

**The Relationships among
Family Economic Status, Intergenerational Proximity and Parental Health**
- Lessons from Health and Retirement Study (HRS) & Panel Study of Income Dynamics (PSID)

[Preliminary – Do not cite without authors' permission]

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June 2012

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Abstract

Background/Motivation: Informal care provided by adult children is a primary care source for older adults with disabilities in US. Close residential proximity to parent/s is necessary to care for the functionally dependent parent/s. However, moving to achieve such proximity may pose both financial and non-financial burdens. At the same time, residential proximity between parent/s and a child might have been determined by health and family economic conditions during earlier life course. Little is known how intergenerational proximity has been shaped over the life-course responding to health and family economic conditions.

Methods: To address life course trajectory of intergenerational proximity in the association with family economic status and parental health, detailed longitudinal datasets on both parent/s and child are necessary. We exploit the Health and Retirement Study (HRS) and the Panel Study of Income Dynamics (PSID). Spatial information is available at Zipcode level for both parent/s and children in HRS and at block level in PSID. Self-rated health status, ADLs and cardiovascular events are explored as health condition and health shock variables. Economic quartiles are used as family economic status.

Result/Conclusion: Disabilities are more prevalent among lower income older adults and informal care from children is the primary care source for these. When older adults encounter health shock, they and their children tend to move in with or move closer to each other, especially among moderate income families, women and those without spousal resources. After examining origin and trajectory of intergenerational proximity, empirical findings suggest that low-income families have greater restrictions on longer-distance residential mobility over the life-course, which is also associated with parental poor health status in earlier life-course. In public health policy, burden-sharing in (informal) care might reduce mobility restrictions of potential care-givers in seeking better economic opportunities. This might be especially true for the lower-economic population.

I. Introduction

Many middle-aged adults in the United States provide care for ill parents (Hayman et. al 2001, Hickenbottom et. al 2002, Langa et. al 2002, Piette et al, 2010, Bianchi et al 2008, Wolff & Kasper 2006, Stone R. I., 2000, Kathleen & Schoeni 1995). Such informal care from adult children is the primary resource for disabled parents and has been recognized increasingly more important in this aging society (Wolff & Kasper, 2006).

Close residential proximity of parent/s and children can facilitate care for ill parents, particularly those parents with functional limitations in daily living. While caregiving for functionally dependent parents often requires close residential proximity of child to parent/s, moving to achieve such proximity may create both financial and non-financial burdens for the child (Greenwood 1997, DaVanzo 1981, Sjaastad 1962). At the same time, residential proximity of adult children to parent/s may have been influenced by a family's baseline socioeconomic conditions and parental health conditions. Note that health and socioeconomic status are significantly associated and that association is persistent over the lifecourse (Smith 2009, Case et. al. 2005, Smith 2004, Currie and Stabile 2003, Case et.al 2002, Smith 1999). In real life, it is difficult to disentangle relationships among family economic status, intergenerational spatial proximity and parental health not only in a short-term but also in a long-term. Lower-income families tend to encounter health problems in earlier life-course. If parental health problems occurred in parent/s' middle age, it can affect early residential separation and spatial mobility of those parent/s' offspring. Moreover, lower-income families have greater motivation to pool resources and greater economic ties among family members (Bianchi, Hotz, McGarry, & Seltzer 2008, Haider & McGarry 2006, Schoeni 1997, Sloan, Zhang, & Wang 2002). Little is known,

however, about how differently, intergenerational, geographic proximity is shaped by individuals' and families' different socioeconomic resources over the life-course.

Note that adequately addressing these questions requires detailed longitudinal data on both parents and their children. Accordingly, using two nationally representative longitudinal studies— The Health and Retirement Study (HRS) and Panel Study of Income Dynamics (PSID)—we asked the following study questions: Does health shock of older adults induce closer proximity to their children, and how such proximity response differs by economic status of older adults? How has the intergenerational residential proximity been shaped over the life-course by different family economic status and parental health at baseline?

Understanding the relationships among family economic status, intergenerational proximity and parental health over the life-course can inform health policy concerning ageing population and low income families. Adult children are primary care-givers for disabled older adults (Wolff & Kasper 2006), and close spatial proximity between older adults and their children is particularly important for those older adults with functional limitations in daily living. Facilitating close proximity to their children might reduce healthcare costs for aging population. At the same time, burden-sharing health policy in care for fragile parents might reduce the spatial mobility restrictions of potential care-givers. Such public policy might be even greater if the intervention is implemented in earlier life-course.

I. Data, Sample and Measurement

Analysis units of interest in this paper contain both older parents and their adult children. In order to understand life-course residential mobility and proximity in the association with parental

health and family economic conditions, we used two national, longitudinal studies - Health and Retirement Study (HRS) and Panel Study of Income Dynamics (PSID).

Data

Since 1998, the HRS provides information about the U.S. population over age 50 through biennial surveys with samples of that population. Therefore, HRS is more representative of older adults and more suitable for parents as units of analysis. Extensive health measurements are available for HRS respondents. Zipcode or city/state of family respondents' children and step-children is obtained for 2004, 2006 and 2008. The HRS asks family respondents whether their children or step-children live further than 10 miles, and for those children living further than 10 miles family respondents are asked to provide information on the Zip Code or city/state of their children and step-children.

The Panel Study of Income Dynamics (PSID) is a longitudinal study that collects information on both individuals and households, from 1968 to the present. The original PSID sample, originating in 1968, comprises two independent samples: a cross-sectional national sample (SRC) with about 3,000 families in 1968, and a national sample of low-income families, called survey of economic opportunity (SEO) with about 2000 families. This SEO sample was reduced by two-thirds, starting in 1997. As a result, the original core sample was reduced from nearly 8,500 families in 1996 to approximately 6,168 in 1997. Another important change in 1997 was the introduction of a fresher sample of 441 post-1968 immigrant families and their adult children. The PSID has collected information on self-rated health status (SRHS) for household head and wife since 1984 and for all individuals in 1986. It also asked questions about heads' and wives' functional limitations in 1986 and has asked this in every survey since 1992. From 1999, PSID has gathered more detailed health information, especially for heads and wives, and

for older adults (55 or older). Geographic information can be obtained at block level for all individuals in PSID.

Analysis Sample

We use HRS for 2002-2008 for the analysis using older adults as units of analysis because child's geographic information available only since 2004 and hence 2002 demographic, socioeconomic and health as baseline covariates. Despite richer information on health during later years in PSID (from 1999), our analysis sample for this paper follows children age cohort 0-16 in 1968 only until 1996 (over a 28 years span) concerning the reduced sample size of SEO from 1997. The economic group of main interest in this paper is the low income families and SEO sample contains a sizable low income families and hence children of these families (**Appendix Figure 1**). Note that we exploit PSID to understand the origin and trajectory of intergenerational proximity of those children and parents in the HRS analysis sample which includes parents' age 55 and older in 2002. These parents sample using HRS were 21 or older in 1968. Therefore, observing children aged 0-16 in 1968 in the PSID analysis sample over 28 years can provide a valuable insight into how spatial proximity between parents and their children in later years have been shaped in earlier life-course.

Economic quartiles are defined based on respondents' total wealth and age at baseline year (2002) in the analysis using older adults as units of analysis. In the analysis of concerning children as units of analysis, we construct economic quartile based on poverty ratio at baseline year (1968). Both self-rated health status (SRHS) and limitations of daily activities are used as health status variables. For a health shock variable, new cardiovascular events (such as heart attack and stroke) are explored for older adults. For spatial proximity measurement, we utilize both geographic boundary (e.g., block, tract, Zipcode, county, and state) and distance between

centroids of blocks using PSID and distance between centroids of Zipcodes using HRS. We also construct a categorical proximity variable of six exclusive categories – coresident, <10 miles, <30 miles, <100 miles, <500 miles.

II. Health and Proximity to Closest Child among Community Dwelling Older Adults (55 and older, using HRS)

Older adults with disabilities often need specific help for daily activities. It is well established that in US much long-term care is unpaid help from families and friends (Wolff & Kasper, 2006; Stone R. I., 2000; Stone, Cafferata, & Sangl, 1987). In general, the role of care-giver might be assigned in a sequential process - spousal, intergenerational and siblings: spouses provide most care for married people, children provide most care for the widowed, and siblings provide most care for childless, unmarried family members (Cicirelli, 1985; Johnson, 1983; Horwitz, 1993). Concerning prevalence of care-givers among total population of community dwelling older adults, a study based on 1999 National Long-term Care Survey (NLTC) shows that primary informal caregivers were children (41.3%), spouses (38.4%), and other family or friends (20.4%), and children were more likely to serve as primary caregivers in 1999 compared to 1989 (Wolff and Kasper 2006). However, little is known about the relative prevalence and significant of care resources by different economic status of older adults.

Restricting HRS respondents to those aged 55 or older in 2002 (15,409 respondents), we examined functional limitations in daily activities (ADLs) for subsequent years, 2004-2008 (41,115 observations) by respondents' economic status. Functional limitations in daily living (ADLs) used here contain six items: difficulty in walking, dressing, bathing, eating, getting in and out of bed, using toilet. Economic quartile was calculated based on total wealth of respondent's household. As presented in **Figure 1**, 29% from the bottom economic quartile

reported at least one ADL compared to 11% from the top economic quartile. The majority of those with at least one ADL did not receive ADL specific help (16% vs. 13% in the bottom quartile and 7% vs. 4% in the top quartile, without ADL specific help vs. with ADL/s specific help, respectively).

Respondents who reported they received any ADLs specific help were asked following question: Who most often helps you with crossing a room, dressing, bathing, eating, into or out of bed, using toilet? Respondents are allowed to mention more than one care provider. As presented in **Figure 2** (2,790 respondents and 4,233 observations), disparity across different economic groups is notable. In the bottom quartile economic group, 33% referred to children and 24% referred to spouse/partner as most-helping care resources. In the top quartile, 21% mentioned children and 48% mentioned spouse/partner as most-helping care resources. Among men (952 respondents and 1,380 observations), spouse/partner is referred to most as the most-helping ADL/s care resource in all economic groups although the rate is lower for respondents in the bottom quartile (46% in the bottom quartile and over 60% in other economic quartiles). Among women, however, children are referred to most in the bottom quartile (38%) and second quartile (38%) economic groups. Note that lower economic status is likely associated with lacking spousal resources (62% in the bottom quartiles, 42% in the second quartile, 31% in the third quartile and 22% in the top quartile have no spouse or partner in the household). Children, therefore, are more likely to be primary caregivers for older adults who have functional limitations especially for the lower income families.

A. Association between Functional Limitations in Daily Living and Residential Proximity to a Child by Economic Status

To obtain daily support specific to functional limitations, close spatial proximity of the caregiving person and care-receiver is necessary. Overall, a majority of older adults in the US have at least one child within 10 miles (Lin & Rogerson, 1995; Rogerson, Weng, & Lin, 1993). In order to understand the disparity of residential proximity in the association with disability conditions of parent/s by different economic groups, we exploit HRS geographic information for both parents and children. In particular, concerning older adults as units of analysis, we obtained distance to the closest child in each survey year. Note that children's geographic information is only available from 2004. Baseline sample is restricted to age 55 or older who have at least one living child in 2002. Residential proximity to the closest child by economic quartiles is presented in **(Figure 3)**. Respondents in lower economic status are more likely to have children living together or closer (living in the same Zipcode area and/or less than 10 miles): 79% of older adults in the bottom economic quartile, and 62% in the top quartile, live with or close to at least one child.

