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FERTILITY AND HOUSEHOLD STATUS OF OLDER WOMEN IN CANADA, 1971

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Résumé – Il y a un recueil croissant de littérature sur l'augmentation du nombre et de la proportion d'individus âgés primaires (chefs de ménage vivant seul ou avec des personnes non-parentées) aux Etats-Unis et au Canada. Utilisant les données du recensement canadien de 1971, nous examinons, dans cette étude, les déterminants des arrangements de vie non-organisée d'un établissement parmi les femmes âgées qui ne sont plus mariées. Nous examinons en particulier la validité de l'hypothèse de Kobrin (1976) qui nous dit que l'augmentation des femmes âgées qui sont des individus primaires est, en majeure partie, causée par l'indisponibilité de filles adultes avec qui co-habiter. De nombreux enfants déjà nés apparaissent comme le déterminant majeur bien que l'éducation, l'âge, le revenu personnel et l'action réciproque entre la fécondité et le revenu soient aussi statistiquement importants.

Abstract – There is a growing body of literature concerning the rise in the number and proportion of elderly primary individuals (household heads living alone or with unrelated persons) in both the United States and Canada. This paper examines the determinants of non-institutional living arrangements among elderly women who are no longer married, using 1971 Canadian census data. In particular, the validity of Kobrin's (1976) hypothesis that the rise of elderly women who are primary individuals is in part due to the unavailability of adult daughters with whom to co-reside is investigated. Number of children ever born surfaces as the major determinant, although education, age, personal income and the interaction between fertility and income are also statistically significant.

Key Words – **fertility, family structure, household headship, the elderly**

Introduction

In an analysis of the rising number and proportion of primary individuals (household heads living alone or with unrelated persons) in the United States between 1950 and 1974, Kobrin (1976) argues that for women aged 55 and over and previously (but not currently) married, the rise is due in large measure to a decline in the relative number of adult daughters (i.e., women aged 35-44) with whom they might co-reside. Her argument is, in effect, that age-specific headship rates for older females are influenced by their own past fertility.

Kobrin presents no direct evidence for the hypothesis but shows that for aggregate time-series data, the average household size and the total fertility rate (averaged over the preceding twenty years) decline in parallel until around 1950 but diverge sharply thereafter, with fertility rising while average household size continues to fall through 1973 (Kobrin, 1976:135). At the same time, a ratio of women aged 35-44 to widowed and divorced women aged 55 and over (a rough measure of the number of women in the daughter generation with whom older divorced and widowed women might live) is more or less stable until 1930, and then declines steadily in parallel with declining average household size. Kobrin concludes: "There is evidence that in the not too distant American past elderly relatives, particularly female ones, ordinarily lived with the families of their kin, especially of their children. . . . Under former demographic conditions, it was possible for these women to be included in available families, and yet still have only a small proportion of families contain such relatives" (Kobrin, 1976:136). Furthermore,

she speaks of the "sharp rise in non-nuclear families which would have occurred in order to absorb the increases in eligibles caused by the shift in population structure" (p. 136).

This hypothesis is important in its own right insofar as recent sharp upturns in the proportions of primary individuals in various age-sex groups have yet to be adequately explained. The hypothesis also has important implications for the future. To the extent that residential arrangements of the elderly depend on the availability of children in the next generation, these residential arrangements may revert to their former patterns (at least temporarily) as small birth cohorts of the 1930s reach old age and large baby-boom cohorts reach the middle adult years.

Whether the primary headship rate will continue to track the ratio of widowed and divorced older women to their daughter generation will depend on the relative causal importance to be attributed to the availability of young adult kin in determining headship rates among the elderly, compared to the importance of other factors including health, income and availability and cost of housing of various types, as well as attitudes towards residential arrangements. The latter involve such factors as preferences for privacy, autonomy, companionship and help with domestic tasks, as well as social norms regarding appropriate living arrangements.

Kobrin's thesis is also of interest in that it relates to a growing body of demographic analysis which highlights the importance of mortality, fertility and age structure in determining the availability of kin of various types, ages and sexes, and thus in helping constrain and shape household, family and kinship behaviour and structures (Burch, 1980; Chevan and Korson, 1972; Goode, 1963; Ryder, 1976; Sweet, 1972; Widgor, 1978).

