Household Size, Home Health Care, and Medical Expenditures

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Working Paper No. 09-16
November 3, 2009

Abstract

We document a robust negative correlation in which residing in a larger family is associated with lower consumption of medical care *ceteris paribus*. For men, an additional household member is associated with between $659.69 and $1039.97 fewer expenditures on health care and, for women, the estimates range between $391.28 and $728.66. Using quantile regression, the magnitude of the coefficients on household size increases monotonically with the quantile of medical expenditure. If household size is a proxy for home health care then these results suggest that home health care substitutes for medical care obtained on the market and that the degree of substitution increases with one's consumption of medical care and by implication decreases with one's health status. Finally, we provide suggestive evidence that the relative generosity of coverage for home health care by MEDICARE *vis-a-vis* private insurance may induce a crowdout of family care-giving by home care obtained through professional agencies.

Keywords: household size, medical expenditure, family, care-giving, crowd-out

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1. INTRODUCTION

In the United States, 10% of patients account for 70% of total health expenditures (Bodenheimer and Berry-Millett, 2009). Moreover, many patients who require expensive medical care have multiple chronic conditions, many medications, frequent hospital admissions, and limitations on their ability to perform basic daily functions due to physical, mental, or psychosocial challenges. Consequently, a pressing policy concern in the United States has been cost containment, particularly for the sickest constituents of society.

A body of literature provides evidence that family support can be protective and beneficial to people with a chronic illness (Aldwin and Greenberger, 1987, Schofield et al., 2001, Beebe, 2002, Doornbos, 2001, Sorensen et al., 2002). Studies consistently have shown that individuals with supportive family environments are less likely to be institutionalized and that the absence of family care-giving is a leading predictor of institutionalization (National Alliance for Care-giving/AARP, 2004). Several mechanisms may explain these results. First, family care-givers may detect abnormalities in a patient's health before a condition progresses to an acute stage. Because early detection may prevent emergency department visits and hospital admissions, it may decrease a household's medical expenditures. Second, family support can create a positive emotional state for a patient and may reduce endocrine and immunologic responses that are known to be harmful to health. Third, family support for a healthy lifestyle and behaviors may positively influence a patient's adherence to treatment regimens (Wallace, 1996). However, much of the existing evidence has a limitation: The results are typically from small-scale studies that are not nationally representative and that offer limited information on medical care expenditures.

We proposed to fill this void by investigating the relationship between family care-giving and medical consumption in the Medical Expenditure Panel Survey (MEPS) - a dataset that is representative of the U.S. population and contains excellent information on medical expenditures. The challenge that we face in this endeavor is that the strength of the family support network is difficult to measure. To address this issue, we use the size and demographic structure of the household as a proxy for the family support network.

We justify our use of this proxy on several grounds. First, a decision to reside with a family member who needs care-giving may indicate a level of emotional attachment that may increase the likelihood of providing care for that person. Second, a larger family suggests that more people can monitor and detect changes in an ill member's health and can initiate immediate treatment. Third, the burden of care-giving may be shared among several family members, allowing for uninterrupted care. Finally, larger family size implies that several relational qualities are available to the care-receiver. Thus, should a conflict or stressful relational issue arise, other relationships that can mediate the conflict's negative effects may be readily available to the patient. We do not claim that the use of household size as a proxy for informal care-giving is without imperfections, but we do believe that this strategy is a useful first step towards understanding the consequences of family care-giving for the demand for formal care-giving.

In this study, we investigate the relationship between household size and the demand for medical care using the Medical Expenditure Panel Survey (MEPS). We do so by disaggregating both the household's demographic structure into gender/age brackets and the consumption of medical care into its more important constituents such as doctors office visits, emergency room visits, inpatient costs, prescription costs and, particularly, costs of formal care-giving. If household size is an adequate proxy for family support and if family support is protective of

one's health, then we should observe that larger households have fewer expenses on formal medical care *ceterus paribus*.

Our findings are broadly consistent with this conjecture. This is an important result because it suggests that the family and the relatively inexpensive care-giving that it provides may substitute for relatively more expensive formal medical care. We flesh out more fully these policy implications in the last section of the paper. Of course, this is an observational study which is only suggestive of causality and the actual mechanisms linking household size to formal medical care. So, our paper is intended to contribute to and elucidate the discussion of the role of informal care-giving in reducing medical costs, but clearly more work is needed, particularly using randomized controlled trials (RCTs), before we can make concrete policy recommendations. Caveats aside, we contend that our paper is suggestive of avenues through which health policy makers can contain the rising cost of medical care in the US.