To assess whether having at least one ADL is associated with closer spatial proximity during subsequent years, multivariate logistic regressions were performed after controlling for socio-demographic characteristics at baseline. **Table 1** shows summary statistics of analysis sample. Having at least one ADL is a significant predictor of coresident or close proximity (living in the same Zipcode area or within 10 miles) to at least one child among low- or moderate- income groups (bottom and second quartiles) at 10% significance level (OR: 1.24 for the bottom quartile and 1.28 for the second quartile, **Figure 4**). Estimates are not significantly different across different economic groups.

B. Do parent/s and an adult child move in with or move closer after parental health shock such as cardiovascular events?

The association between parental functional limitation status and proximity to a child is likely to be confounded by various factors related by socioeconomic status. It, therefore, has limitation in assessing whether family members changed residential locations in response to parental health problems. Changing residential locations to achieve closer spatial proximity is likely to burden a family, financially and non-financially. Initial level of distance between parents and children likely affects costs of subsequent migration to achieve closer proximity. Current job attachment is likely to increase opportunity cost of longer-distance migration, likely more so for adult children in their prime working years compared to parents who retired. Greater financial liquidity might help parents and children move closer but also might make alternative care more available. Hence it is not straightforward to make a linear relationship between economic status of family members and residential mobility responding to parental health problems. The poorer tend to encounter greater liquidity constraints, and the richer might have greater opportunity cost in changing residential locations.

To examine whether there is any significant change in residential mobility responding to health shock, and which economic group is more likely to respond, we explore new cardiovascular events. Stroke and heart attack have been recognized as profound risk factor of functional limitations of elders (Guccione, et al. 1994). Using HRS, we restrict the sample to those aged 55 or older in 2002 who did not have a cardiovascular disease in 2002 and who do not have any coresident child but with at least one non-coresident child. We have 7,106 respondents and 13,429 observations. Of these observations, 889 (6%) experienced new cardiovascular events in subsequent years (2004~2008 survey). Outcome variable is an indicator of moving

closer, which is based on change in the categorical variable of proximity to the closest child (0, <10 miles, <30 miles, <100 miles, <500 miles, greater than 500 miles). Hence, final analysis sample focusing on changes in proximity comprises 6,682 respondents and 12,328 observations.

To examine health shock effect on residential proximity to the closest child, we used multivariate logistic models adjusting for socio-demographic characteristics and ADLs status of respondents at baseline. Having a heart attack or stroke leads to a greater probability of the older adult and a child moving-in with, or moving closer to each other, among respondents in the second quartile economic group (OR 2.63, $p < 0.001$, **Figure 5**). The likelihood of moving-closer among family members in response to a health shock in the second economic group is even greater among parents without a spouse (OR 3.63, $p < 0.001$, **Figure 6**) and among women respondents (OR 3.10, $p < 0.001$, **Figure 7**). Significant health shock effect among women also is observed in the third economic quartile (OR 1.92, $p = 0.02$, **Figure 7**) and in the top economic quartile (OR 1.78, $p = 0.08$, **Figure 7**). No significant health shock effect on proximity to child has been found in the bottom economic quartile.

Note that older adults in the low income group are more likely unhealthy at baseline and more likely to have been exposed to health shock in earlier years. Accordingly, those lower income older adults are more likely to have at least one child living close at baseline. Focusing on variability in health shock of older adults and on variability in residential proximity to a child in later years, one might understate true health effect on intergenerational proximity especially for low income families. To understand the full trajectory of how spatial proximity between parent/s and a child are shaped in different economic groups, it is necessary to examine the trajectory of spatial migration of individuals as well as that of intergenerational proximity over the life-course.

III. Origin and Trajectory: Family Economic Status, Intergenerational Spatial Proximity and Parental Health (using PSID)

The residential dispersion between older adults and their children might have been determined by various factors in the earlier life course. Some demographic and socio-economic factors might have affected one's spatial mobility throughout one's life-course or even inter-generationally to some extents. Conceptual models of spatial mobility of an individual suggest that spatial separation begins as children seek independent lives - pursuing higher education, seeking employment, marrying, mainly triggered by adult children's migration, and such individual mobility tends to be highest for young adults and decrease gradually until around age 60 as retirement migration begins (Lin & Rogerson 1995, Rogerson, Weng, & Lin 1993, Plane 1993). In the later stage, elderly parents face retirement, health deterioration and loss of spouse, and tend to move to, or closer to, adult children's residential location (Longino 2008, Silverstein & Angelelli 1998, Silverstein and Angelelli 1998, Litwak & Longino 1987). Exploiting Panel Study of Income Dynamics (PSID), the age pattern of spatial mobility is presented in **(Figure 8)** and is consistent with the conceptual models above and the pattern based on current population survey **(Appendix Figure 2)**.

To discuss relationships among family economic status, intergenerational proximity and parental health over the life-course, we examine the age cohort of 0-16 in 1968 by tracking those children over a 28-year span. Note that ages of these children are 34-50 in 2002. Most parents of this cohort are aged 55 or older in 2002, which is the analysis sample that we focused on older adults and their children in earlier sections using HRS. **Table 2** describes sample characteristics by different family economic status in 1968. Survey of Economic Opportunity (SEO) sample was assessed separately in this paper because our main interest of economic status is the lower

income family. Moreover, SEO sample also includes greater number of non-white and unhealthy population, which can provide an important and interesting disparity in this analysis of interest. The SRC sample, which is a representative sample of 1968 residents in the US, was divided into four groups based on poverty ratio to family income at baseline year 1968. The median poverty ratio is 0.95 in the bottom quartile, 1.78 in the second quartile, 2.53 in the third quartile and 3.82 in the top quartile. And the median poverty ratio in the SEO sample is 0.82. Despite similar economic status of families between SEO sample and the bottom quartile of SRC sample, notable differences exist in terms of racial and health distribution in these two groups: Only 25% of SEO sample are white while 75% in the bottom quartile of SRC sample. And, 42% of children in SEO sample had mothers in fair/poor health while 34% of children in the bottom quartile of SRC sample had mothers in fair/poor health. Conditional on mother's age 55 or older in 1996, 61% of children in SEO sample had mother who had at least one functional limitation in 1996 while 35% of children in the bottom quartile had mother who had at least one functional limitation in SRC sample.

A. Residential Proximity to Origin and to Mother from Childhood to Adulthood

Lundberg and Pollak (2007) addresses how more heterogeneous and less stable American families become with multiple, serial partnerships between parents, which leads to uncertain implications for parent-child relationships. In the study of intergenerational proximity, to reduce such complex family dimensions, this paper focuses on the relationship between adult children and their biological mothers.

Children from low-income families are likely to encounter greater mobility restriction due to liquidity constraints (Greenwood, 1997) and due to a stronger economic linkage among extended family members financially and non-financially (Bianchi, Hotz, McGarry, & Seltzer,

2008; Haider & McGarry 2006, Kathleen & Schoeni 1995), and hence tend to stay nearby the initial residence and their families, relatives and friends. Children from high-income family tend to move farther during this early separation period because they have less restriction in spatial mobility as they seek higher education and better economic opportunity.

In order to understand residential proximity to mother, we first examine the residential mobility pattern of those children age 0-16 in 1968 over a 28 year span. **Figure 9** depicts residential distance to the childhood residence over the subsequent 28 years by the childhood family economic status (i.e., 1968 economic quartile). The median distance to childhood residence (1968 residence) during adulthood is distinctively low for SEO sample (6 miles) and greater for top quartile (11 miles for the bottom, 13 miles for the second, 13 miles for the third, 39 miles for the top quartile). **Figure 10** presents trajectory of percent living in the same block, Zipcode, county and state over 28 years by childhood family economic status. This shows that the probability of living in the same block as the origin is lower for low income children (SEO and bottom quartile of SRC) compared to higher income children during early years. However, in terms of residential distance to origin at a larger geographic boundary (e.g., county and state level), the probability of children living in the same county is greater for low income children at all subsequent years. This suggests that low income families and individuals are more likely to change residential locations but only at a short distance. Long-distance residential mobility is relatively more prevalent among individuals from high income family background. Accordingly, distance to mother is also greater for children from higher income family compared to low income family as presented in **Figure 11** and **Figure 12**.

B. Mother's health and Proximity to Mother over the Life-course by Childhood Family

Economic Status

One of important factors that might determine intergenerational proximity is parental health status. Note that residential mobility is the greatest during young adulthood (around 25 years old). Parental health problems during a child's young adulthood can directly affect decision on the early residential separation from parents. Some children in their young adulthood might already have parents with disabilities and might even provide care to disabled parent/s. Or, some children anticipate their parental health deteriorating in near future and limit their spatial mobility during the early separation period. At the same time, health and socio-economic status are strongly related. Using the analysis cohort (0-16 in 1968) as above, we examined mother's health status in a child's young adulthood (children's age 18-34, measured in 1986) and residential proximity to mother in children's adulthoods (children's age 26-44, measured in 1994-1996) within the baseline family economic quartile: Among lower income groups, fair/poor health status of mother is significantly associated with a greater probability of living with mother in their adulthood (OR=1.4 for SEO sample; OR=4.8 for the bottom quartile **Figure 13**), greater probability of living in the same Zipcode area (OR=1.7 for SEO sample; OR=1.6 for the bottom quartile **Figure 14**), and greater probability of living in the same county (OR=1.3 for SEO sample; OR=1.8 for the bottom quartile **Figure 15**).

IV. Summary

Among community dwelling older adults (aged 55 or older), about one third of the low income have at least one disability while about one tenth of the top quartile do. Children are identified as primary care providers for these older adults with functional limitation/s in the lower income

older adults, while spouses are primary care providers for the richer. Consistently, poorer economic status among older adults is associated with a greater probability of having at least one child living close by compared to the richer.

We also found that older adults and their children tend to move in with or closer to each other after the older adult had new heart attack or stroke especially among women and among those without spouse/partner in the second or higher economic group. Note that older adults in the low economic group tend to encounter health problems in the earlier life-course and they have at least one child living with or closer to. Observing exogenous health shock in older years and corresponding change in residential proximity between parent/s and an adult child is likely to understate the relationship between health and intergenerational relationship for the low income adults.

Investigating origin and earlier life-course trajectory of intergenerational proximity can provide valuable insight into how persistently family economic status and parental health predict intergenerational proximity of the family in later years. Children from low income families tend to leave the baseline residence early compared to those from high income family, but the mobility of low income children tends to be limited to shorter distance compared to higher income children. Children from low income family also tend to live with or closer to mother in their adulthood. Mother's health during young adulthood seems to play a significant role in predicting closer proximity to mother in subsequent years among lower income children.