The present paper constitutes a micro-level test of Kobrin's hypothesis using the 1971 Canadian public use census sample. An implication of Kobrin's thesis is that the probability of an older widowed or divorced female being a primary individual should be inversely related to the number of children she has borne. This implication is tested by a multiple regression analysis of census variables related to household status. Before beginning the empirical analysis, however, it will be useful to review some relevant research on the determinants of living arrangements among the elderly.

Determinants of Living Arrangements Among the Elderly

Recent analyses of the determinants of living arrangements among the elderly have uncovered several demographic, social and economic factors. Soldo (1977) has introduced an outline of life-cycle factors affecting living arrangements which display temporal order. According to her analysis, the demographic components of age, sex and race precede social factors, which in turn precede economic factors, in the temporal ordering of the independent variables. The temporal priority of the demographic variables (age, sex and race) is derived from the fact that they are ascribed (or fixed) characteristics, while social and economic factors are not. These latter determinants would therefore come after the ascribed ones sequentially and act as intervening variables. The following discussion of these variables leads to hypotheses about the residential decision-making process among previously married older women. It should be noted that we have adopted a framework where variables such as fertility and marital status are viewed as social factors rather than demographic variables, as commonly interpreted by demographers.

Demographic Factors

The ascribed nature of age, sex and race gives these variables temporal priority. With age, there is a decrease in the proportion of elderly persons living in an intact husband-wife

household (Soldo, 1977; Soldo and Lauriat, 1976). For previously married elderly women, age would be expected to be negatively associated with being a primary individual, due to the negative relationship between age and functional capacity (Shanas, 1962). As the previously married elderly women grow older, fewer are able to live on their own due to restricted movement and poor health (Shanas, 1962; Widgor, 1978). More specifically, Shanas (1962) argues that older persons with health limitations are much more likely to live with relatives, especially adult children.

Differential mortality between males and females (Kitagawa and Hauser, 1973) — magnified by the fact that females tend to marry older men — results in females living in non-intact households more than twice as often as men (Kobrin, 1976; Soldo, 1977). Also, women tend to remarry less often than men, thereby making them more likely to remain in non-husband-wife households (Myers and Soldo, 1977). This is consistent with the focus of Kobrin (1976) and Michael *et al.* (1980) on elderly females as the group centrally involved in recent increases in primary individuals.

Mortality differentials between whites and non-whites also affect the probability of living in an intact husband-wife household. However, the effect of race on the probability of being a primary individual among previously married elderly persons depends on certain other relationships. Non-whites are less likely to be living alone, mainly due to financial restrictions, and at the same time, less likely to be institutionalized (Soldo, 1977). While race may affect the number of potential primary individuals through differential mortality and nuptiality, these effects may be negated by higher proportions of non-whites living with children and other relatives. It appears that income and fertility differentials are the key factors rather than race itself. Soldo (1977:271) concludes that race, independent of its demographic and socio-economic correlates, has a negligible effect as a determinant. Carliner (1975) reported a similar finding.

Recent research based on Canadian census data has demonstrated that the rise in older persons living alone over the last two decades has been considerably affected by changes in the age-sex-marital status distribution (Fletcher and Stone, 1980; Harrison, 1980). These changes, however, have only accounted for about one-third of the apparent increase (Harrison, 1980), suggesting the need to address other factors.

Social and Economic Factors

Several authors (Fletcher and Stone, 1980; Harrison, 1980; Myers and Soldo, 1977; Shanas *et al.*, 1968; Soldo, 1977) have documented significant differences in living arrangements among the elderly due to the "social" and "economic" factors: marital status, family size, income and educational attainment. However, because the focus of this research is to investigate the effects of census variables (especially family size) as they relate to the household status of previously married elderly women, the effects of differing marital statuses will not be discussed further.

In assessing the influence of family size on household status, we would expect the number of available adult children to be negatively associated with being a primary individual for previously married elderly women. (The same general argument applies to males, but is less important insofar as a larger proportion of elderly males than females are married. In any case, available census data give children-ever-born only for females, so that hypothesis cannot be tested for males.) Shanas (1962) found that the childless elderly were more likely to live alone than were the elderly with children: 23 per cent of those with children were primary individuals, as compared with 63 per cent of those without children. Using Canadian census data, Harrison (1980:60) has shown that "a decrease in the number of children ever-born is

likely to result in a contraction of the opportunity structure for living arrangements during widowhood and an increased propensity to live alone." However, the relative impact of fertility was not compared with that of other determinants.

