^a</i>	<i>RANK</i>	<i>MR^b</i>	<i>RANK</i>	<i>SR^c</i>
Kingston	1	-0.4362	14	0.3737	2	-0.1381
St Andrew	2	-0.3761	12	0.0670	1	-0.4217
St Thomas	10	0.1425	10	-0.0146	6	0.0083
Portland	12	0.2113	2	-0.0993	12	0.2079
St Mary	13	0.2196	3	-0.0862	4	0.0065
St Ann	8	0.1214	9	-0.0169	5	0.0066
Trelawny	11	0.1878	7	-0.0438	10	0.1613
St James	4	-0.0347	6	-0.0480	3	-0.0458
Hanover	5	0.1732	1	-0.1602	13	0.2545
Westmoreland	9	0.1303	5	-0.0805	7	0.0119
St Elizabeth	14	0.3119	8	-0.0356	14	0.2682
Manchester	6	0.0585	4	-0.0861	9	0.1087
Clarendon	7	0.1134	13	0.0763	11	0.1819
St Catherine	3	-0.1343	11	0.0438	8	0.0463

Notes:

^a HR refers to human resources

^b MR refers to material resources

^c SR refers to social resources

Comparison of Parish Rankings on the Domains and the ESVI

Bivariate analysis of the correlation patterns between the domains show that the ESVI has the highest correlation with the human resources ($r=0.706$) and social resources domains ($r=0.705$). However, the level of correlation between the ESVI and the material resources domain is not strong. So whereas the human and social resources domains move with the ESVI, the material resources domain behaves differently. This finding requires further exploration (table 35).

Table 35: Pearson Correlation Between ESVI and its Domains

	ESVI	Human resources	Material resources	Social resources
ESVI	1.0000			
Human resources	0.7060	1.0000		
Material resources	0.4651	0.0282	1.0000	
Social Resources	0.7058	0.2177	0.0398	1.0000

Table 36 compares how the parishes rank on the domains and the ESVI. The table shows that St. Andrew ranks best on the ESVI and on the human and social resources domains but near to the bottom on the material resources domain. The results for St. Elizabeth are directly opposite to those of St. Andrew. St. Elizabeth has the worst ranking on the ESVI and on the human and social resources domains. The ranking of Hanover on the material resources domain is surprising given the socioeconomic dominance of St. Andrew. However the result substantiates in some way the findings of the Jamaica Survey of Living Conditions which intimates that Hanover represents an anomaly in terms of poverty and living standards when compared to other rural areas (PIOJ 2005). Overall, the ranking of the parishes on social resources corresponds closely with the ranking on the ESVI.

Table 36: Comparative Rankings on the Domains and the ESVI

<i>ESVI Rank</i>	<i>Parish</i>	<i>Score</i>	<i>Rank</i>	<i>Human resources score</i>	<i>Rank</i>	<i>Material resources score</i>	<i>Rank</i>	<i>Social resources score</i>
14	St. Elizabeth	0.523	14	0.311	8	-0.036	14	0.268
13	Clarendon	0.356	6	0.113	13	0.076	11	0.182
12	Portland	0.297	12	0.211	2	-0.099	12	0.208
11	Hanover	0.281	10	0.173	1	-0.160	13	0.255
10	Trelawny	0.276	11	0.188	7	-0.044	10	0.161
9	St. Thomas	0.129	9	0.142	10	-0.015	6	0.008
8	St. Mary	0.125	13	0.220	3	-0.086	4	0.006
7	St. Ann	0.099	7	0.121	9	-0.017	4	0.006
6	Manchester	0.051	5	0.059	4	-0.086	9	0.109
5	Westmoreland	0.005	8	0.130	5	-0.081	7	0.012
4	St. Catherine	-0.047	3	-0.134	11	0.044	8	0.046
3	St. James	-0.113	4	-0.034	6	-0.048	3	-0.046
2	Kingston	-0.242	1	-0.436	14	0.374	2	-0.138
1	St. Andrew	-0.760	2	-0.376	12	0.067	1	-0.422

Discussion and Summary

Several important findings come out in this section of the analysis. First, material resources are a challenge for older Jamaicans. This result helps to confirm the view that many older Jamaicans are experiencing hardship (HelpAge 2008). Material resources are defined as protective resources theorized to provide financial independence and security. These resources include income from work or pensions and ownership of assets, in this case, the living house. The problem with this domain is that these resources are not easily acquired in poor socioeconomic contexts. Those who are less able to accumulate these resources are therefore more likely to experience greater risk of vulnerability. So although the majority of older Jamaicans own their homes (72 percent), the other two dimensions of this domain appear to be problematic as the majority of the elderly are no

longer working (75 percent) and most are not in receipt of pensions (75 percent). This has already been established in the contextual analysis in chapters five and six.

A more detailed exploration of the material resources domain shows that these scores are lowest in the three main urban areas. This pattern is consistent with findings from the Jamaica Survey of Living Conditions (PIOJ 2004) which indicate that the rate of poverty in the KMA has been increasing. Since most of the parishes post better scores on this domain, it can be concluded that the scores of these primary urban areas are significant enough to depress the overall score for the domain. The observation that the 75-84 year old age group has the best score on this domain requires explanation which will be further explored at the level of the indicators.

Scores for the social resources domain are within expectations. As conceptualized in this study, social resources provide support in the form of social networks and social relations. Older persons in less developed countries are often thought to be strong on these resources and the results for this domain support this assertion. Females have worse scores than males on this domain which may be reminiscent of wide female disadvantage as discussed in the feminist theoretical section of the literature review. In some respects this finding goes against a general perception that women have better social resources because they have stronger social relations and networks. These findings may therefore be a function of how the domain is conceptualized and theorized. Also observed is the disadvantage of the oldest-old on the social resources domain. This could be showing the compounded effect of status changes such as widowhood and household headship that tend to occur in old age.

The results of the human resources domain again demonstrate the relative disadvantage of rural residence. Although the overall score for this domain is relatively weak, the primary urban centers (Kingston, St. Andrew, St. James and St. Catherine) all post relatively strong scores, likely because of greater access to educational and health services. Human resources are conceptualized in this study as productive resources defined in terms of skills and capacities. These resources tend to lose their value over time, often with rapid declines after the onset of old age. The overall results for this domain are therefore not surprising.

Based on the above discussion it seems safe to conclude that the ESVI is being driven by the human and social resources domains. The parishes that scored best on these domains also scored best on the index. Likewise those that did badly on these domains also did badly on the index. The same pattern is observed in the case of sex and age categories. The weak showing of the material resources domain does not suggest that these resources are less important for the wellbeing of the elderly. Rather it suggests that this domain might need strengthening. The next section analyzes and discusses the indicators.

Indicator Analysis

This section of the analysis further explores the underlying structure of the ESVI by examining the eleven indicators. Since the indicators are the building blocks of the index, it is important to understand their structure and contribution to the index. Indicator analysis is also important since it is at this level that policy interventions can be made. In this section each indicator is analyzed, beginning with a brief statistical description.

Analyses according to sex, age categories and parish follow, after which a comparative analysis of the rankings is undertaken.

Description of Indicators

Examination of table 37 shows that the values of most indicators have a range somewhere between 2 and 2.5. Most of the indicators have distributions that are right-skewed indicating relative disadvantage. Only four indicators (urban-rural status, chronic illness, social security and employment status) are left skewed. Of those indicators that are right-skewed, education is the most glaring (skewness 5.1; kurtosis 27.4). These figures tell that the distribution of this indicator is sharply peaked with a very heavy right tail. Most of the values therefore seem to be bunched on the positive side, indicating increasing disadvantage. Household status is also heavily right skewed (skewness 1.9; kurtosis 4.6).

Table 37: Selected Descriptors of Indicator Variables

INDICATOR VARIABLE	MINIMUM	MAXIMUM	RANGE	SKEWNESS	KURTOSIS
Urban-rural status	-1.1632	0.8597	2.0228	-0.3035	1.0921
Education	-0.1877	5.3262	5.5140	5.1386	27.4054
Chronic illness	-1.2246	0.8165	2.0412	-0.4081	1.1666
Disability	-0.4778	2.0929	2.5707	1.6152	3.6088
Social security	-1.1051	0.9049	2.0100	-0.2002	1.0401
Employment	-2.0653	0.4842	2.5495	-1.5812	3.5001
Housing tenure	-0.4791	2.0871	2.5662	1.6081	3.5858
Marital status	-0.6082	1.6442	2.2524	1.0361	2.0734
Household status	-0.4266	2.3439	2.7705	1.9174	4.6762
Household size	-0.6855	1.4586	2.1442	0.7731	1.5977
Fertility	-1.6223	2.2355	3.8579	0.3563	2.3754

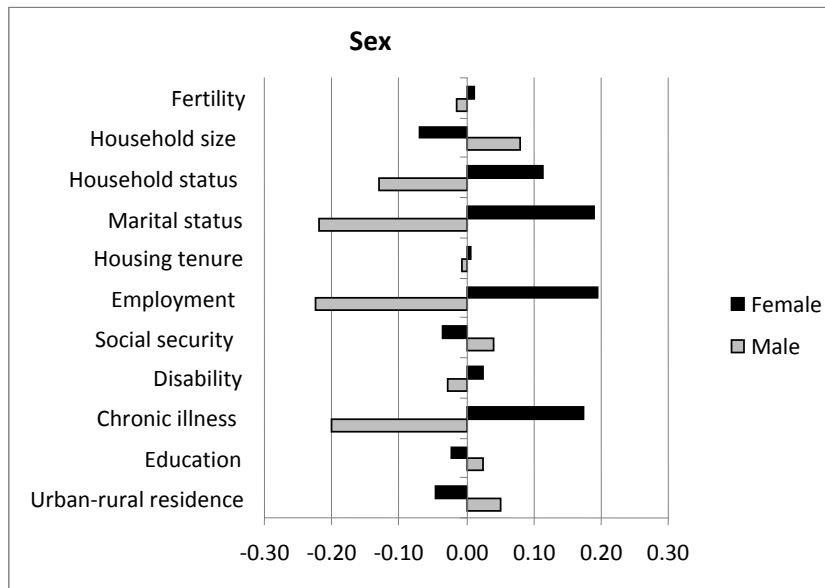
Analysis by Sex

As discussed in earlier chapters, older males are more likely to be married, to be household heads and to be employed. They also report lower rates of both chronic illness and disability than females. On the other hand, females are more likely to live in urban areas and to receive pensions and are less likely to live alone. Differences between the sexes on fertility, housing tenure and education are fewer, although females have a slight advantage on education (table 38). What is obvious from the bar chart (figure 21) is that males score higher on more indicators than females, and the indicators on which females score higher than males are lower scoring.

Table 38: Indicator Variables by Sex

<i>INDICATOR</i>	<i>MALE</i>	<i>FEMALE</i>
Urban-rural residence	0.0516	-0.0450
Education	0.0247	-0.0215
Chronic illness	-0.2008	0.1749
Disability	-0.0272	0.0237
Social security	0.0418	-0.0364
Employment	-0.2241	0.1952
Housing tenure	-0.0070	0.0061
Marital status	-0.2187	0.1904
Household status	-0.1302	0.1134
Household size	0.0792	-0.0690
Fertility	-0.0139	0.0121

Figure 21: Bar Chart of Indicator Variables According to Sex



Analysis by Age Categories

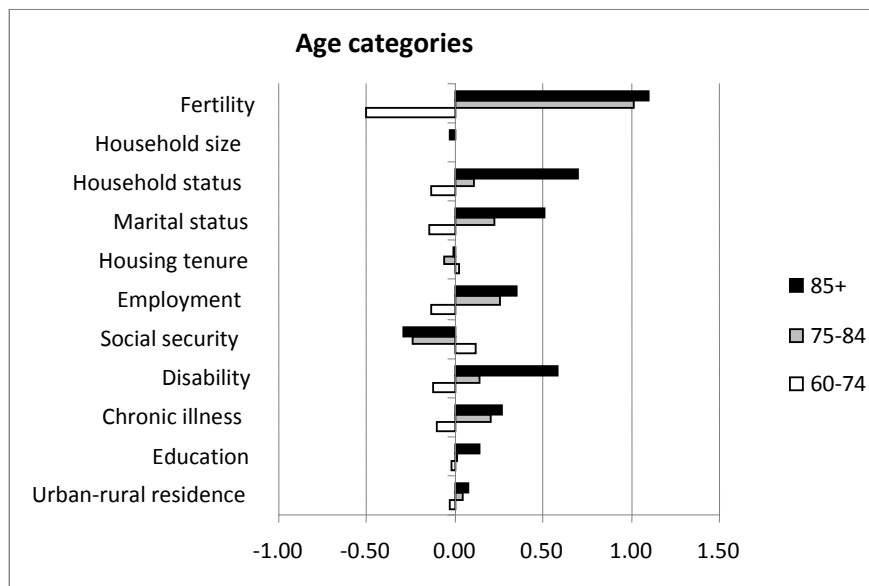
Table 39: Indicator Variables by Age Categories

INDICATOR	60-74	75-84	85+
Urban-rural residence	-0.0276	0.0494	0.0754
Education	-0.0228	0.0093	0.1416
Chronic illness	-0.1067	0.2013	0.2635
Disability	-0.1274	0.1354	0.5807
Social security	0.1234	-0.2357	-0.2968
Employment	-0.1379	0.2543	0.3550
Housing tenure	0.0214	-0.0573	-0.0097
Marital status	-0.1479	0.2226	0.5078
Household status	-0.1350	0.1103	0.6993
Household size	0.0025	0.0039	-0.0280
Fertility	-0.5071	1.0157	1.1017

Table 39 and figure 22 show that the old-old (75-84) and the oldest old (85+) are disadvantaged on most of the indicators. They are more likely to live in rural areas, to be

widowed and unemployed. They also have more chronic illness and disability and lower levels of education. Only in terms of social security do the young-old (60-74) have worse scores than the two older age categories. This finding is perfectly normal since the official retirement age is 60 for females and 65 for males, so many of the young old are still employed and ineligible for social security benefits.

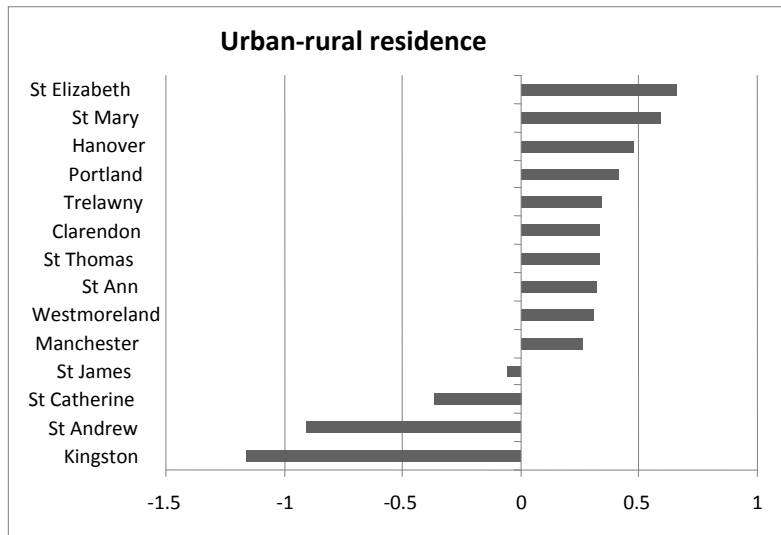
Figure 22: Bar Chart of Indicator Variables According to Age Categories



Indicator Analysis by Parish

Place of Residence. This indicator measures the ratio of rural to urban residents in each parish. Figure 23 clearly shows that Kingston and St. Andrew have the best scores on this indicator which is expected given the urban profiles of these parishes. These two parishes constitute the Kingston Metropolitan Area (KMA), the main urban center of the country.

