Elderly's Self-Rated Health Status and Functional Capacity in Decentralizing Indonesia[1]

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The twentieth century has witnessed the gain of longevity among developed countries, while developing countries, such as Indonesia have been undergoing the same trend only since the past few decades. As Indonesians living longer, in tandem with a fast decline in fertility rate, the percentage of older person is growing and will accelerate in the next decades (Rahardjo et al, 2009; Arifin, Braun, and Hogervorst, 2012). Among Southeast Asian countries, Indonesia has the largest number of elderly who live in a relatively low-income country with limited old-age income security (Ananta and Arifin 2009). However, the gain in longevity may be accompanied by increased morbidity. Health status plays an important role in remaining active in later life. Self-rated health status (SRHS) has commonly been used to measure health status of older persons in many developed countries (Larue et al. 1979; Mossey and Sprangers 1982). Despite its simplistic appearance, in comparison with physician rating, self-rated health status (SRHS) can provide a valid, cost-effective means of health assessment (Larue et al. 1979). The answers respondents give when asked to rate their health status have been shown to be robust predictors of later adverse health-related outcomes. For instance, studies have shown that the SRHS predicted morbidity and health seeking behaviors (Bourne 2009a), mortality (Mossey and Shapiro 1982; Frankenberg and Jones 2003; Benyamini et al. 2003), functional limitations (Idler, Russel and Davis 2000; Bourne 2009b; van der Wardt, Bandelow and Hogervorst 2010), and use of health services. The SRHS is also a strong determinant of disability retirement, which is a serious labour market issue in many countries aiming elderly to remain active in later life (Pietilainen et al. 2011).

While much evidence comes from developed countries, this can also be extended to developing countries, such as Indonesia, as shown by Frankenberg and Jones (2003)

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using panel data analysis of the Indonesian Family Life Survey in 1993, 1997, and 2000. Their study demonstrated that SRHS of Indonesian older adults aged 50 and above acted as a significant predictor of mortality in the follow-up periods of observation. Those who perceived their health as poor were significantly more likely to die in the follow-up periods than their counterparts who reported their health as good. More recently, in 2007, other studies of health and functional limitations were conducted among older people in Ghana and Indonesia (Debpuur et al. 2010, and Ng et al. 2010). These were part of a global study conducted by WHO and INDEPTH in 8 countries (e.g. South Africa, Tanzania, Kenya, Ghana, Vietnam, Bangladesh, Indonesia, and India) (Kowal et al. 2010).

However, Ng et al.'s (2010) study was carried out only in one Indonesian district, namely, the Purworejo district of a Central Java province, interviewing respondents aged 50 and above on three main outcomes of self-reported quality of life, self-reported functioning and disability, as well as overall health. Another more recent study conducted by Clifford et al. (2012) in several Indonesian districts assessed whether better health-related quality of life (QoL) had clinical implications and affected engaging in functional activities. The study also showed that participation in physical activity was associated with higher QoL.

Functional limitations in carrying basic daily activities can be dependent on health status as some chronic diseases, such as hypertension, heart diseases, diabetes mellitus, cancer, and stroke can result in loss of the ability to provide self-care. Some of these morbidities result in an immediate dependence, some in lowered functional capacity. Functional limitations as assessed by Activities of Daily Living (ADL) bring about consequences, such as those related to the need for care givers, nursing home use, use of hospital services, and the need for long-term care. Long-term care insurance policies rely on disability in ADLs as these determine premium and benefits. Cognitive status play important role in the ability to perform daily activities. SRHS together with the presence of dementia and depression also have significant impact on instrumental daily activities of living (IADL) which include the use of information and communication technologies (ICT) such as telephone, TV and computer which can facilitate care giving (van der Wardt, Bandelow and Hogervorst 2010).

Amidst the mentioned studies, there are only limited numbers of studies assessing SRHS and functional capacity of Indonesian older persons using nationwide cross sectional surveys. In response to the need of Indonesia's rapidly ageing society, in 2005, the government of Indonesia through the National Statistics Board (BPS) recognized the need for further information to develop appropriate policies and programs to ensure the well-being of Indonesia's older persons. Apart from collecting regular demographic information, the 2005 Intercensal Population Survey (*Survey Penduduk Antar Sensus/SUPAS*) is the first nation-wide cross sectional survey to specifically gather information on those aged 60 and above. The current study seeks to fill the gap on the knowledge relating to health (SRHS), and functional capacity (ADLs and IADLs) of older persons at the district level using the published 2005 SUPAS. It also tests the hypotheses that SRHS is associated with functional capacity; whether SRHS plays a significant role on functional capacity in general and with regards to individual elements of ADL, also taking into account region, type of districts and sex. The current study is an extension from our previous study (Arifin, Braun and Hogervorst, 2012) analysing the same issues at the provincial level in Indonesia. The same weakness as applies here as it did in that study as our analysis is unable to use individual information. However, the current analysis provides a better understanding on the issues Indonesian districts and their elderly population face.

This paper also gives attention to the importance of the environment and the interaction between people and their environment. Place of residence is one of the most important environmental variables. Whether elderly reside in urban or rural settings, for instance, provides an example of the contextual variables. Here the districts are grouped into two categories: cities and regencies. The differences between cities and regencies are generally associated with population density, non-farm type of work, health care services, transportation services, and social norms, which all may potentially affect heath and perceptions of health. Therefore, "urban-rural"(with regencies reflecting the rural environments) differences should not be overlooked, and this is thus being considered in this paper.

In addition to this, economic differences and developments are dichotomous, comparing regions of the more prosperous Java/Bali islands and those regions outside the

Java/Bali islands of archipelagic Indonesia. Economic and demographic divides between these two regions have distinctive characteristics, in which manufacturing industries are heavily concentrated in Java/Bali islands but not so much outside of these regions. Also the majority of the Indonesians live on Java/Bali islands.

Furthermore, 1999 was an important year for Indonesia as that year marked the enactment of two laws transforming the central-local government relationship. Law number 22/1999 replaced the hierarchical governance system linking local governments to the centre, with one that granted local governments considerably greater autonomy. With mayors and regents now selected by local assemblies, rather than appointed by the provincial governor, local governments have become more accountable, rendering a relative regional autonomy (Silver, Azis and Schroeder (2010). This provides further opportunities to pay attention to issues at the district level as the local government has become an important agent to make changes.

The Context of Ageing in Indonesia

The Indonesian population structure has shifted toward an ageing population as indicated by an increasing proportion of the population aged 60 and above. In 1971, 4.5% of Indonesian population constituted of older persons, which increased to 7.3% in 2005. Indonesians have gained longevity, with the rising of its life expectancy at birth, from 45.7 years in the mid 1960s, to 69.2 years in the period 2001-2004. The total fertility rate (TFR) has decreased from 5.6 in 1967-1971 to 2.3 in 2000-2005. Low fertility has often been observed as the primary determinant of ageing in a population, with declining mortality as the second most important one. Some provinces have even reached a below replacement level since 1990s. These provinces are Yogyakarta, East Java, Jakarta, and North Sulawesi. This is partly due to an intensive family planning program which was initially implemented on the Java/Bali islands, the most densely populated islands, in early 1970s, under the First Five-Year Plan for Development. Later, it was expanded to other provinces outside the Java/Bali region until the programme finally covered all provinces in the early 1980s.