Research by Soldo and Myers (1976) indicates that the strongest predictor of household status among previously married elderly persons is income, although fertility surfaces as statistically significant. These findings are in partial agreement with Kobrin (1976), even though Soldo and Myers' (1976) analysis included both sexes. Since elderly women display a greater propensity towards co-residence with adult children because of their closer ties and greater usefulness in the home (Shanas *et al.*, 1968), an analysis using only previously married elderly women would be expected to result in a stronger fertility effect than research based on both sexes. Chevan and Korson (1972) investigated several determinants of living arrangements among widowed women of all ages in the United States. They found that three significant variables emerged among those tested. While they had no direct measures of health or of personal preferences and attitudes towards living arrangements, the three variables that did emerge as important determinants were (in order): age, children-ever-born and income.

Income has been included as an important predictor of living arrangements among previously married elderly women by several authors, such as Chevan and Korson (1972), Michael *et al.* (1980), and Soldo and Myers (1976). Michael *et al.* (1980:46), in a cross-sectional aggregate analysis, found that for elderly widows, income is an important predictor of living alone. They concluded that growth in income increases the propensity to live alone, or as Michael *et al.* (1980:42) state, "as income rises the demand for privacy and autonomy rises." The authors argue that financial security allows a person the option of fulfilling his/her desire for privacy. They note, however, that in contrast to the very stable income coefficient for the household status of young men (20-24), for elderly widows the income coefficient is much more volatile, with a consequent loss of confidence. Research by Chevan and Korson (1972) has found that fertility and age display stronger predictive power than income.

It appears that while there is agreement that income is important, there is uncertainty as to its relative importance compared to other variables, such as children ever born. There is no agreement about the underlying causal structure of the determinants of primary individualship, signifying a need to clarify their interrelationships, including interactions.

The effects of educational attainment on household status of the elderly appear to be twofold. First, educational attainment is positively correlated with income. Education would therefore be positively correlated with being a primary individual, through income. Second, education may influence elderly persons' attitudes towards housing and living arrangements. For instance, it may be that education alters attitudes towards autonomy, which in turn affect the acceptability of living with adult children. However, little is known about these relationships (Abu-Laban, 1980).

Attitudes towards residential arrangements – involving personal tastes and preferences – play an integral role in the decision-making process. While our data-base has no indicators of attitudes towards living arrangements, it is necessary to emphasize their potential importance. Several authors have reported that most elderly persons prefer not to live with their adult children (Lopata, 1973; Shanas, 1980), although there has been some question over the accuracy of these reports (Sussman, 1976:228). It was also noted that as age increases, the effects of poor physical health, shrinking social contacts and dwindling income make these types of living arrangements more acceptable (Abu-Laban, 1980). These findings indicate that taste and preference factors operate in the context of available alternatives, including constraints such as income, health and available kin. Thus, an elderly widow who is financially well-off and who has good health could exercise her tastes and preferences in her decisions of where

and with whom to live, in contrast to one who is sharply limited by economic and health factors.

In addition to the attitudes of elderly women towards living arrangements, one cannot leave out the attitudes of potential co-residing kin (Hill and Hill, 1976). One might expect, for example, that adult children who have the need for a babysitter would more likely invite a widowed or divorced mother to co-reside. However, due to space limitations and personal conflicts, one might also expect co-residential arrangements between adult children and previously married elderly mothers to occur even more frequently once the grandchildren have left, leaving more room and personal space for grandmother. Again, the tastes and preferences of kin must be understood in the context of available alternatives and limitations on their choice.

Urban-rural residence was also included in our analysis, as a correlate of household status. Living in a rural or urban setting would influence the availability of certain types of accomodations, such as single apartments, which are conducive to living alone. Rural areas would be expected to have fewer such dwellings than urban ones. Also, rural communities would be expected to have stronger kinship ties, and thus families may be more likely to provide co-residence to older relatives from a broken husband-wife relationship. Since urban-rural residence is not an ascribed characteristic, it will be grouped with the other social variables in the model.