Figure 23: Indicator Results for Urban-Rural Residence

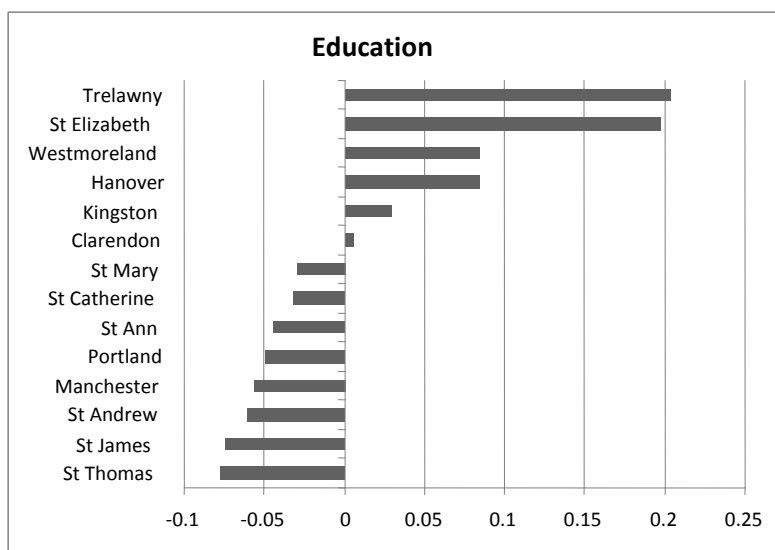


St. Catherine adjoins the KMA and has developed largely to accommodate the overspill from the KMA as urbanization expanded. The score for St. James suggests that although this parish is home to the country's second city, it is still largely rural.

Education. This variable is an indicator of the proportion of the elderly population with at least primary school level education (six years of formal schooling). The results are somewhat different from what was expected (figure 24). Generally, urban residents have greater access to social services, including schools and would be expected to score better on this indicator. As such, Kingston or St. Andrew should have the lowest scores but instead it is St. Thomas which occupies this position. An explanation for this finding can be found in the way the variable is defined. For the index, the education variable had two categories: less than six years of formal schooling and six years or more of formal schooling which would mean the completion of primary school. Elderly residents of St.

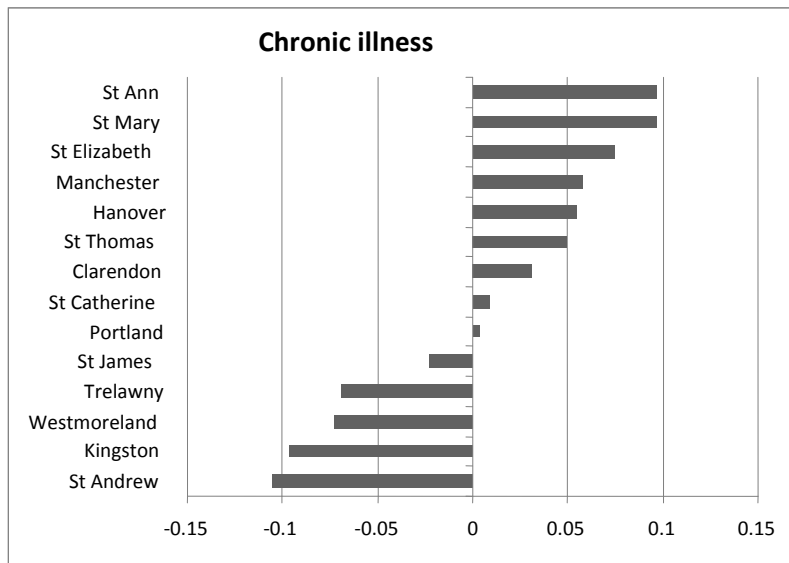
Thomas have high primary education completion rates, but residents of Kingston and St. Andrew have higher secondary and tertiary education completion rates. So had the variable been defined in terms of secondary or tertiary education, the results would have been very different. As explained earlier it was necessary to use primary education as the yardstick since that was the prevailing standard for that age cohort. Further versions of the index will inevitably use secondary education completion as the average level of education for measurement purposes. St. James and St. Andrew, two of the most urbanized parishes fall in the bottom three.

Figure 24: Indicator Results for Education



Chronic Illness. Figure 25 shows that the elderly in the KMA are least affected by chronic illness while those in St. Ann and St. Mary are most affected. Chronic illnesses which are permanent or longstanding illnesses that could interfere with activity, are typically lifestyle related, and tend to be more prevalent in urban areas.

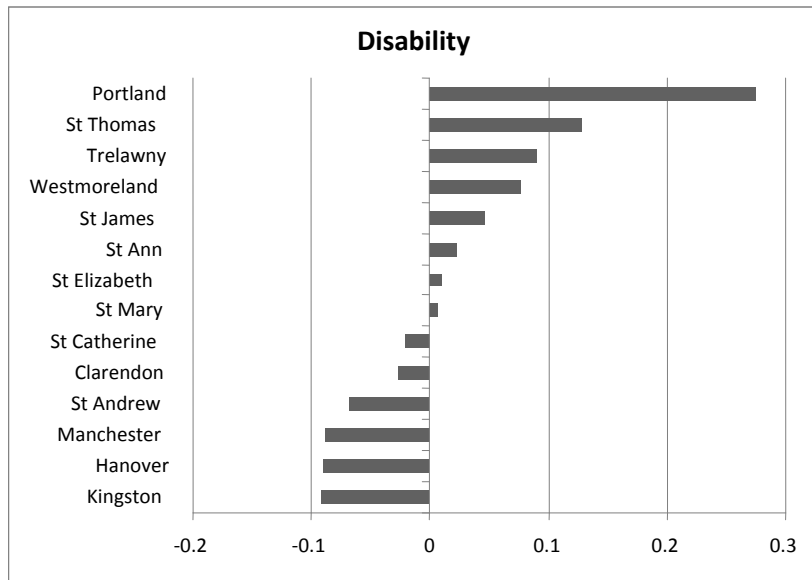
Figure 25: Indicator Results for Chronic Illness



This is not the situation in the case of the ESVI. Possible explanations include the greater access of residents of the KMA to health services and specialized healthcare. Higher health insurance coverage is also a possible explanation.

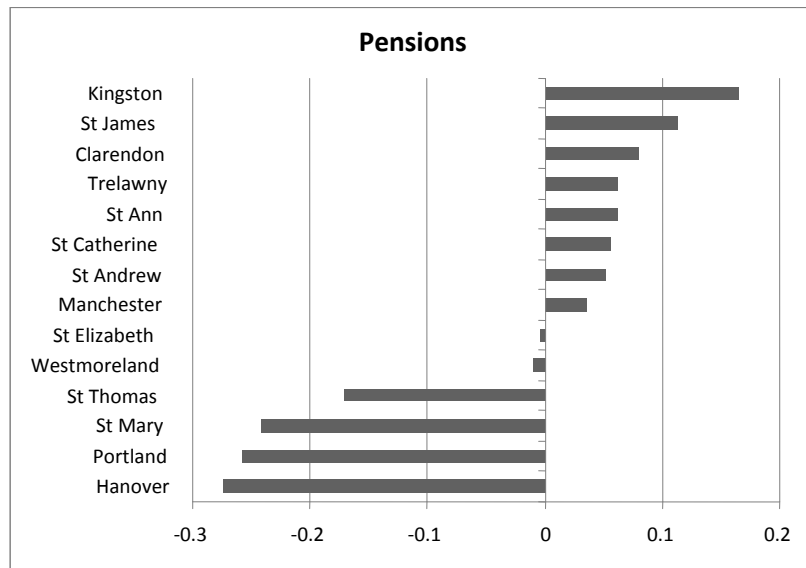
Disability. The existence of physical, mental or other impairments can also limit the ability of elderly persons from performing their daily tasks. Based on figure 26, elderly disability is a bigger problem for Portland than it is for other parishes. It is less of a problem for Kingston, Hanover and Manchester. Although chronic illness and disability often occur together, there does not seem to be any clear patterns between the scores for these two indicators as the parish scores vary. However, Kingston and St. Andrew get low scores on both indicators, while St. Thomas has relatively high scores on both.

Figure 26: Indicator Results for Disability



Pensions. As discussed earlier, pensions are critical to the wellbeing of the elderly in many societies. This variable measures the receipt of an income from the state in the form of contributory or non-contributory pensions. The elderly in Kingston and St. James, and to a lesser extent St. Catherine and St. Andrew, the main urbanized parishes are disadvantaged on pensions (figure 27). Unexpectedly, Hanover and Portland show the lowest scores on this indicator. This is unexpected given the fact that Kingston (38 percent) and St. Andrew (34 percent) had the highest proportion of NIS pensioners in 2008 compared to Hanover and Portland both of which had a coverage rate of 23 percent.

Figure 27: Indicator Results for Pensions

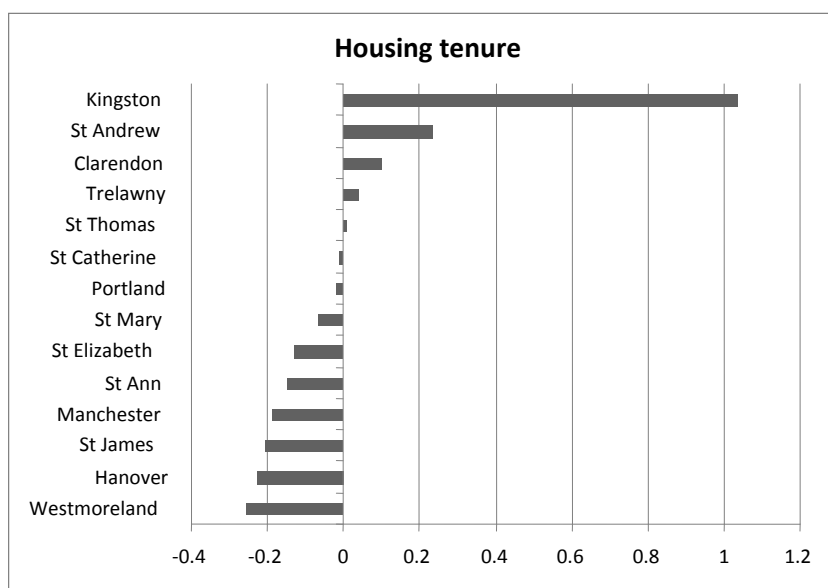


Part of the explanation of what appears to be an anomalous finding could be the tendency to not differentiate the NIS which is a social insurance program from PATH which is a social assistance program. Another possible explanation may be found in the parish structures which could make it easy or difficult for potential beneficiaries to access the program. These unexpected results could also be due to reporting differences across parishes.

Housing Tenure. Ownership of assets, including housing, is an important variable for the economic security of the elderly. Figure 28 shows that urban elderly, particularly those in Kingston, are disadvantaged on the housing tenure indicator. Urban housing is a problem in many cities, and especially in the cities of developing countries where shanty towns and urban slums are part of the landscape. These features are also present in

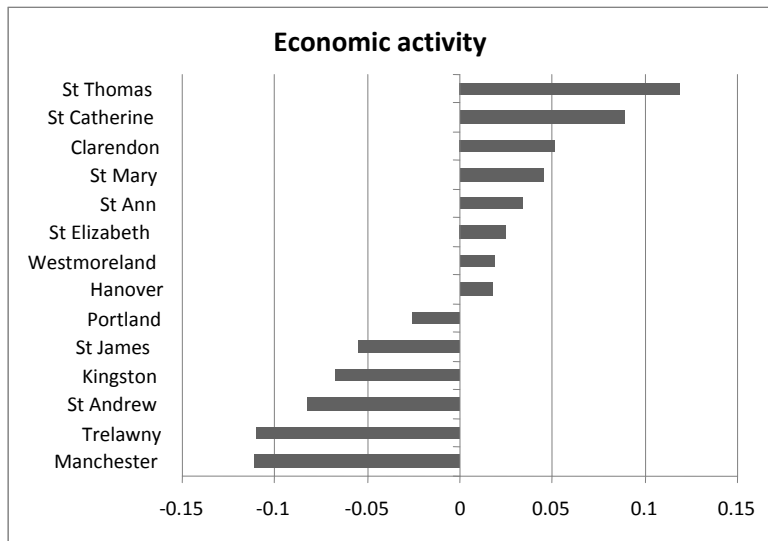
Kingston contributing to the high rates of insecure tenancy. St. James, the home of the second city, also has huge squatter settlements with insecure tenancy.

Figure 28: Indicator Results for Housing Tenure



Economic Activity. Engagement in economic activity is theorized to reduce social vulnerability among the elderly. Economic activity is affected not only by health status and the existence of other sources of income such as pensions, but also by the availability of work opportunities. The results of this indicator (figure 29) have to be interpreted in this light. The ranking of St. Thomas on this indicator is therefore not surprising since this parish also ranks fairly high on both the disability and chronic illness indicators. The fact that the major urban parishes fall in the bottom four may indicate the possibilities for elderly employment in the large informal economy that characterizes major urban areas.

Figure 29: Indicator Results for Economic Activity



Marital Status. Being married has been shown to offer many benefits to the elderly. Figure 30 indicates that the elderly in Kingston are in the best position to experience the benefits of legal marriage as discussed in the literature review. This result is somewhat surprising given that St. Ann reported the highest rate of marriage in the elderly population (45.49 percent) to 20.83 percent for Kingston.

Household Status. The results of this indicator demonstrate that household status and marital status are not necessarily correlated (figure 31). While Kingston scores best on the marital status indicator, the parish scores worst on the household status indicator. In fact, the elderly in the four most urbanized parishes post the highest scores on this indicator which indicates that they are members of households rather than household heads. On the other hand, this is the only indicator on which St. Elizabeth has the best

score. That the rural parishes score higher on this indicator supports the view that rural areas are more traditional than urban areas. Viewed from the point of modernization theory, urban areas may therefore portray greater vulnerability overall.