2. METHODS

2.1 Sample

Our sample for this study was a 5-year panel, 2003-2007, from the Medical Expenditures Panel Survey (MEPS), which is a set of surveys of that contains comprehensive information on the medical consumption and expenditures of American families and individuals. Each year of the panel contains raw data for about 34,000 individuals. In our analysis, we restricted the sample to people older than 30 years. This restricted the sample sizes in a given year to about 10,000 women and 8,000 men. Because some information is missing on some variables for certain individuals, the sample sizes for the regression analysis are smaller.

2.2 Variables

Our measure of medical expenditures, defined as total and out-of-pocket (OOP) expenditures including total emergency department visits in the past year, comprised payments from all sources to hospitals, physicians, and other health care providers, including dentists and pharmacies. We also work with disaggregated expenditures including expenditures on doctors visits, emergency room visits, inpatient services, home health care, and prescriptions. Expenditures on home health care are further separated into "agency" and "non-agency." The latter refers to a paid independent provider while the former refers to a home health provider which could include a part of a hospital or a stand-alone home health agency. Finally, we used information on household size, race, marital status, self-reported health status, body mass index (BMI), age, gender, morbidities (arthritis, diabetes, high blood pressure, myocardial infarction, and stroke), personal income, family income as a percentage of the poverty line, and insurance status. Table 1 reports the descriptive statistics for our sample.

2.3 Analytical strategies

We employ censored linear regressions (or Tobit regressions), Possion regressions, and quantile regressions to estimate the relationship between household size and the demand for medical care while adjusting for confounding factors. Control variables include age; dummies for being married, widowed or divorced; a dummy for being uninsured during the previous year; race dummies individual income; family income as a percentage of the poverty line; dummies for self-rated heath status; body mass index; and dummies for having asthma, diabetes, high blood pressure, and ever having had a myocardial infarction or stroke. We used STATA 11 for all estimations.

We now offer some more detail about our estimation methods. Tobit regressions model the mean of expenditures conditional on a positive value of expenditures as a linear function of the control variables *i.e*.

$$E[med \mid hh, x, med > 0] = hh\eta + x\xi$$

where *med* is medical expenditures, *hh* is household size, and *x* are the control variables. For emergency room visits which is a count variable, we employed Poisson regression in which the conditional mean is given by

$$E[er \mid hh, x] = \exp(hh\phi + x\delta)$$

where *er* denotes emergency room visits. The quantile regression model the α^{th} quantile of medical demand conditional on household size and control variables *i.e.*

$$q_\alpha(med \mid hh, x) = hh\gamma_\alpha + x\beta_\alpha$$

We clustered all standard errors by individual to account for observing the same individual at multiple times in our data. For the Tobit regressions, we simply used the cluster command in STATA. For the quantile regressions, this was not possible in STATA so we used a block bootstrapping procedure with 50 repetitions and in which individual (as opposed to individual-time) observations were re-sampled.

3. RESULTS

Table 2 reports estimations for men using three dependent variables (total expenditures, OOP expenditures, and total emergency department visits) disaggregated into younger than 65 and 65 and older. This table like all others in this paper controls for a comprehensive set of

variables that are listed in the footnote of the table. In the interest of saving space, only the coefficient estimates on household size and age are reported.

The table shows a highly significant negative relationship between household size and all three dependent variables. In column one, where the dependent variable is total medical expenditures, we see that an additional household member is associated with $659.69 fewer dollars spent on medical care ($p<0.01$) for men between ages 30 and 65 per annum. In column two, for the same dependent variable, we see that the coefficient on household size increases in magnitude to $1039.97 ($p<0.01$) for men 65 or older *per annum*. For all three outcomes, we observe a general pattern in which the household size coefficient is larger for men 65 or older than for those younger than 65. This makes sense if home health care is more important for elderly people. Finally, the other coefficients on household size in the remaining columns in which the dependent variables are out-of-pocket expenses and emergency room visits are also negative and significant at the 95% or 99% level.