V. Conclusion and Discussion

Children have been recognized as a primary care provider for older adults with disabilities in US. A large proportion of non-coresident children have provided care for frail parents in a close proximity. However, few research works have examined intergenerational proximity other than

co-residents partly attributable to the lack of spatial information on both parents and children. Exploiting newly available geographic information in two nationally representative, longitudinal studies - HRS and PSID, empirical findings in this paper can provide valuable insight into how intergenerational proximity has been shaped over the life-course interacting with parental health and family economic status. Informal care from children is even more prevalent among low income families. Moreover, those low income children might have been involved in caring for frail parent/s for a longer period which can adversely affect those children's subsequent SES.

This paper informs public policy concerning health care for the aging population and for the low-income population. Close spatial proximity was considered a proxy of accessibility to care from a child for those vulnerable older adults. At the same time, caring for ill parent/s can burden the care-giving children financially and non-financially. An innovative health care such as facilitating informal networks might reduce health care costs for families and might decrease potentially fatal health risks for old parents. In public health policy, burden-sharing in (informal) care might reduce mobility restrictions of potential care-givers in seeking better economic opportunities. This might be especially true for the lower-economic population.

Despite discussions on various aspects in the relationships among family economic status, intergenerational proximity and parental health, some important questions are not explicitly explored in this paper. First, responding to parental health shock, it is important to identify which of parent/s or children tend to change residential location in order to achieve closer residential proximity to each other. Second, majority of children caregivers are daughters, due in part to the lower average opportunity cost of time (Norton 2000, Stone, Cafferata, & Sangl 1987). How differently a son and a daughter respond to parental health problems in terms of spatial mobility and intergenerational proximity need to be explored. Third, identifying needy individuals who

lack informal care resources as well as formal resources is important to target the most vulnerable population.

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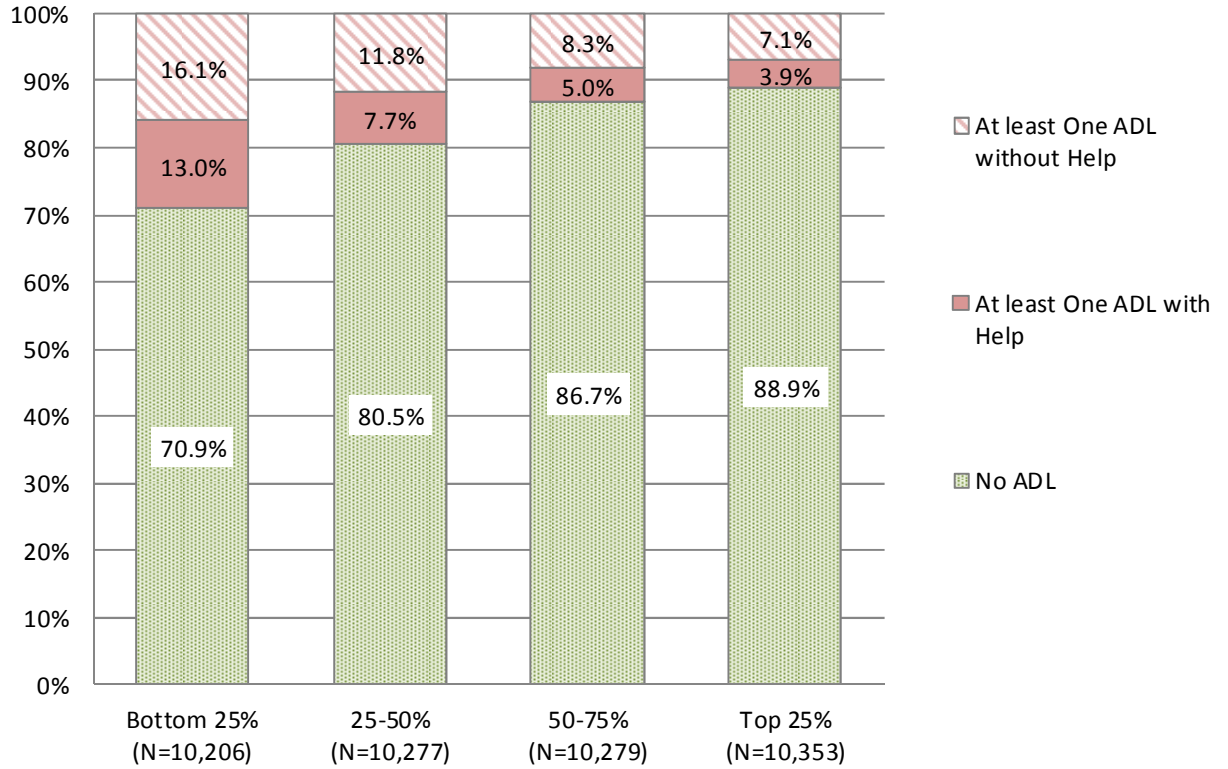
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Figure 1 – % of Having at least one ADL/s and Receiving ADL/s Specific Care among Older Adults
(Age 55 or older in 2002, N of Respondents=15,409, N of obs=41,115)



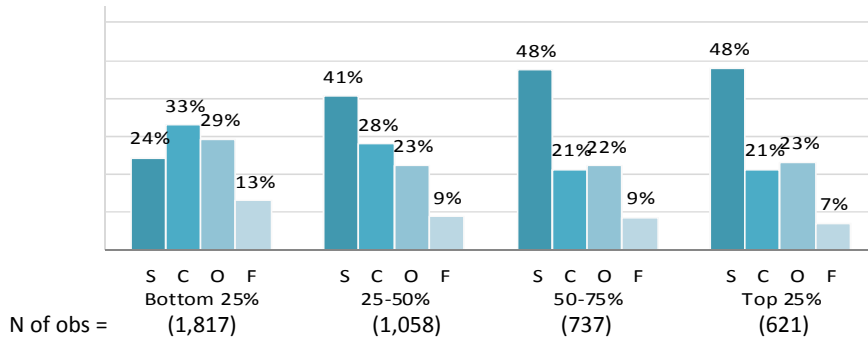
Data Source: Health and Retirement Study (2002-2008)

Note: Six items are used for ADL/s (difficulty in walking, dressing, bathing, eating, getting in and out of bed, using toilet). Observations are from 2004-2008 surveys. Population weight was applied. Economic quartile is defined based on total wealth in 2002 and respondent's age.

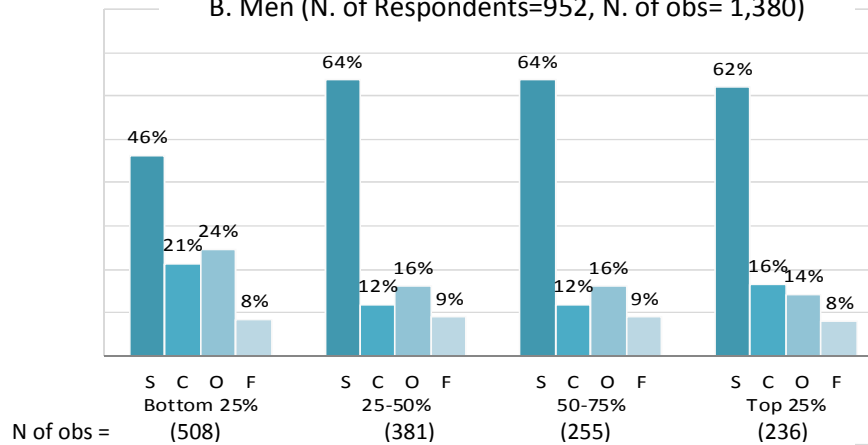
Figure 2 – Most Helping Individuals/Institutions for ADLs
 (Age 55 or older in 2002, at least one ADL/s for 2004-2008, at least one helper available)

■ S: Spouse ■ C: Children ■ O: Other Individuals ■ F: Formal Care Services
 (Organization/Institution/
 Professionals)

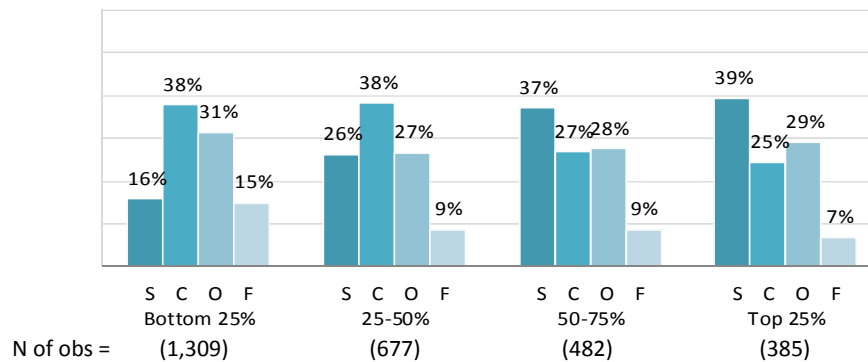
A. All (N. of Respondents=2,790, N of obs=4,233)



B. Men (N. of Respondents=952, N. of obs= 1,380)



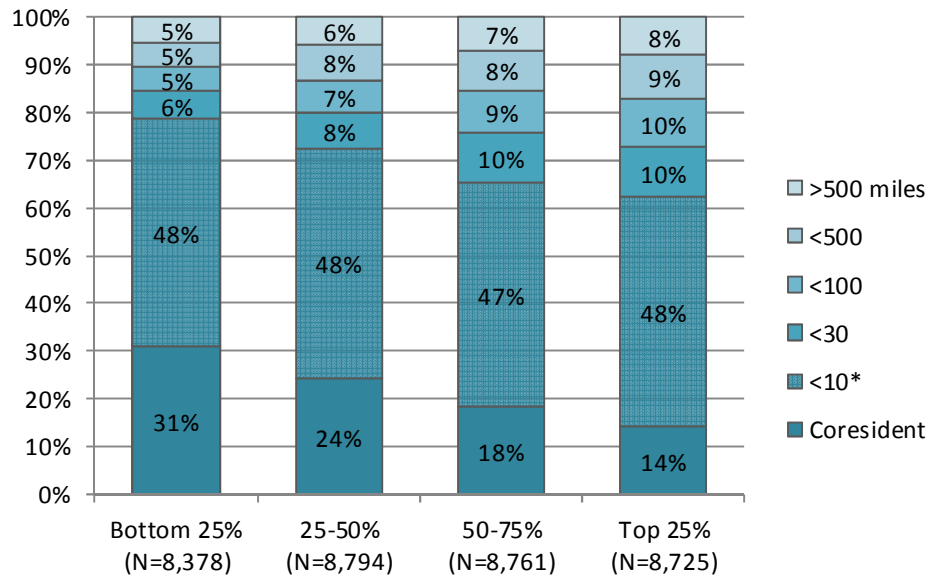
C. Women (N. of Respondents=1,838, N of obs=2,853)



Data Source: Health and Retirement Study (2002-2008)

Note: Six items are used for ADL/s (difficulty in walking, dressing, bathing, eating, getting in and out of bed, using toilet). Population weight was applied. Economic quartile is defined based on total wealth in 2002 and respondent's age.