Figure 30: Indicator Results for Marital Status

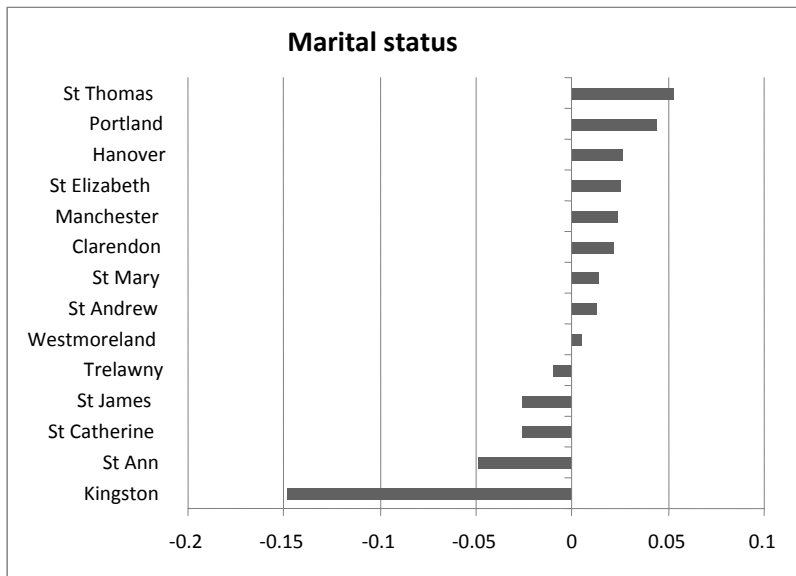
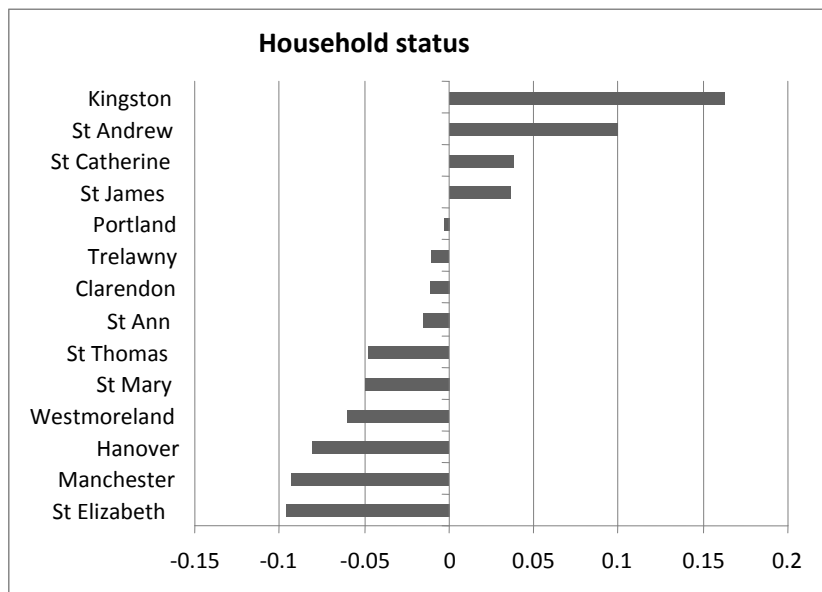
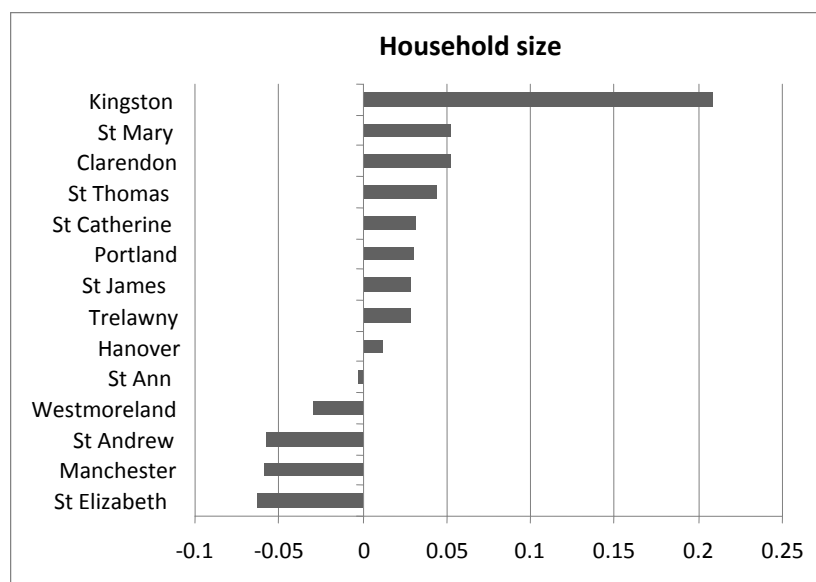


Figure 31: Indicator Results for Household Status



Household Size. This indicator measures vulnerability in terms of the number of members living in a household. The results are interesting (figure 32). Although Kingston has one of the lowest household size rates nationally, the parish has the worst score on this indicator. Based on how the indicator is defined, this finding could mean that the more elderly persons in Kingston are living alone or in households with more than six persons. The former is more likely to be true since fertility rates are generally lower in urban areas. In many situations older people are among those trapped in the city and unable to leave when urban decay sets in. The results of this indicator also suggest that household status and household size seem to be mutually reinforcing, at least for the parishes in the bottom four.

Figure 32: Indicator Results for Household Size



Fertility. Children are one of the most important sources of support for elderly persons in developing countries. As expected, scores are lower in the major urban areas (figure 33). Fertility rates begin to decline earlier in urban areas, one of the consequences of modernization. The fact that St. Andrew is way ahead of the runner-up, Kingston, suggests that more factors than sheer urbanization are at play. As seen in appendix G and appendix K, St. Andrew has higher rates of secondary and tertiary education as well as higher overall socioeconomic status than Kingston. Also, while St. Catherine has a higher level of urban residence, St. James has a lower fertility score. This evidence points to the youthful nature of St. Catherine but also to the fact that St. James has a longer history of urbanization.

Figure 33: Indicator Results for Fertility

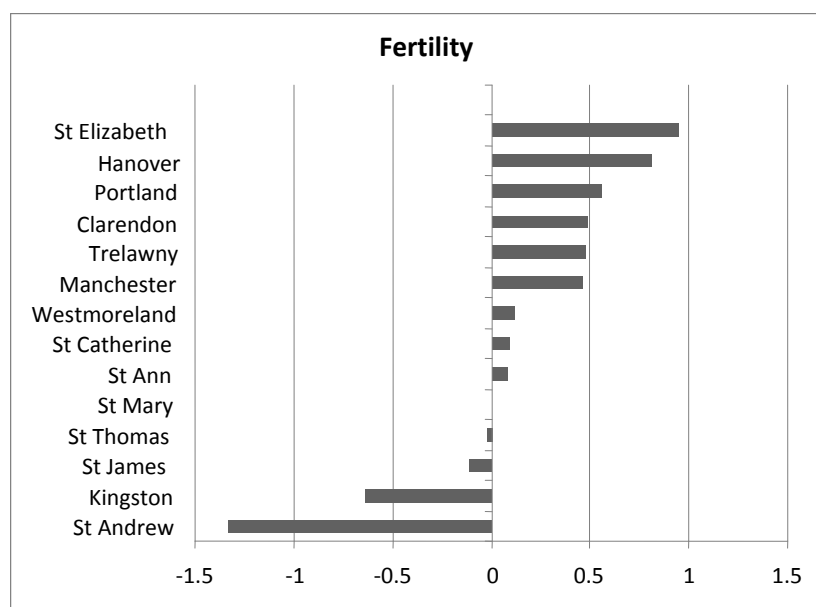


Table 40 summarizes the results of the indicators for all parishes. As seen in the table, Kingston and St. Andrew consistently rank in the bottom three on six indicators. In fact,

Kingston has the lowest score on three indicators (rural-urban residence, disability and marital status). Although these two parishes display similar patterns in some respects, there is congruence on only three indicators (rural-urban residence, chronic illness and fertility). St. James is also a parish of interest since it ranks in the bottom three on three indicators and is the location of the nation's second city. Hanover also ranks in the bottom three on four indicators (disability, social security, housing tenure and household status). On the other hand, St. Elizabeth consistently ranks in the top three on four indicators (rural-urban residence, education, chronic illness and fertility). Finally, Clarendon ranks in the bottom three on four indicators (social security, housing tenure, employment status and household size).

Table 40: Comparative Parish Ranking of Indicators

<i>PARISH</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>	<i>6</i>	<i>7</i>	<i>8</i>	<i>9</i>	<i>10</i>	<i>11</i>
Kingston	1	10	2	1	14	14	4	1	14	14	2
St Andrew	2	3	1	4	8	13	3	7	13	3	1
St Thomas	8	1	9	13	4	10	14	14	6	11	4
Portland	11	5	6	14	2	8	6	13	10	9	12
St Mary	13	8	13	7	3	7	11	8	5	13	5
St Ann	7	6	14	9	10	5	10	2	7	5	6
Trelawny	10	14	4	12	11	11	2	5	9	7	10
St James	4	2	5	10	13	3	5	4	11	8	3
Hanover	12	11	10	2	1	2	7	12	3	6	13
Westmoreland	6	12	3	11	5	1	8	6	4	4	8
St Elizabeth	14	13	12	8	6	6	9	11	1	1	14
Manchester	5	4	11	3	7	4	1	10	2	2	9
Clarendon	9	9	8	5	12	12	12	9	8	12	11
St Catherine	3	7	7	6	9	9	13	3	12	10	7

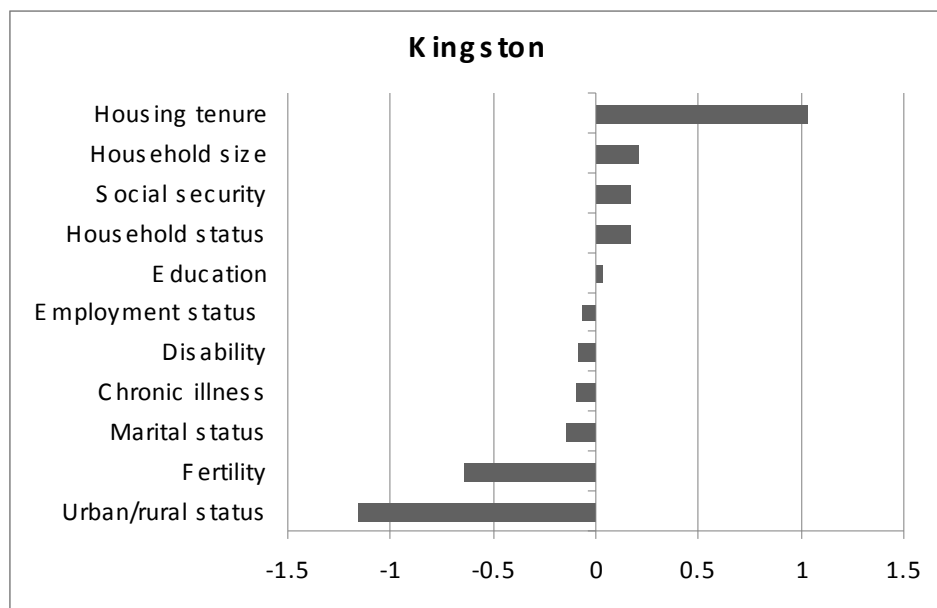
Note: 1=rural-urban residence; 2=education; 3=chronic illness; 4=disability; 5=social security; 6=housing tenure; 7=employment status; 8=marital status; 9= household status; 10=household size; 11=fertility.

Based on the above discussion the parishes of Kingston, St. Andrew, St. James, Hanover, St. Elizabeth and Clarendon are selected for further analysis in the next section. Kingston and St. Andrew are selected because they have the best ranking on most indicators, while Clarendon and St. Elizabeth are selected because they have poor rankings on most indicators. The selection of St. James is due to its because it houses the second city, Montego Bay and Hanover because it has very unexpected results.

Indicator Analyses for Select Parishes

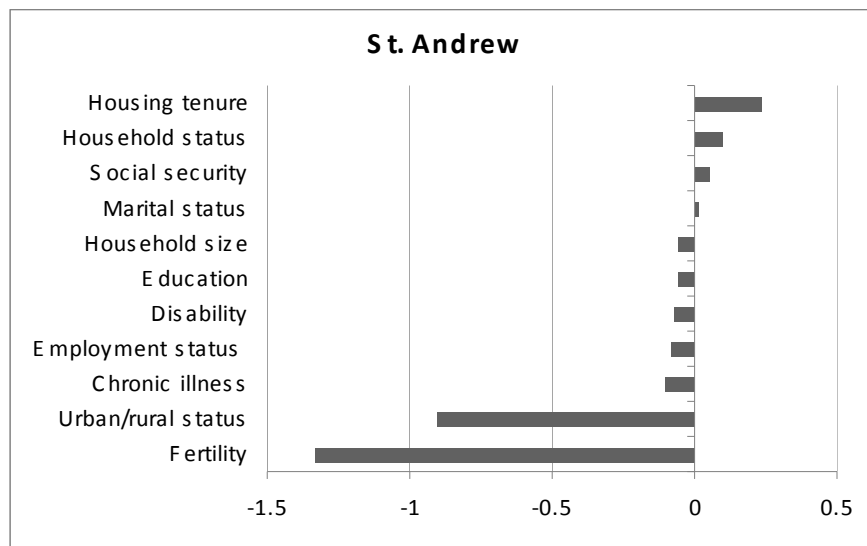
Kingston. Figure 34 shows that Kingston performs best on the urban-rural residence and fertility indicators and worst on the housing tenure indicator. As already established these results are compatible with the fully urban status of the parish which is associated with lower fertility rates and housing insecurity.

Figure 34: Indicator Profile of Kingston



St. Andrew. Like Kingston, St. Andrew has low scores on fertility and urban-rural residence although the positions of these indicators are reversed (figure 35). That is fertility occupies the top spot for St. Andrew while it is second in importance for Kingston. Housing tenure is also less of a problem for St. Andrew than it is for Kingston.

Figure 35: Indicator Profile of St. Andrew



St. James. The pattern for St. James shifts as housing tenure is the highest scoring indicator for this parish in contrast to Kingston and St. Andrew. Education also contributes to the status of St. James. Unlike the others, disability ranks as one of the worst scores for St. James, along with social security (figure 36).

Hanover. The results for this largely rural parish (figure 37) are opposite to the results for the urban parishes of Kingston and St. Andrew. Housing tenure and social security are the best scoring indicators while fertility has the worst score. In keeping with the

general notion of more traditional values in rural areas, Hanover scores relatively high on the household headship indicator.