Table 3 is identical to Table 2 except that we estimate the model for women. Like men, in columns one and two, we observe that larger households are associated with lower total medical expenditure, although the coefficients are attenuated for women. The magnitude of the estimate for women age 30 to 64 is $391.28 ($p<0.01$) and for 65 or older is $728.66 ($p<0.01$). We still observe that the coefficient on household size is larger for older people in the first two columns. However, this pattern does not carry over to the remaining four columns.

At this point, it is important to emphasize that the effects of household size are operating independent of marital status. All estimations in Tables 2 and 3 adjust for dummies for being married, widowed or divorced (being single is the omitted category). In the Tobit estimations with total expenditures as the dependent variable, the (unreported) t-statistics on the dummies for

marital status range between one and three which are substantially lower than the t-statistics on household size which are never lower than five. This observation suggests that that the effects of household size are not simply proxying for the effects of being married.

In Table 4, we explore some alternative specifications. In the first four columns, we estimate the Tobit model using total expenditures as the dependent variable in which we interact a dummy for having SRHS equal to fair or poor (*i.e.* SRHS greater than or equal to four) with the household size. The idea behind this exercise is that larger households may be more protective for sicker people. The evidence for this is mixed. In columns one, two and four, there is no evidence, but in the third column, we do see that there is evidence for younger women. The final four columns of the table are a robustness check in which we include a complete set of age dummies instead of the age trend. These estimates are very close to the estimates in columns one and two of Tables 2 and 3, so restricting age to a simple linear function does not seem to affect our results.

In Table 5, we estimate Tobit regressions in which we disaggregate expenditures by type. We consider expenditures on doctors visits, emergency room visits, inpatient services (both facilities and physician costs), home health care (both agency and non-agency), and prescriptions. We estimate the models separately by gender and age (less than 65 and 65 or older). The most interesting finding in this table concerns home health care. We see large and highly negative effects of household size on expenditures on agency-provided home health care in columns one and three where we consider people under 65. This suggests that family care-giving is substituting for formal home health care obtained from the market. In each of these columns, these are the largest estimates in magnitude. However, once we consider people older

than 65, we do not see statistically significant effects of household size on agency-provided home health care.

This finding suggests that MEDICARE is inducing a crowding-out of family care-giving by agency provided home health care. The reason is that, while both MEDICARE and private insurers reimburse many forms of home health care, private insurance is typically substantially less generous. This suggests that for older adults, MEDICARE may be reimbursing home health aides and this obviates the need to rely on family care-giving. Moreover, most insurers including MEDICARE are far less likely to reimburse home health care obtained on the market but from informal sources. Consistent with our "crowd-out" hypothesis, we still see that there is a negative and highly significant impact of household size on non-agency home health expenditures for adults age 65 and above.

However, this raises a puzzle as it is not clear why people who were obtaining home health care prior to 65 from non-agency sources do not switch to agency sources after age 65 once it is more likely to be reimbursed. One possible explanation for this is that home health care obtained from agency sources and from non-agency sources are not perfectly substitutable. This may be the case if people view agency sources as too impersonal or if people of certain ethnic backgrounds are choosing non-agency home health aides on the basis of common languages or cultural understandings which cannot be provided by home health care agencies.

In Table 6, we estimate Tobit regressions using total expenditures as the dependent variable, but we disaggregated household size into men and women within particular age brackets. The most interesting feature of this table is the coefficients on children between zero and one year of age in the regressions that were run on the sample of younger women in column three. These are positive, reflecting the increased medical demand of postpartum medical care.

Next, all of the coefficients on age brackets 6-18, 19-65, and 65+ for both males and females are negative in all four columns and most are significant. Finally, in columns two and four for older men and women, we see that the coefficient on males between 0 and 1 is highly negative and significant. This is a puzzle as it is probably not the case that infants are taking care of their grandparents. An alternative and more plausible explanation is that having an infant in the same household as an elderly person is a proxy for a multi-generational household in which middle aged adults are taking care of both their children and their parents.