As in many countries (Mujahid, 2006), female older persons in Indonesia outnumber the males. In 2005, female older persons accounted for 52.3% of Indonesian older persons (Badan Pusat Statistik, 2006). Labour force participation rate for male elderly was 64.7%, in contrast with 29.8% for female elderly in the same year. The low participation rate of female elderly is associated with their higher level of illiteracy. Illiteracy among female elderly was as high as 50.9%, while among males it was only about half of the female rate (24.1% in 2005). As in many other countries, Indonesian elderly still mainly work in the agriculture sectors, which are characterised by more flexible working hours, and many work as unpaid family workers (Arifin and Ananta 2009).

Since 1998, Indonesia has turned into a democratic country. Pressures had been mounting to decentralize political and economic powers away from the central government. Under Law No. 22/1999, the central government of Indonesia decentralised its power and resources to local governments – in regencies and cities. In the decentralised democratic Indonesia, the concerns of older persons thus rely on how sensitive the local stakeholders are to the importance of older persons in their own locality.

A key concern has been the financing of future pension schemes and the possible labor shortage, especially in social and health services within the public sector. Active ageing beyond working age, has become more important in countries such as Indonesia (Ananta and Arifin, 2009). It was in 1996, when the government of Indonesia decided to declare that the 29th of May would be 'the Older Persons' Day highlighting the increased importance of focusing on this particular age-group

Furthermore, a number of laws and regulations have been made and enacted to address issues related specifically to older persons. These are Law no.13/1998 on older persons' welfare, and Law no.40/2004 which is on the national social security system. The enactment of Law no 13/1998 led to the opportunity for the establishment of the National Commission for Older Persons (NCOP, Komisi Nasional Lanjut Usia, abbreviated as Komnas Lansia) which was declared under the Presidential Decree no.52/2004. The following year, the presidential decree no.93/M/2005 on the membership of Komnas Lansia for the period between 2004 and2008 was announced to

the general public, and new members are assigned on a regular four-year basis. The NCOP works closely with regional commissions established at the district level. This study hopes to further inform the NCOP and related commissions as it summarizing information regarding elderly and their needs from the individual regions. Focusing the analysis at the district level can be of great interest as Indonesia has implemented the regional autonomy since the enactment of Law no. 22/1999, which was revised by Law no. 24/2004. Since then local governments, i.e. district level of government beneath that of province, have enjoyed greater power to provide all public services except foreign policy, defense, system of law, and monetary policy.

Methods

Data

Data for this study were derived from the published 2005 Indonesian Intercensal Population Survey. This survey is a regular survey conducted every ten years in between two population censuses. It is a part of efforts conducted by the National Statistical Office to provide comparable population data gathered from population censuses. The survey generally covers all Indonesian provinces and collects information on demographic elements related to fertility, mortality, and migration, as well as social-cultural data on employment, education, ethnicity, housing conditions, and activities. The 2005 survey took place within the month of June 2005 which covered nearly all 30 provinces, except the province of Aceh and two regencies, Nias and South Nias, in South Sumatra, as these areas were covered under the 2005 Population Census of Aceh and Nias in the aftermath of the 2004 tsunami. The 2005 SUPAS did not collect information from the province of Aceh and the Nias district of North Sumatra province as they had their own census conducted in the same year as the response to the tsunami. However, their census did not collect the same information as SUPAS. Thus, the data on older persons in Aceh is missing from the analysis. Two regencies in Papua province, Boven Digul and Teluk Wondama, were also not included because the geography makes them extremely difficult to reach. Due to limited sampling size for each district in the province of Papua, this paper does not cover Papuan districts in the analysis.

The 2005 survey is the first nation-wide survey which gathered information specifically related to older persons, including their health and functional capacity. The analysis in this paper is mostly based on the compilation of the series of publications of the 2005 SUPAS for the 29 out of 30 surveyed provinces. Moreover, this paper uses a data set of local governments derived from 388 selected districts of the 29 provinces. These 388 districts are represented 15,496,676 population aged 60 years and above, as was defined officially by the government of Indonesia through Law no.19/1998 on Older Persons' Welfare.

Variables

The primary interest in this study is health and functional capacity of older persons. Self-rated health status (SRHS) was used to measure health status, which is based on respondents' assessment of their current health status. SRHS was a response to the question: "Menurut Bapak/Ibu, bagaimana keadaan kesehatan Bapak/Ibu?" [In your opinion, how is your health?]. Three response categories were available: 1 for 'Baik' (good or healthy), 2 for 'Cukup" (somewhat healthy), and 3 for 'Kurang' (somewhat unhealthy) (Badan Pusat Statistik 2006).

Other indicators of health status examined in this study are self-reported functional capacity, indicating the limitations in physical ability to perform activities of daily living (ADL). Katz's ADL index summarizes six functions, namely: bathing, dressing, going to the toilet, transferring, continence, and feeding into overall performance (Katz, Down, Cash, and Grotz 1970). However, the 2005 SUPAS asked only about four ADLs -- dressing, toileting, bathing, and eating—and one instrumental ADL -- food preparation. Older persons aged 60 years and above were asked whether they needed other people's help to do each of these tasks (with yes or no answer options). Although other ADL indices ask about the level of difficulty in performing tasks (such as 'a little difficulty', 'a lot of difficulty', 'unable to perform task at all', see Wiener et al. 1990), the 2005 SUPAS did not distinguish between mild and severe functional disability.

The selected districts were also grouped by region using a binary split (whether the districts are located on the Java/Bali islands or outside Java/Bali islands). The districts were also grouped into regencies (rural areas) and cities (or urban areas).

Administratively, both regency and city are the same level. The difference between the two lies on the size, demography and economy. The geographical size of regencies is generally larger than that of cities, the density of population per squared kilometer in regencies is smaller than that of cities, and the share of non-agricultural activities in regencies is larger than that of cities.

Sex was considered as a main independent variable in the analysis. Taking into account sex of the population in each district, the number of observation doubled to 776 districts.

Method of Analysis

As mentioned, the data used for the analysis were derived from a set of 29 publications in a form of frequency cross-tabulations of each of these variables, namely: SRHS, functional limitation as assessed by total, the four ADLs and IADL by district. We compiled the information and saved these into one data-set for analysis. Percentage distributions were calculated at every district for each of the selected variables. Descriptive statistics are summarized using the minimum, maximum, and mean. To make it clearer, the graphical presentations for each of the variables considered in the analysis are employed to describe their variations across districts and type of districts.

Spearman's correlations were employed to test the hypothesis on the association between SRHS and functional limitation, as measured by the percentages of those rating 'good' SRHS and those rating no help needed for all activities of daily living (ADL), versus those reporting needing help with getting dressed, using toilet, taking a bath, eating, and preparing meals. Furthermore, univariate and multivariate regression analyses were employed to assess the magnitude and significance of the percentage of good SRHS reported, and the importance of region, type of district and sex, on functional limitations (ADL). Statistical modeling has been previously used at the district level as the unit of analysis to test whether or not the extent to which decentralized minimum-wage setting has had a bearing on urban population growth (Comola and de Mello 2010).