Figure 36: Indicator Profile of St. James

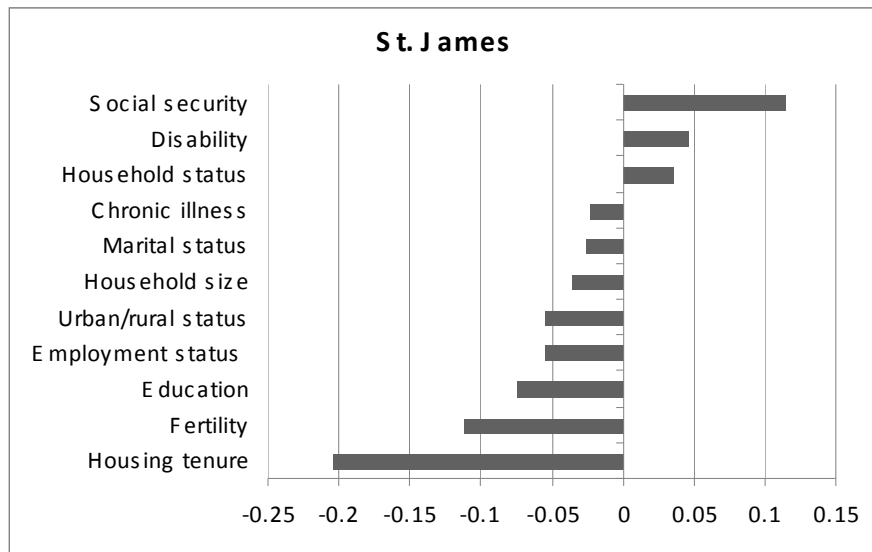
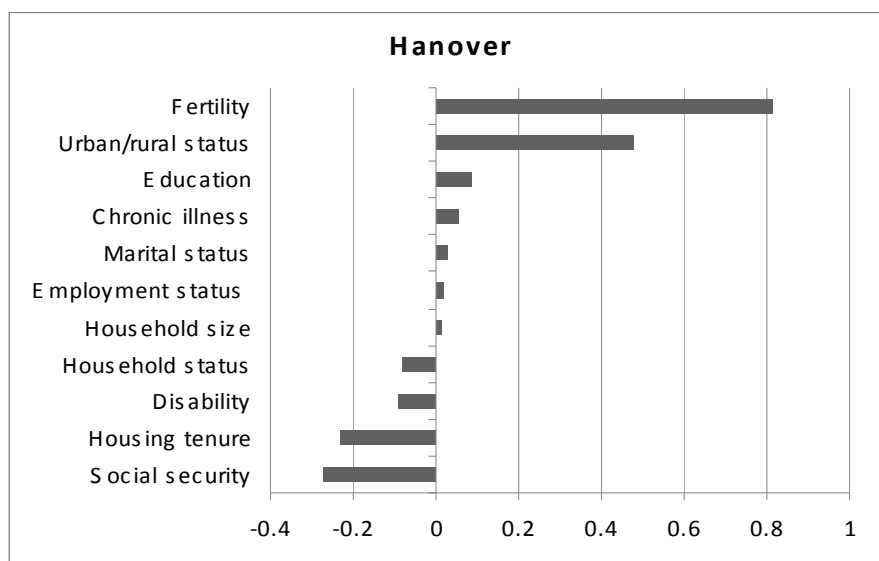
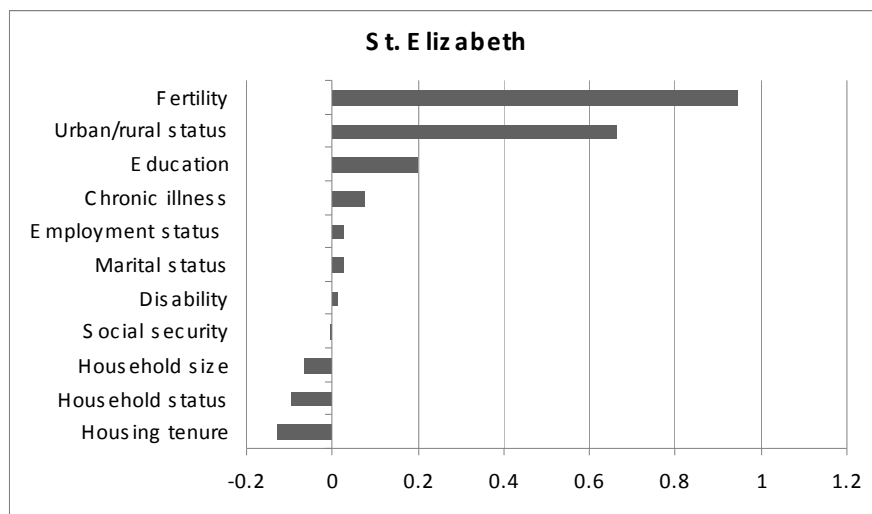


Figure 37: Indicator Profile of Hanover



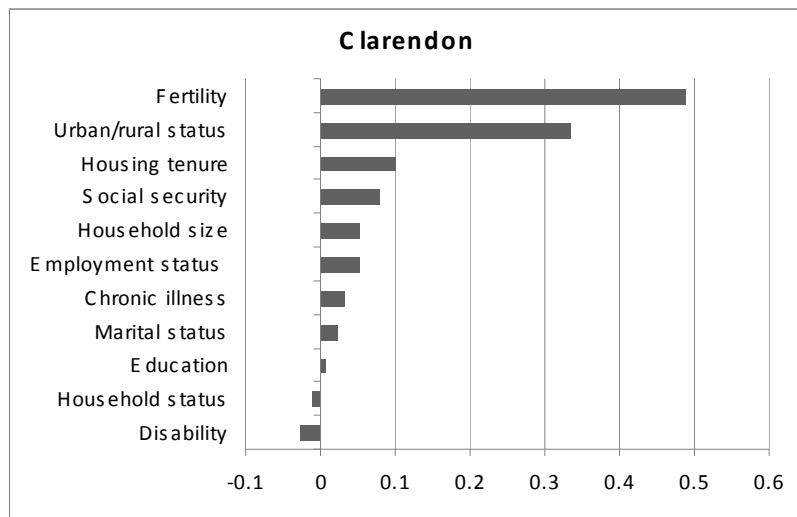
St. Elizabeth. Also a rural parish, St. Elizabeth shares with Hanover relative disadvantage on fertility, urban status and education but with more intensity (figure 38). Household tenure and household status receive better scores in this parish, in keeping with the general pattern for rural areas. Since household sizes are larger in rural areas, and households are more likely to be male-headed, it may be safe to assume that the disadvantage that this parish faces in terms of household size is due to the existence of large rather than single person households.

Figure 38: Indicator Profile of St. Elizabeth



Clarendon. This parish seems to have more low scoring indicators than all the others presented so far (figure 39). Scores are even low on the housing tenure indicator which has so far been an advantage for most rural parishes. The indicator on which the parish scores best is disability, followed by household status.

Figure 39: Indicator Profile of Clarendon



Discussion and Summary

Overall, the values on the indicators are not widely spread. Education has the widest range and social security the smallest. Education has been demonstrated to have a significant impact on quality of life in old age, higher levels being associated with better health and greater material assets. The range in values on the education indicator compared to other indicators may be pointing to disparities in wellbeing among older Jamaicans. On the other hand, the small range on the social security variable implies a roughly equal level of disadvantage across groups. To the extent that this is the case, then there may be support for the age-as-leveler hypothesis (Kent 1971).

Males score better on most indicators (64 percent). Women do better on only four of the eleven indicators, but the size of their advantage on these four indicators does not compensate for their scores on the others. The result is that females have lower overall scores on the ESVI. This may be pointing to greater overall vulnerability. Older

Jamaicans (75 years and over) also score high on most indicators, which is indicative of greater vulnerability.

The six parish case analyses show a common pattern. In all these parishes fertility, housing tenure and urban-rural residence are major players. Two main conclusions can be drawn: highly urbanized parishes benefit most from low fertility and are most challenged by household tenure. The situation is the opposite for rural parishes which score worse on fertility and best on housing tenure. The results of the three indicators that make up the material resources domain further illustrate urban and rural differences. Housing tenure is particularly challenging for the urban elderly who also score lower on the social security indicator.

On the whole, this section of the analysis demonstrates that the vulnerability status of a parish is best understood by looking not only at its overall ranking or ESVI score, but by looking at its results on all the indicators. Providentially, of the three domains, the indicators in the material resources domain are the areas in which interventions can work most quickly and effectively to bring about changes.

Quintile Analyses

The Overall Picture

When the scores are analyzed according to quintiles, the results show that the mean ESVI score is -1.683 for the lowest quintile rising to 1.839 in the highest quintile (table 41). Scores in quintiles one and two are well above the mean for the entire sample (-0.0139), while scores in the top two quintiles are below the sample mean. Based on the structure

of the ESVI, scores falling in quintiles 4 and 5 represent greater levels of vulnerability than those in quintiles one to three.

Table 41: Vulnerability Quintiles

<i>QUINTILES</i>	<i>NUMBER</i>	<i>PERCENT</i>	<i>MEAN</i>	<i>STANDARD DEVIATION</i>	<i>MINIMUM</i>	<i>MAXIMUM</i>
Lowest	3375	20.00	-1.6863	.45363	-3.31299	-1.09662
Second	3576	20.01	-.73681	.15025	-1.09520	-.46758
Middle	3589	20.08	-.07869	.15037	-.46537	.14379
Fourth	3561	19.92	.59598	.23300	.14386	.95107
Highest	3573	19.99	1.8398	.72897	.95198	6.4777

Note: n= 17874

Quintile Scores by Sex

As indicated in the bar chart (figure 40), male scores are more likely than those of females to fall in the bottom two vulnerability quintiles. The situation is reversed in the top two quintiles where female scores exceed those of males. Scores in the middle quintile are equally distributed between males and females. This finding shows a clear female disadvantage which is well documented in the literature.

Quintile Scores by Age Categories

Analyses of quintiles according to age categories also demonstrate the disadvantage of the oldest-old. As shown below (figure 41), scores for the young old (60-74) move in the opposite direction of scores for the old-old (75-84) and oldest-old (85+) across quintiles. Roughly one-quarter of the scores of the young-old fall into the lowest quintile. This compares with the scores for the oldest-old, about one-half of which fall in the highest quintile. So although the oldest-old represent only 9.2 percent of all older adults, they

represent more than 50 percent of scores in the highest quintile. The distribution of scores among the three age categories appears more equitable in the middle quintile.

Figure 40: Quintile Results by Sex

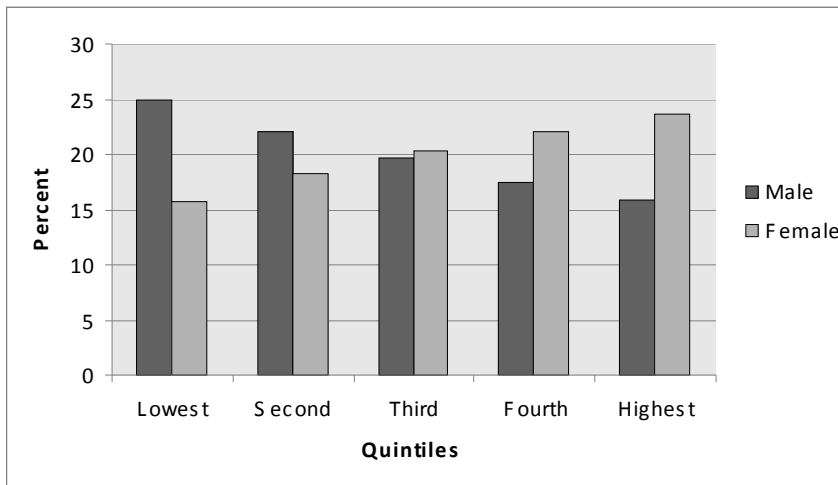
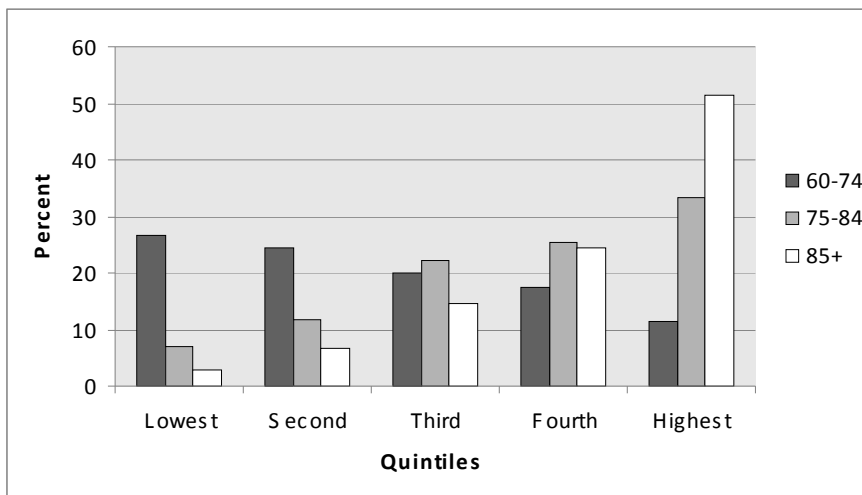


Figure 41: Quintile Results by Age Categories



Quintile Analysis According to Parishes

The superior position of St. Andrew is further demonstrated in its mean quintile scores which are better than the overall mean. This is the situation in all quintiles. Other parishes showing advantage in the case of the lowest quintile which represents the lowest level of vulnerability are St. Mary, St. James and Westmoreland. The mean score for these parishes are all above the mean score for that quintile. Again, St. Elizabeth has the worst mean score for quintile one. In terms of the highest quintile, most parishes (71 percent) had scores that were better than or roughly equal to the mean. Clarendon, Trelawny, St. Elizabeth and Portland have scores well below the overall mean for the top quintile (table 42).

Table 42: Mean ESVI Scores by Quintiles and Parish

<i>PARISH</i>	<i>LOWEST QUINTILE Q1</i>	<i>SECOND QUINTILE Q2</i>	<i>MIDDLE QUINTILE Q3</i>	<i>FOURTH QUINTILE Q4</i>	<i>HIGHEST QUINTILE Q5</i>	<i>OVERALL MEAN</i>
Mean	-1.686	-0.736	-0.078	0.595	1.839	-0.0138
Kingston	-1.627	-0.690	0.013	0.643	1.667	-0.242
St. Andrew	-1.814	-0.843	-0.209	0.563	1.512	-0.760
St. Thomas	-1.481	-0.716	-0.088	0.663	1.703	0.129
Portland	-1.502	-0.672	0.001	0.606	1.914	0.297
St. Mary	-1.760	-0.828	-0.112	0.617	1.812	0.124
St. Ann	-1.648	-0.769	-0.0688	0.657	1.829	0.099
Trelawny	-1.533	-0.658	-0.055	0.604	2.016	0.276
St. James	-1.768	-0.810	-0.103	0.614	1.840	-0.113
Hanover	-1.463	-0.578	0.043	0.512	1.833	0.280
Westmoreland	-1.783	-0.816	-0.084	0.654	1.902	0.004
St. Elizabeth	-1.341	-0.563	-0.096	0.492	1.951	0.523
Manchester	-1.531	-0.659	-0.023	0.619	1.708	0.050
Clarendon	-1.502	-0.662	-0.020	0.627	1.873	0.355
St. Catherine	-1.626	-0.715	-0.058	0.603	1.792	-0.046

The general pattern observed in most parishes is a greater proportion of high vulnerability (quintile one) to low vulnerability scores (quintile five). However, this pattern is inverted in the parishes that are highly urbanized. In the case of St. Andrew, more than 42.08 percent of the scores fall in the lowest vulnerability category, compared to Clarendon which has the smallest proportion (11.02 percent) in this category. St. Elizabeth also stands out, having the largest proportion of scores (32.99 percent) in quintile five and the smallest in quintile three. In fact, St. Elizabeth has four times more scores in quintile five than St. Andrew. The distribution pattern of scores across quintiles is roughly similar for most other parishes (table 43).