Methodology

Data

The data are from the 1971 Canadian census 1/1000 sample tape. Our sample consists of all previously married females over the age of 55 — 694 cases in all. Older males are excluded due to the absence of fertility data for this group. Previously married women include widowed, divorced and separated marital-status categories. Our sample includes only persons from private households, excluding collective households representing institutional living arrangements.

All elderly women who were household heads living alone or with unrelated persons fit the definition of primary individual. By selecting elderly previously married females who were household heads with no family members present, we operationalized the term "primary individual." It should be noted that the vast majority of primary individuals live alone (Harrison, 1980). This dichotomous dependent variable was divided almost equally, with 52 per cent (359) non-primary individuals and 48 per cent (335) primary individuals. Primary individuals were coded as one, while all others were given a code of zero.

Of the several independent variables suggested by the literature as significant predictors of living arrangements of the population under study, only five were available in the 1971 Canadian census sample tape. These include age, number of children ever born (fertility), educational attainment, personal income and urban/rural residence. These variables were placed into sequential groups of demographic (age), social (fertility, education and rural/urban residence) and economic (income) categories, respectively, as suggested by Soldo (1977).

Regression Analysis

A hierarchical approach using regression techniques was used to analyze the data. The forced entry of theoretically grouped variables, net of causally prior variables, allowed an assessment of demographic, social and economic effects on the probability of living alone. The in-

crement in R^2 as each successive variable or group of variables is entered into the regression equation can be understood as the portion of variation attributable to the particular variable(s) added on that step (Nie *et al.*, 1975). The change in R^2 at each step can be statistically tested by calculating F scores for groups of variables. Interaction was tested for in an initial regression, where the dependent variable was regressed on all of the first-order multiplicative terms after the main effects were entered. This analysis produced only one statistically significant interaction term at the $p = .05$ level, which was then included in the final step of the hierarchical regression.

A question arises about the validity of using a dummy dependent variable in multiple regression analysis. According to Gillespie (1977), Goodman (1976) and Knoke (1975), as long as the dichotomous dependent variable for the whole sample is between 25 per cent and 75 per cent, the violation of assumptions by dummy dependent-variable regression is likely to be inconsequential and, in addition, this method yields results similar to the log-linear technique. Our dummy dependent variable was well within this range.

Results

Age was entered as the lone independent variable in the initial step of the hierarchical regression. This produced a statistically significant beta coefficient (-.128) at the $p = .05$ level. The variance explained by age was also statistically significant (see Table 1). In the second step, children ever born, education and urban/rural residence, in addition to age, were regressed on the dependent variable. This caused the beta coefficient for age to decrease slightly from -.128 to -.091, but remain statistically significant. The fertility indicator proved to be the strongest predictor of household status, exhibiting a beta coefficient of -.196, and was followed by education, with a beta coefficient of .102. Both of these variables were statistically significant. Unlike the other social indicators, urban/rural residence displayed a beta coefficient (.022) that was not statistically significant.The inclusion of these three variables increased the explained variance from .016 to .072 — calculated to be statistically significant. It is interesting to note that the variables entered in this step resulted in the largest change in explained variance. The inclusion of income in the third step of the hierarchical regression produced very little alteration in the beta coefficients of the previously mentioned variables. After controlling for the other variables in the equation, total income from all sources showed a positive relationship with household status (with a beta coefficient of .083, $p = .05$). As seen in Table 1, the beta coefficient of the income indicator was fourth in rank behind fertility, age and education, respectively. The change in R^2 was also statistically significant.

The only interaction term found to be statistically significant was the multiplicative term: fertility × income. When this interaction term was included in a final step of the hierarchical regression analysis to assess its relative predictive power, the R^2 increased from .078 to .100. This change in R^2 was computed as being statistically significant at the $p = .05$ level. One of the most striking results is that the interaction between income and fertility is considerably more influential than income alone, in the sense of added explained variance.

