Introduction

How do families care for a sick and aging parent? The majority of care for the elderly is undertaken by family members and this pattern is particularly true among those elderly with disabilities. About 70 percent of these individuals receive at least some informal care and 40 percent of them rely solely on unpaid help, primarily from wives or daughters (Spillman and Pezzin, 2000). Informal caregiving is facilitated by geographic proximity and co-residence (Börsch-Supan, Kotlikoff and Morris, 1988; Crimmins and Ingegneri, 1990). The extent to which families rely on one another for care, and the relationship between care giving and geographic proximity will be increasingly important issues as aging baby boomers seek care from children who are more likely to be single parents or dual-career couples than were the children of past generations of elderly.

This paper examines the relationship between the health of aging unmarried mothers and geographic proximity to their adult children.[1] In particular, we examine whether the onset of poor health affects proximity of mothers and children. Our hypothesis is that as parents fall into ill health and require care, children may move closer to their parent—or parents to their children—to more easily provide the needed care or alternatively, to supervise the provision of formal (paid) care. The basic questions that we address are the following:

1. Do the children who live closer provide more care to their mother? Does the relationship between proximity and care depend on the health of the mother?
2. Does an aging mother falling into poor health result in family members moving closer to one another?
3. What is the relationship between past proximity and current proximity between mothers and their children when mothers begin to age and become sick?
4. Among those with more than one child, which child is most likely to move closer (or which child is the mother most likely to move closer to) when health declines?

This paper uses data from the Panel Study of Income Dynamics [PSID]. The PSID is unique in its ability to examine the evolution of geographic proximity and intergenerational relationships over the life course. We can trace proximity among children and parents from the time the children leave the family home to the time that parents require care. Because of the genetic structure of the PSID we have self-reported data on children and parents over time. In more recent years, the PSID has included numerous measures of health as well as undertaken several supplements specifically on time transfers and caregiving which we use in this study.

Previous Literature

Characteristics of both parents and children are correlated with geographic proximity. Being the firstborn child is one of the strongest predictors of living farther from parents and having more children is one of the strongest predictors of living near at least one child (Lin and Rogerson, 1995; Konrad et al., 2002). Rainer and Siedler (2009) argue that merely having a sibling is enough to predict living farther from parents and that this effect remains strong even as parents age. In spite of the fact that daughters are more likely to care for elderly parents than

[1] We focus on older unmarried mothers for two reasons. First, they are more reliant on children for caregiving because they either never had or no longer have a spouse to rely on. Second, the ties between mothers and children are easier to trace because children are more likely to remain with their mothers in the event of a separation or divorce. There is the potential to add married couples to the study.

sons, they do not appear to live closer to their parents than do sons. However, this relationship depends on the marital status of the mother; daughters of widowed mothers live closer to their mother than daughters of non-widows and closer than sons of both widows and non-widows (Lin and Rogerson, 1995). These correlations are useful in establishing stylized facts about proximity and highlight important differences within families, particularly related to birth order and presence of siblings, but do not reveal very much about the motivations for living near parents and how these motivations may change in response to caregiving needs. Silverstein (1995) and Rogerson, Burr, and Lin (1997) use longitudinal data to document the relationship between changes in caregiving needs and geographic proximity. Silverstein examines the relationship between changes in health of a parent over a four year period and the temporal distance between aging parents and their nearest child. He finds that declines in health are associated with a higher probability of moving closer to a child and with a shorter distance to the closest child given that a move is made. For the widowed, in particular, declines in health are associated with increases in non-coresident proximity as well as with the transition to co-residence. Rogerson, Burr, and Lin (1997) perform a similar analysis but include some child characteristics in their study and also find that increased functional limitation is one of the most robust relationships with increased proximity. They also find evidence of substantial switching in which child lives closest to parents among those with more than one child. In this paper we extend these analyses to examine the evolution of geographic proximity from the time the children leave the home to the time the older mother might need care allowing us to (1) consider the question of causality in greater depth and (2) examine all children to look at switching and the relationship among siblings more carefully.