Figure 3 – Proximity to the Closest Child 2004-2008
 (Age cohort: 55 or older in 2002, N. of respondents=13,429, N. of obs=34,658)



Data Source: Health and Retirement Study

Note: Sample was restricted to respondents aged 55 or older, and have at least one living child in 2002. The category of <10 miles also includes those in the same Zipcode area. Population weight was applied. Economic quartile is defined based on poverty to income ratio in 2002.

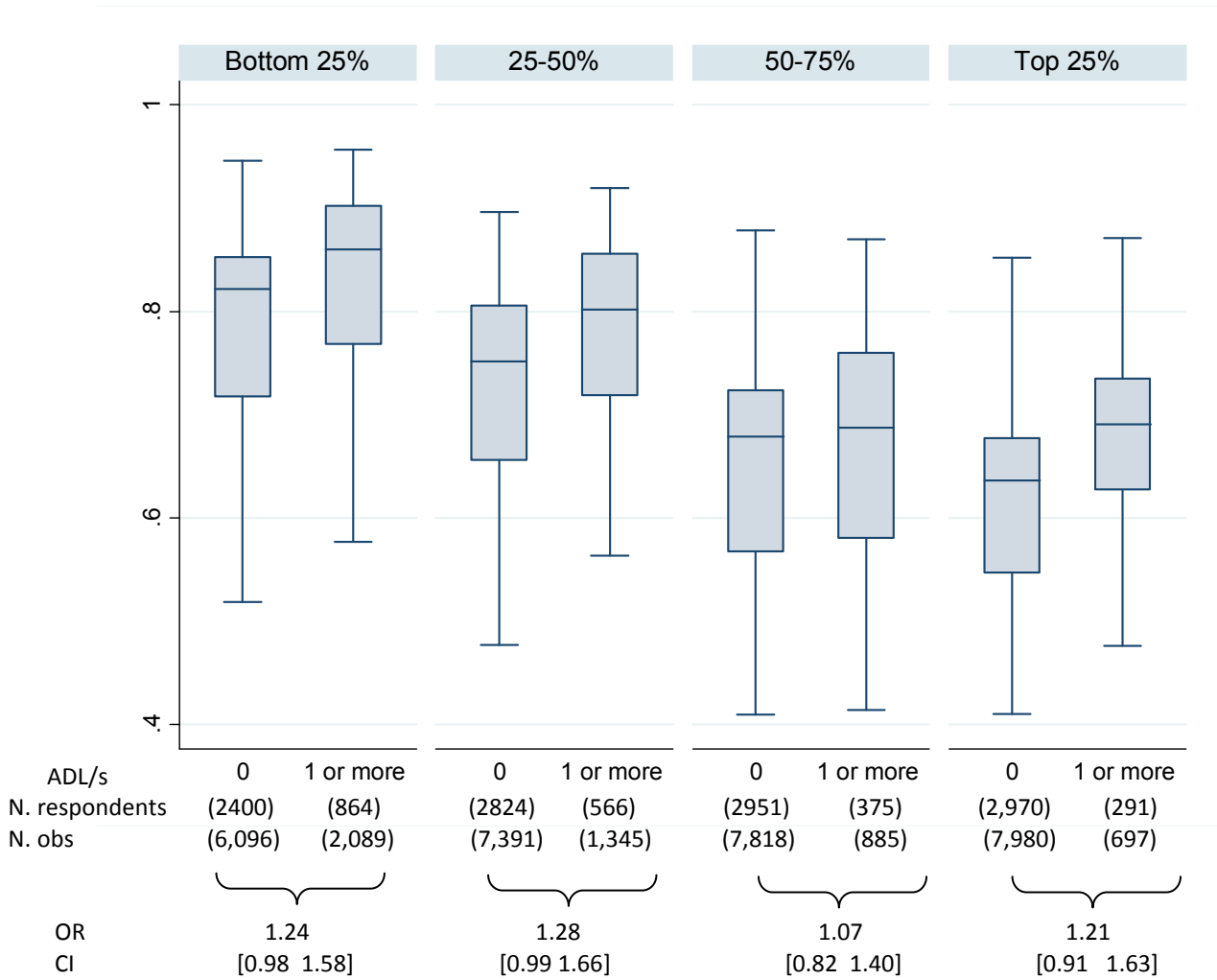
Table 1. Analysis Summary Table
(age 55 or older, 2002)

	Respondents' Family Economic Status 2002			
	Q1 Bottom 25%	Q2 25-50%	Q3 50-75%	Q4 Top 25%
N. of Respondents	3544	3567	3500	3437
N. of Observations, 2004-2008	9,141	9,543	9,461	9,428
Family's Total Wealth, 2002 (median)	9,000	97,700	256,000	729,000
Age 2002 (mean)	68	68	68	68
Female, %	65	57	54	51
Race (% White)	66	81	90	96
Have a spouse, %	40	60	71	80
Number of Children 2002				
1	13	11	13	11
2	23	31	34	39
3 or more	64	58	52	51
ADLs 2002, %				
0	75	85	90	93
1	11	8	6	5
2 or more	14	6	4	2
CV disease 2002, %	31	28	23	21

Data Source: Health and Retirement Study

Note: Sample is restricted to respondents aged 55 or older with at least one living child

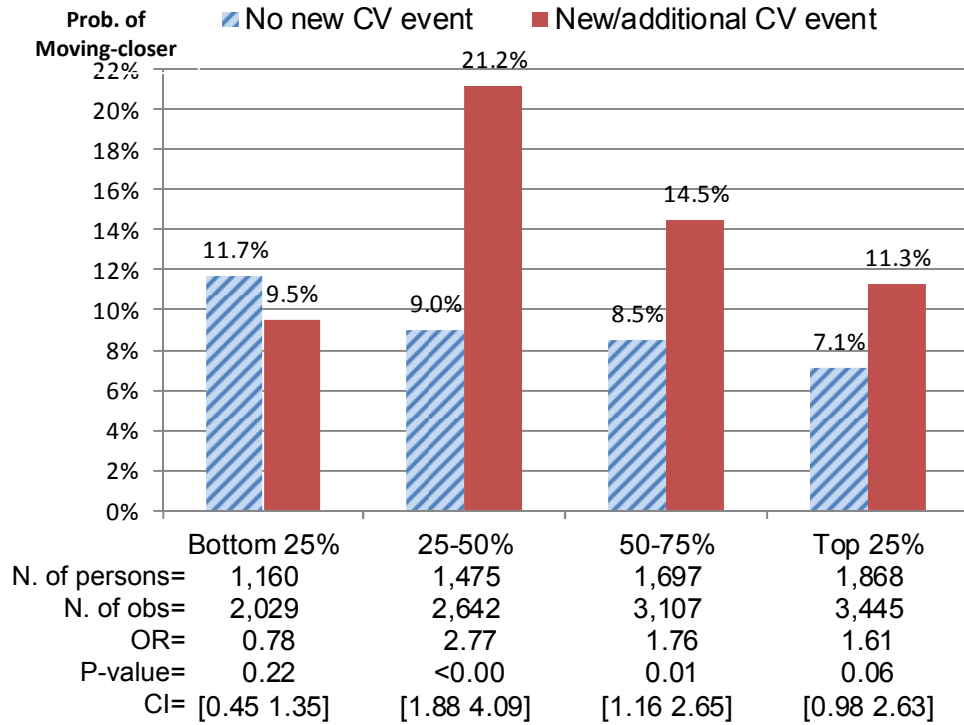
Figure 4 – Odds Ratios and Predicted Probabilities of Living within 10 miles* to the Closest Child over 2004-2008 by Respondents' ADL/s Status and Economic Quartile in 2002 (Age cohort: 55 or older in 2002)



Data Source: Health and Retirement Study

Note: Six items are used for ADL/s (difficulty in walking, dressing, bathing, eating, getting in and out of bed, using toilet). 2002 population weight was applied. The category of <10 miles also includes those in the same Zipcode area. Multivariate logistic regression was employed to estimate difference between no ADL vs. at least one ADL. Other predictors are: age at baseline, year dummies, gender, race (white indicator), spousal status, number of children.

Figure 5 – Odds Ratios and Predicted Probabilities of Subsequent Change in Proximity to the Closest Child Responding to Health Shock by Economic Quartiles (Age cohort: 55 or older in 2002)

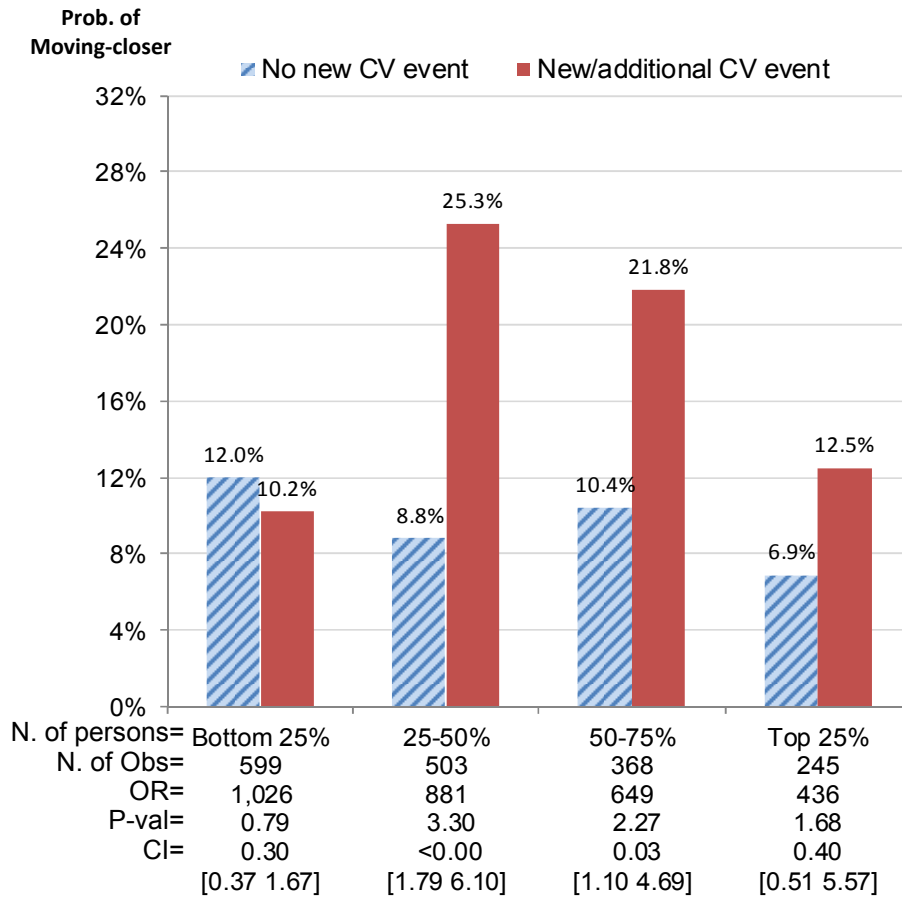


Data Source: Health and Retirement Study (2002-2008 HRS)

Note: Sample is restricted to respondents 55 or older i) who do not have a co-resident child but have at least one non-co-resident child in 2002, ii) who did not have cardiovascular disease in 2002. Multivariate logistic regressions were employed. 2002 population weight was applied. Predicted values are obtained at individual level. Predictors include : i) gender, ii) race, iii) spousal status, iv) age, v) number of living children, vi) ADL/s status in 2002. Outcomes (Change in Proximity) are constructed by comparing proximity to the closest child observed in 2006 and 2008 to that in two years prior, for each.