To further analyze the interaction between children-ever-born and income from all sources, the final equation from the hierarchical regression — including the interaction term — was evaluated, using combinations of selected high and low levels of fertility and income. The mean values of the remaining main effects were plugged into the equation using unstandardized coefficients. This yielded four probabilities of living alone based on combinations of low/high levels of fertility and income (see Figures 1 and 2) and can be interpreted as the probability of living alone given, for example, high fertility, high income and mean scores for the

TABLE 1. HIERARCHICAL REGRESSION OF PRIMARY/NON-PRIMARY LIVING ON THE INDEPENDENT VARIABLES AND THE SIGNIFICANT INTERACTION

VARIABLE	B	β
Age	-.007	-.128*
Intercept	-.949	
R^2	.016*	
Age	-.005	-.091*
Children Ever Born	-.030	-.196**
Education	-.030	.102*
Urban/Rural	.013	.022
Intercept	.821	
R^2	.072**	
Age	-.005	-.091*
Children Ever Born	-.030	-.193**
Education	.025	.085*
Urban/Rural Residence	.018	.030
Income	.000009	.083*
Intercept	.803	
R^2	.078*	
Age	-.004	-.086*
Children Ever Born	-.012	-.077
Education	.021	.072
Urban/Rural	.019	.032
Income	.00005	.429*
Interaction	-.000008	-.381*
Intercept	.706	
R^2	.100*	

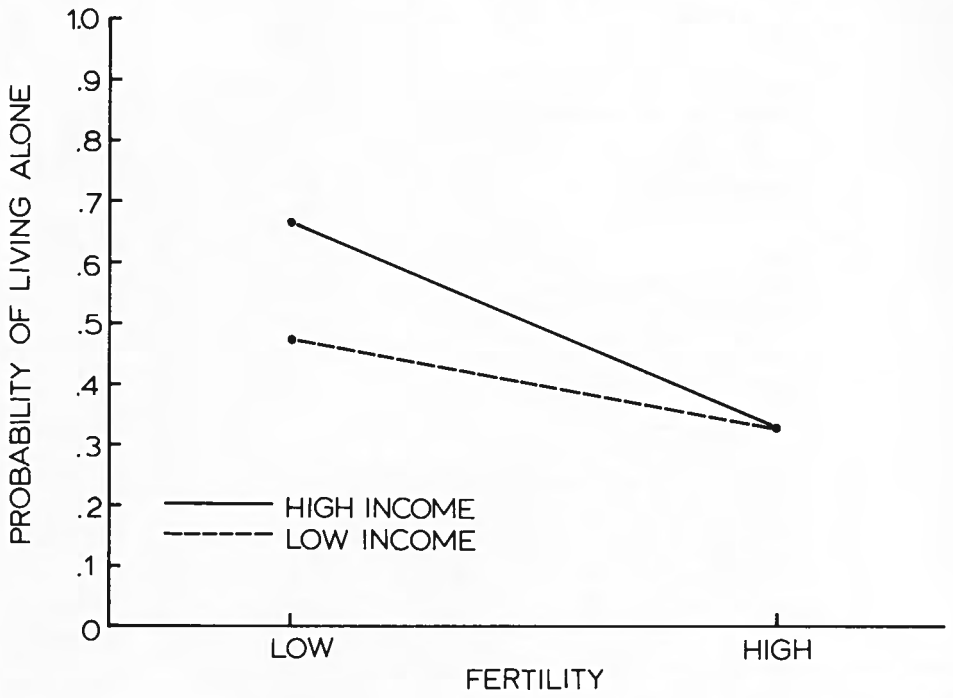
B = unstandardized coefficient
β = standardized coefficient
R^2 = the proportion of variance explained
* = $p < .05$
** = $p < .001$
Note that the B's and β's for C.E.B. and Income are not interpretable in the usual way with the inclusion of the interaction term in the final step.

other variables in the linear equation (Cleary and Kessler, 1982). The highest probability of living alone (65 per cent) was found when low fertility was combined with high income. A probability of 47 per cent resulted from low fertility and low income. Finally, high fertility produced a 35 per cent probability of living alone, whether income was high or low.

Discussion

From the hierarchical regression it is apparent that what we have termed "social factors" had the largest effect on the household status of older women, although all steps produced statistically significant increases in *R squares.* Of the social factors, the number of children ever born was was the best predictor and remained so even when income was included. This moderate negative relationship supports Kobrin's hypothesis that the number of children ever

FIGURE 1. THE INTERACTION BETWEEN LIVING ALONE AND INCOME CONTROLLING FOR FERTILITY, NET OF ALL OTHER INDEPENDENT VARIABLES