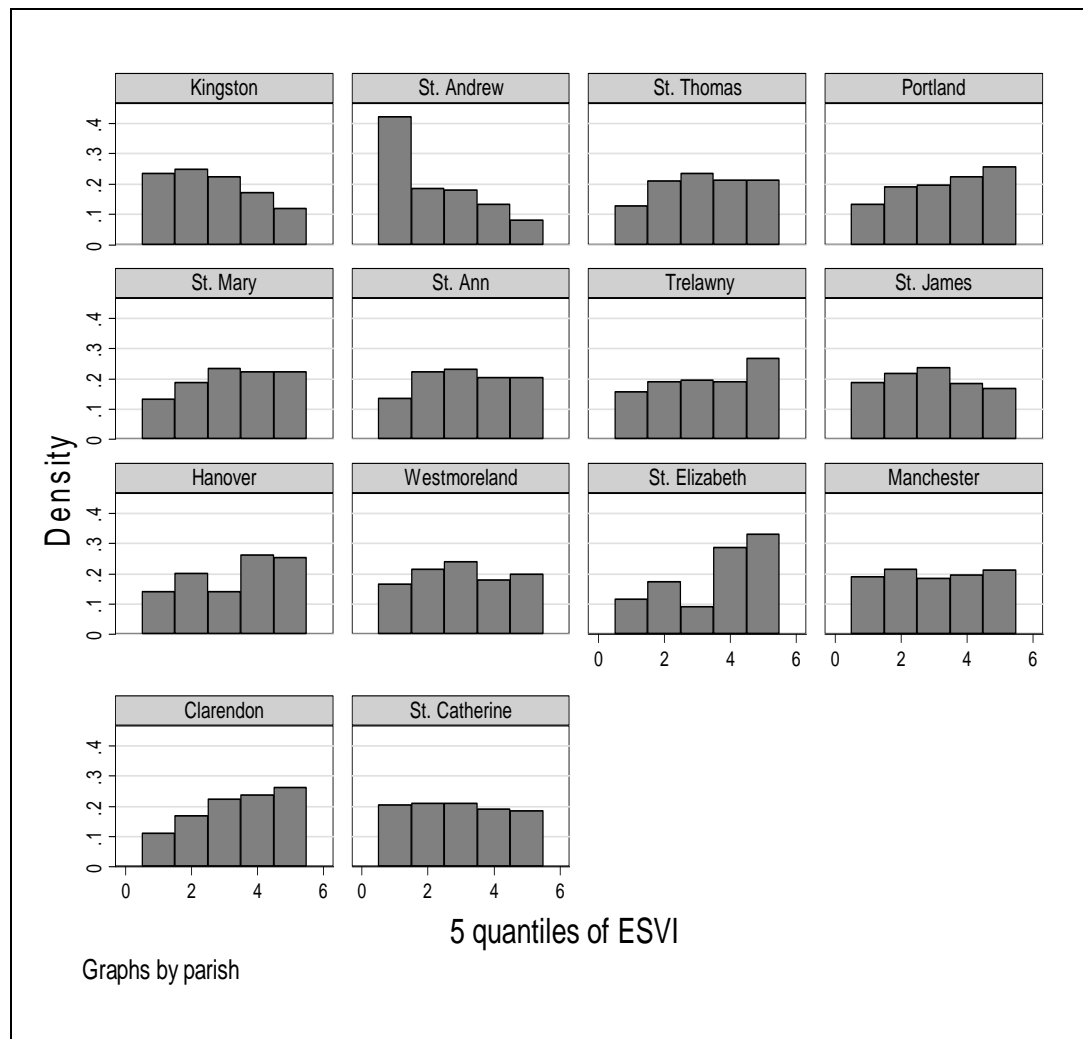
Table 43: Percentage of ESVI Scores in Each Quintile, by Parish

Parish	Lowest Q1	Second Q2	Third Q3	Fourth Q4	Highest Q5	Total percent
Kingston	23.51	24.95	22.47	17.11	11.96	100.00
St. Andrew	42.08	18.55	18.03	13.33	8.01	100.00
St. Thomas	12.71	21.07	23.61	21.19	21.43	100.00
Portland	13.35	19.01	19.74	22.30	25.59	100.00
St. Mary	13.22	18.91	23.38	22.24	22.24	100.00
St. Ann	13.47	22.42	23.18	20.39	20.54	100.00
Trelawny	15.68	19.03	19.57	19.03	26.68	100.00
St. James	18.90	21.88	23.84	18.62	16.76	100.00
Hanover	14.24	20.13	14.08	26.19	25.37	100.00
Westmoreland	16.58	21.50	24.08	17.90	19.94	100.00
St. Elizabeth	11.56	17.45	9.20	28.79	32.99	100.00
Manchester	18.95	21.46	18.58	19.62	21.39	100.00
Clarendon	11.02	16.96	22.23	23.62	26.17	100.00
St. Catherine	20.37	21.06	20.95	19.06	18.56	100.00

Graphically displayed, differences in the quintile distribution of scores across parishes are more obvious as the following series of histograms reveals (figure 44). Not only do St. Andrew scores dominate quintile one, but within the parish itself there is a

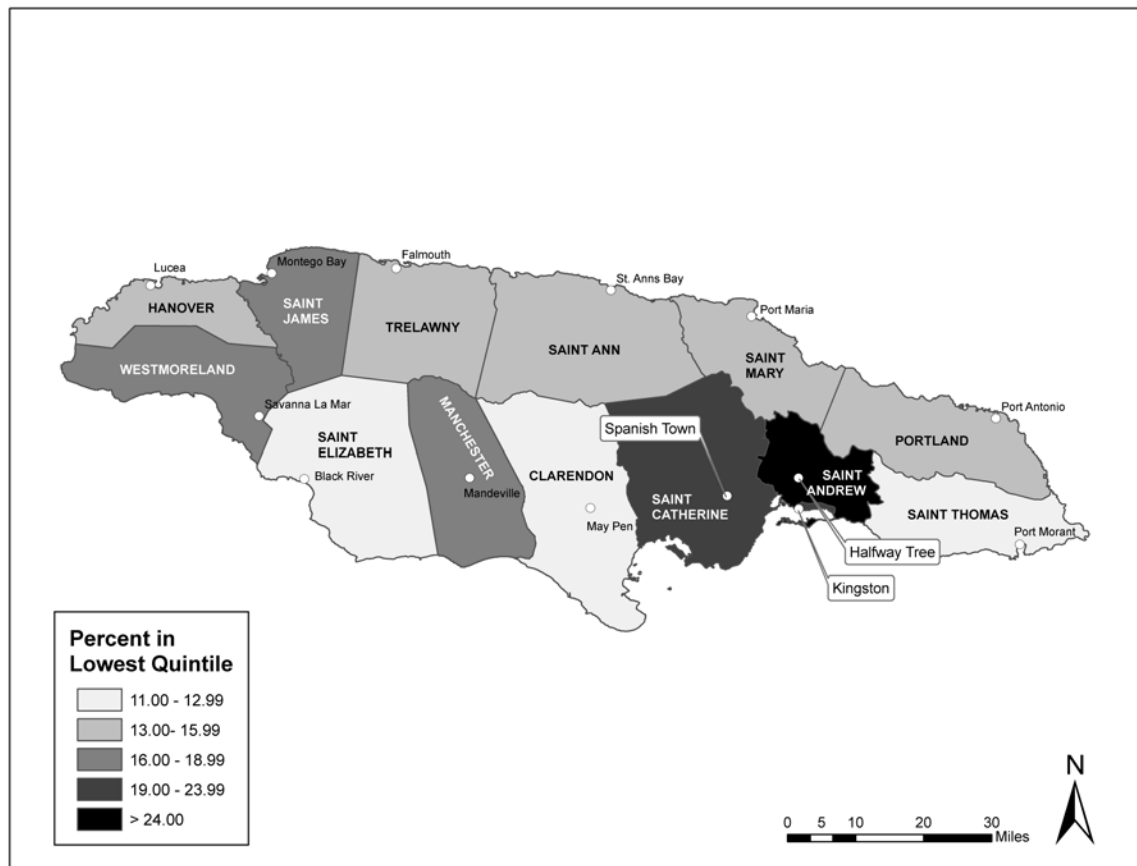
much higher proportion of quintile one scores to other quintile scores. These patterns indicate greater inequality in St. Andrew compared to St. Catherine and Manchester which appear to be more equitable.

Figure 42: Histograms of ESVI Quintiles



The following maps present the distribution of the quintiles spatially. Looking at the first map (map 2) it can be clearly seen that the parish of St. Andrew stands out. It is the only parish in which almost one-quarter of the scores fall in the lowest quintile. At the opposite end of the scale are St. Elizabeth, Clarendon and St. Thomas where less than 13 percent of scores are in quintile one.

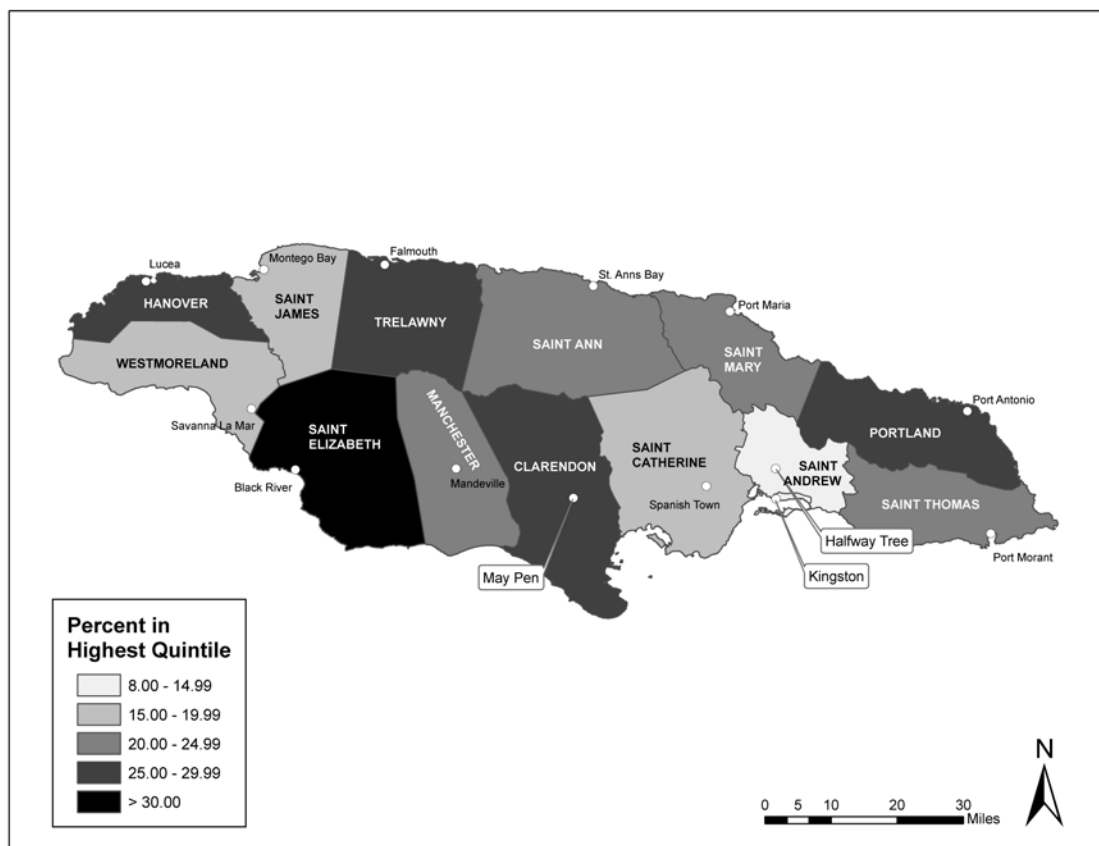
Map 2: Distribution of Scores in Lowest ESVI Quintile



Source: Source: Map created by Greg de la Begassiere using GIS shapefile.

Map 3 shows the distribution of scores in quintile five. This quintile represents the highest vulnerability levels. The map shows that Kingston and St. Andrew have the smallest proportion of scores in quintile five, while St. Elizabeth has the highest proportion. It is important to note the parishes trailing St. Elizabeth since these also represent high vulnerability levels.

Map 3: Distribution of Scores in Highest Vulnerability Quintile

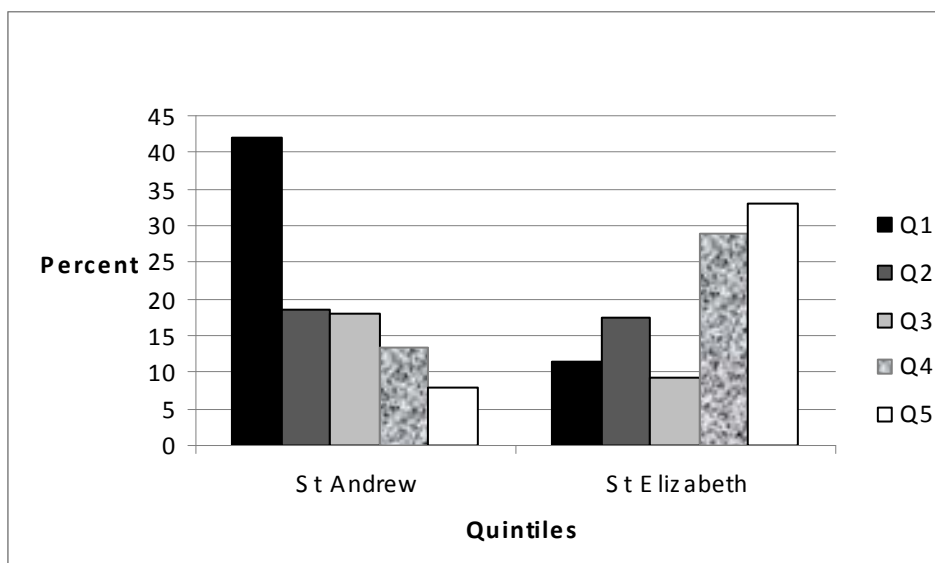


Source: Map created by Greg de la Begassiere using GIS shapefile.

Comparison of Parishes with Lowest and Highest Vulnerability Scores

According to figure 43, residents of St. Andrew are four times more likely to fall in the lowest quintile than residents of St. Elizabeth. On the other hand, residents of St. Elizabeth are roughly four times more likely to be in the highest quintile than residents of St. Andrew. Spatial variations in social vulnerability as observed between St. Elizabeth and St. Andrew might suggest a contextual explanation. According to this approach, there are features of these areas that promote or depress social vulnerability. On the other hand, a compositional explanation would suggest that the observed differences between these parishes result from the differences in the characteristics of the residents (Macintyre and Ellaway 2000). However, the possibility of interactions between these two explanations cannot be ignored.

Figure 43: Quintile Distribution for St. Andrew and St. Elizabeth



Closer examination of St. Andrew and St. Elizabeth which are at opposite ends of the vulnerability scale reveals important differences. The parish of St. Andrew is socially complex, with many layers. First there is rural St. Andrew and urban St. Andrew with very different economic and social structures. Urban St. Andrew itself is deeply stratified along class lines. There is “upper St. Andrew” where the wealthiest Jamaicans live, middle St. Andrew, and lower St. Andrew. In addition there are various low income and politically volatile inner-city communities. Furthermore, St. Andrew has the highest proportion of elderly persons with both secondary and tertiary level education while St. Elizabeth has the second lowest (appendix O).

St. Andrew is predominantly an urban parish with the main economic activities being commerce and manufacturing. Approximately 87 percent of the elderly population of St. Andrew lives in urban areas compared to just 14.4 percent in St. Elizabeth (table 13). The main economic activities of St. Elizabeth, agriculture, bauxite mining and fishing, do indicate the rural nature of the parish (appendix H). Indeed in 2002, half of the population of St. Elizabeth was involved in agriculture compared to five percent in St. Andrew. The two parishes also differ in terms of the sizes of their elderly populations as there are almost three times more elderly in St. Andrew than there are in St. Elizabeth.

Interestingly, although St. Elizabeth exhibits higher levels of socioeconomic disadvantage overall, the parish does not have the highest incidence of poverty as it ranked eighth (20.0 percent) in the country in 2002. St. Andrew, ranked twelfth in terms of the poverty incidence (14.8 percent), although it recorded the highest mean consumption expenditure, 50 percent above the national mean (PIOJ and STATIN 2005).

Discussion and Summary

The results of this section of the analysis confirm the findings of the first part. Females show higher levels of vulnerability than males. Among the categories of the old, those over 85 years old record the highest level of vulnerability. Based on mean scores for the quintiles, St. Andrew again emerges as the least vulnerable while St. Elizabeth comes out as most vulnerable. The quintile scores seem to sort themselves into natural groupings. At the top end are St. Elizabeth, Trelawny, Portland and Clarendon with the highest proportions of quintile five scores. At the bottom end are Kingston and St. Andrew which have the highest proportions of quintile one scores. In between are those parishes that appear to have a more equitable distribution of scores across all quintiles which are all the others excluding Hanover which appears atypical.