Figure 6 – Odds Ratios and Predicted Probabilities of Subsequent Change in Proximity to the Closest Child Responding to Health Shock by Economic Quartiles (Age cohort: 55 or older in 2002)

- Respondents without Spouse -

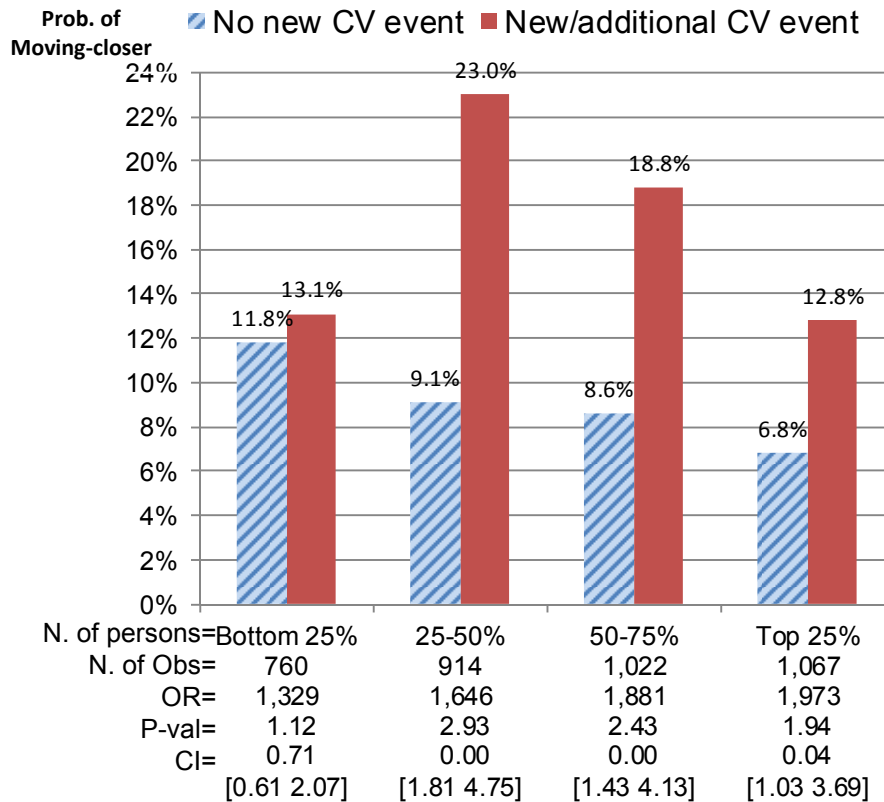


Data Source: Health and Retirement Study (2002-2008 HRS)

Note: Sample is restricted to respondents 55 or older i) who do not have a co-resident child but have at least one non-co-resident child in 2002, ii) who did not have cardiovascular disease in 2002 and iii) who did not have spouse in 2002. Multivariate logistic regressions were employed. 2002 population weight was applied. Predicted values are obtained at individual level. Predictors include : i) gender, ii) race, iii) spousal status, iv) age, v) number of living children, vi) ADL/s status in 2002. Outcomes (Change in Proximity) are constructed by comparing proximity to the closest child observed in 2006 and 2008 to that in two years prior, for each.

Figure 7 – Odds Ratios and Predicted Probabilities of Subsequent Change in Proximity to the Closest Child Responding to Health Shock by Economic Quartiles (Age cohort: 55 or older in 2002)

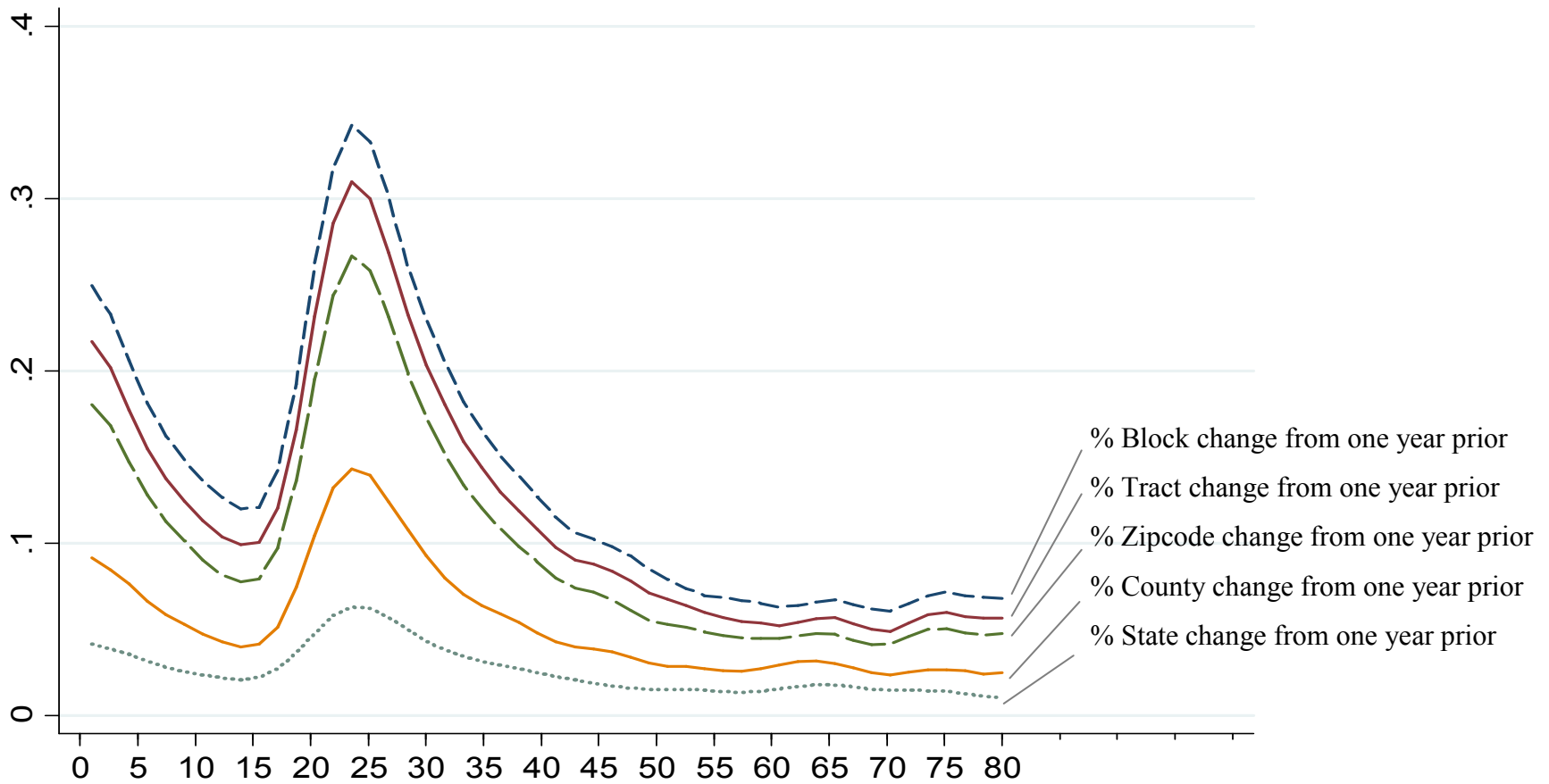
- Women Respondents -



Data Source: Health and Retirement Study (2002-2008 HRS)

Note: Sample is restricted to women respondents 55 or older i) who do not have a co-resident child but have at least one non-co-resident child in 2002, ii) who did not have cardiovascular disease in 2002. Multivariate logistic regressions were employed. 2002 population weight was applied. Predicted values are obtained at individual level. Predictors include : i) gender, ii) race, iii) spousal status, iv) age, v) number of living children, vi) ADL/s status in 2002. Outcomes (Change in Proximity) are constructed by comparing proximity to the closest child observed in 2006 and 2008 to that in two years prior, for each.

Figure 8— Individual Residential Mobility Pattern over Age
 (N. of Individuals=13,177 Individuals, N. of observations = 219,401)



Data Source: Panel Study of Income Dynamics (1969-1996). SRC sample

Note: Sample is restricted to respondents age 15-85. Population sample weight is NOT applied.

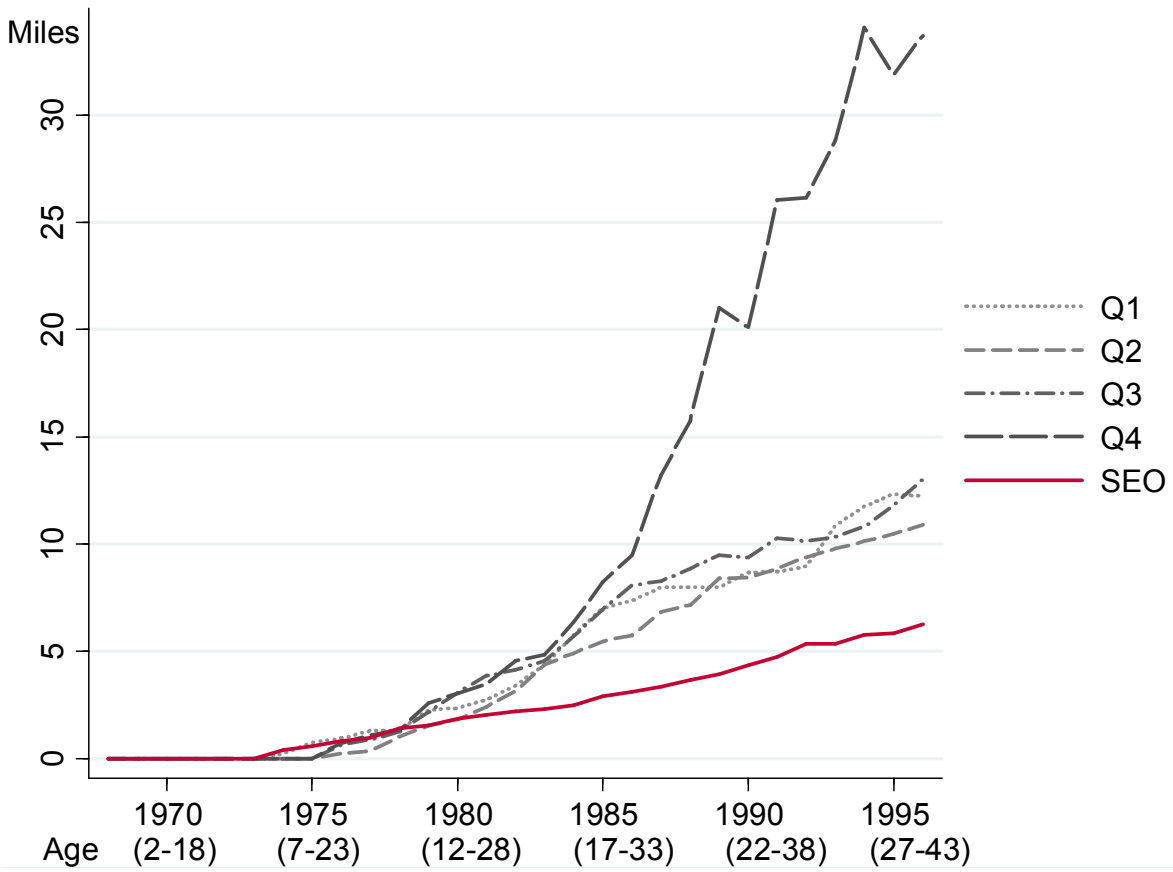
Table 2– Analysis Sample Summary Table (Age cohort 0-16 in 1968)

