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DETERMINANTS OF THE VARIATIONS IN THE PRESENCE OF

THE SUBFAMILY IN U.S. METROPOLITAN AREAS: 1980

by

JOHN OSSAIEDEME UMUDE

A Dissertation submitted in partial fulfillment of the
requirements for the degree of

DOCTOR OF PHILOSOPHY
in
URBAN STUDIES

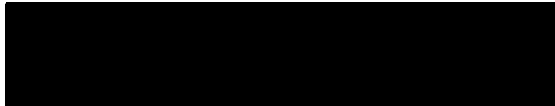Portland State University

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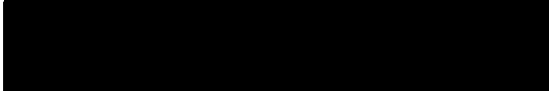of John Ossaiedeme Umude presented December 9, 1985.

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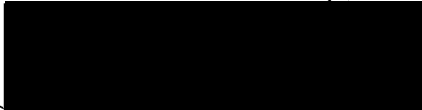
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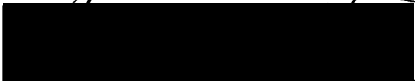
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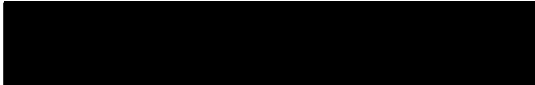
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AN ABSTRACT OF THE DISSERTATION OF John Ossaiedeme Umude for the Doctor of Philosophy in Urban Studies presented December 9, 1985.

Title: Determinants of the Variations in the Presence of the Subfamily in U.S. Metropolitan Areas: 1980

APPROVED BY MEMBERS OF THE DISSERTATION COMMITTEE:

William A. Rabiega, Chairperson

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Over the years there has been interest in the living arrange-ments of Americans and the factors which influence those arrangements. Researchers have considered the growth of families headed by women, households consisting of single individuals, and those composed of

unrelated individuals. One area, however, on which little attention has been focused is the presence of extended family living, characterized by the subfamily.

The aim of this dissertation is to establish if subfamilies are a random or systematic phenomenon, and to identify the factors responsible for the variations in its occurrences within and across U.S. metropolitan areas. A causal model which accounts for the systematic variations in the presence of the subfamily was developed and tested on the metropolitan and census tract levels. The technique of path analysis was employed and analysis was performed on two geographical levels (SMSA and census tract) using the 1980 census data to ascertain if conclusions were consistent at different levels of data aggregation. The variables employed in the analysis were grouped in four major categories—demographic, sociocultural, economic and housing characteristics.

A major finding of this study is that the subfamily is systematically predicted by demographic, sociocultural and economic characteristics and not by the housing variables. It suggests that subfamily will exist regardless of the housing conditions.

There were some differences and similarities in the results of the two geographical levels. Starting with the differences, it was found, for instance, that the unemployment rate was significantly associated with the subfamily when using Los Angeles census tract data but not with the SMSA level data. This result can be attributed to data sensitivity to aggregation. The SMSA, based on a broader, aggregated referent set, has limited variability, which makes some relationships less definable. On the other hand Los Angeles (a lower

aggregation level) has more variability and relationships at a given strength tend to be more statistically significant.

Despite the differences, there are a great many similarities between the results of the two geographical levels. Regression coefficients for causal variables are relatively equal. The means for the two geographical levels are about the same. These results indicate that variations of subfamilies is consistent between the two aggregate levels.

Overall, the model held fairly well as predicted except for the housing variables. The research findings suggest that subfamily may be both a voluntary and involuntary phenomenon. Given this, a number of questions were raised that must be addressed in determining whether subfamily living is a symptom of a major social problem or if it is an acceptable alternative family structure for some families in contemporary society. It might even represent both possibilities simultaneously. These questions cannot be addressed with the type of data used in this study. Future research should be directed toward addressing them. If subfamily living is determined to be a problem, future research should help planners and policy makers formulate and implement programs that will alleviate the negative consequences of subfamily life.

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CHAPTER I

INTRODUCTION

In recent years, researchers have paid increasing attention to the living arrangements of Americans and to the factors which influence those arrangements. Such considerations as the growth of families in which females are the head of the household, the increase in households composed of unrelated individuals, and the economic theories of household formation behavior have been analyzed. A number of studies have also focused on the decline in average household size and on households consisting of single individuals (see, for example, Troll, 1971; Carliner, 1975; Kobrin, 1976; and Kuznets, 1978).

One area, however, which has received relatively little formal attention is that of the extended family form of living arrangement, among which is the subfamily unit. The U.S. Bureau of Census describes the subfamily households as those which consist of:

> a married couple with or without children, or
> one parent with one or more single children
> under 18 years old, living in a household and
> related to, but not including, the head of the
> household or his wife. The most common example
> of a subfamily is a young married couple sharing
> the home of the husband's or wife's parents
> (1980:15).

The subfamily, according to the definition on the preceeding page, shares a home with a primary family.