Table 7 reports the results of the quantile regressions. Each cell of this table corresponds to a coefficient from a separate regression. We estimate the regressions using $\alpha = 0.5, 0.6, 0.7, 0.8, 0.9, 0.95, \text{and } 0.99$ for men and women of ages 30 to 64 with total expenditures as the dependent variables. In total, 14 coefficient estimates are reported together with their t-statistics. Bear in mind that these are linear regression models not censored regressions like the results from the Tobit estimations. As such, the estimates will be smaller in magnitude. Because of this, the interpretation of the estimates is now different. With the Tobit regression estimates, the coefficient estimate corresponds to the effect of an additional household member on the mean of household expenditures conditional on having positive expenditures. With the quantile regression estimates, the estimate corresponds to the effect of an additional household member on a particular quantile of expenditures for all people (*i.e.* either with non-zero or zero expenditures).

The results in this table show that the relationship between household size and medical consumption increases in magnitude as the quantile gets larger. For example, consider the first column which reports the results for men. At the 50th percentile, the coefficient estimate is -41.02 and highly significant ($p < .01$), suggesting that an additional household member reduces

the conditional median of total expenditures by $41.02. However, when one looks at the 99th percentile, the coefficient estimate increases in magnitude to -504.21 ($p < .05$), which constitutes a 12-fold increase. The coefficient magnitudes increase monotonically with the quantile size. A similar pattern can be with women in the second column.

To provide the reader with a visual idea of these estimates, we present Figures 1 and 2 which correspond to men and women respectively. Each figure plots the 50 bootstrapped coefficient estimates that were used to compute each standard error in Table 7 for all seven quantiles together with the medians of each set of estimates. Each of the 50 estimates is plotted as a circle and the medians are plotted as crosses. What we see in both figures, consistent with Table 7, is that the medians decline sharply with the quantile. In addition, the dispersion of the bootstrapped estimates increases substantially with the quantile reflecting a loss of precision of the estimates at the higher quantiles. This is consistent with the observed decrease (increase) in the magnitude of the t-statistic (standard error) with the quantile.

In many ways, the quantile regression estimates provide a clearer and perhaps more elegant way of seeing what the interactions between SRHS and household size in Table 4 intended to show, namely, that the effects of household size are larger in magnitude for less healthy people. The reason is that at higher quantiles of medical expenditures there will be a tendency for people to be less healthy. Consequently, the higher estimates of household size may be indicative of household size being more protective for less healthy individuals.

4. CONCLUSSIONS, POLICY DISCUSSION AND LIMITATIONS

We draw several conclusions from our analysis. First, we document a robust correlation in which people residing in a larger household consume fewer medical services *ceterus paribus*.

If household size is a proxy for family care, then this suggests that family care-giving substitutes for medical care obtained on the market. Second, it appears as if people who require a larger amount of medical care benefit more from residing in a larger household. Third, we provide evidence that family care-giving substitutes for home health care obtained from the market for people younger than 65, but there is no evidence for this substitution for people older than 65. This is consistent with an increase in the generosity of coverage for home health care that occurs post 65 once people become eligible for MEDICARE. Thus, it may be the case that, for people older than 65, formal home health care is crowding out family care-giving. Overall, these findings concur with recent literature that family support can have a positive effect on the management of a person's chronic illness. For example, in a recent report issued by the Robert Wood Johnson Foundation's Synthesis Project, *the* key feature to lowering health care costs is keeping patients with complex and chronic disease out of institutions (Bodenheimer and Berry-Millett, 2009).

These findings have multiple policy implications. First, policy makers may want to consider rewarding families who care for a chronically ill member. Supporting family care-givers may result in greater direct and indirect cost savings. In terms of direct cost saving, the results suggest that an additional household member is associated with between $659.69 and $1039.97 fewer expenditures on health care for men and between $391.28 and $728.66 for women. In addition to fostering positive health, family support also provides significant indirect cost savings, such as housing and meals. Often, when a person becomes severely ill, he or she may suffer temporary or permanent loss of income, which may jeopardize their housing. Having family members reside with a patient stabilizes housing and provides him or her with regular meals. Thus, a family is absorbing costs, such as for public housing, that otherwise would have

been borne by the community (Park and Chesla, 2010). Chronically ill persons without family support are more likely to rely on public support, increasing the cost of care. Because this was beyond the scope of our study, we did not investigate indirect-cost savings due to family support but will consider them in future work.