Studies have shown that the relationship between SRHS and functional capacity can be simultaneous (inter-dependent). Some conducted the analyses testing the

hypothesis that SRHS is dependent on functional capacity (Haseen, Adhikari, and Soontorndhada 2010, Arnadottiret al. 2011), while others tested the opposite relationship (Idler, Russel and Davis 2000; Bourne 2009b). With regard of possible simultaneous relationship, simultaneous equations should ideally be employed depending upon the availability of required variables. Instead, due to limited existing variables, in this paper univariate and multiple regression analyses are used to test the latter relationship in which functional capacity is dependent on SRHS, also controlling for sex, type of residential district, and region. With this background, the analysis here provides some light on the limited knowledge of the issues in the context of Indonesia at a district level. Analyses were run using SPSS version 21 statistical software.

<div align="center">

Results

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Ageing population at district level

Among the 388 selected districts, 124 districts are located on the Java/Bali islands, and 264 districts are located Outside the Java/Bali islands. In other words, the majority of districts (68%) are located Outside the Java/Bali islands. Yet, in terms of the population size, districts Outside the Java/Bali islands have smaller population sizes. Thirty three districts on the Java/Bali islands belong to the category of 'city', which is 26.6% of the total of districts in this region. Meanwhile, only 51 out of 264 districts on the Outside Java/Bali islands belong to the category of city (19.3%) reflecting their more rural character.

On average, the percentage of the population aged 60 years and above to the total population in the selected districts in Indonesia is about 7.3%. With regards to individual regions, the corresponding figure in Java/Bali islands is 8.3%, which is higher than that of Outside Java/Bali islands at 5.7%. Considering both types of districts and region, the figure is the highest (8.9%) for the regencies on the Java/Bali islands, and 6.0% for the regencies Outside Java/Bali. This difference is smaller in urban areas, with 5.8% for cities on Java/Bali islands, and 4.6% for cities Outside Java/Bali.

Across districts, this percentage ranges widely, from as low as 1.2% to 17.5%. Arifin and Ananta (2009) classified that a population with a percentage of those aged 60 and above greater than 12% as an 'old population'. With this definition, 20 of the selected districts can be categorized as 'old populations'[1].

Figure 1. Population Ageing by District and Region in Indonesia
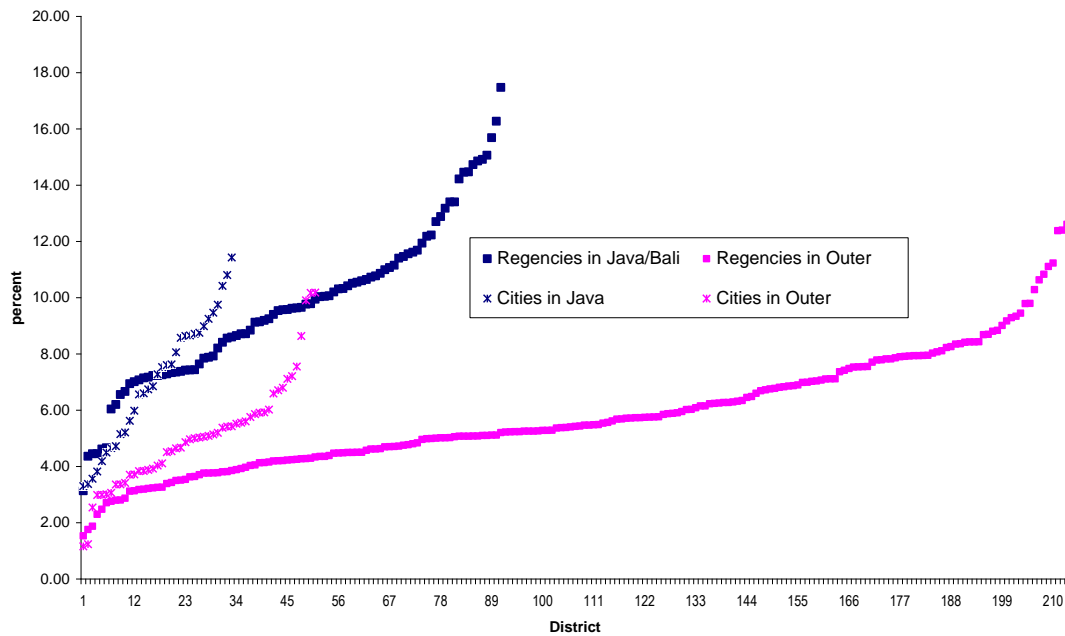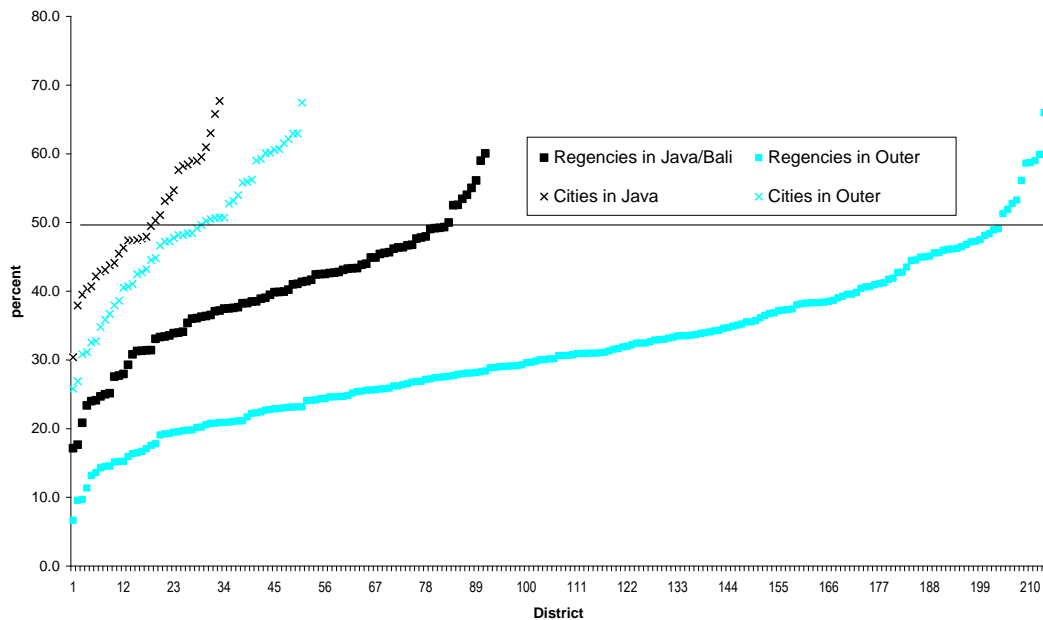

Source: Authors' calculation

With regards to type of districts and region, as can be seen in Figure 1, the percentage of older persons among regencies on Java/Bali islands ranges from 3.1% to 17.5%. The corresponding figure for the regencies on the Outside Java/Bali islands ranges from 1.5% to 12.6%. For cities in the Java/Bali region, this ranges from 3.3% to 11.4%, while for cities in the Outside Java/Bali region, this percentage ranges from 1.2% to 10.2%. Figure 1 shows that generally regencies and cities in the Java/Bali region have a higher percentage of elderly than in the Outside Java/Bali region. This is partly explained by the lower fertility rates in Java/Bali districts than those of the Outer Java/Bali ones.