"Subfamily" is used here as a particular operationalization of the concept of the extended family. The extended family is generally defined as a living arrangement consisting of husband, wife, dependent and adult unmarried offspring, and married sons with their spouses and offspring. While "extended family" may also include the interaction patterns among related individuals, it will be confined here to the actual living arrangement of the family members. The subfamily was chosen because it is the only unique, self-contained measure of extended family life represented by the U.S. Department of the Census. This study focuses on the subfamily because it is a reasonable index and a useful measure of the extended family.

EXTENDED FAMILY LIVING

The extended family form of living arrangement in contemporary America is an area in which little research has been done. In view of some accepted social theories (e.g., those of the functionalists) the household structure in present day U.S. society should be nuclear. The functionalist theorists argue that industrialization was responsible for the nuclearization of the family. While it is clear that the nuclear family is predominant in modern U.S. society, these theorists gave no explanation for the existence of extended family living in industrial and post industrial

urban society. Yet, the extended family form of living arrangement exists for a small proportion (2.5%) of U.S. households.

The U.S. Bureau of the Census recognizes this, and therefore, they categorized and defined it as a subfamily in the 1980 census. The phenomenon is general enough that it was reported in the public press. Newsweek (April 7, 1980) noted that many young couples across the U.S. have returned to their parents' homes. Economic difficulties, inflation, the housing shortage, and rising divorce rates were said to be among the factors that have forced young adults back to their parents' homes in extended family living situations.

Some social theories and studies also indicate that contemporary U.S. cities may have other family structures besides the nuclear type that may be more appropriate to their sociocultural and economic circumstances. Berkner's (1972) life cycle theory, for example, is one which provides that household structure is not static, that families go through both extended and nuclear phases.

RESEARCH PROBLEM

Given that the extended family living arrangement exists and is represented by subfamilies, the question arises:

- Does this occur randomly or systematically in U.S. cities?

If it occurs randomly, this means an inherent but relatively small error in the structural functionalist viewpoint and therefore, it is not theoretically significant. However, if it occurs systematically, then it is associated with certain variables and is theoretically significant.

- Assuming that it is systematic, can the differences in their presence across geographical levels be accounted for by a reasonable set of predictors in a causal model?

- And if so, can this be done at national and/or local levels of data aggregation?

This study seeks to answer the above questions. Currently, no study of this type has been undertaken. The subfamily may represent only a small percentage of all households, and it appears to be a limited arrangement; however, it affects hundreds of thousands of families nationally and tens of thousands in a given SMSA. This phenomenon may also affect Americans in ways that may not be obvious, but which none-theless challenge very fundamental attitudes Americans have about family life. For example, the subfamily can lead to situations wherein grandparents are forced to play the role of principle parents, and a generation gap can be exacerbated by this.

The aim of this dissertation is to establish if sub-families are a random or systematic phenomenon, and to identify the factors responsible for the variations in its occurrences within and across U.S. metropolitan areas. It

employs 1980 data for the 318 U.S. SMSAs (Standard Metropolitan Statistical Areas).

USEFULNESS OF THE STUDY

The results from this study should be useful to housing planners and policy makers in addressing the housing, zoning, and related problems associated with the subfamily. Current housing is designed for nuclear families, which poses problems in that subfamily life increases density, which, in turn, may affect zoning in many areas. If it is determined that subfamily living is linked to poverty or ethnicity, the information gained from this research may also be useful in the development of public housing programs optimized to subfamily life. This study overall will provide a clearer understanding of the factors responsible for the extended family form of living arrangement in contemporary urban America.

CHAPTER II

REVIEW OF LITERATURE

INTRODUCTION

There is currently no significant literature on the
subfamily. This living situation was only distinguished as
a household type by the U.S. Bureau of the Census in 1980.
However there is literature on the extended family of which
the subfamily is a subgrouping. The theories and studies
that will be reviewed are those available and are most
appropriate in establishing the general background for this
dissertation. These research tracts are currently more or
less independent. This section strives to integrate them
into a concise, logically cohesive conceptual model that
will be developed and analyzed in the subsequent chapters.

The Functionalist Perspective

Functionalist theory holds that industrialization,
i.e., the factory system of production, its concommitant
technology and its associated forms of urbanism, was respon-
sible for the nuclearization of the family. This argument
is strongest among the functional theorists (Burgess and
Locke, 1945; Parsons and Bales, 1965; and Ogburn, 1968).

They argue that prior to modern times, the family
performed seven functions: (1) it was the basic economic

unit of society; (2) it was the center of prestige and con-
ferred status to its members; (3) it was the center for
education; (4) it protected its members; (5) it exercised
religious functions; (6) it provided recreational outlets;
and (7) it provided affection for its members (Ogburn,
1968).

The industrial revolution brought with it new techno-
logies which required a structural differentiation of the
family to meet the needs of the new industrial system.
Thus, the family became more differentiated and more specia-
lized with the emergence of the factory system of produc-
tion. The head of the household frequently left the home
during the day to work in offices, stores, factories, and
the like, thereby destroying the home-based economy. His
absence meant that his authority could no longer be exer-
cised to the same degree over family members, nor was he any
longer the family's primary social and economic trainer.