Data and Sample

We use the PSID geocoded data along with files matching parents to children to construct proximity histories for families. We use several health and transfer supplements to the PSID, including the 1988 Time and Money Transfer Files and the 1993 Health Care Burden File, to document the relationship between proximity and caregiving. We use detailed data on activities of daily living [ADLs], instrumental activities of daily living [IADLs], and specific health conditions collected after 1992 to explore the relationship between proximity and changes in maternal health.

Our sample consists of all unmarried women who have children and who are over 55 in 1992-2007. We have 1601 individuals in the sample contributing 6848 person years. Table 1 contains summary statistics on their age, year of birth, number of children, number of marriages, and prevalence of each of seven ADLs. Table 2 shows the distribution of the total number of ADLs in the sample.

Table 1. Means of Selected Variables

Variable Name	Mean	Standard Deviation
Age	70.76	10.02
Number of Children	3.98	2.60
Number of Marriages	1.40	3.56
Has Trouble Bathing	0.16	
Has Trouble Dressing	0.12	
Has Trouble Eating	0.0524	
Has Trouble Getting out of Bed/Chair	0.19	
Has Trouble Walking	0.34	
Has Trouble going Outside	0.18	
Has Trouble using the Toilet	0.09	

Table 2. Distribution of ADLs.

Number of ADLs	Fraction of Sample (Person-Years)
Zero	59.65 (4085)
One	13.52 (926)
Two	8.83 (605)
Three-Four	9.61 (658)
Five-Seven	8.39 (574)

Empirical Strategy

This paper begins by documenting the relationship between geographic proximity and caregiving by children for older unmarried mothers. We examine how the relationship between caregiving and proximity depends on the health of the mother. In particular, how much does a having a mother in poor health affect the amount of time that children spend caring for their mother? Is it always the nearest child who provides more care and does the relationship between proximity and caregiving change when a parent becomes ill or disabled?

Even if children who live closer provide more care than those who are distant, causality between proximity and caregiving is difficult to disentangle. Do children live near parents in order to provide care? Or, is proximity as parents age a reflection of earlier residential choices and is caregiving one of the results of proximity? Children who are closer emotionally to their parents may be more likely to choose to live closer and be more likely to provide care making the relationship between care and proximity endogenously determined. This paper disentangles the relationship between caregiving and proximity in two ways. First, it uses data from an exceptionally long time series in the PSID to examine the relationship between residential decisions throughout the life-course and residential decisions later in life when mothers are ill. We are able to follow children as they leave the family home and then to examine their behavior later in life as their mother ages and becomes ill. Being able to trace the proximity between children and their parents throughout the life course allows us to control for past choices when we examine the effect of a parental health shock on proximity to adult children. Second, we use changes in health to see how proximity changes in response to a health shock. We use the relationship between caregiving and geographic proximity to infer how these changes in proximity are likely to affect caregiving. A negative shock to a mother's health creates an exogenous change in her need for care. We examine how children respond to this change in their

mother's need for care.[2] In this paper we examine shocks to health in several forms. We examine the onset of problems with activities of daily living (ADLs). We examine the first onset of ADLs and the onset of the second ADL which is often the trigger for long term care insurance. We also examine the onset of specific diseases or conditions such as cancer, heart attacks, strokes and permanent loss of memory or mental capacity as well as increases in problems with instrumental activities of daily living [IADLs] such as preparing meals, shopping and managing money.

The final section of this paper looks at which child is most likely to become geographically closer to a parent as she ages among those women with multiple children. We examine the effect of gender on changes in proximity. Are daughters more likely to change residential location or are sons and daughters equally likely to do so? Are unmarried children more likely to move than married children and does marriage interact with gender so that unmarried daughters and married sons are more likely to move? We also examine whether, as Rogerson, Burr and Lin (1997) find, there is evidence of switching among siblings in proximity to their mother as she ages. We analyze the role of birth order in determining proximity between parents and children later in life and whether there is evidence of a relationship between birth order and switches in proximity among siblings as a mother becomes ill.

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[2] With other shocks to the need for care we worry about the possible endogeneity of proximity. For example, if a young woman has a child this creates a higher demand for care. However, if women who believe their mother will move closer to them to help care for a child are more likely to have children then the change in the need for care is not exogenous to proximity. We argue that mothers are unlikely to develop a health problem because they want to move closer to children.