Self-rated Health Status

Data showed that an average of 39.0% of older Indonesians rated their health as 'good'. However, the proportion of those reporting to be in a good health across districts has a wide range, from as low as 7%, to as high as 68%. The plot of percentages of elderly reporting 'good' SRHS across districts classified by both region (Java/Bali islands and Outside Java/Bali islands) and type of district (city or regency) is presented in Figure 2. The percentage of older persons reporting good SRHS among regencies on Java/Bali islands range from 17.1% to 60.0%. A wider range is observed among regencies on the Outside Java/Bali islands, from 6.6% to 66.0%. In other words, the inequality in good SRHS in regencies Outside the Java/Bali region is higher. Meanwhile, good SRHS among cities on Java ranged from 30.4% to 67.7%, while among cities on islands Outside Java/Bali it ranged from 25.8% to 67.4%. Hence, the range difference between cities Java/Bali and other parts of Indonesia is smaller in cities as compared the more urbanized cities (Cities in Java/Bali).

**Figure 2. Percentage of Good SRHS by District and Region, Indonesia 2005**

Source: Authors' calculation

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Figure 2 clearly shows that it is evident that the proportion of elderly in a good health varies by region, in which those living on Java/Bali islands -- the most densely populous small islands -- tend to be healthier than those living on outside Java/Bali islands. Place of residence is thus a significant differentiating factor in older persons' health status. Those living in urban areas tended to report better health status than those in rural areas overall.

The gender difference of the percentage of elderly self-reporting good health is significant. Figure 3 shows the scatter plot of percentages of self-reported good health by sex, with the X-axis for male rating good health and the Y-axis for females rating good health. Each dot represents a district. As many more districts are located below the 45-degree line, this means more districts having a lower percentage of self-rated good health for females than males. In other words, the female elderly on average has a disadvantaged health status

Figure 3. Scatter Plot of Percentages of Good SRHS against Sex across Districts: Indonesia, 2005
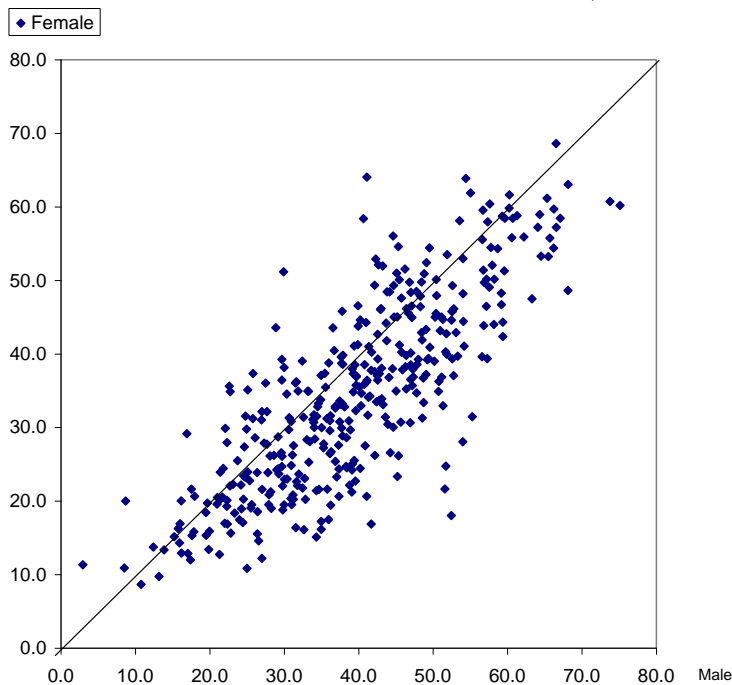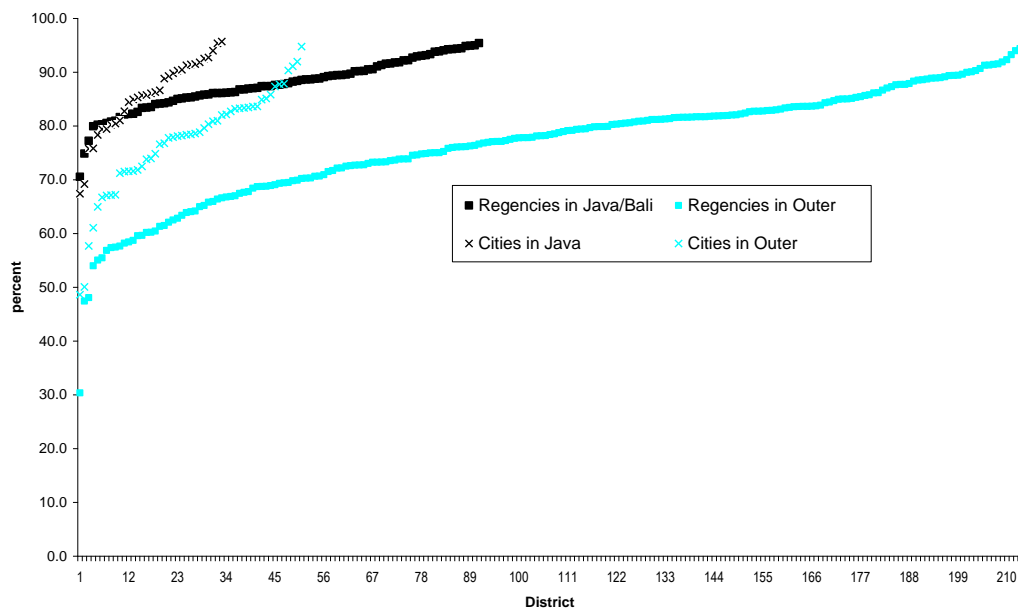

Source: Authors' calculation

Functional Capacity

'No help needed' refers to none of the five functional capacity items being reported as impaired, and the elderly is classified as 'independent and active'. As seen in Figure 4 differentiating by region and type of districts, functional capacity varied at the district level. In general, the percent reporting "no help needed" ranged from 30% to 96%. Only very few districts (four districts[2]) have fewer than 50% of the elderly reporting not needing help. However, the range is different between Java/Bali and islands Outside the Java/Bali region. The percentage of elderly not needing help among regencies on Java/Bali islands ranged from 70.55% to 95.41%, whereas in regencies on islands Outside Java/Bali this ranged from 30.35% to 94.39%. The percentage ranged from 67.41% to 95.69% among cities on Java/Bali islands and from 48.61% to 94.75% among cities on islands Outside Java/Bali. As seen in Figure 4, most districts in all categories have older persons reporting to be in a good health, ranging between 70% and 90%. However, this cohort of elderly has seen world wars, famine, colonialism and absence of antibiotics to help survive childhood morbidity (selective health/genetic confound) and the high percentage of elderly overall reporting good health may thus not be surprising.

Figure 4. Percentage of Not Needing Help

Source: Authors' calculation

Figure 5 depicts the scatter plot of percentages of elderly not needing help in their daily activities by sex in which the X-axis represents the percentage for males, and the Y-Axis for females. The figure clearly shows that more dots are located above the 45-degree line, indicating more districts where the percentages of female not needing help in performing basic activities at the district level are higher than those for males. This is due to a higher weight of the capability to prepare food, in which higher percentages of female elderly reported to be able to prepare food than their male counterparts (data not presented here due to space limitation).