The factory system also brought with it increased
child labor, which removed the child from the realm of total
family control. The educational and recreational training
of the child also began to take place to a large extent
outside the home. Teachers assumed the role of part-time or
substitute parent (Ogburn, 1968). Parks, clubs, cinemas,
and ultimately television provided much of the recreational
outlet for children. Similarly, the economic performance of
adults and children was segregated (Smelser, 1959).

The result of these changes was that the family no longer served as the axis around which everything else revolved. Functionalists argue that this transformation of the family functions brought about the transformation of family structure as well. They concluded therefore that the extended family disintegrated because it was no longer functional.

The functionalists have constructed a strong internal logic to explain the predominance of the nuclear family. By that logic, urban families are nuclear families. There are, however, some underlying assumptions in their theory which, if violated, may lead to other family structures. They assume that a society is homogeneous, with all its members socialized to positively value nuclear family structure. However, this is not the case in the contemporary United States. It has been shown that ethnic minorities, especially blacks and Hispanics have a tradition of extended family living. Given that a great proportion of residents in many cities are members of those minorities, extended families are also likely to be present.

Another assumption is that the market will provide adequate supply of housing for many nuclear families. Again, this is not always so. Economic crises, localized housing shortages, and increased housing costs are cited as major factors which cause families to extend. The functionalists also assumed that family structure is static--i.e., once nuclear, always nuclear. This again is not true, for

today's United States. Social forces, e.g., marriage disso-
lutions, can lead to single-parent household, extended fami-
ly structure, or other non-nuclear living arrangements, for
people in their lifetimes. Finally, the functionalists
assumed that the nuclear family will occur at the same rate
and in the same process everywhere in a supposedly homo-
geneous society. Thus, their theory may not work in a
heterogeneous society with people dispersed over a large
geographical area, even if it is industrializing. The
forces that operate in one area may differ from those of
others, or stage of development reached may differ. Thus,
there are social and economic forces which can cause the
functionalist theory to work inefficiently. Studies which
take into account these forces will be reviewed below. Some
of them offer alternative premises for the emergence of
nuclear families, some detail historical processes, and
others are directed at the relationship of household struc-
tures and variables of the social and economic system.

ALTERNATIVE PREMISES

One reason extended families might be present in
industrial cities is because the theoretical premises under-
lying the functionalist model are wrong. The major alterna-
tive to it is the life cycle theory.

The Life Cycle Theory

Berkner employed the concept of life cycle in his study of Austrian peasants (1972). He noted that in a rural society an eldest son, his wife and his children might for a time live in the parents' household. During this period, usually in the children's early marriage years, the family will be extended, but the structure reverts to nuclear later on when the parents die or the young couple moves out. The implication of this study as was earlier noted is that families go through both extended and nuclear phases.

The lifecycle concept might operate in contemporary U.S. society, with even more than two phases described by Berkner. In today's society there are periods of nuclear-family households, and periods of multiple-person households. The theory, unlike the functionalist theory, offers systematic explanation of the occurrence of extended family living by noting that at a certain point in life the family would be extended. On the average, some proportion of families will be extended at any time in a large city. It recognizes social forces, such as divorce, which affects family formation.

HISTORIC AND CONTEMPORARY STUDIES OF FAMILY STRUCTURES

There are two sets of theoretical conditions under which the presence of subfamilies might systematically exist in urban places. One would see them as an inevitable and continuing outcome of temporary dislocation in advanced

urban systems. The other would see them as one of the usual
and inevitable structures a family takes over its life
cycle. Historical and contemporary studies of family
structure in various developmental and economic contexts
detail the situations in which other than nuclear families
are present in cities. Some of these studies will now be
reviewed.

The Medjuck Study

One empirical study was undertaken by Medjuck (1979).
Her work examined the validity of various hypotheses regard-
ing the effect of industrialization on household structure.
Focusing on the period between 1851 and 1871, she examined
the transformations which occurred in the structure of fami-
lies and households in Moncton, New Brunswick, as a result
of rapid economic changes. Using Census statistics, she
found that household size was large and unstable in Moncton
near the beginning of the industrial revolution. The mean
household size was 8.49 in 1851; it shrank to 5.95 in 1861,
and grew slightly again to a mean of 6.07 in 1871.

These results are in sharp contrast to the Laslett
(1965) findings that household size was relatively small and
stable (about 4.75 average member/household) in England
during the mid-nineteenth century. The Medjuck research
points out that mean household size was so large in 1851
Moncton because almost 40% of the population lived in
multiple-family households. Heads of many of these multiple

family households were young immigrants where quarters were shared because they had little money. The aged also lived in multiple-family households. Her study concludes that essentially only relatively affluent, native-born households were likely to be in single-family units.

The Medjuck study found Laslett's conclusions, that children moved out of their parents' homes to start their own families, to be true; however, she indicates that this led to the erroneous conclusion that nuclear family structures consistently prevailed. What the Laslett study (and others like it) failed to envision was a situation such as Moncton, in which young men and families from outside the colony immigrated to share in the economic boom precipitated by the industrial revolution and consequently shared a household with other families, unrelated to them by birth or marriage.