Second, family care-givers should be given the necessary skill sets to care for an ill family member. Although strong evidence shows that family care-giving may be beneficial to a care-receiver, equally strong evidence shows that chronic illness is burdensome and can impair a family care-giver's health. Providing support to an ill family member is stressful for family care-givers, ultimately increasing their rates of morbidity and mortality (Lee and Farran, 2004, U.S. Census Bureau, 2007, Talley and Crews, 2007, Ohaeri, 2003). By providing families with a skill set to manage an illness and to navigate the health care system, the burden of illness on a family can be lowered and valuable family support for the patients can be fostered. By improving family support, negative health outcomes in both patients and their family care-givers may be prevented. This two-pronged approach (providing assistance to patient and family care-giver) may have a greater effect than the traditional health care model that focuses on the individual.

Third, clinicians must be offered creative incentives to include family care-givers in patient education. Including family members may be a key to an effective and sustainable intervention for a chronically ill person. A paradigm shift that fundamentally revises the conceptualization of family in chronic illness management may be necessary. Instead of considering family members to be ancillary to a patient's health behavior modification, they should be considered to be active and essential participants in the disease self-management process. Innovative ways may be needed to better monitor a patient's condition.

Fourth, for those patients without family care-givers, interventions modeled on family care-giving should be developed, for example, support groups of patients with similar conditions or clinicians who can consistently provide patients with family-like emotional stability. In addition, the use of telemedicine may provide a cost-effective means of closely monitoring chronically ill patients in the absence of a family care-giver.

Finally, the crowd-out result suggests that MEDICARE may want to weigh the costs and benefits of family care-giving *vis-a-vis* home health care obtained through agencies. However, this result should be considered with caution. Clearly, from the standpoint of an insurance company or MEDICARE, the former may seem cheaper. However, once one moves to the societal perspective, this may not be the case because caring for family members with chronic conditions bears high costs on the household. In addition, family care-giving may create unwanted consequences, such as increasing morbidity and mortality among family care-givers, and deflating household monetary reserves. Professional health care and family care may also serve the patients (or care receiver) differently. On one hand, professional care may come with greater medical expertise, but on the other hand, it may lack many of the sensitivities that family members may possess. In short, while we can certainly conclude that this crowd-out would be costly for MEDICARE, we recommend further, rigorous investigation, on both the theoretical and empirical levels, before we come to conclusion about the relative costs and benefits of family care-giving *vis-a-vis* formal home health care from society's perspective.

While this is one of the first studies to investigate the relationship between household demographic structure and the consumption of medical care, further research is needed to explain the mechanisms underlying this correlation. Despite the relevance of its findings to many health-related fields, this study offers limited information on why and how larger household size is

beneficial to a person's health. Thus, further studies, including randomized controlled trials, are needed to elucidate these mechanisms to create interventions for individuals without family support and to build a realistic health policy. At the theoretical level, health economists and health care researchers should collaborate to develop a more sophisticated, explanatory model to determine how family factors, such as household size, protect people with chronic illness.

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Table 1: Summary Statistics

	>= 30 and < 65	>= 65
	Utilization Variables	
Total Exp	3439.91	8599.31
	(10671.74)	(19459.21)
Total OOP Exp	641.84	1291.40
	(1559.66)	(2461.32)
Total ER Visits	0.19	0.29
	(0.61)	(0.71)
Exp of Doctor's Visits	816.80	1522.70
	(3355.64)	(3545.68)
Exp on ER Visits - Facilities	108.95	135.49
	(677.57)	(821.50)
Exp on ER Visits - Phys	22.52	31.01
	(128.48)	(134.00)
Exp on Inpatient Services - Fac	817.02	3065.03
	(7304.30)	(12614.84)
Exp on Inpatient Services - Phys	142.54	358.98
	(967.97)	(1319.85)
Exp on Home Health Care - Agency	76.69	625.52
	(1994.36)	(3311.97)
Exp on Home Health Care - Non-Agency	3.95	43.94
	(216.04)	(744.21)
Exp on RX	822.00	1831.87
	(2400.95)	(2850.14)
	Demographics	
White[1]	0.773	0.80
	(0.419)	(0.40)
Black[1]	0.155	0.14
	(0.362)	(0.35)
American Indian[1]	0.008	0.006
	(0.089)	(0.075)
Asian[1]	0.045	0.034
	(0.208)	(0.182)
Native Hawaiian/Pac Islander[1]	0.004	0.003
	(0.064)	(0.055)
Multiple Races[1]	0.014	0.011
	(0.116)	(0.103)
Household Size	3.22	2.00
	(1.66)	(1.16)
Age	45.65	74.44
	(9.56)	(6.44)
Married[1]	0.65	0.50
	(0.48)	(0.50)
Widowed[1]	0.03	0.32
	(0.16)	(0.47)
Divorced[1]	0.15	0.11
	(0.35)	(0.31)
	Socioeconomic Variables	