Apart for the fact that St. Andrew has the highest proportion of quintile one scores, what is noticeable is the step-like structure of the quintiles from lowest to highest. This pattern is also discernible in the quintile distributions of Kingston. In the cases of St. Elizabeth, Portland, Clarendon and to a lesser extent Trelawny, the pattern is opposite as the steps move from highest to lowest across quintiles. The parishes of St. Andrew and St. Elizabeth exhibit almost directly opposite trends on the quintile analysis. However it is important to note that there are high and low quintile scores in each parish making it difficult to establish without question whether the results are due to contextual or compositional effects.

CHAPTER X

CONCLUSION

This study investigated the state of social vulnerability in the Jamaican elderly population through the development of the ESVI, a composite indicator created with the use of census data. In the context of this study, social vulnerability was defined as susceptibility to inadequate support in old age. It was conceived as having three core components or domains and eleven indicators. The three domains, human resources, material resources and social resources, represent distinct aspects of the resources considered important for the well-being of the elderly.

The ESVI compared the level of social vulnerability of older people according to sex, age category and place of residence, and confirmed the existence of differential vulnerability. More specifically, the index results show that elderly females are more vulnerable than their male counterparts and that the oldest-old (85+) are the most vulnerable age group. In addition, the results indicate the presence of geographic variations in social vulnerability, and provide convincing evidence of the need for greater support of the elderly in the area of material resources. Overall, the findings support the theoretical model used and substantiate the literature.

General Conclusions

The results of the study suggest several general conclusions. First and foremost, the study reinforces the view that elderly people are not a homogeneous group, a consistent theme presented in the literature. As reiterated in the literature, older people vary not only

in their biological and psychological circumstances, but also in their social circumstances (Settersten 2006; Hooyman and Kiyak 2005). That there is significant variation in the vulnerability scores of older persons across social categories calls into question status convergence theories such as the “age-as-leveler” hypothesis which suggest that advanced age levels or eliminates many of the differences among different types of older adults resulting in less inequality in old age (Kent 1971). In fact, the results may be more reflective of a status maintenance perspective which hypothesizes that status differences among individuals are preserved in old age rather than eliminated (Pampel and Hardy 1994).

Second, gender is a compelling marker of disadvantage. According to the study results, older adult Jamaican females as a group are more vulnerable than older adult males on all domains of the ESVI. This suggests that being male or female says something not only about individuals’ characteristics, but more importantly about their position in society. Support for this position can be found in feminist literature which links the later life disadvantage of women to the value that society gives to their reproductive and productive work (Stoller and Gibson 1994; Arber and Ginn 1991). Evidence for this argument can be found in the wide prevalence of labor market discrimination and the gender gap in earnings (England 1992; Gornick 1992). Indeed, feminist theories of aging provide the most plausible explanation for the existence of higher female than male social vulnerability in a strongly matrifocal society like Jamaica.

However, gender alone does not fully explain the relative disadvantage of older women in the area of social vulnerability. The results of the ESVI suggest that there may be merit in the “double-jeopardy” hypothesis, the notion that combination of two

stigmatized statuses puts people at a disadvantage (Joseph and Cloutier-Fischer 2005). According to the “double-jeopardy” hypothesis, the combination of two stigmatized statuses puts women in a disadvantageous position in later life (Lincoln and Allen 2004; Chappell and Haven 1980). Older Jamaican women may be experiencing the “double jeopardy” effects of age and gender which is reflected in their higher vulnerability scores.

While not universally accepted, there is a growing argument that age and gender relations are not separate systems (McMullin 1995; Arber and Ginn 1995). Both age and gender simultaneously organize social life, so older people are defined not only by their age but also by their gender. The importance of examining age and gender relations together lies in the fact that the situations and experiences of men and women in old age are different and have different causes. Older women have poorer health, higher levels of disability and less financial resources overall (Arber and Ginn 1991). They also have shorter working lives and lower pay on average, putting them at greater risk for vulnerability.

The third conclusion suggested by the results is that advanced old age is a risk factor for social vulnerability. As the ESVI shows, vulnerability scores increase with advancing age, resulting in persons in the oldest-old age category (age 85 and above) being the most vulnerable of all. Older age cohorts often have higher poverty levels and more health problems than younger cohorts which translate into greater disadvantage (Hooyman and Kiyak 2005). Moreover, the oldest-old (85+), have different needs and resources from other groups of older persons. They have even higher levels of morbidity and disability, lower levels of education and are less likely to be married, all of which are risk factors for vulnerability (Richard, Willis and Manton 1995).

Conceivably, the high vulnerability level in the “oldest-old” is related to the depletion of resources over time due to physical, psychological and social losses, supporting a life course explanation. It is also very likely that cumulative disadvantage processes are at work in helping to create social vulnerability in old age. This approach suggests that disadvantages accumulate over the life course and may even be magnified (DiPrete and Eirich 2006; Dannefer 2003; O’Rand and Henretta 1999; Crystal and Shea 1990). For instance, lower levels of education translate into lower standards of living overall, partly through the mechanisms of lower lifetime incomes and pensions.

However, the contextual analysis shows that in many ways the social vulnerability of older Jamaicans is structured, supporting a political economy explanation. A political economy perspective is valuable since it shows how economic and political forces influence the allocation of social resources, and how these decisions affect the situation of the elderly (Estes 2001; Quadagno 1999; Townsend 1981; Walker 1981). Employment and labor policies, the provision of adequate incomes, the provisions of safety nets and the degree to which health, social services and other resources are available to citizens are all the result of government policies and programs. These resources are provided and distributed within political and ideological structures that act as barriers and reduce opportunities for older people (Phillipson 2005). The result is increased risk and experience of social vulnerability.

Based on the index results, it can also be concluded that low levels of material resources have a negative impact on the well-being of the Jamaican elderly. This is not unexpected, given the structure of the domain which measures access to income in the form of pensions, economic activity and security of housing tenure. Both reduced

economic activity (UN 2007a; Kalache, Barreto and Keller 2005; and low pension coverage (UN 2007a; HelpAge 2004; Gorman 2004) increase the risk of vulnerability for older adults. In addition, the low rate of home ownership in the cities puts many urban elders at a disadvantage. As the literature shows, housing is an important asset for the elderly since it provides security of tenure, and is a source of income through savings from imputed rent or through rent earnings (Moser 1998; Rawlings 2006). These conditions are the result of policy decisions and point to a political economy explanation.

The final conclusion suggested by the study is the centrality of place as a variable in the study of social vulnerability. Index results show that St. Andrew is inarguably the best performing parish on the ESVI, while St. Elizabeth is the worst performing. These positions are fairly constant across all levels of analysis which raise questions about the characteristics of these places that facilitate or inhibit the development of social vulnerability. The index scores show that elders in more urbanized parishes are lower than those in more rural parishes, irrespective of the level of analysis, and that rural and urban elders display different kinds of vulnerability. This result is consistent with the literature which shows that rural areas are generally poorer and underserved in terms of services (Krout and Bull 2006; Joseph and Cloutier-Fischer 2005; Glasglow and Brown 1998).

One way to interpret the differences in the positions of St. Andrew and St. Elizabeth on the ESVI is to apply a world systems analysis which links location to advantage or disadvantage. According to world systems theory, a country's location in the world economic system has a significant bearing on its overall level of development, as well as the level of within-country inequality (Bergensen and Bata 2002; Bornschieer

2002). For the most part, peripheral countries experience low levels of development because of their incorporation into the world system as producers of agriculture and other primary goods.

Applied to the local level, this type of analysis helps to explain the constituent disparities in vulnerability levels between the high scoring St. Elizabeth and the low scoring St. Andrew. In other words, St. Elizabeth might be displaying a high vulnerability level due to its incorporation into the national economy primarily as an agriculture producing area. St. Andrew, on the other hand is a major provider of services and secondary and tertiary products. This signals its dominant role in the local economy, akin to the core countries of the world system.

These findings support the vulnerability of places approach (Rygel, O'Sullivan and Yarnal 2005) which suggests that social vulnerability can be viewed from within geographic locations. The observed spatial variations in social vulnerability might indeed suggest that the differences are related more to the features of the areas than to the characteristics of their residents, a contextual as opposed to a compositional explanation (Macintyre and Ellaway 2000).

Overall, the results support the theoretical model used and substantiate the literature, thereby contributing to our theoretical and empirical understanding of social vulnerability in general. Taken together, the political economy framework along with feminist theories and the cumulative disadvantage perspective helps to explain differential social vulnerability in the Jamaican elderly population.

Policy Issues and Implications

These conclusions have a number of policy implications. First, attention must be paid to elders in rural areas, since these areas are aging faster than urban areas but with lower levels of development. In particular, the parishes of St. Elizabeth, Clarendon and Portland warrant special attention. Very few persons would disagree that rural elders have many advantages over their urban counterparts including greater involvement in community and voluntary activities. Yet rural elders as a group face many challenges as a result of where they reside such as less access to health and other social services. The answer, however, is not to simply do away with rural areas. Rather, what is required is better access to health and social services to improve the lives of rural residents.

There is also a demonstrated need for support in the area of material resources. In particular urban elders in the KMA appear to be doing poorly in the areas of housing and social security. Urban housing is a challenge in many cities of the world, especially in developing countries where overcrowding and lack of access to basic utilities are widespread. In the area of social security, the government has started to address the inequities between rural and urban elders through PATH, the government's social assistance program. The program has been designed with a leaning towards the less privileged, who are mostly rural, in order to balance the urban bias in the NIS. This has proven to be successful since rural elders have higher rates of social security coverage and post better scores on this domain. There is some danger though that the elderly urban poor could end up suffering more disadvantage. This is not a desirable outcome given the harshness of the urban environment.

Provisions must also be made for older adults of advanced ages, most of whom do not qualify for national insurance and can no longer work to provide for their needs. Incidentally, many of these persons are rural residents which lend support to the call for greater support of elders in rural areas. Addressing this issue will require that attention be paid to the parishes of St. Elizabeth and Portland which have the highest proportions of older adults.

Overall, these conclusions suggest that in addition to universal policies that aim for broad improvement to the conditions of the elderly, there is a need for targeted policies that focus on the needs of particular segments of the elderly population. The following recommendations are being made to begin addressing the problem of social vulnerability in the Jamaican elderly population:

1. Create an environment that supports elderly employment. Many older adults would continue in formal employment if they could, but the existence of set retirement ages makes this difficult if not impossible. Ageism and age discrimination will also have to be addressed.
2. Increase the coverage of non-contributory social assistance programs to include all elderly persons who are not covered by the NIS and/or private pension schemes. This is the first step towards the introduction of a universal social pension which has proven beneficial in many developing countries.
3. Improve the administrative infrastructure of the social security program to make it easier for older persons to access the services. Although rates of coverage are high especially for rural elders, the program is still undersubscribed.
4. Develop housing programs directly targeting urban elders, particularly those in city

areas. Urban housing is worrisome and is appreciably harder for older persons who are no longer employed.

5. Establish partnerships with communities and organizations that provide support for older adults. Collaboration between formal and informal support systems has the potential for greater impact.

Further Research

The ESVI has demonstrated the ability to differentiate vulnerability status at a sub-national level with the potential for international comparisons as well. However, the index needs to be refined. Certain indicator variables were not included due to lack of data, but these variables can enrich our understanding of social vulnerability. Variables such as church membership and membership in societies are important for the wellbeing of the elderly, as is actual support from family members and relatives. These should be included in future models of the index. On the other hand, the urban-rural residence indicator variable dominated the index and so it might be wise to substitute a variable such as main economic activity to capture spatial differences. Future work should also redefine and reoperationalize the social security variable so that NIS and private pensions are differentiated from social assistance delivered through PATH. This could reveal significant differences in the vulnerability scores.

Future studies should consider studying vulnerability at more detailed levels like the community and even the household. The current research offers a macro view of vulnerability which is important for national assessment of the situation of the elderly in the area of social vulnerability. However, it is inappropriate to assign parish values to

households, since not all who live in areas posting high vulnerability scores are themselves vulnerable. The converse is also true: not all highly vulnerable people live in identified high vulnerability areas.

Another area for future research concerns the mechanisms through which the variables create vulnerability in the elderly population. If policy initiatives are to be effective, it is important to understand and address the underlying issues which are all related to inequalities. Additional studies should also seek to build on the current index using it as a baseline assessment of social vulnerability. The ESVI uses cross-sectional data, so the picture it presents is a snapshot of social vulnerability as it was in 2001. However, the factors that define social vulnerability are subject to change and should be monitored. The ESVI can be developed into a trend study to monitor and track changes in the levels and locations of social vulnerability in the elderly population in much the same way as the Jamaica Survey of Living Conditions tracks trends in household welfare. This will establish index reliability over time.

Finally, the ESVI needs to be validated. Since there are no comparable measures, empirical testing will be necessary to establish the truthfulness of the indicators used, and determine whether these coincide with the actual experiences of the elderly. This process would benefit from the views of an expert panel, but qualitative methods will also be required.

To conclude, the ESVI has important theoretical and policy implications. From the academic standpoint, the development of the ESVI contributes to the articulation of a theoretical model of elderly vulnerability. In terms of policy, the ESVI calls attention to the issue of elderly vulnerability, an under-explored but critical issue in this current

environment of rapid social change. More importantly, the ESVI provides a measure that will facilitate policy-makers and other decision-makers in identifying and ultimately addressing the issue of social vulnerability in the elderly population.

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APPENDICES

Appendix A: Percent of Elderly Population Covered by NIS and PATH

<i>Parish</i>	<i>Total elderly</i>	<i>NIS beneficiaries^a</i>	<i>Percent</i>	<i>PATH beneficiaries^b</i>	<i>Percent</i>
Kingston	7315	2,795	38.21	369	5.04
St Andrew	52513	18,163	34.59	1,732	3.29
St Thomas	10455	2,659	25.43	1,375	13.15
Portland	10029	2,338	23.31	1,615	16.10
St Mary	13521	4,455	32.95	2,504	18.52
St Ann	17511	4,109	23.46	2,544	14.52
Trelawny	8706	2,348	26.97	1,048	12.04
St James	15144	4,385	28.96	1,470	9.71
Hanover	7644	1,767	23.12	1,877	24.55
Westmoreland	15729	3,786	24.07	2,802	17.81
St Elizabeth	18375	3,252	17.70	4,118	22.41
Manchester	22582	4,073	18.04	2,788	12.34
Clarendon	25686	5,490	21.37	3,830	14.91
St Catherine	39141	12,492	31.92	3,793	9.69
Jamaica	264776	72,112	27.24	31,865	12.03

Source: For NIS beneficiaries the source is data from the Ministry of Labor and Social Security, National Insurance Division. For PATH beneficiaries: Economic and Social Survey of Jamaica 2005.

^a Data for NIS refer to 2008

^b Data for PATH are for 2005.