In 1851, for example, 64% of all households were simple, nuclear configurations, while 24% were multiple; in 1861, however, when industry declined, 82% were once again nuclear. Thus, rapid economic growth appears to have had a dramatic effect on household structure, and consequently on household size.

> In the nineteenth-century Moncton, it [shared housing] served as an institutional interface between economic conditions and individual well being, providing many new immigrants, as well as the community at large, a mechanism for adapting to the rapidly changing economic conditions of the nineteenth century (Medjuck, 1979: 285).

It would seem then, that household structure is, among other things, extremely malleable, and in periods of economic boom and consequent housing shortages will extend.

Medjuck's study of Moncton, produced no evidence of a strengthening of family ties with the growth of industry. Total strangers, not kin, came to dwell with native-born families. This represents the "doubling up" phenomenon. She notes, however, that as the surge of impact of the industrial revolution and concomitant migration declined, relatives began to replace boarders in multiple-family households. These findings are basically similar to those of empirically based research projects focusing on the United States during the eighteenth and nineteenth centuries (e.g., Demos, 1970; Pryor, 1972; and Modell & Hareven, 1973). Here, then, an extended family situation is associated with later stages of industrialization.

The Agresti Study

Another study of the same general type as Medjuck's was conducted by Agresti in 1979. This work examined the impact of changing economic conditions on household composition in Walton County, Florida, during the period between 1870 and 1885. Using data from census manuscripts, she compared kinship structure and lodger presence within households. Comparisons were made over time between rural and village residents and by stage of primary family life cycle.

Her results indicated a relatively important percentage of extended family households. The percentages were higher for families in later stages of the life cycle. Agresti also noted that within all stages of the life cycle, the percentage increased in response to increasing economic difficulties which occurred during the 1870-1885 period. Young married men had difficulty in establishing and maintaining a household in Walton County during this interval. This difficulty was reflected in the statistics which showed that the percentages of young married men heading their own households declined from 98% in 1870 to about 80% in 1885.

Agresti also found that the presence of extended kin in households increased as economic problems increased. Her findings, like those of Medjuck, suggest that the early American family structure was neither as stable nor as simple as had previously been assumed. Her conclusion is that "norms defining family residence should be seen as influenced by economic and social contexts" (p. 257).

The general conclusions reached by Medjuck and Agresti are that extension is a response to severe social and economic crisis. Their findings point to conditions under which other than nuclear families will be present in urban settings, however where hard evidence is available, the nuclear household still predominates.

The Angel and Tienda Study

Angel and Tienda's research (1982) examines the relationship between household composition and sources of household income among Hispanics, Blacks, and non-Hispanic Whites. Specifically, they investigated the extent to which extended living arrangements help buffer the effects of labor market disadvantages faced by minority household heads. Their analysis was based on the 1976 Survey of Income and Education.

They began with a decomposition of total household income into five categories: (1) earnings of the head of household; (2) earnings of nonnuclear members; (3) earnings of the spouse and adult children; (4) welfare income; and (5) other nonwork income. The study had two objectives: (1) to document differences in the income contributions of nonnuclear members among the various racial and ethnic groups; and (2) to determine whether the formation of extended family households might be instrumental in the alleviation of poverty, or whether other cultural and demographic factors might be more important explanatory variables. This second objective is similar to the principal question posed in the current research project.

With regard to the first objective, Angel and Tienda found that variations in the relative income contributions of nonnuclear members reflect differences in the labor market success of the various racial and ethnic groups, as well as group differences in the motivation to form and

maintain extended family households. They noted that the income contributions of nonnuclear members are more substantial among female-headed households than among households where both spouses are present.

Additionally, their data reveal that the earnings of nonnuclear members are found to be significantly and positively related to total household income in minority households. This finding is consistent with Sweet's 1973 study, which noted that a relatively greater share of income is contributed by secondary workers among Black households. The analysis reveals that

> extended family structure is more prevalent among minority households and those headed by single women than among nonminority and husband/wife households and that the economic roles of nonnuclear members differ according to the race, ethnicity, and sex of the head (1982: 1379).

They also determined that non-Hispanic Whites and Central/ South American households contain the fewest members, averaging 4.3 persons in husband/wife households and 3.0 persons in female-headed households. Mexicans and Blacks were determined to have the largest median family size, averaging between four and five persons per household. Other, earlier studies, have noted that for these groups, large family size is due in part to the persistence of higher fertility rates and to norms which favor large families (see, for example, Bradshaw & Bean, 1972; Edington & Hays, 1978).

To achieve their second objective--a determination of the extent to which extended family household formation may be related to the alleviation of poverty--they employed multivariate analysis. Logistic regression was first used to examine the propensity of various ethnic and racial groups to form extended households. Following that determination, the researchers employed regression analysis to determine the extent to which the earnings of nonnuclear members contribute to total household income.

The logistic regression employed by Angel and Tienda used a dichotomous dependent variable--extended versus non-extended family structures. The logarithm of the probability of extension was then expressed as a linear function of a constant set of terms--ethnicity, the educational level, female headship, the ratio of household income to poverty, full-time employment status of the head of household, and nativity. Their data indicates that in every case, non-White or Hispanic origin increases the likelihood of an extended family structure presence.