Figure 5. Scatter Plot of Not Needing Help by Sex
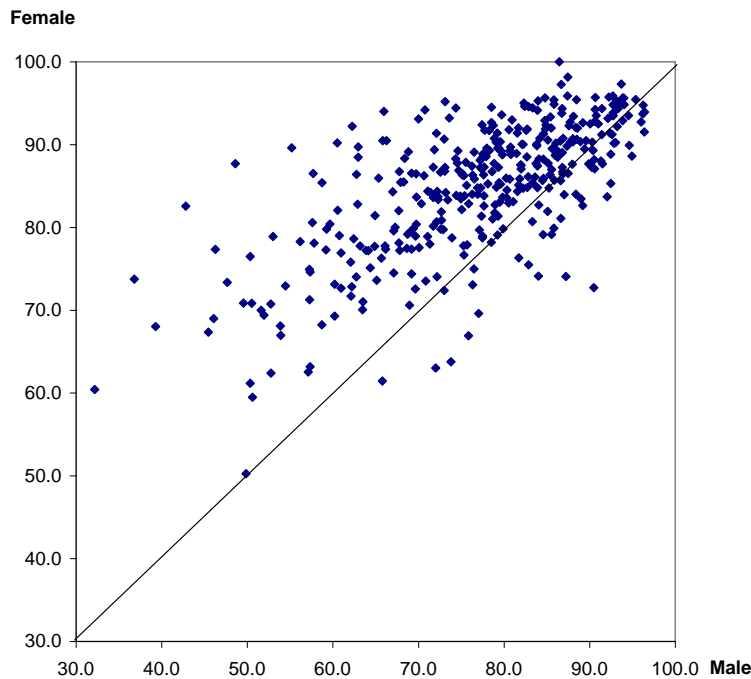
Difficulty in ADLs

When functional capacity was thus disaggregated into ADLs and IADLs, the following disparities were observed. The ADL functional statuses consist of four items, namely: getting dressed, taking a bath, using the toilet, and eating. As described by Katz, Downs, Cash and Grotz (1970) dressing is complex, involving actions for getting clothes from a

cupboard/drawer and getting dressed, going to the toilet includes actions to go to the toilet room for bowel and bladder functions, clean the body, transfer the body on and off the toilet, and re-arrange clothes; and bathing includes getting water and cleaning and drying the whole body.

Our previous study (Arifin, Braun and Hogervorst, 2012) found that the percentage of elderly having difficulties performing ADLs in Indonesia is quite low, with 2.9% having difficulty using the toilet, 3.1% reporting difficulty in getting dressed, 3.5% in taking a bath, and 4.4% in eating. However, larger proportions of elderly reported difficulty in IADLs; with18.4% required help in preparing meals.

In each of the following figures, a number of districts show a very positive phenomenon, where none of the elderly needs help in performing any of the four ADLs (getting dressed, using toilet, taking a bath, and eating).

Difficulty in Getting Dressed

There were 82 out of 388 districts where elderly reported no difficulty in getting dressed. The percentage of those needing help in getting dressed ranged from 1.82% to 18.21%. It should be noted that only one district had a percentage above 18% (as seen in Figure 7), the rest is below 15%. Variation is also seen across regions and types of district.

## Figure 7. Needing Help with Getting Dressed
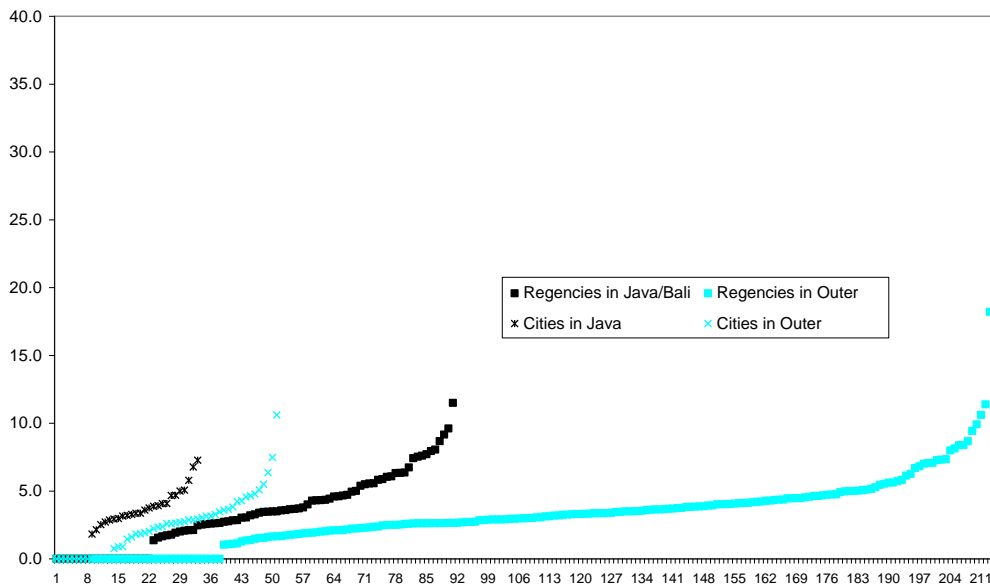
Source: Authors' calculation

The percentage of needing help in getting dressed ranged from 1.36% to 11.50% among regencies on the Java/Bali islands, from 1.04% to 18.21% among regencies on the islands Outside Java/Bali, from 1.82% to 7.27% among cities on Java/Bali, and from 0.76% to 10.61% among cities in the islands Outside Java/Bali . The percentage of needing help for getting dressed among elderly living in cities is smaller than those living in regencies reflecting their overall better self-reported health perhaps and possibly higher overall socioeconomic status.

Difficulty in Using Toilet

In 90 out of 388 districts older persons reported that no help was needed for using the toilet. In the other districts needing help in using the toilet ranged from 0.85% to 10.74% in regencies on Java/Bali islands, while for regencies on islands Outside Java/Bali it ranged from 0.86% to 15.9%. The difficulty in using the toilet ranged from 1.02% to 7.75% in cities on Java/Bali islands, and among cities in Outside Java/Bali this ranged from 0.88% to 14.39%. However, as displayed in Figure 8, most of the districts have fewer than 10% of the elderly needing help in using toilet.