	SEO	SRC (1032 families; 2408 children)			
		Q1 Bottom 25%	Q2 25-50%	Q3 50-75%	Q4 Top 25%
N. of Families, 1968	973	245	260	262	265
N. of Children, 1968	3,281	754	631	530	493
N. of Observations, 1968-1996	73,364	16,663	15,053	13,164	12,154
Family's Poverty Ratio 1967 (median, range)	0.82 (0 - 6.3)	0.95 (0-1.45)	1.78 (1.46-2.12)	2.53 (2.13-3.06)	3.82 (3.07-17.5)
Children's Age 1968	8.3	9.0	8.0	8.6	8.4
Mother's Age 1968 (mean, range)	35 (16-61)	35 (15-59)	34 (18-59)	35 (17-59)	35 (19-35)
Mother's Race (% White)	26	73	92	94	96
Mother's SRHS (Fair/Poor) 1986, %	42	34	20	17	13
Mother's SRHS (Fair/Poor) 1996, %	47	34	19	20	16
Mother's ADL* (at least one) 1996,%	61	35	31	32	21

Data Source: Panel Study of Income Dynamics (Core sample)

Note: Population sample weight is NOT applied.

Figure 9 – Proximity to 1968 Residence over 28 years (Mediance Distance, miles)
(Age cohort: Children 0-16 in 1968)



Data Source: Panel Study and Income Dynamics.

Figure 10 – Proximity to 1968 Residence (Boundaries, %) over 28 years by Baseline Economic Status (Age cohort: Children 0-16 in 1968)

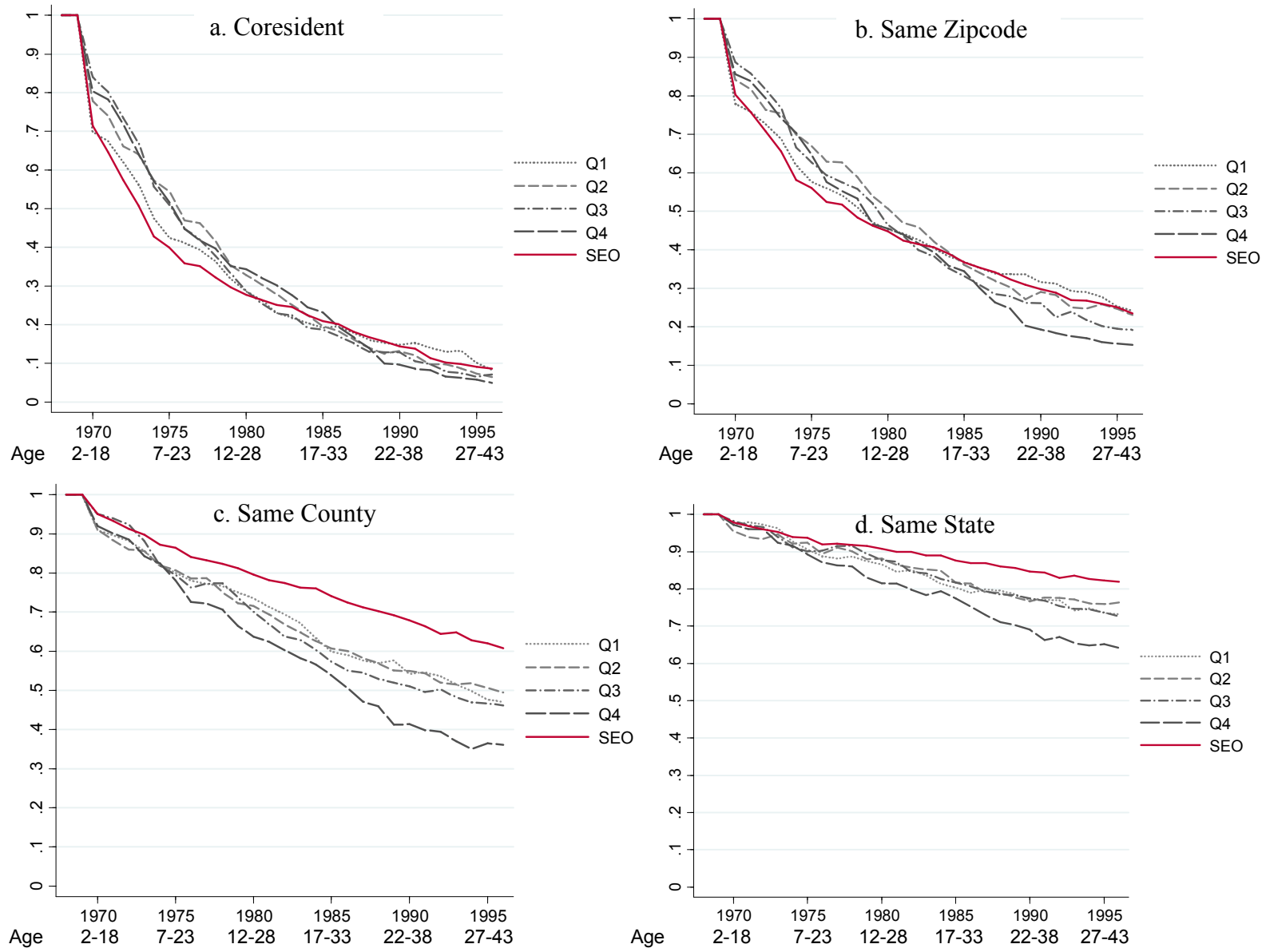
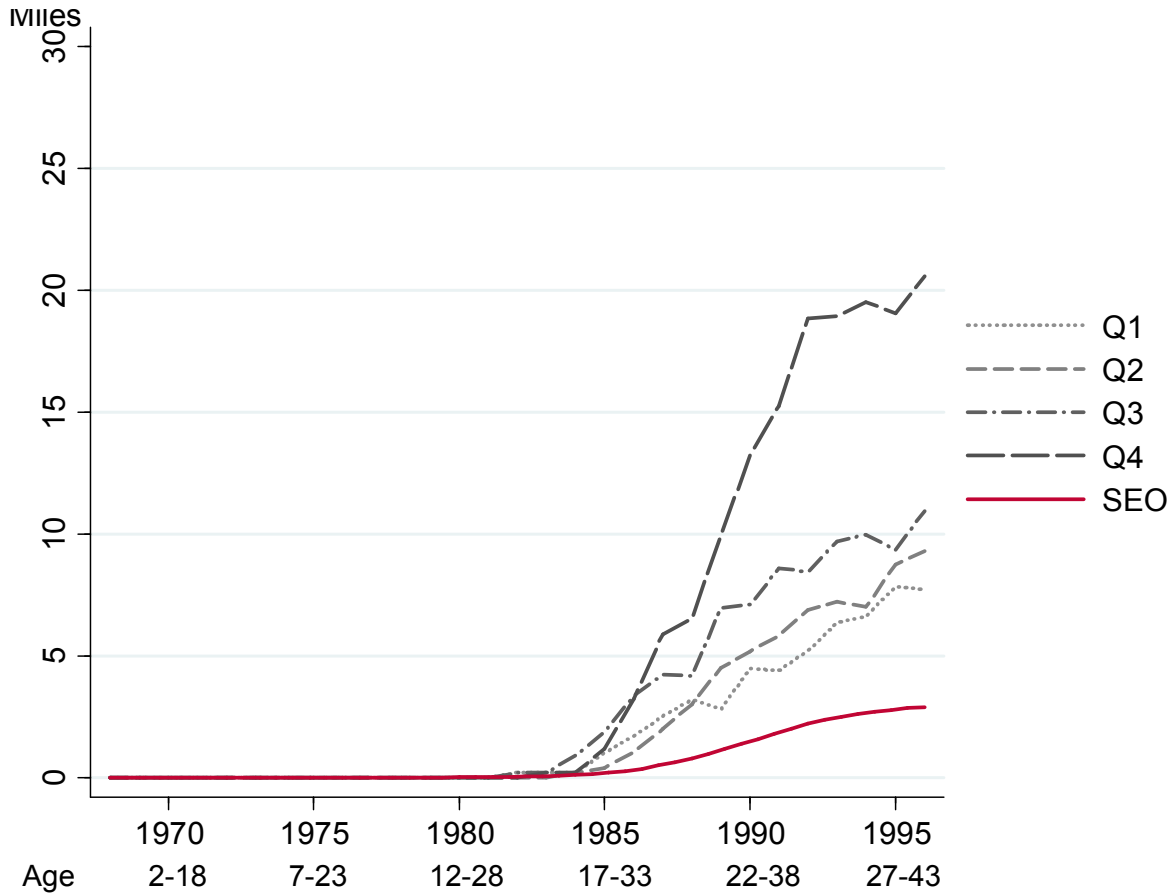


Figure 11 – Proximity to Mother (Median Distance, miles) over 28 years
by Baseline Economic Status

(Age Cohort 0-16 in 1968, N. of individuals=5,885, N of obs=129,635)



Data Source: Panel Study of Income Dynamics (PSID 1968-1996)

Note: Population sample weight is NOT applied. Economic quartile is defined based on 1968 family income ratio to poverty of the cohort. Distance is measured based on centroids of blocks.