APPENDIX B-1: Structure of Jamaican Health Care System, 2002

<i>TYPE OF FACILITY</i>	<i>SERVICES PROVIDED</i>
HOSPITAL: Type A (3) Tertiary public general hospital	Provides both secondary and tertiary care and have a wide range of specialist services. Receives referrals for these specialist services. Located in the cities
Type B (5) Secondary level hospital	Provides inpatient and outpatient services in at least five specialist areas – surgery medicine, obstetrics and gynecology, pediatrics and anesthetics. Also x-ray and laboratory services. Located in large urban centers
Type C (10) District or community hospital	Provides general medicine, surgery, child and maternity care. Basic x-ray and laboratory services. Operate at the parish level
Specialist hospital (6)	Provides services in obstetric and gynecological, psychiatric, pediatric, cardiopulmonary and respiratory care, oncology, physical rehabilitation. Located in the KMA.
HEALTH CENTER: Type 1	Basic maternal and child health, nutrition, family planning, immunization, health education, first aid
Type 2	Type 1 services plus curative (visiting doctor/Nurse Practitioner), dental, environmental health, sexually transmitted infections, mental health, pharmacy
Type 3	Type 1 and 2 services and a range of preventive and curative services
Type 4	All services of Type 3. Located in rural capitals
Type 5	Comprehensive clinics with all Type 3 services, specialties and laboratories. Located in large urban areas

APPENDIX B-2: Distribution of Health Care Facilities in Jamaica, 1998

<i>PARISH</i>	<i>HOSPITALS</i>	<i>TYPE^a</i>	<i>CATEGORY</i>	<i>HEALTH CENTERS</i>	<i>POPULATION</i>
Kingston	5	Public 4 Private 1	Type A - 3 Type C - 3	22	96,054
St Andrew	7	Public 4 Private 3	Type A - 1 Type C - 3	25	555,830
St Thomas	1	Public	Type C	17	91,597
Portland	1	Public	Type C	19	80,209
St Mary	2	Public	Type C	32	111,466
St Ann	1	Public	Type B	31	166,593
Trelawny	1	Public	Type C	20	73,071
St James	2	Public 1 Private 1	Type A	25	175,131
Hanover	1	Public	Type C	21	67,030
Westmoreland	1	Public	Type B	21	138,945
St Elizabeth	1	Public	Type C	25	146,404
Manchester	2	Public 1 Private 1	Type B	25	185,802
Clarendon	3	Public	Type B - 1 Type C - 2	27	237,023
St Catherine	2	Public	Type B - 1 Type C - 1	36	482,309
Jamaica	30	Public 24 Private 6	Type A - 3 Type B - 5 Type C - 12	348	2,607,632

Source: Ministry of Health unpublished data.

Notes: ^aType A facilities are general hospitals that provide the full range of medical services. Type B hospitals provide at least four major specializations (surgery, pediatric, obstetrics and gynecology and internal medicine), while Type C facilities are community hospitals that provide general care excluding emergency cases.

Appendix D: Parish Distribution of Elderly Population by Age Groups, 2001

<i>Parish</i>	<i>60-74 years</i>	<i>Percent</i>	<i>75-84 years</i>	<i>Percent</i>	<i>85+ years</i>	<i>Percent</i>	<i>Total pop</i>
Kingston	5052	69.08	1613	22.06	652	8.9	7313
St Andrew	35240	67.12	12433	23.68	4840	9.2	52504
St Thomas	6875	65.75	2625	25.11	957	9.15	10456
Portland	6245	62.29	2720	27.13	1060	10.57	10025
St Mary	8777	64.92	3423	25.32	1321	9.77	13519
St Ann	11736	65.51	4345	24.25	1835	10.24	17914
Trelawny	5734	65.87	2154	24.74	818	9.4	8705
St James	10473	69.15	3379	22.31	1293	8.53	15145
Hanover	4978	65.1	1853	24.23	815	10.66	7647
Westmoreland	10198	64.83	3955	25.14	1580	10.04	15730
St Elizabeth	11496	62.55	4604	25.05	1825	9.93	18378
Manchester	15212	67.35	5225	23.13	2148	9.5	22587
Clarendon	17238	67.11	6222	24.22	2229	8.68	25685
St Catherine	27562	70.43	8589	21.95	2987	7.63	39133
JAMAICA	177263	66.96	63140	23.85	24369	9.2	264741

Source: Calculations based on census data for 2001

Appendix E: Parish Aging Indicators, 2001

<i>PARISH</i>	<i>TOTAL POPULATION</i>	<i>AI</i>	<i>OADR</i>	<i>PASR</i>	<i>POSR</i>
Kingston	96054	23.21	8.8	8.63	11.31
Urban	96052	23.21	8.8	8.63	11.31
Rural	0	0	0	0	0
St Andrew	555830	31.72	11.12	9.35	8.98
Urban	483083	32.56	11.15	9.46	8.96
Rural	72746	26.8	10.91	8.53	9.16
St Thomas	91597	33.56	15.67	11.69	6.37
Urban	25827	31.01	14.58	12.24	6.85
Rural	65773	34.55	16.11	11.49	6.2
Portland	80209	37.8	17.1	13.6	5.83
Urban	18806	32.46	13.95	12.89	7.16
Rural	61397	39.39	18.18	10.5	5.49
St Mary	111466	35.91	16.6	12.74	6.02
Urban	23148	30.86	14.26	11.3	7
Rural	88316	25.52	13.59	13.06	7.35
St Ann	166593	31.65	13.45	11.96	7.43
Urban	44666	30.95	11.57	10.38	8.64
Rural	122098	31.89	14.19	12.53	7.04
Trelawny	73071	35.29	15.73	11.49	6.34
Urban	14290	31.52	12.99	11.55	7.69
Rural	58775	36.17	16.46	11.48	6.07
St James	175131	25.98	10.38	8.65	9.62
Urban	96490	23.23	8.38	6.45	11.9
Rural	78640	29.1	13.04	11.24	7.6
Hanover	67030	34.7	14.85	13.22	6.73
Urban	6245	47	19.3	12.79	5.17
Rural	60795	34.38	14.37	13.3	6.9
Westmoreland	138945	33.98	15.12	13.23	6.61
Urban	35692	27.97	11.8	10.95	8.4
Rural	103257	36.06	16.31	13.93	6.13
St Elizabeth	146404	39.46	16.53	12.1	6.04
Urban	21120	40.6	14.2	10.87	7.03
Rural	125280	39.2	16.9	12.36	12.36

APPENDIX E Continued

<i>PARISH</i>	<i>TOTAL POPULATION</i>	<i>AI</i>	<i>OADR</i>	<i>PASR</i>	<i>POSR</i>
Manchester	185802	38.24	15.72	11.66	6.36
Urban	62264	44	15.8	9.98	6.32
Rural	123540	35.71	15.66	12.54	6.38
Clarendon	237023	30.7	14.6	10.48	6.84
Urban	71758	29.28	13.23	9.01	7.55
Rural	165269	31.32	15.23	11.09	6.56
St Catherine	482309	25.18	9.5	7.05	10.5
Urban	355901	22.72	7.9	5.6	7.9
Rural	126404	31.44	14.61	10.98	6.84
Jamaica	2607632	31.38	8.13	10.23	7.8
Urban	1353240	28.8	10.5	8.49	9.5
Rural	1254390	33.8	15.5	12.03	6.4

Source: Calculations based on census data for 2001

Appendix F: Rural-Urban Distribution of Elderly by Sex, 2001

<i>PARISH</i>	<i>URBAN AREAS (percentage)</i>		<i>RURAL AREAS (percentage)</i>	
	Male	Female	Male	Female
Kingston	42.41	57.59	0	0
St Andrew	41.69	58.31	48.15	51.85
St Thomas	45.41	55.69	49.15	50.85
Portland	43.34	56.65	48.62	51.38
St Mary	45.86	54.13	49.16	50.84
St Ann	46.12	53.88	49.14	50.86
Trelawny	43.42	56.57	49.59	50.41
St James	44.1	55.9	49.19	50.81
Hanover	42.7	57.3	49.01	50.99
Westmoreland	45.84	54.16	48.43	51.57
St Elizabeth	45.78	54.22	47.06	52.94
Manchester	46.36	53.64	48.58	51.42
Clarendon	44.03	53.76	49.3	50.7
St Catherine	43.96	56.03	49.5	50.5
JAMAICA	43.51	56.49	48.79	51.2

Source: Calculations based on census data for 2001

Appendix G-1: Comparative Educational Attainment of Elderly and Total Population, 2001

<i>Parish</i>	<i>Primary Education</i>		<i>Secondary Education</i>		<i>Tertiary Education</i>		
	Elderly	Total pop	Elderly	Total pop.	Elderly	Total pop	Total
Kingston	58.58	11.00	21.50	40.90	3.64	5.90	96054
St Andrew	46.70	11.10	28.70	39.40	13.58	14.10	555830
St Thomas	75.25	21.00	9.85	35.20	2.31	5.03	91597
Portland	64.95	19.70	21.57	37.20	2.96	4.80	80209
St Mary	71.63	20.30	15.05	36.54	2.18	4.50	111466
St Ann	65.35	18.90	20.19	36.71	4.27	6.40	166593
Trelawny	71.38	23.00	15.45	34.12	2.89	4.60	73071
St James	68.01	16.70	16.52	37.09	5.03	8.10	175131
Hanover	73.20	21.30	14.63	37.08	2.71	4.30	67030
Westmoreland	66.64	17.00	21.74	42.34	2.42	3.70	138945
St Elizabeth	76.71	26.40	12.65	34.30	2.65	4.20	146404
Manchester	69.97	22.80	15.46	33.90	5.71	7.50	185802
Clarendon	72.41	20.20	15.37	36.30	2.80	4.20	237023
St Catherine	65.95	14.80	17.70	37.00	4.30	10.30	482309
JAMAICA	64.76	17.10	18.87	37.30	5.62	8.20	2607632

Source: Calculations based on census data for 2001.

Appendix G-2: Educational Attainment of Elderly Population by Parish, 2001

<i>Parish</i>	<i>Less than primary</i>	<i>Primary</i>	<i>Secondary</i>	<i>University/ Tertiary</i>	<i>Total</i>
Kingston	3.27	56.58	21.51	3.64	7315
St Andrew	2.00	46.70	28.74	13.58	52513
St Thomas	2.37	75.25	9.85	2.31	10455
Portland	1.96	64.95	21.57	2.96	10029
St Mary	2.12	71.63	15.05	2.18	13521
St Ann	2.79	65.35	20.19	4.27	17511
Trelawny	4.11	71.38	15.45	2.89	8706
St James	3.10	68.01	16.52	5.03	15144
Hanover	2.32	73.20	14.63	2.71	7644
Westmoreland	4.29	66.64	21.74	2.42	157129
St Elizabeth	3.95	76.71	12.65	2.65	18375
Manchester	2.62	69.97	15.46	5.71	22582
Clarendon	3.57	72.41	15.37	2.80	25686
St Catherine	2.37	65.95	17.70	4.30	39141
JAMAICA	2.78	64.76	18.87	5.62	264776

Source: Calculations based on census data for 2001(vol.3 part A Table 1)

APPENDIX H-1: Economic Activity in the 60-64 Age Group by Sex and Area of Residence, 2001

<i>Activity Status</i>	<i>Male</i>		<i>Female</i>		<i>Total</i>
	Urban	Rural	Urban	Rural	
Usually active	7844 (57.16%)	9446 (60.85%)	4645 (31.06%)	3458 (27.37%)	25393 (44.68%)
Inactive	5878 (42.84%)	6077 (68.94%)	10308 (68.94%)	9176 (72.63%)	31439 (55.32%)
Total reporting	13722	15523	14953	12634	56832

Source: Calculated from Population Census 2001 Vol 9 tables 23-25 p21-23

APPENDIX H-2: Economic Activity in the Dependent Elderly Population (65+) by sex and Area of Residence

<i>Activity Status</i>	<i>Male</i>		<i>Female</i>		<i>Total</i>
	Urban	Rural	Urban	Rural	
Usually active	7979 (23.15%)	15153 (31.82%)	4810 (11.53%)	4325 (10.42%)	32267 (19.52%)
Inactive	26491 (76.85%)	32472 (68.18%)	36893 (88.47%)	37182 (89.58%)	133038 (80.48%)
Total reporting	34470	47625	41703	41507	165305

Source: Calculated using data from Population Census 2001 Vol 9 tables 23-25 p21-23.

APPENDIX I: Selected Socioeconomic Indicators by Parish, 2002

PARISH	MAIN ECONOMIC ACTIVITIES	UNEMPLOYMENT RATE	URBAN STATUS	POVERTY INCIDENCE
Kingston	Services, commerce, industry, manufacturing	17.7	100%	18.3
St. Andrew	Commerce, manufacturing	11.5	86.9%	14.8
St. Thomas	Agriculture, commerce	22.3	28.2%	28.7
Portland	Agriculture, tourism	23.7	23.4%	38.2
St. Mary	Agriculture, tourism	8.3	20.7%	27.2
St. Ann	Tourism, bauxite mining, agriculture	19.1	26.7%	37
Trelawny	Tourism, agriculture	14.6	19.6%	31.3
St. James	Tourism, agriculture, commerce	18.8	55%	12.9
Hanover	Tourism, agriculture	26.8	9.3%	14.1
Westmoreland	Agriculture including fishing, tourism, distributive trade	12.7	25.7%	18.7
St. Elizabeth	Agriculture, bauxite, mining, fishing	10.5	14.4%	20.0
Manchester	Bauxite mining, agriculture	13.2	33.5%	24.4

APPENDIX I continued.

PARISH	MAIN ECONOMIC ACTIVITIES	UNEMPLOYMENT RATE	URBAN STATUS	POVERTY INCIDENCE
Manchester	Bauxite mining, agriculture	13.2	33.5%	24.4
Clarendon	Bauxite mining, agriculture, agricultural processing, manufacturing	17.0	30.3%	27.2
St. Catherine	Agriculture, commerce	13.7	73.8%	16.2
JAMAICA	Services including tourism, agriculture, distributive trade	15.4	52%	19.7

Source: Data from Planning Institute of Jamaica and Statistical Institute of Jamaica. 2005. *Jamaica Survey of Living Conditions Parish Report 2002*. Kingston, Jamaica: Pear Tree Press.