They found that the education of the household head has an impressively strong negative impact on the odds of extension. For each year of school completed by the head of household, the likelihood of extension decreases 1.6%. Female headship was associated with a large increase in the likelihood of extension. They noted that the ratio of household income to poverty has a significant but small positive impact on the likelihood of extension. For each

100% increment in the ratio of household income to poverty, the odds, of extension increase by 1.1%.

Their data show that full-time employment of the household head is associated with a decrease in the odds of extension. Surprisingly, foreign birth of the head of household has a negative impact on extension, suggesting that foreign-born heads of household may be in a process of adjustment to a new society and thus are less able to incorporate nonnuclear members than are households with native-born heads of household (Angel & Tienda, 1982: 1371).

Overall, the results of the Angel and Tienda study lend considerable support to the claim that extension is related to the desire to alleviate the temporarily or chronically low earnings of the primary wage earner. This study seems, as they suggest, to have provided

> an empirical basis for the claim that families rely on immediate relatives or nonnuclear members within the same household for support when social and economic demands are great (1982: 1380).

While the Angel and Tienda study concerns itself to some extent with the economic aspects of extended family structuring, they are adamant that such explanations must also look beyond economic considerations if the subject of extended family and structures is to be fully explained. Montiel (1970) and Mirande (1977), for example, have suggested in their respective studies that intrafamilial non-

monetary contributions are particularly important among
households containing families of Spanish origin.

The Monahan Study

The Monahan's study (1956) was one of the earliest to
note that the shortage of sufficient housing units is a
major reason for families "doubling up." Using census
statistics, he found that "doubling up" increased from 1910
to 1940 and peaked in 1947, with a level of one in ten
families sharing a household with another family. He cites
three primary reasons for this occurrence: (1) the depres-
sion created an economic need for it; (2) the war perpetu-
ated it in the form of housing materials shortages, and the
propensity of war-wives to live in the parental homes of
either spouse; (3) the postwar boom in marriages, but not in
the available housing accommodations.

Other Studies Concerned with Household Sharing and Housing Supply Issues

It was not only in the United States that housing
shortages led to doubling up, but also in other countries.
A study by Prince (1942) detailed the same phenomenon in
Canada. His study predicted that the severe housing short-
ages of wartime Canada would worsen after the war was over
and would consequently lead to more sharing of accommoda-
tions. Several other writers have also noted that in addi-
tion to influences of housing shortages, doubling-up is a
response to personal economic difficulties. In addition to

the Monahan study (1956) cited earlier, Glick (1949) also studied this aspect of extended family living. He found that doubling up is most significant among older low-income couples and among newlyweds. Prince's Canadian study indicated that shared housing afforded families the opportunity to "pool resources" by doubling up.

It should be noted that subfamily living, the subject of the current study, is only one aspect of doubling up. Doubling up can also involve unrelated persons or single adult children; however, these aspects will not be dealt with here in that they are beyond the parameters of this study.

Other, less predictable reasons for shared housing (such as a personal choice) have been suggested by several writers. Rose (1947), for instance, has pointed out that low income immigrants and migrants to the cities often share households with their peers because it gives them the security of their own cultural environment as well as the benefits of living with peers who are acquainted with the new environment. This element would seem to be still relevant today among refugee immigrants and also ethnic migrants from the rural areas of the country.

THE EFFECTS OF DEMOGRAPHIC VARIABLES ON FAMILY AND HOUSEHOLD COMPOSITION

This section will focus on the effects of recent changes in demographic factors upon family and household composition. Demographics will be discussed in terms of the

life events which affect family composition. While effects on family structure are associated with these events, there is no necessary linkage between them and industrialization/ urbanization. Thus, a separate social trends literature is considered here in the search for possible systematic causes of family extension.

Fertility

Most literature in this area focuses on the decline of fertility and a decrease in household size. However, a change which may have the impact of increasing household size and emphasizing extended structure is the increased proportion of births to unwed mothers. Since many of these women are now keeping their children, an increasingly larger percentage of families are beginning with one fewer member-- the father (Rabiega and Schafer, 1980: 28). Female heads of households with children are the most likely group to be with their parents in a subfamily. Thus, this trend can be expected to lead to extension.

Marriage and Divorce

The recent change in attitudes about marriage and the increase in marriage dissolutions have effects on both household size and composition. The decade of the seventies witnessed a major shift in marriage and divorce rates. Rabiega and Schafer's proposal (1980: 29) show that "between 1972 and 1975, the first marriage rate--first marriage per

1,000 single men/women over 14 years old--declined from 70 to 56, a 3-year decline of 20 percent." The remarriage rate has also declined. All this has resulted in a large number of divorced men and women who have not remarried.

Michael et al. (1980) have also noted that the propensity among divorced men and women to live alone has increased since 1950. Their data reveal that among divorced men, 18-24, their propensity to live alone increased from 4.0% in 1950 to 23.9% in 1976. For divorced women in the same age group, the increase was from 3.1 in 1950 to 19.1 in 1976. For divorced men in the age category 25-34, the increase was from 10.7 in 1950 to 36.7 in 1976; for women in the same age group, the increase was from 8.7 in 1950 to 12.5 in 1976. While all of this points to smaller nuclear families as a trend, the divorced female group, especially with children, are likely candidates for subfamily structures.