Figure 12 – Proximity to Mother (Boundaries, %) over 28 years by Baseline Economic Status (Age cohort: Children 0-16 in 1968)

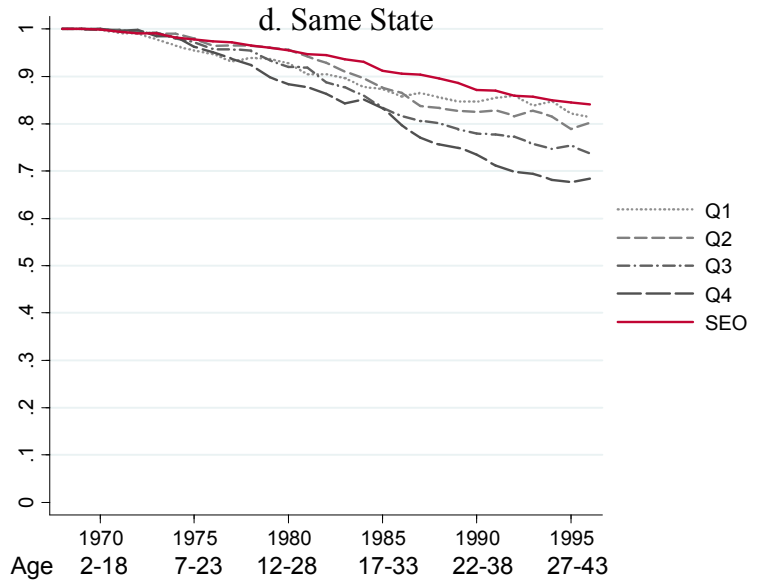
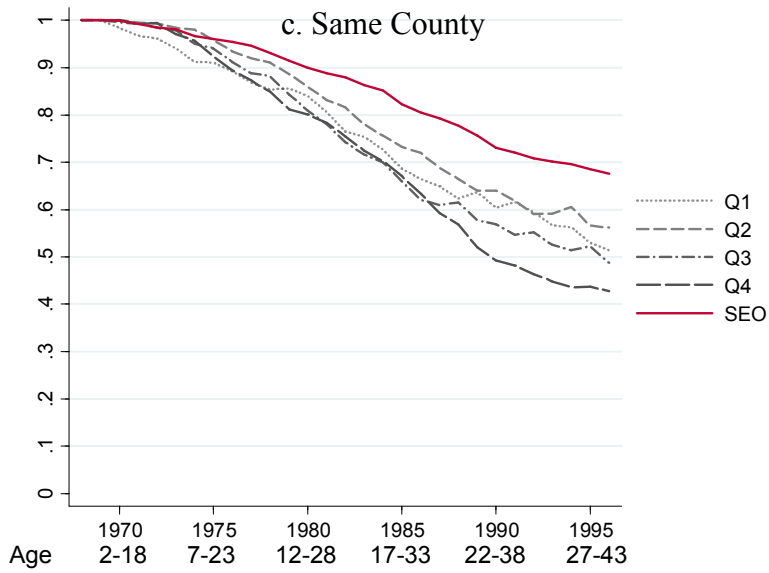
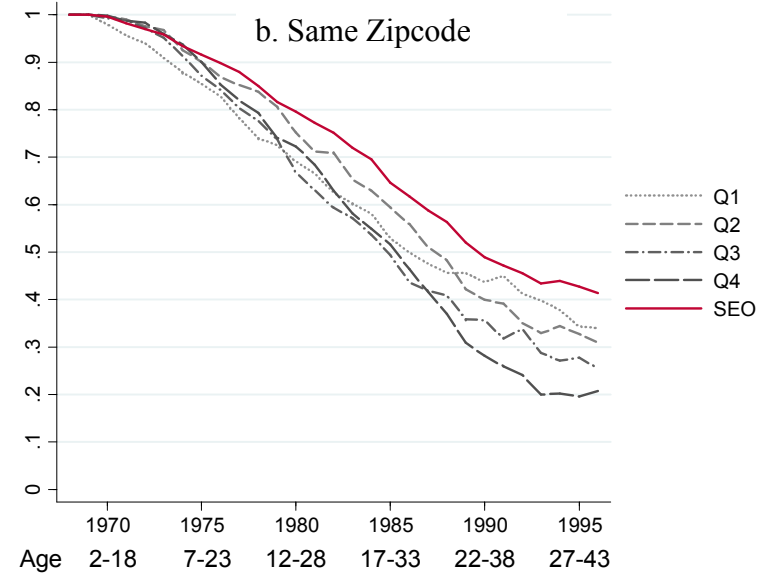
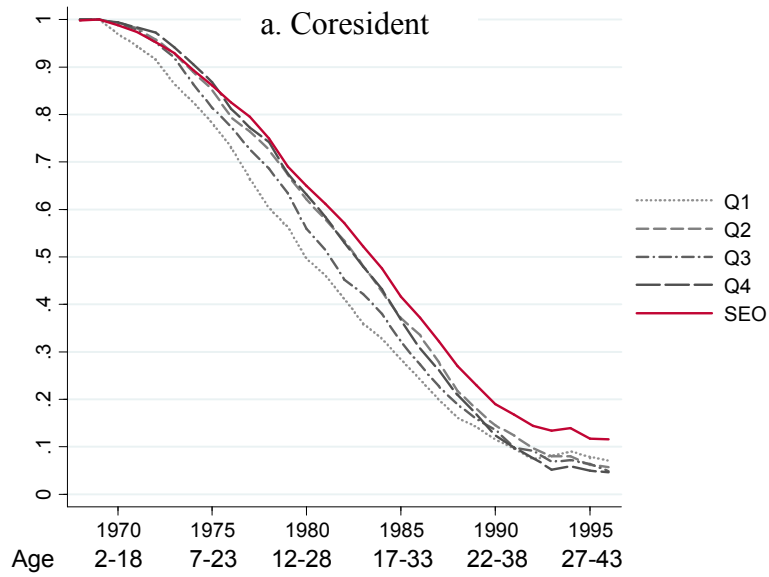
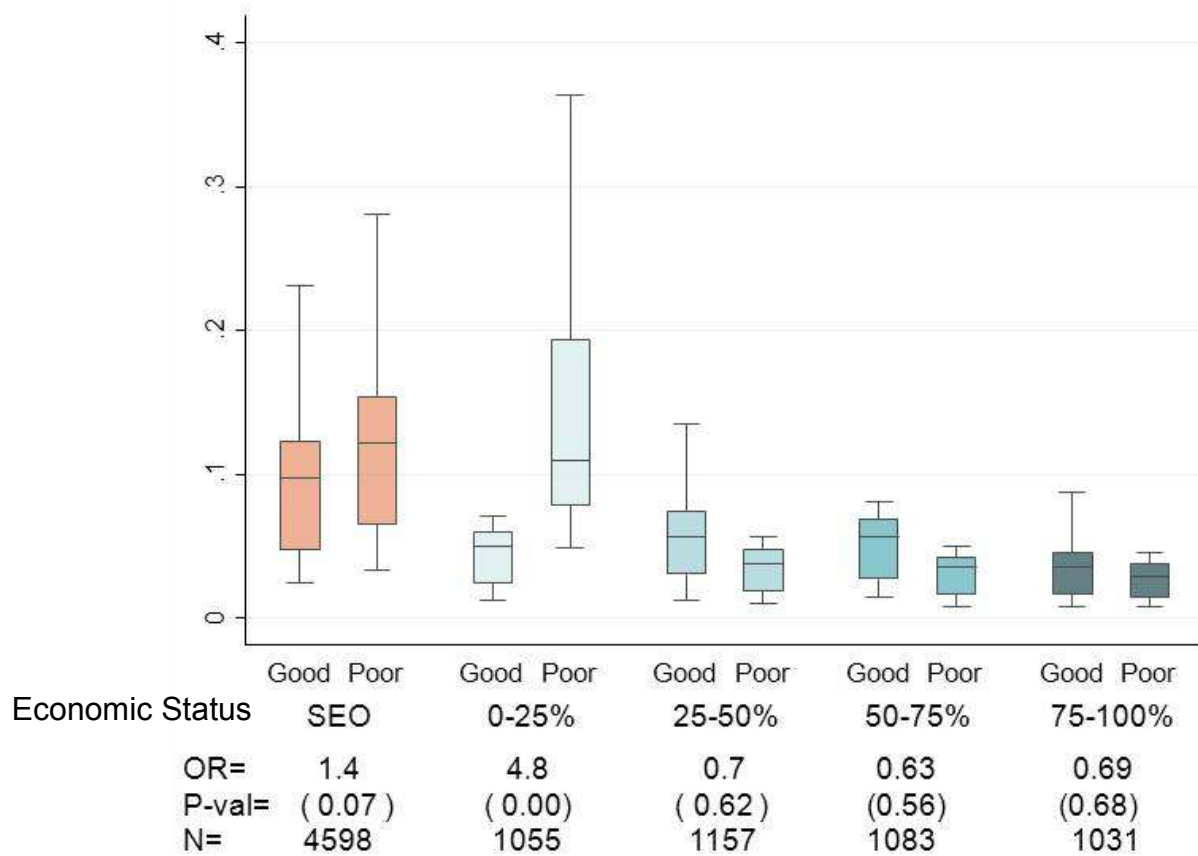


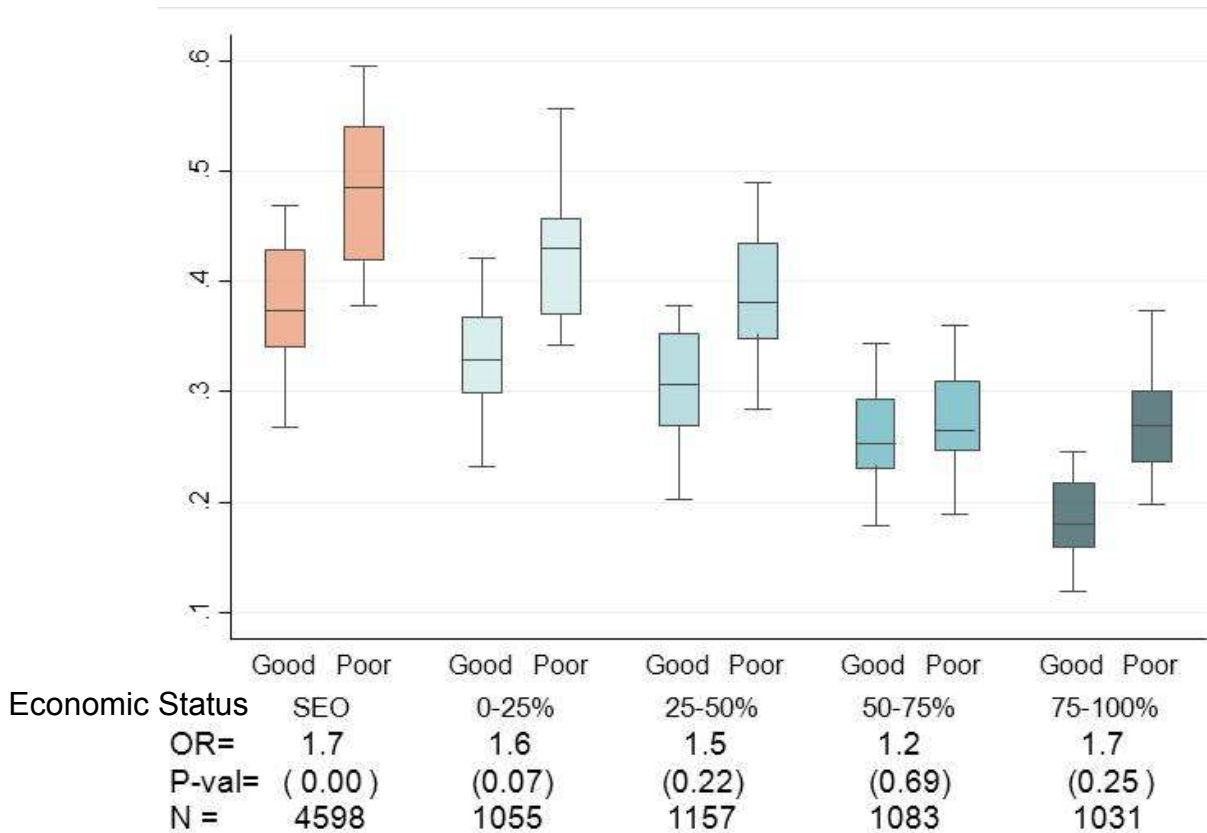
Figure 13 – Odds Ratio and Predicted Probability of Coresident with Mother during Adulthood by Mother’s Health during Young Adulthood and Family Economic Status during Childhood (Age Cohort 0-16 in 1968, N. of individuals=5,885, N of obs=129,635)



Data Source: Panel Study of Income Dynamics, SRC+SEO

Note: Adulthood proximity outcomes come from observations for 1994 -1996 (children’s age 23-44). Mother’s health during children’s young-adulthood is based on mother’s self-rated health status measured in 1986 (children’s age 18-34). Childhood family economic status is based on poverty ratio in 1968 (children’s age 0-16). Gender, age, year were used as covariates.