**Figure 8. Needing Help with Using Toilet**
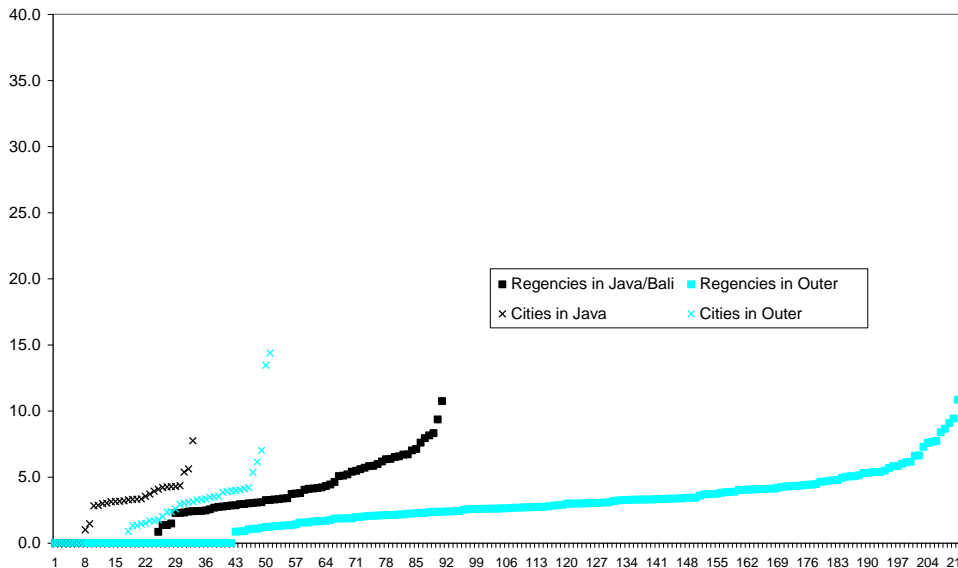
Source: Authors' calculation

Difficulty in Bathing

In 78 districts elderly reported not needing help with bathing. The percentages of elderly needing help with bathing among regencies on islands in the Java/Bali region ranged from 1.32% to 11.73%, and ranged from 0.86% to 25.34% among regencies on the islands Outside of Java/Bali. As seen in Figure 9, only one district had more than a quarter of older person needing help (in a regency on an island Outside Java/Bali, the rest of the regencies all had percentages below 13.0%. The percentages of elderly needing help in taking a bath among cities on islands of the Java/Bali region ranged from 1.47% to 8.66%, and among cities on islands Outside Java/Bali ranged from 0.76% to 12.20%.

Figure 9. Needing Help with Taking a Bath
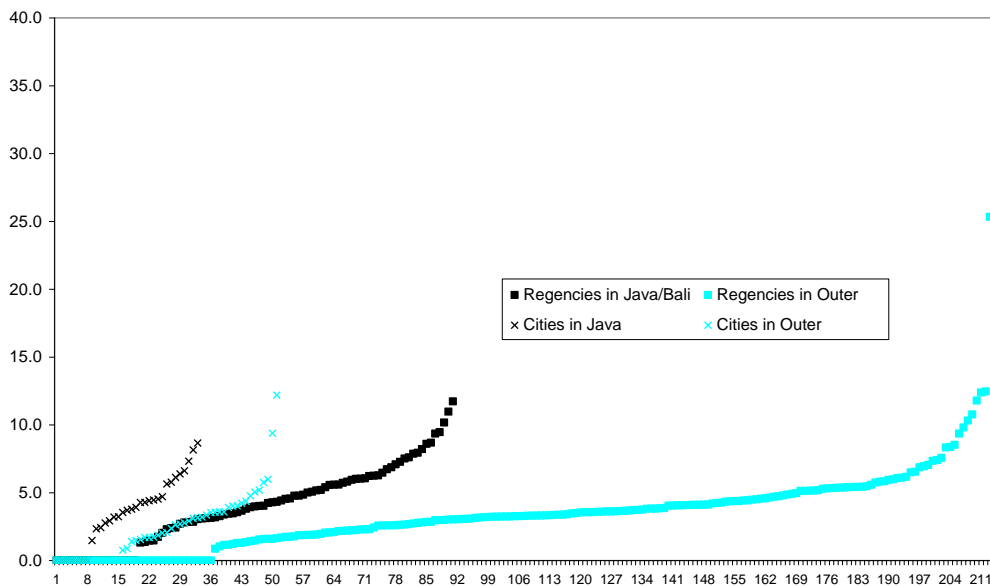
Source: Authors' calculation

Difficulty in Eating

The number of districts reporting their older persons not needing help eating is much smaller than that of the other two categories, there were only 49 districts. Figure 10 shows that the percentages of needing help eating among regencies on Java/Bali islands ranged from 1.36% to 20.20%, while among regencies on islands Outside of the Java/Bali region this ranged from 0.96% to % 35.63%. One regency was observed to have a high

percentage of elderly needing help eating, and another one had 22.63%, but most of the regencies have fewer than 16.0% of elderly needing help eating. Needing help eating among cities on Java/Bali islands ranged from 2.24% to 15.80%, and among cities on islands Outside Java/Bali it ranged from 1.17% to 11.24%.
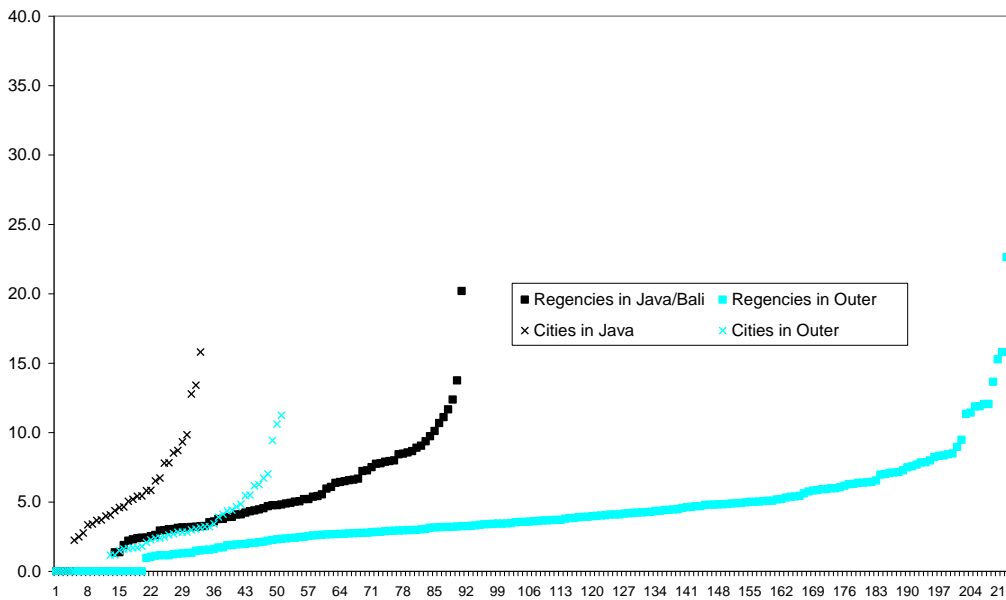
Figure 10. Needing Help With Eating

Source: Authors' calculation

Difficulty in IADL: Preparing Meals

The purchasing, preparation and serving of food requires a certain degree of physical strength and mental agility. Arifin, Braun and Hogervorst (2012) found that nationally, more elderly men (17.6%) needed help preparing food than elderly females (10.9%), and the same pattern of a greater difficulty in preparing meal among males than females is seen across the provinces.

Unlike the four ADLs, only three districts had zero elderly needing help preparing meals, and these were in regencies Outside Java/Bali. The percentages of needing help preparing meals among regencies on Java/Bali islands ranged from 5.27% to 44.01%, but among regencies on islands Outside Java/Bali the range is wider, ranging from 3.74% to as high as 67.50%. The corresponding percentages among cities on Java/Bali islands

ranged from 14.76% to 49.94%, among cities on islands Outside Java/Bali the percentage ranged from 2.92% to 42.34%.