Uninsured[1]	0.20	0.026
	(0.40)	(0.16)
Individual Income[2]	32261.37	21224.98
	(31844.61)	(22965.74)
Family Income as % of Pov.	3.67	3.40
Line[3]	(1.39)	(1.41)
	Health Variables	
Self-Reported Health Status	2.45	2.83
(SRHS)	(1.12)	(1.17)
Body Mass Index	28.26	27.18
	(6.32)	(5.72)
Diagnosed with Diabetes[1]	0.08	0.21
	(0.27)	(0.41)
Diagnosed with Asthma[1]	0.09	0.10
	(0.29)	(0.29)
Diagnosed with High Blood	0.26	0.65
Pressure[1]	(0.44)	(0.48)
History of Heart Attack[1]	0.02	0.11
	(0.14)	(0.31)
History of Stroke[1]	0.02	0.10
	(0.13)	(0.30)
Diagnosed with Arthritis[1]	0.19	0.53
	(0.39)	(0.50)

[1]Dummy variable. 1 = Yes and 0 = No.

[2]In 2005 dollars.

[3]Family income as a % of the poverty line

Table 2: Household Size and Medical Consumption: Men

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Expenditures		OOP Expenditures		ER Visits	
	>= 30 and < 65	>= 65	>= 30 and < 65	>= 65	>= 30 and < 65	>= 65
Estimation Method	Tobit	Tobit	Tobit	Tobit	Poisson	Poisson
HH Size	-659.69***	-1039.97***	-98.99***	-151.19***	-0.050***	-0.089**
	(-8.77)	(-6.34)	(-10.38)	(-5.67)	(-3.26)	(-2.28)
Age	97.99***	83.90**	17.16***	11.39**	-0.014***	0.012**
	(7.54)	(2.39)	(12.60)	(2.30)	(-5.38)	(2.11)
NT	31197	7154	31197	7154	31197	7154

Notes: All standard errors adjust for clustering by individuals. All specifications include additional controls for race dummies, marital status (dummies for being married, widowed or divorced), srhs (dummies for shrs=1, srhs=2, srhs=3, srhs=4), individual income, family income as a percentage of the poverty line, insurance status, BMI, and morbidity dummies (diabetes, high blood pressure, stroke, heart attack, arthritis, asthma). t-statistics are reported in parentheses.

* significant at the 90% level

* * significant at the 95% level

* ** significant at the 99% level

Table 3: Household Size and Medical Consumption: Women

	(1)	(2)	(3)	(4)	(5)	(6)
	Total Expenditures		OOP Expenditures		ER Visits	
	>= 30 and < 65	>= 65	>= 30 and < 65	>= 65	>= 30 and < 65	>= 65
Estimation Method	Tobit	Tobit	Tobit	Tobit	Poisson	Poisson
HH Size	-391.28***	-728.66***	-104.77***	-97.52***	-0.050***	-0.006
	(-9.91)	(-5.42)	(-12.79)	(-3.97)	(-3.74)	(-0.27)
Age	8.13	47.89**	7.85***	18.86***	-0.022***	0.009**
	(1.33)	(2.02)	(5.66)	(4.26)	(-10.45)	(1.97)
NT	35926	10099	35926	10099	35926	10099

Notes: Per Table 2.

Table 4: Alternative Specifications

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	>= 30 and < 65 - Men	>= 65 - Men	>= 30 and < 65 - Women	>= 65 – Women	>= 30 and < 65 - Men	>= 65 - Men	>= 30 and < 65 - Women	>= 65 - Women
HH Size	-660.83***	-1138.78***	-317.83***	-716.05***	-652.09***	-1045.93***	-374.58***	-722.62***
	(-8.01)	(-6.07)	(-7.73)	(-4.81)	(-8.16)	(-6.39)	(-9.30)	(-5.38)
HH Size* SRHS>=4	6.44	260.62	-328.82***	-34.51	-	-	-	-
	(0.04)	(0.90)	(-2.69)	(-0.14)				
Age Trend	Yes	Yes	Yes	Yes	No	No	No	No
Age Dummies	No	No	No	No	Yes	Yes	Yes	Yes
NT	31197	7154	35926	10099	31197	7154	35926	10099

Notes: Per Table 2. The dependent variable in each column is total medical expenditure. All specifications used Tobit estimation.