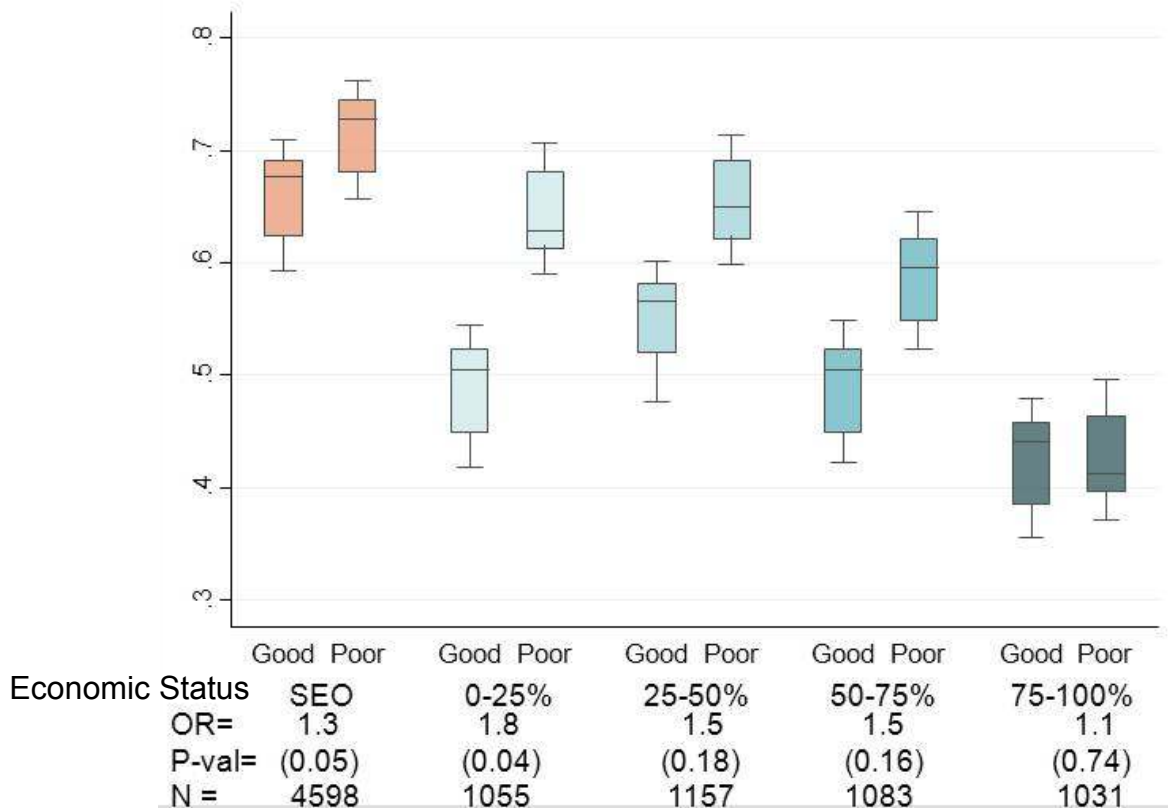
Figure 14 – Odds Ratio and Predicted Probability of Living in the Same Zipcode area with Mother during Adulthood by Mother’s Health during Young Adulthood and Family Economic Status during Childhood (Age Cohort 0-16 in 1968, N. of individuals=5,885, N of obs=129,635)



Data Source: Panel Study of Income Dynamics, SRC+SEO

Note: Adulthood proximity outcomes come from observations for 1994 -1996 (children’s age 23-44). Mother’s health during children’s young-adulthood is based on mother’s self-rated health status measured in 1986 (children’s age 18-34). Childhood family economic status is based on poverty ratio in 1968 (children’s age 0-16). Gender, age, year were used as covariates.

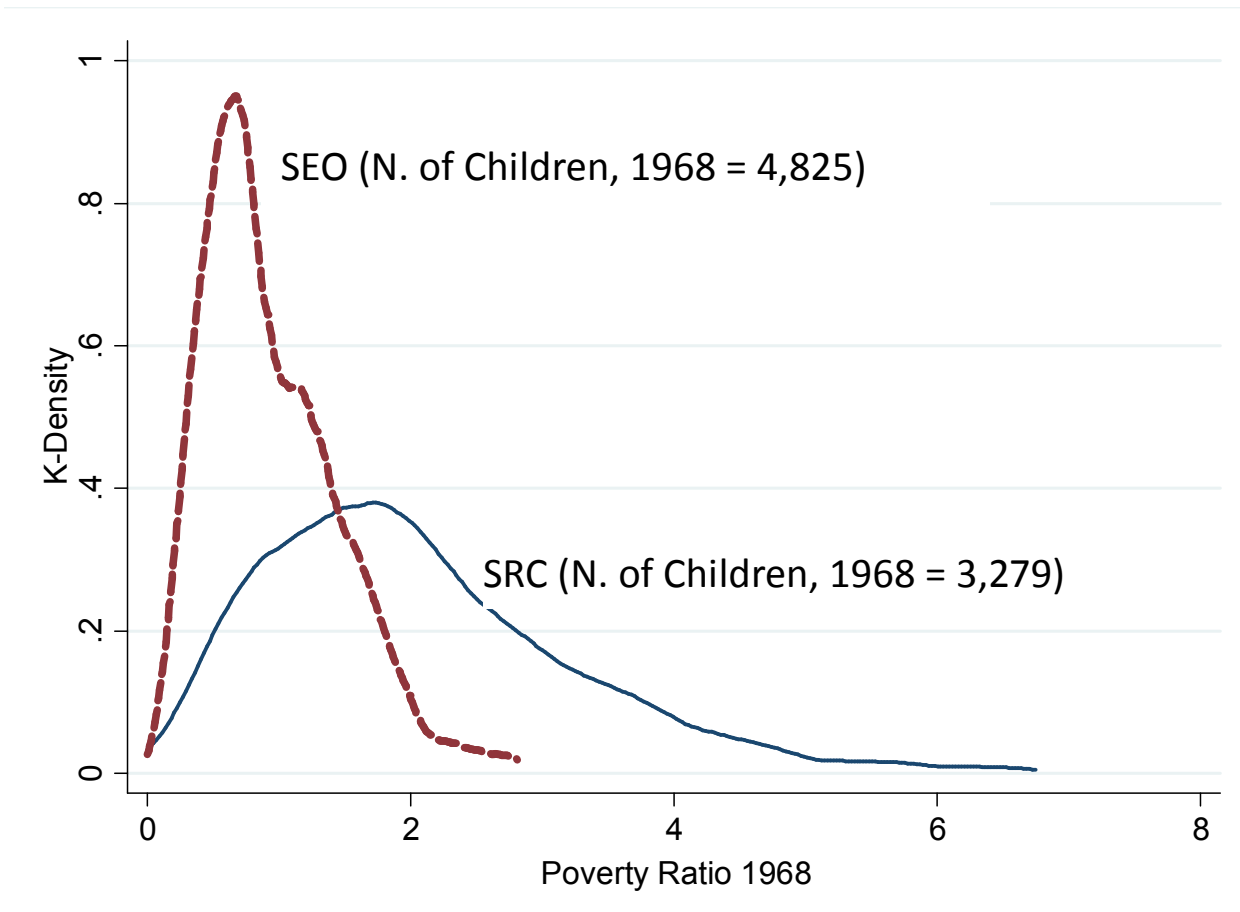
Figure 15 – Odds Ratio and Predicted Probability of Living in the Same County area with Mother during Adulthood by Mother’s Health during Young Adulthood and Family Economic Status during Childhood (Age Cohort 0-16 in 1968, N. of individuals=5,885, N of obs=129,635)



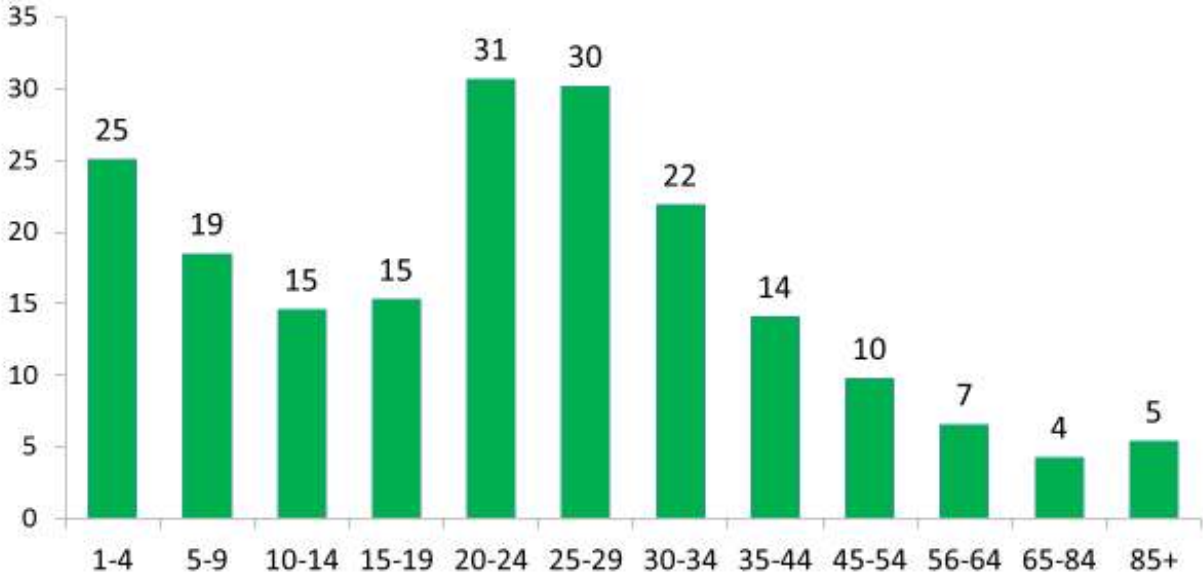
Data Source: Panel Study of Income Dynamics, SRC+SEO

Note: Balanced sample for 1984-1989. Sample is restricted to those aged 18-23 in 1984. Economic groups are based on child’s poverty ratio in 1984. Covariates are i) gender, ii) race, iii) age, iv) year, v) mother’s spousal status, v) number of siblings, vi) respondents having a child. Core sample weight was applied.

Appendix Figure 1
PSID Original Sample: K-density of Poverty Ratio – SRC vs. SEO



Appendix Figure 2 – Population Profile of the United States
(Percent Moving in one year by Age, 1996)



Data Source: U.S. Bureau of the Census, Current Population Survey