Figure 11. Needing Help with Preparing Meals
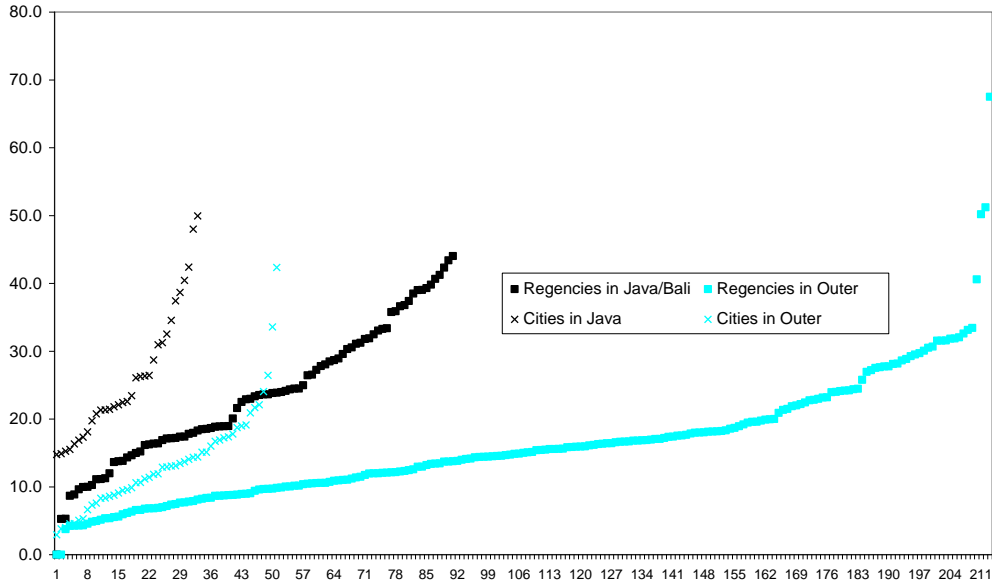
Source: Authors' calculation

The Association between Health and Functional Capacity

Linear regression analyses were performed to test the predictive power of reporting 'good' SRHS on each of the individual functional capacities across districts. Table 1 shows that a significant positive association between the percentage of good SRHS reported among elderly and the percentage of those not needing help performing basic daily activities. The expected percentage of physically independent elderly increases as an increase in a one-percentage point of those reporting good health. This relationship is robust to inclusion of region, type of districts and sex of the respondents. The Spearman correlation between these two variables is 0.279, indicating a medium correlation, but the correlation weakens when the data are disaggregated by sex (compared models 1 and 4 of Table 1).

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Indicated by a significant increase in the R square or Coefficient Determination, we see that region and sex play a significantly and important role in the model fit. The R square increases from 0.036 in model 4 to 0.193 in model 5 with the inclusion of sex into the model, and a further increase is seen when region is included (to 0.313 in model 6, i.e., whether districts are located in Java/Bali islands or outside the island), with a higher percentage of physically independent elderly with in Java/Bali's districts than in Outside Java/Bali's. In other words, elderly residing in Java/Bali are more likely to be physically independent than their counterparts in the Outside Java/Bali regions.

The percentage of female elderly not needing help in performing activities of daily living is significantly higher than that of males, with regression coefficients around 9.0 in all models. Elderly living in cities also tend to be less likely to need help in performing any activities of daily living than elderly living in the regencies.

Table 1. Coefficients of Regression Analysis of Good SRHS on Physical Independency of Older Persons

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	71.317***	72.238***	70.971***	73.867***	66.769***	67.614***	66.243***
Good SRHS	0.236***	0.131**	0.185***	0.168***	0.234***	0.140***	0.195***
Region	-	9.236***	9.000***	-	-	8.955***	8.746***
Type of district	-	-	-2.931*	-	-	-	-3.266**
Sex	-	-	-	-	9.333***	8.881***	9.144***
N	388	388	388	776	776	776	776
R	0.288	0.503	0.513	0.190	0.440	0.559	0.568
R square	0.083	0.253	0.263	0.036	0.193	0.313	0.232

Note: *** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$
Region, type of district, and sex are dichotomous variables for each category is compared to the corresponding reference group, namely, Outside Java/Bali, regency, and male.

Tables 2 and 3 provide the results of the regression analyses showing a significant negative relationship between good self-rated health status (SRHS) and needing help taking a bath, as well as with eating. The relationships between good SRHS and needing help getting dressed and using the toilet, on the other hand, are not significant.

As shown in Table 2, region and type of districts both had a significant contribution to the percentage of elderly reporting to need help eating, but sex did not.

Districts located on Java/Bali islands were more likely to have smaller percentages of elderly needing help eating than districts on islands Outside Java/Bali. Cities are also more likely to have higher percentages of elderly needing help eating than regencies. Region and type of districts together play an important role in the above relationship. As shown in models 2 and 6, adding region into the models changes the relationship between good SRHS and needing help eating to be insignificant. Thus, the regional differences in health explain the differences in needing help eating. Further analyses, adding type of districts into the model, the significant negative relationship between the two variables was retained, as seen in models 3 and 7. In addition, the presence of region and type of districts in the model enhanced the R square.

Table 2. Coefficients of Regression Analysis of Good SRHS on Needing Help Eating

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	5.960***	5.763***	6.452***	6.014***	6.226***	6.031***	6.703***
Good SRHS	-0.043**	-0.021	-0.050**	-0.038***	-0.040***	-0.019	-0.045***
Region	-	-1.983***	-1.854***	-	-	-2.070***	-1.967***
Type of district	-	-	1.595**	-	-	-	1.602**
Sex	-	-	-	-	-0.0278	-0.174	-0.302
N	388	388	388	776	776	776	776
R	0.145	0.282	0.321	0.129	0.134	0.273	0.311
R square	0.021	0.079	0.103	0.017	0.018	0.075	0.096

Note: *** = $p < 0.001$, ** = $p < 0.01$, * = $p < 0.05$
Region, type of district, and sex are dichotomous variables for each category is compared to the corresponding reference group, namely, Outside Java/Bali, regency, and male.

Table 3 shows that region and sex are both significant in differentiating the percentages of elderly needing help taking a bath. Districts located on Java/Bali islands are more likely to have smaller percentages of elderly needing help taking a bath than districts outside Java/Bali. Compare with male elderly, females were also more likely to need help taking a bath.

The relationship between the need for help preparing meals and health status can be two directional, whether the latter is assumed to be the dependent variable predicting the former or vice versa. Here, it is assumed that good SRHS is dependent on the need for help in meal preparation. Table 4 shows a significant negative relationship, indicating that districts having a higher percentage of older persons needing help in meal preparation are also more likely to have a lower percentage of those reporting good health.

Region, type of districts and sex were also significant in differentiating the percentages of elderly reporting good health. Districts on Java/Bali islands tended to have higher percentages of older persons reporting good health than districts Outside Java/Bali. Type of districts has a high impact in explaining the variation on health status as the R square increased to around 0.36. Cities tend to have much higher percentages of elderly reporting good health than regencies. Males are more likely to have good SRHS than females.