CLOSING COMMENTS

It should be noted that even if one accepts the basic functionalist model, there are conditions of housing shortage, housing expense, poverty, ethnic diversity, fertility, marriage customs, and developmental diversity under which urban places may exhibit different proportions of extended families. Insofar as these conditions are perpetuated, the extended family structure can be expected to persist in urbanized society.

The theoretical and empirical literature reviewed in this chapter is disparate, and has some limitations. While the studies presented here have identified factors that influence the formation of the extended family households, none have looked at the causal structure of these variables in a holistic model. Examining the causal relationship of these variables and their effect on the subfamily is central to this research, and this effort is detailed in subsequent chapters.

CHAPTER III

THEORETICAL DISCUSSION AND
PRELIMINARY OPERATIONALIZATION

The literature reviewed in Chapter II suggest that the existence of subfamilies are particularly affected by four generic conditions. The four conditions or conceptual variables are: (1) demographic characteristics, (2) sociocultural characteristics, (3) economic characteristics, and (4) housing characteristics. These characteristics are closely associated with the major theoretical and empirical studies detailed earlier. In the literature, the term demographic characteristics was used. The other three conditions, however, are not named as above. But the variables used such as female headed households, educational level of the head of household, median family income, unemployment rate, seem appropriate to be classified under sociocultural, economic, and housing characteristics.

Three variables--fertility, marriage rate, and divorce rate--were used as indicators of demographic characteristics in the literature. One or more of these variables are incorporated in the arguments underlying life cycle theory. The life cycle theory uses the variable marriage and death to illustrate that families go through both extended and

nuclear phases. Bogue (1969) and Kobrin (1976), in their respective studies, employed the variable fertility. Michael et al. (1980) used the variable divorce in their own study.

Sociocultural characteristics used in past studies include the educational level of the head of household and female headed households (Angel and Tienda, 1982). Implicit in Agresti's study (1979) are some sociocultural discussion. The variables used in the literature that can be classified here as economic characteristics are unemployment rate and the ratio of household income to poverty level. Angel and Tienda (1982) employed these two variables in their study. Agresti's study (1979) is basically an economic argument. Personal economic difficulties were identified as major causes for not being able to establish and maintain a household.

Housing characteristics mentioned previously include rent and mortgages. Discussions were also focused on housing shortages, supply and demand. Implicit in the life cycle theory are also discussions about housing, and this can also be seen in Berkner's (1972) argument. Housing shortages, and the depression which created economic need were addressed by Monahan in his study (1956). The Prince study (1942) was focused on forecasting housing shortages.

From the preceding discussion it can be inferred that each of the four conceptual variables independently affects

the extended family household. A set of simple models can be developed to show this (see Figure 1).

Demographic Characteristics ————————▶ Extended Family Household

Sociocultural Characteristics ————————▶ Extended Family Household

Economic Characteristics ————————▶ Extended Family Household

Housing Characteristics ————————▶ Extended Family Household
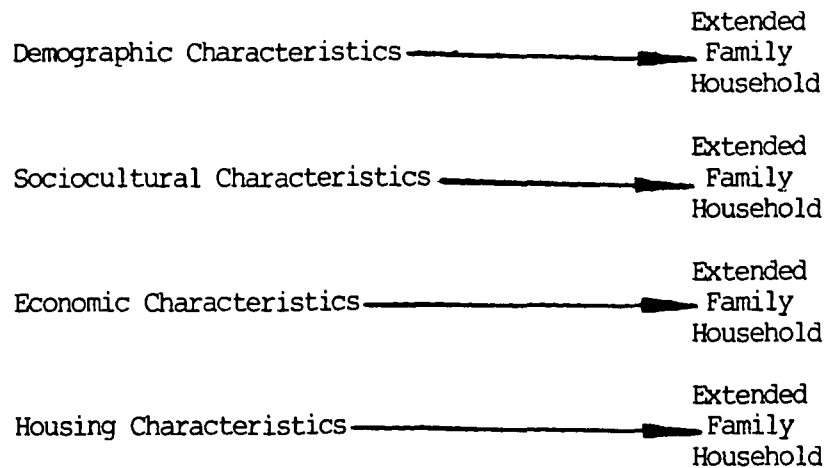
Figure 1. Effects of demographic, sociocultural, economic and housing characteristics on the extended family household.

Following the argument of life cycle theory, Kobrin (1976) and Angel and Tienda (1982), it can be inferred that demographic characteristics affect the extended family and the model developed in Figure 1 illustrates this. Following Agresti's (1979) and Angel and Tienda's (1982) studies, it can be inferred that sociocultural characteristics influence the extended family household. The model developed in Figure 1 also shows this. Following Medjuck's study (1979) and also that of Angel and Tienda, it can be conceptualized that economic characteristics influence the extended family household (see Figure 1). Following the life cycle theory and the study by Monahan (1956) and that of Prince (1942) it

can be inferred that housing characteristics affect the
extended family household (see Figure 1).