Table 5 : The Effects of HH Size by Expenditure Type

	(1)	(2)	(3)	(4)
Dependent Variable	>= 30 and < 65 - Men	>= 65 - Men	>= 30 and < 65 - Women	>= 65 - Women
Exp on Doctor's Visits	-219.15***	-309.70***	-183.52***	-176.86***
	(-8.46)	(-6.25)	(-9.96)	(-3.51)
Exp on ER Visits - Facilities	-25.83	-196.62***	-43.22***	-30.02
	(-1.15)	(-2.62)	(-2.79)	(-1.04)
Exp on ER Visits - Phys	-11.02*	-32.42**	-8.75**	-8.47
	(-1.85)	(-2.36)	(-2.45)	(-1.42)
Exp on Inpatient Services - Fac	-1399.49**	-1732.77***	270.38	-1078.34**
	(-2.42)	(-2.81)	(1.57)	(-2.33)
Exp on Inpatient Services - Phys	-201.05***	-216.82**	41.02	-84.64
	(-3.06)	(-2.63)	(1.06)	(-1.50)
Exp on Home Health Care - Agency	-1940.23***	-261.89	-1396.00**	-356.81
	(-2.87)	(-0.69)	(-1.96)	(-1.49)
Exp on Home Health Care - Non-Agency	-801.83***	-3558.85**	-459.66***	-1004.40***
	(-7.17)	(-2.42)	(-7.85)	(-8.36)
Exp on RX	-181.58***	-176.12***	-161.39***	-133.89***
	(-7.45)	(-5.22)	(-12.60)	(-4.14)

Notes: Per table 2. Each cell reports the coefficient on household size from a separate Tobit regression. Each specification includes a linear age trend.

Table 6: Decomposing HH Size

	(1)	(2)	(3)	(4)
	>= 30 and < 65 - Men	>= 65 - Men	>= 30 and < 65 - Women	>= 65 - Women
Females btn				
0 and 1	-570.35**	-756.19	1819.51***	-294.00
	(-2.09)	(-0.53)	(7.50)	(-0.21)
2 and 5	-381.22*	-2326.92***	35.85	677.15
	(-1.94)	(-1.85)	(0.24)	(0.88)
6 and 18	-595.92***	-437.77	-432.23***	-1381.89***
	(-4.28)	(0.60)	(-5.52)	(-3.21)
19 and 65	-495.89***	-843.11*	-641.31***	-518.25
	(-3.17)	(-1.83)	(-5.66)	(-1.58)
66 +	-1202.00***	-569.02	-1013.17***	-656.16
	(-3.35)	(-1.15)	(-4.50)	(-1.05)
Males btn				
0 and 1	-595.03**	-2827.32*	1834.35***	-3541.31***
	(-2.35)	(-1.86)	(8.48)	(-4.10)
2 and 5	-695.58***	765.48	-163.40	-846.54
	(-3.70)	(0.54)	(-1.11)	(-0.79)
6 and 18	-368.94***	-1030.80**	-465.47***	-73.21
	(-2.62)	(-2.25)	(-6.24)	(-0.15)
19 and 65	-718.53***	-912.30**	-553.12	-1054.88***
	(-3.78)	(-2.24)	(-4.60)	(-3.37)
66 +	-1114.66*	-1093.88**	-675.91***	-664.93

	(-1.81)	(-2.03)	(-2.79)	(-1.18)
NT	31198	7154	35927	10099

Notes: Per Table 2. Each column reports the results of a Tobit regression in which the dependent variable is total medical expenditure. All regressions include age trends.