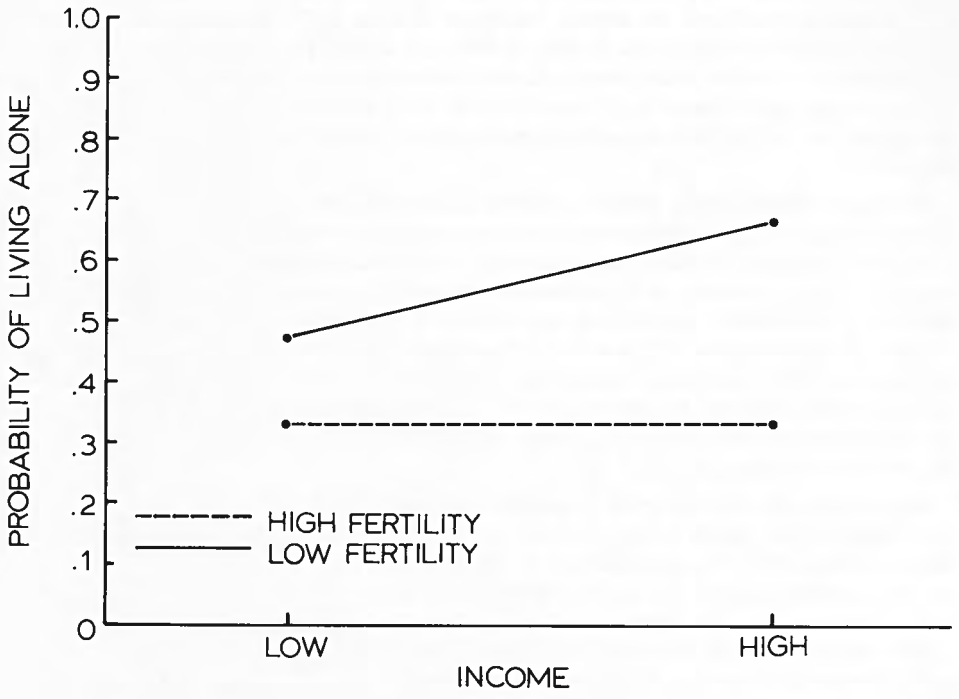


born to a previously married elderly woman influences the probability of her being a primary individual. Therefore, aggregate changes in the relative number of available adult children with whom the older women might co-reside could affect the number of primary individuals. This could be viewed in terms of a supply-demand model, with the number of children available for co-residence as a supply factor, and income, health and personal preferences of the older women as demand factors.

Education was also found to be a key social attribute, with more educated older women tending towards separate living arrangements. It appears that education's influence is through attitudes. When income — along with the other independent variables — is controlled, the effect of education remains significant at the $p = .05$ level, with very little alteration in the strength of the relationship. Perhaps this indicates that a more liberal or less traditional attitude towards living arrangements is associated with educational attainment, with elderly women of high educational attainment preferring to live by themselves rather than with kin. Our analysis also shows that the influence of age should be considered in an analysis of residential decision-making.

The age effect suggests that health factors play a significant role in the decision of where to

FIGURE 2. THE INTERACTION BETWEEN LIVING ALONE AND FERTILITY CONTROLLING FOR INCOME, NET OF ALL OTHER INDEPENDENT VARIABLES



live and with whom. Even though we have concentrated on private households (eliminating collective or institutional living arrangements where many of the dependent elderly reside), age still arises as an important indicator of primary individualship. Due to the constraining effects of health, older persons are less likely to live alone. If we had included institutional households, we would have expected age to be an even stronger correlate of separate living. In addition to its relationship with health status, advanced age may also lead to a decrease in social contacts (Abu-Laban, 1980). This may also pose limitations on one's ability and preference for separate living.

We also found that higher levels of income increase the tendency for previously married elderly women to live alone. Our results are similar to those of Chevan and Korson (1972) in their analysis of widows of all ages. Using United States census data, they found that income was a significant variable affecting living arrangements of widows, but it was overshadowed by both age and family size. Their study is comparable to ours, since the majority of the widowed population are 55 and over (Harrison, 1980). This suggests only partial support for the economic argument of Michael *et al.*, since it was discovered that income contributes only moderately to the probability of living alone.