In Figure 1 each of the four conceptual variables are
seen to have a direct and independent effect on the extended
family household. Those models, however, can be further
developed and synthesized to show how each of the four
variables are causally related to affect the extended family
household. The synthesized model is the more general model
of the causal effects on the extended family and it is
depicted in Figure 2.

In Figure 2 demographic characteristics have direct
effect on sociocultural characteristics, economic charac-
teristics, and the extended family household. It indirectly
affects the extended family household through sociocultural
and economic characteristics. Sociocultural characteristics
have direct effect on the extended family, housing, and
economic characteristics.
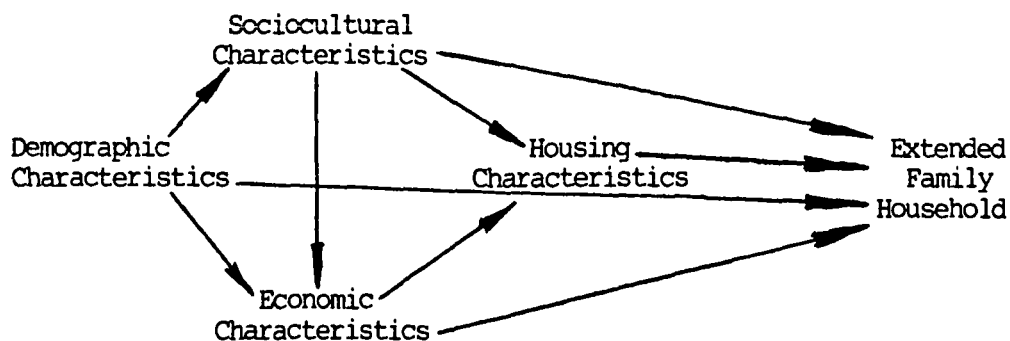
Figure 2. The conceptual path model of the influences
of demographic, sociocultural, economic and housing
characteristics on the extended family household.

Economic characteristics have a direct effect on the extended family and also on housing characteristics, while housing characteristics have a direct effect on the extended family. Both sociocultural and economic characteristics affect the extended family indirectly through housing characteristics. The operationalization of the four conceptual variables identified here and how they are to be used in this study is the focus of the next chapter. In that Chapter (IV) a detailed discussion of why the variables are ordered the way they are in Figure 2 will be given.

CHAPTER IV

DATA AND VARIABLE SET

INTRODUCTION

In chapter III, the theoretical model of the
influences of extended family was developed. However, that
model (Figure 2) cannot be tested in its present form
because it describes associations among a set of constructs.
By definition, theoretical constructs are abstract and
cannot be directly measured. One purpose of this chapter,
then, is to operationalize the constructs in order to posit
from the conceptual model a model or models having directly
measurable construct indicators. These models will then be
tested.

Five models will be developed from the conceptual
model: one for each of the four major constructs, identified
earlier in Figure 2, and their indicators, and a fifth which
will include all four constructs and their specific
indicators.

THE DEPENDENT VARIABLE

The dependent variable in this study is the percent of
family households with subfamilies. The Bureau of the
Census has defined four types of subfamilies, as discussed

in Chapter I: (1) a married couple with children; (2) a married couple without children; (3) a father with children; and (4) a mother with children living with another nuclear family to whom they are related by primary kinship.

INDEPENDENT VARIABLES

The four factors identified in Chapter III as the major causes of extended family encompass the independent variables used in this study. To reiterate, these factors are demographic, sociocultural, economic, and housing characteristics. The specific indicators for each of the four conceptual variables and how they affect one another and the subfamily will now be discussed.

Demographic Characteristics

The three indicators of demographic characteristics selected in this analysis are race and ethnicity (RAE), proportion of foreign born (PFB), and proportion of the population divorced and not remarried (POD). As noted earlier, race and ethnicity increased the likelihood of extension; Mexican and Black populations, particularly, have shown a long history of preference for extended family life. Mexican Americans are depicted as having established patterns of support and mutual aid among family members so strong and cohesive that collective needs take precedence over individual needs (Mirande, 1977; Keefe 1980). Other studies note that the large family size of Mexicans and Blacks is due in part to the persistence of higher fertility

rates and to norms which favor large families (Bradshaw & Bean, 1972; Edington & Hays 1978). Data collected by Angel and Tienda (1982: 1373) indicate also that "Black households are 14% more likely than non-Hispanic white ones to be extended. Mexican, Puerto Rican, and other Spanish households are approximately 5% more likely to extend than non-Hispanic white ones."

The second demographic variable mentioned here is the proportion of foreign born. This variable refers to all persons not classified as native. Foreign born frequently experience problems in acclimating themselves to a new country, both economically and culturally. Jobs are often scarce for this segment of the population, and social contacts are few--both problems which often cause them to extend. As Medjuck (1979: 281) noted: "Native-born family heads were far more likely to be in single family household than foreign-born family heads."