Table 3. Coefficients of Regression Analysis of Good SRHS on Needing Help with Taking a Bath

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	4.809***	4.704***	4.652***	5.183***	4.757***	4.641***	4.632***
Good SRHS	-0.037**	-0.025*	-0.023	-0.038***	-0.034***	-0.021*	-0.021*
Region	-	-1.054**	-1.063**	-	-	-1.235***	-1.236***
Type of district	-	-	-.120	-	-	-	-0.021
Sex	-	-	-	-	0.559*	0.622**	0.623**
N	388	388	388	776	776	776	776
R	0.158	0.229	0.229	0.158	0.181	0.252	0.252
R square	0.025	0.052	0.053	0.025	0.033	0.064	0.064

Note: *** = p < 0.001, ** = p < 0.01, * = p < 0.05
   Region, type of district, and sex are dichotomous variables for each category is compared to the corresponding reference group, namely, Outside Java/Bali, regency, and male.

Table 4. Coefficients of Regression Analysis of Needing Help to Prepare Meals on Good SRHS

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	43.560***	39.713***	36.805***	40.961***	46.833***	42.632***	39.826***
Prepare Meals	-0.355***	-0.242***	-0.242***	-0.213***	-0.329***	-0.226***	-0.231***
Region	-	5.518***	4.626***	-	-	5.891***	4.810***
Type of district	-	-	14.697***	-	-	-	14.931***
Sex	-	-	-	-	-7.481***	-6.643***	-6.686***
N	388	388	388	776	776	776	776
R	0.289	0.346	0.603	0.186	0.326	0.379	0.604
R square	0.084	0.119	0.364	0.035	0.106	0.143	0.365

Note: *** = p < 0.001, ** = p < 0.01, * = p < 0.05
   Region, type of district, and sex are dichotomous variables for each category is compared to the corresponding reference group, namely, Outside Java/Bali, regency, and male.

Discussion

As a vast ageing population in Indonesia is emerging and will continue to accelerate in growth in the future, nationwide data disaggregating by district on health status and functional capacity of older persons are regularly required to monitor trends in their health status, as well as to establish economic and social policies impacts on the elderly's well-being.

On average, this study finds that 39.0% of the elderly reported having good SRHS, which is lower than that of Thai elderly aged 60 and above at 43.9% (Haseen, Adhikari and Soonthorndhada 2010), but higher than the elderly in Brazil, at 35.0% (Alves, Leite, and Machado 2010). A previous study by Frankenberg and Jones (2003) found that Indonesian aged 50 and above tended to cluster on the categories of good health around 69% in 1993 and 74% in 1997, with no different between men and women, which is different from the current study. A much higher percentage of Frankenberg and Jones's study than the current one could have been found because their samples were overall much younger than the sample of this study. In addition, Frankenberg and Jones noted that with respect to SRHS the IFLS data they used in their analysis provided four responses, namely: "very healthy", "sufficiently healthy", "less than healthy", and "unhealthy", while only three responses were re available in the 2005 SUPAS. For their analysis, the last two categories were combined to fall under a 'poor health' category, while "sufficiently healthy" became good health, and "very healthy" was entered as excellent health. If the "somewhat healthy" category from the 2005 SUPAS is combined with "good health or healthy" category, this study reveals that that the elderly's health is as high as 81.4% for females and 82.5% for males (the calculation not shown here). If these data are correct, this would suggest that health of elderly has improved over the decade.

Although the older population is higher among districts on Java/Bali islands compared to islands Outside Java/Bali, a high frequency of good SRHS is generally reported on the Java/Bali islands and the range of scores in Java/Bali is shorter than that Outside Java/Bali. It is imperative that attention should be given to elderly living in districts located outside Java/Bali, where poor health was rated by 35% of elderly, as

compared with only 15% of elderly in Java/Bali. The difference can be due to inadequacy in health services provided and a low number of health professionals available in these regions, such as doctors, nurses and midwives, as well as poor health infrastructure in regions Outside Java/Bali. Our previous paper also showed lower socio-economic conditions of the elderly there. Meanwhile, the creation of new districts under the era of decentralization has been happening Outside Java/Bali. The local policy makers have not allocated funding for its people according to their age groups and differing needs. Regional differences as described here provide a challenge for local governments to handle these issues well before these become more serious in the future.

As in many countries, Indonesian elderly women live longer than men, yet in terms of health, women are disadvantaged over men as the percentage of women reporting good health in this study was significantly smaller than that of men. This finding is also similar to other studies employing individual cases in their studies (Rosenberg and Moore 1997; Benyamini et al. 2003; Haseen, Adhikari and Soonthorndhada 2010; Minh 2010). However, another earlier study on Indonesia using individual panel data found that self-rated health did not differ between men and women aged 50 and above (Frankenberg and Jones 2003). An increase in age at mortality over the past decades particularly for women with increasing morbidity could explain these differences (Hogervorst et al., 2012). Further studies should test this employing the same data set or other sources of data. It is expected that with a wider provision of health services, these differences will be reduced in the next census data.

With regards to functional limitations, Indonesian elderly are generally well functioning or independent in carrying out basic daily activities, with only few (4) districts reporting that more than 50% elderly needed help in any ADLs and IADLs. Variation across districts is significant, with regencies and cities in Java/Bali regions showing a higher percentage of physical independency than those Outside Java/Bali. Like Bourne (2009), this study finds that place of residence -- indicated by whether districts are characterized by cities or regencies – is significant. In this study elderly in cities are more likely to report better functional capacity than those living in regencies. More specifically, they are less likely to report needing help eating and preparing meals.

This study finds a paradox that while women tend to report a worse health status than men, in terms of physical independency, women tend to be better than men, in particular with regards to independency in meal preparation. As argued by Rosenberg and Moore (1997) many elderly perhaps adapt their lifestyle to their health conditions if they are not severe. In addition, culturally in many households in Indonesia and also Asian countries, women are in charge for meals at home. However, with regards to taking a bath, more women report needing help than men which was independent of their health status. Possibly older women find it easier to accept help (from a mostly female carer) which invades their privacy as compared to older men.

Conclusion and Implications

Good SRHS and functional limitations vary greatly across districts and attention should be given to differences mitigated by contextual variables, such as region, and type of districts, as well as elderly characteristics, such as sex. Although, overall, few older Indonesians reported needing help with ADLS, their functional capacity varies greatly by district, implying that the policy making process at the district level should pay attention to their local needs. Functional capacity influences how older people rate their health and vice versa.

The data should be available for public and be further disaggregated by age groups, as many studies have shown that as people become older, a poor perceived health and higher frequency of limitations/disability reported increases. Future studies should also include novel census data to analyse trends over time and take into account health care infrastructure to further advise policy makers

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NOTES

[1] The 20 old populations includes the districts of Tanah Datar (12.4%) of West Sumatra; Sragen (12.2%), Kebumen (12.2%), Purworejo (14.5%), Klaten (15.1%), and Wonogiri (16.3%) of Central Java; Bantul (12.9%), Kulon Progo (15.7%) and Gunung Kidul (17.5%) of Yogyakarta; Nganjuk (12.7%), Blitar (13.4%), Ngawi (13.4%), Pacitan (14.2%), Trenggalek (14.5%), Madiun (14.7%), Ponorogo (14.9%), Magetan (14.9%) of East Java; Tabanan (13.2%), Bali; Minahasa (12.6%), North Sulawesi; and Soppeng (12.4%) in South Sulawesi.

[2] There are four districts with less than half of its older persons reporting no need help, namely, Pangkajene (48.1%) of South Sulawesi, Buru (30.4%) of Maluku, Sula islands (47.4%) and Ternate (48.6%) of North Maluku.