APPENDIX J-1: Chronic Illness in the Elderly Population by Sex, 2001

<i>Parish</i>	<i>Population</i>	<i>Male</i>	<i>Female</i>
Kingston	7315	30.56	69.44
St Andrew	52513	34.19	65.81
St Thomas	10455	36.96	63.04
Portland	10029	36.89	63.11
St Mary	13521	37.52	62.48
St Ann	17511	38.33	61.67
Trelawny	8706	39.03	60.97
St James	15144	36.67	63.33
Hanover	7644	36.78	63.22
Westmoreland	15729	36.27	63.73
St Elizabeth	18375	37.59	62.41
Manchester	22582	39.16	60.84
Clarendon	25686	37.48	65.52
St Catherine	39141	35.81	64.19
JAMAICA	264776	36.69	63.1

Source: Calculations based on census data for 2001

APPENDIX J-2: Disabled Elderly Population by Sex, 2001

<i>PARISH</i>	<i>DISABLED ELDERLY</i>	<i>MALE PERCENT</i>	<i>FEMALE PERCENT</i>
Kingston	1295	36.37	60.18
St Andrew	8515	39.82	54.74
St Thomas	2342	45.26	53.99
Portland	2019	46.01	54.33
St Mary	2658	45.67	55.86
St Ann	3269	44.14	53.89
Trelawny	1581	46.11	56.11
St James	3014	43.89	53.46
Hanover	1594	46.54	54.76
Westmoreland	3152	45.24	56.26
St Elizabeth	3159	43.74	55.56
Manchester	3618	44.44	54.15
Clarendon	4972	45.85	56.71
St Catherine	6994	43.29	56.00
JAMAICA	48190	43.63	63.63

Source: Calculations based on census data for 2001

APPENDIX J-3: Chronic Illness and Disability in the Elderly Population, 2001

<i>PARISH</i>	<i>TOTAL ELDERLY POPULATION</i>	<i>PERCENT DISABILITY</i>	<i>PERCENT CHRONIC ILLNESS</i>
Kingston	7315	17.70	47.30
St Andrew	52513	16.20	46.10
St Thomas	10455	22.40	48.10
Portland	10029	20.00	45.70
St Mary	13521	19.70	50.80
St Ann	17511	18.60	51.90
Trelawny	8706	18.20	48.90
St James	15144	19.90	48.80
Hanover	7644	20.80	48.20
Westmoreland	15729	20.00	49.60
St Elizabeth	18375	17.20	52.40
Manchester	22582	16.00	48.90
Clarendon	25686	19.40	51.20
St Catherine	39141	17.90	49.90
JAMAICA	264776	18.00	48.70

Source: Calculations based on census data for 2001

APPENDIX J-4: Disability in the 60+ and 75+ Populations, 2001

<i>Parish</i>	<i>Disabled elderly (60+)</i>	<i>60+ Percent</i>	<i>75+ percent</i>
Kingston	1295	17.70	47.41
St Andrew	8515	16.20	47.96
St Thomas	2342	22.40	50.81
Portland	2019	20.00	55.47
St Mary	2658	19.70	52.25
St Ann	3269	18.60	53.19
Trelawny	1581	18.20	50.53
St James	3014	19.90	48.57
Hanover	1594	20.80	50.94
Westmoreland	3152	20.00	51.23
St Elizabeth	3159	17.20	53.84
Manchester	3618	16.00	49.83
Clarendon	4972	19.40	47.38
St Catherine	6994	17.90	45.76

Source: Calculations based on census data for 2001

APPENDIX K-1: Marital Status of Elderly Jamaicans by Parish, 2001

<i>Parish</i>	<i>Never married</i>	<i>Married</i>	<i>Widowed</i>	<i>Separated/ Divorced</i>	<i>Total</i>
Kingston	50.30	27.37	16.57	4.19	6908
St Andrew	29.00	42.69	21.35	5.52	51753
St Thomas	31.45	42.04	21.49	4.09	10371
Portland	26.57	45.67	23.46	19.45	9956
St Mary	28.85	42.71	23.81	3.93	13404
St Ann	21.34	50.37	24.15	3.10	17830
Trelawny	23.92	47.78	23.46	3.84	8630
St James	26.82	46.64	21.62	3.90	15043
Hanover	25.80	46.99	21.90	3.99	7611
Westmoreland	24.29	47.01	24.19	3.57	15648
St Elizabeth	24.39	47.10	24.78	3.60	18280
Manchester	20.58	51.58	24.10	3.62	22369
Clarendon	24.97	46.82	23.64	3.59	25591
St Catherine	28.20	45.33	21.07	4.21	38896
JAMAICA	70200	119437	59157	10717	262290

APPENDIX K-2: Marital Status of Elderly Jamaican Males, by Parish 20001

<i>Parish</i>	<i>Never married</i>	<i>Married</i>	<i>Widowed</i>	<i>Separated/ Divorced</i>	<i>Total</i>
Kingston	46.15	36.31	10.21	5.26	2908
St Andrew	24.04	56.78	11.49	6.17	22094
St Thomas	31.53	50.2	12.38	4.96	4976
Portland	26.29	55.11	13.57	4.14	4732
St Mary	29.48	51.51	13.5	4.84	6502
St Ann	21.47	60.47	13.65	3.43	8629
Trelawny	23.97	57.16	12.78	4.97	4185
St James	24.76	58.12	11.66	4.34	7034
Hanover	26.97	54.81	12.04	4.95	3678
Westmoreland	24.94	56.74	12.92	4.56	7478
St Elizabeth	24.84	57.84	12.71	3.82	8560
Manchester	19.36	62.68	12.71	4.37	10686
Clarendon	25.64	55.97	13.01	4.38	12395
St Catherine	25.13	57.69	11.19	4.76	17827
JAMAICA	25.22	56.6	12.29	4.75	121685

Source: Calculations based on census data for 2001.

APPENDIX K-3: Marital Status of Elderly Jamaican Females, 2001

<i>Parish</i>	<i>Never married</i>	<i>Married</i>	<i>Widowed</i>	<i>Separated/ Divorced</i>	<i>Total</i>
Kingston	53.37	20.88	21.2	3.42	4000
St Andrew	32.73	32.2	28.71	5.04	29659
St Thomas	31.38	34.51	29.9	3.29	5395
Portland	26.84	37.12	32.43	3.33	5224
St Mary	28.27	34.42	33.53	3.07	6902
St Ann	21.23	40.91	33.4	2.79	9201
Trelawny	23.89	38.97	33.52	2.79	4445
St James	28.63	39.69	30.38	3.53	8009
Hanover	24.71	39.69	31.12	3.1	3933
Westmoreland	23.71	38.12	34.52	2.67	8170
St Elizabeth	24.01	37.65	35.35	2.41	9720
Manchester	21.71	41.43	34.52	2.93	11683
Clarendon	24.35	38.23	33.63	2.93	13196
St Catherine	30.88	34.88	29.43	3.75	21069
JAMAICA	28.01	35.95	31.43	3.5	140605

APPENDIX K-4: Union Status of Elderly Jamaicans by Parish, 2001

<i>Parish</i>	<i>Married</i>	<i>Common law</i>	<i>Not in union</i>	<i>Total</i>
Kingston	20.83	9.66	64.05	6908
St Andrew	36.08	5.71	51.89	51753
St Thomas	33.74	7.05	54.7	10371
Portland	37.89	5.71	51.52	9956
St Mary	35.21	6.24	55.32	13403
St Ann	45.49	4.12	50.39	17074
Trelawny	39.99	4.14	51.23	8629
St James	39.07	4.95	51.54	15043
Hanover	39.58	4.27	51.15	7611
Westmoreland	39.06	4.12	53.07	15648
St Elizabeth	41.26	3.94	50.91	18280
Manchester	45.2	2.95	42.12	22369
Clarendon	39.44	4.73	50.44	25591
St Catherine	37.73	6.15	50.44	38896
JAMAICA	41.44	5.56	55.59	243146

Source: Calculations based on census data for 2001.

APPENDIX L-1: Parish Distribution of Elderly-Headed Households by Household Size, 2001

<i>Parish</i>	<i>1</i>	<i>2</i>	<i>3 to 6</i>	<i>7+</i>	<i>Total</i>
Kingston	37.5	21.03	31.51	10.23	4712
St Andrew	26.69	25.38	38.09	8.25	32719
St Thomas	35.06	24.92	32.22	7.61	7084
Portland	30.71	24.97	32.22	7.61	6733
St Mary	32.20	23.00	34.13	10.64	9052
St Ann	23.99	22.87	39.02	13.1	11768
Trelawny	29.49	23.95	36.47	9.99	5796
St James	25.58	23.59	37.73	10.42	9878
Hanover	29.25	22.93	36.55	10.79	5163
Westmoreland	28.84	23.98	36.55	10.17	10788
St Elizabeth	24.84	24.86	38.45	11.33	12523
Manchester	22.1	25.62	39.47	11.88	17261
Clarendon	26.09	23.05	38.16	12.7	21877
St Catherine	27.73	26.67	44.71	13.64	21877
JAMAICA	26.91	24.12	37.69	11.27	173126

Source: Calculations based on census data for 2001

APPENDIX L-2: Distribution of Elderly Single-Member Households by Parish and Sex,
2001

<i>Parish</i>	<i>Male</i>	<i>Female</i>	<i>Total single person households</i>
Kingston	50.62	49.38	1768
St Andrew	46.14	53.86	8733
St Thomas	58.41	41.59	2484
Portland	59.91	40.09	2068
St Mary	60.92	39.08	2915
St Ann	60.62	39.38	2824
Trelawny	63.37	36.63	1709
St James	57.34	42.66	2527
Hanover	61.39	38.61	1510
Westmoreland	60.24	39.76	3111
St Elizabeth	58.79	41.21	3111
Manchester	59.49	40.51	3310
Clarendon	62.28	37.72	4504
St Catherine	56.72	43.28	6067
JAMAICA	56.84	43.16	46592

Source: Calculations based on census data for 2001

APPENDIX M: Creation of Fertility Variable

1. Calculation of Age Specific Fertility Rates (ASFR) - the number of births occurring annually per 1000 women of a specific age. This is usually given in 5-year age groups.

$$\text{ASFR} = \frac{\text{births in a year to women ages } x \text{ to } (x + 5)}{\text{Total women aged } x \text{ to } (x + 5)} \times 1,000$$

ASFRs were calculated for five-year age groups between 15 and 49 for census years 1960, 1970 and 1989 using the following scheme.

Birth year	Age in				
	2001	1960	1970	1982	1989
1941	60	19	29	41	48
1936	65	24	34	46	
1931	70	29	39		
1926	75	34	44		
1921	80	39	49		
1916	85	44			

Child bearing age ranges from 14 to 49. Without data for the earlier censuses, it was assumed that fertility rates for the period preceding 1960 was the same as those of 1960 which is a safe assumption since the fertility decline in Jamaica began after 1965 (Bongaarts and Lightbourne in the 1996).

2. Calculation of the Total Fertility Rate (TFR) which is an estimate of the average number of children that would be born to each woman assuming that she reproduces at the prevailing rates. The TFR combines ASFRs into a single fertility index covering all ages and is a cohort measure of completed fertility. TFRs allow for the cohort to be followed. These were calculated for ages 60, 75 and 85, the thresholds for the three categories of the aged used in the study.

$$\text{TFR} = \sum (\text{ASFR} \times 5)$$

APPENDIX N: Selected Sociodemographic Indicators

PARISH	MEAN HOUSEHOLD SIZE	HOUSE OWNERSHIP	FEMALE HOUSEHOLD HEADSHIP	EDUCATIONAL ATTAINMENT OF HOUSEHOLD HEAD
Kingston	3.2	26.4%	47.7%	13.6 % primary 81.4% secondary 2.9% tertiary
St. Andrew	3.5	42.8%	52.9%	21.3% primary 23.4% secondary 15.7% tertiary
St. Thomas	3.5	49.9%	50.3%	56.3.2% primary 38.2% secondary 1.4% tertiary
Portland	3.5	70.3%	40.8%	38.2% primary 56.3% secondary 3.4% tertiary
St. Mary	3.2	75.5%	48.4%	34% primary 61.7% secondary 4.1% tertiary
St. Ann	4.0	58.8%	42.2%	32.9% primary 61% secondary 4.6% tertiary
Trelawny	3.7	68.7%	37%	36.5% primary 60.5% secondary 2.9% tertiary
St. James	3.5	62.1%	42.9%	34% primary 58.8% secondary 6.5% tertiary
Hanover	3.2	84.1%	40.7%	36.4% primary 59.0% secondary 4.1% tertiary
Westmoreland	3.3	78.8%	38.5%	32.5% primary 65% secondary 3.3% tertiary
St. Elizabeth	3.6	73.5%	43.2%	28.2% primary 65% secondary 2.0% tertiary
Manchester	3.7	64.2%	39.8%	32% primary 63.9% secondary 3.1% tertiary
Clarendon	3.7	67.8%	40%	32.2% primary 57.1% secondary 6.4% tertiary
St. Catherine	3.6	61.2%	40%	21.3% primary 64.2% secondary 12.3% tertiary

Source: Data from Planning Institute of Jamaica and Statistical Institute of Jamaica. 2005. *Jamaica Survey of Living Conditions Parish Report 2002*. Kingston, Jamaica: Pear Tree Press.

APPENDIX O-1: ESVI Scores and Ranking With and Without Imputation for Missing Values

<i>WITH IMPUTATION</i>	<i>PARISH</i>	<i>SCORE</i>	<i>WITHOUT IMPUTATION</i>	<i>PARISH</i>	<i>SCORE</i>
1	St Andrew	-0.7602	1	St. Andrew	-0.7117
2	Kingston	-0.2421	2	St. James	-0.2301
3	St James	-0.1133	3	Westmoreland	-0.0779
4	St Catherine	-0.0465	4	St. Catherine	-0.0747
5	Westmoreland	0.0048	5	Manchester	-0.0188
6	Manchester	0.0507	6	St. Ann	0.0212
7	St Ann	0.0993	7	Kingston	0.0379
8	St Mary	0.1244	8	St. Thomas	0.1809
9	St Thomas	0.1291	9	St. Mary	0.1861
10	Trelawny	0.2761	10	Hanover	0.3031
11	Hanover	0.2805	11	Trelawny	0.3044
12	Portland	0.2971	12	Portland	0.3660
13	Clarendon	0.3559	13	Clarendon	0.3704
14	St Elizabeth	0.5232	14	St. Elizabeth	0.4802

APPENDIX O-2: Scores and Rankings on the ESVI and With Equally Weighted Indicators and Domains

<i>ESVI RANK</i>	<i>PARISH</i>	<i>SCORE</i>	<i>EQUAL WEIGHTING</i>	<i>PARISH</i>	<i>SCORE</i>
1	St. Andrew	-0.7603	1	St Andrew	-0.0658
2	Kingston	-0.2421	2	Kingston	-0.0181
3	St. James	-0.1133	3	St James	-0.0116
4	St. Catherine	-0.0465	4	St Catherine	-0.0040
5	Westmoreland	0.0049	5	Westmoreland	0.0056
6	Manchester	0.0507	6	Manchester	0.0073
7	St. Ann	0.0993	7	St Ann	0.0100
8	St. Mary	0.1245	8	St Thomas	0.0123
9	St. Thomas	0.1292	9	St Mary	0.0126
10	Trelawny	0.2761	10	Hanover	0.0241
11	Hanover	0.2806	11	Trelawny	0.0275
12	Portland	0.2971	12	Portland	0.0288
13	Clarendon	0.3560	13	Clarendon	0.0334
14	St. Elizabeth	0.5233	14	St Elizabeth	0.0490

APPENDIX O-3: Scores and Rankings on the ESVI and Without Rural-Urban Residence

<i>ESVI RANK</i>	<i>PARISH</i>	<i>SCORE</i>	<i>EXCLUDING RURAL/URBAN</i>	<i>PARISH</i>	<i>SCORE</i>
1	St. Andrew	-0.7603	1	St Andrew	-0.4322
2	Kingston	-0.2421	2	St James	-0.1106
3	St. James	-0.1133	3	St Mary	-0.0551
4	St. Catherine	-0.0465	4	Westmoreland	-0.0393
5	Westmoreland	0.0049	5	Manchester	-0.0062
6	Manchester	0.0507	6	St Ann	0.0056
7	St. Ann	0.0993	7	St Thomas	0.0267
8	St. Mary	0.1245	8	St Catherine	0.0760
9	St. Thomas	0.1292	9	Hanover	0.1108
10	Trelawny	0.2761	10	Kingston	0.1833
11	Hanover	0.2806	11	Portland	0.1843
12	Portland	0.2971	12	Trelawny	0.1917
13	Clarendon	0.3560	13	Clarendon	0.2614
14	St. Elizabeth	0.5233	14	St Elizabeth	0.3258

APPENDIX P: Ranked ESVI scores

Rank	Parish	Score (mean)
1	St. Elizabeth	0.5233
2	Clarendon	0.3560
3	Portland	0.2971
4	Hanover	0.2806
5	Trelawny	0.2761
6	St. Thomas	0.1292
7	St. Mary	0.1245
8	St. Ann	0.0993
9	Manchester	0.0507
10	Westmoreland	0.0049
11	St. Catherine	-0.0465
12	St. James	-0.1133
13	Kingston	-0.2421
14	St. Andrew	-0.7603

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PRESENTATIONS

Crooks, D. J., (April, 2008). *Social Vulnerability in Old Age: The Case of Jamaica*. Paper presented at the meeting of the Society for Applied Anthropology, Memphis, Tennessee.

Crooks, D.J., (August, 2008). *Aging in Jamaica: An Analysis of Patterns and Trends*. Paper presented at the meeting of the American Sociological Association, Boston, Massachusetts.