The interaction between fertility and income contributed significantly to the probability that an older woman would live alone. This indicates the importance of analyzing the effects of fertility and income in conjunction with one another as well as separately. The main effect analysis found that higher income increases the propensity to live alone and that higher fertility increases the propensity to co-reside with kin. As expected, the combination of low fertility and high income produced the greatest likelihood of living alone. However, when fertility is high, the probability of living alone remains low regardless of the level of income. It appears that the tendency to live alone associated with higher income — which Michael *et al.* (1980) found for aggregate data — is no longer present when fertility is high. On the other hand, when there are few children available for co-residence, income does affect the probability of living alone.

The interrelations among primacy, income and fertility (as a proxy for number of adult children) suggest a line of explanation which emphasizes the need for adult children to concur in an elderly female's decision to co-reside with them. The number of children a woman has may be seen as an indicator of the number of chances she has to work out mutually acceptable patterns of co-residence. Her income may be seen as an indicator of her desirability as a co-resident, in particular, her ability to be self-sufficient or even to provide economic assistance to her adult child's household. The number of children a woman has more strongly affects her residence status when her income is high. And, income has the least effect on primacy when a woman has many adult children — given several chances at co-residence with kin, income becomes less relevant.

Our analysis has not included a number of potentially key determinants of living arrangements. While health status can easily be integrated into the Soldo model (1977; Soldo and Brotman, 1981), it is more difficult to include personal preferences and underlying normative structures, which are potentially important factors (e.g. Abu-Laban, 1980; Burch, 1981; Kobrin, 1976). The discussion of demographic, social and economic characteristics in recent research has made sense of these effects by viewing them as constraints on resources in residential decision-making. This decision-making approach appears able to incorporate the more sociological effects of preferences and norms, which underlie and interact with the determinants found in Soldo's (1977) life-cycle model. Also, we found it very useful in interpreting the interaction between fertility and income.

Conclusions and Implications

In our analysis of the determinants of living arrangements among divorced, separated and widowed elderly women, we have found supporting evidence for the Kobrin hypothesis that as a decline occurs in the relative number of adult offspring available for shared living arrangements, there will be an increase in the number and proportion of female primary individuals. According to Kobrin's analysis, it is these previously married elderly women who constitute the largest number of primary individuals (most of whom live alone), thereby affecting average household size of the country. However, an even greater implication of Kobrin's work and our substantiating findings involves an understanding of family modernization (Goode, 1963) and the decrease in extended family networks. If family modernization — with its intrinsic pressure towards smaller family sizes — lowers the availability of children with whom to co-reside, then these demographic conditions can be viewed as contributing factors in the decrease in extended family households.

It is apparent that the decision of where and with whom to live is a multifarious one and is contingent on other factors besides family size. As elderly women grow older, their health tends to limit their ability to live alone. These health conditions may over-ride any preference

towards living alone, resulting in a decision to either move in with relatives, friends or kin, or to be institutionalized. This decision may, in fact, be made by relatives, who make up the primary support system for the elderly person.

The personal income of elderly women also limits their choice. While the elderly person may prefer a single living arrangement, their income may be inadequate for this choice. Those who are well-off, either through their personal income or through financial support from kin, have a greater array of possibilities. Those who are financially well-off can choose to live comfortably on their own, while also appearing more acceptable for cohabitation from an economic standpoint. Future research should consider adult children's choices regarding co-residence and the factors relevant to that decision. Interestingly, the tendency to live alone with higher income occurs only when fertility is relatively low, supporting the finding that the fertility of the individual is a salient determinant of living arrangements. Furthermore, income and fertility effects are best understood together, rather than separately. Whether it is availability of adult children and/or closer kinship ties among larger families that results in the "extended" living arrangement is a matter for further investigation, based on more qualitative research.

Our analysis indicates that there is another group of factors to be considered for a more complete understanding of the causal structure determining living arrangements among this population. Availability of kin and economic constraints should be supplemented with work on personal tastes and preferences and the normative structures in which they are often embedded. In discussing these more sociological components, we have indicated the need to consider both the elderly women and their adult children. Analyzing the household status and subcultural norms of various ethnic groups may facilitate an assessment of the utility of normative or cultural change hypotheses. Furthermore, focused research on specific normative effects, such as norms of autonomy, independence and responsibility, will eventually be needed, as well as research on how these are altered over time — perhaps due to the educational system, role changes in the family and in the occupational structure, or other cultural shifts. Integrating these into the decision-making schema will help to develop and further elaborate this type of explanatory model.

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