Table 7: Quantile Regressions

	(1)	(2)
	>= 30 and < 65 – Men	>= 30 and < 65 - Women
50th %	-41.02***	-91.12***
	(-9.43)	(-14.42)
60th %	-52.58***	-110.21***
	(-8.99)	(-12.71)
70th %	-70.26***	-134.95***
	(-9.51)	(-10.37)
80th %	-98.18***	-165.01***
	(-7.96)	(-7.40)
90th %	-189.49***	-182.86***
	(-9.54)	(-4.49)
95th %	-237.08***	-251.98***
	(-5.25)	(-3.21)
99th %	-504.21**	-568.65**
	(-2.29)	(-2.33)

Notes: Each cell reports the coefficient on HH size from a separate quantile regression. All regressions include a linear age trend plus all of the control variables from Table 2. t-statistics are reported in parentheses.

Figure 1: Quantile Results: Men

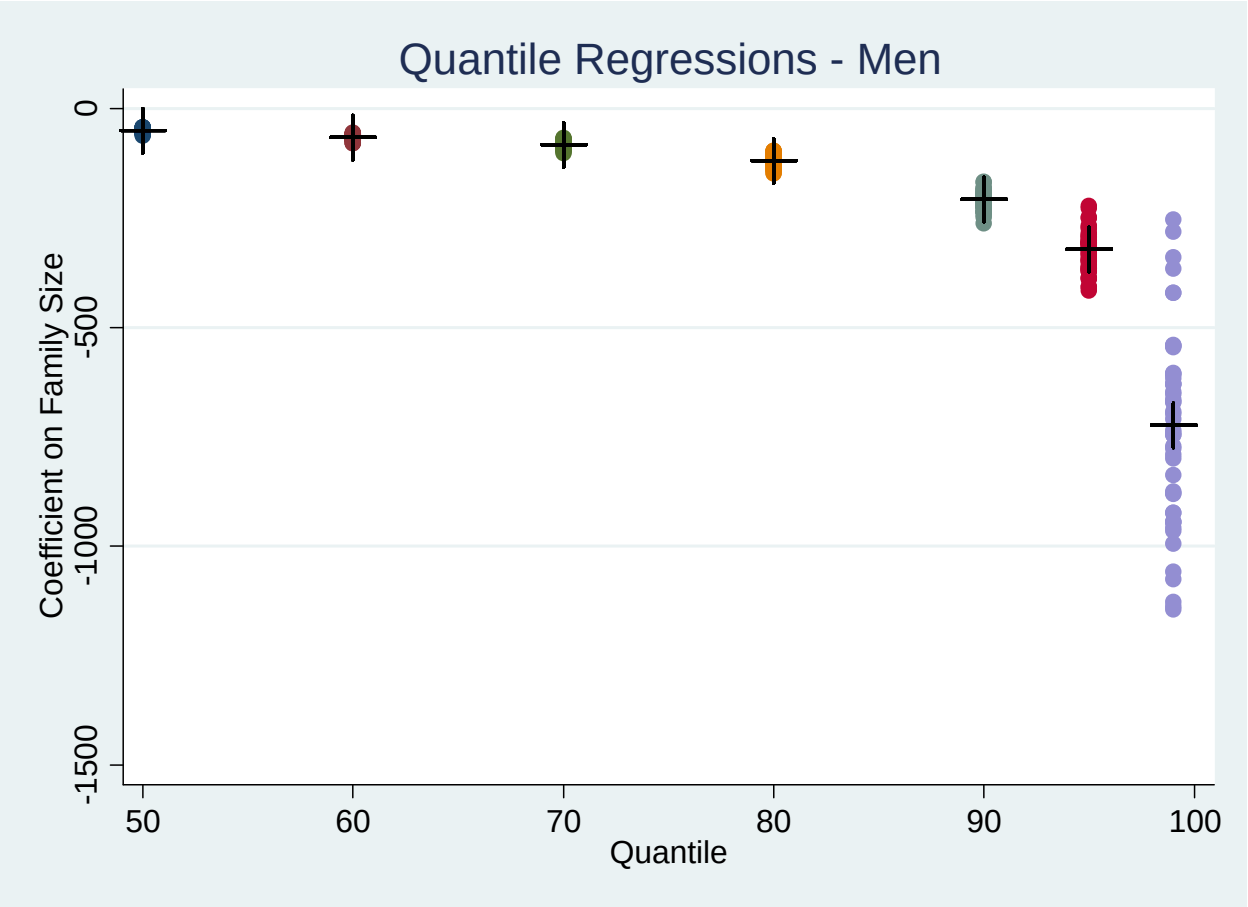

Figure 2: Quantile Results: Women