The third demographic variable used in the analysis is the proportion of the population divorced and not remarried. The seventies witnessed a major shift in marriage and divorce rates. Glick and Norton (1977) point out that there has been a downward shift in the remarriage rate, resulting in an accumulation of divorced (and not remarried) persons. Marriage dissolutions frequently are accompanied by a loss of property and finances by those involved. The assumption here is that the higher the proportion of those divorced and

not remarried the higher the chances of extension.

The preceding discussion has established that the three demographic variables—race and ethnicity, proportion of foreign born and the proportion of the population divorced and not remarried—are directly related to the proportion of extended families in an area. A model was developed to investigate this premise on the subfamily proportions. The model depicted in Figure 3 reflects this premise. Subfamilies are predicted to be positively influenced by race and ethnicity, proportion of foreign born and proportion of population divorced and not remarried. There are three two headed arrows. One connects RAE and PFB. Another Connects PFB and POD and yet another connects RAE and POD. Two headed arrows are generally used in path diagrams to show unanalyzed correlations between variables not dependent upon others in the system (Duncan, 1966: 3).
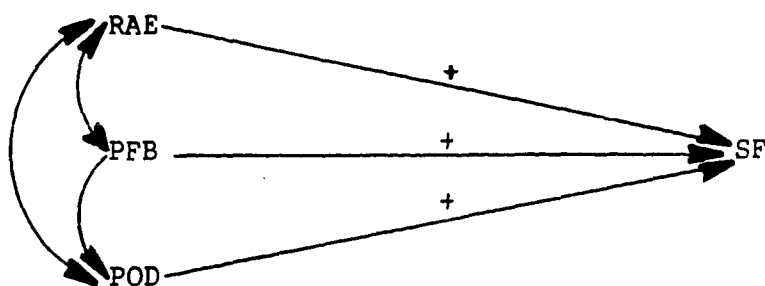
KEY: RAE = race and ethnicity
      PFB = proportion of foreign born
      POD = proportion of the population divorced and
            not remarried
      SF = subfamily

Figure 3. The effects of demographic variables on the subfamily.

Sociocultural Characteristics

Three indicators of sociocultural characteristics are included in our analysis. They are female head (FH), the educational level of head of household (ELOH), and the proportion of the household population under the age of 18 and living with only one parent (PUNAG). Female head is the proportion of family households headed by females. This condition, while nontraditional, is occurring with increasing frequency due largely to the increasing divorce rate. "The number of annual legal divorces per 1,000 existing marriages was 1.2 in 1860, 9.4 in 1960, and 15.2 in 1970" (Heather et al., 1975, quoted in Gonder and Gordon, 1980). As the literature shows, units headed by single women are more likely to extend owing to the economic deprivation often associated with female headship. Angel and Tienda (1982) show that "the prevalence of poverty among female-headed units is three to four times higher than for husband and wife households." Gonder and Gordon (1980: 6) also state that "in all age groups, female headed families have significantly lower income than either two parent or father only families." Conditions such as the ones just discussed often lead to extension.

The educational level of head of household is the second indicator of sociocultural characteristics used in this analysis. As Angel and Tienda (1982) noted, the education of the head of household has strong negative impact on

the likelihood of extension. Generally, the higher the educational level, the higher the income, and the higher the income, the less the chance that extension will occur. Conversely, when the head of household has a low educational level, extension is more likely to occur.

The third and final variable used as an indicator of sociocultural characteristics is the proportion of the household population under the age of 18 and living with only one parent. The under-18 age group is normally dependent on parents for financial support, thus their presence is likely to create a financial burden on the single parent, especially when the established system of assistance, such as alimony and child support, does not adequately meet the needs of this household type. Gonder and Bordon (1980: 7), using statistics from Abrahamse, Deferranti, Fleischauer and Lipson (1977), state that "of all divorced and separated women in the United States, about 14% are awarded alimony and only 46% of these women collect it regularly. Approximately 44% of all divorced mothers are awarded child support and only 45% of these collect it regularly." The assumption here is that the higher the proportion of the household population containing members under 18 years of age, the higher the chances are that a subfamily living arrangement will exist.

The above literature review has indicated that the three sociocultural variables--female head, educational level of head of household, and the proportion of the house-

hold population under the age of 18 and living with only one parent--increase the chances of extension. Figure 4 shows the affect of these variables on the subfamily. In the model, female head is shown to have a direct effect on the proportion of the household population under the age of 18 and living with only one parent and on the subfamily. It is predicted, however, to have an indirect effect on the sub-family through the proportion of the household population under the age of 18 and living with only one parent. The proportion of the household population under the age of 18 and living with only one parent has a direct effect on the subfamily, while the educational level of head of household affects female head and the subfamily directly. In the model a positive relationship is predicted between female head and the proportion of the household population under the age of 18 and living with only one parent. In general, females elect to keep their children. The Gonder and Gordon study (1980: 5), for example, indicates that over 90% of the heads of one-parent families are women. The assumption here is that as female-headed households increase, the proportion of the household population under the age of 18 and living with one parent is also likely to increase. As earlier discussions indicate, the proportion of the household popu-lation under the age of 18 and living with one parent and the female head is expected to have a positive relationship with the subfamily.
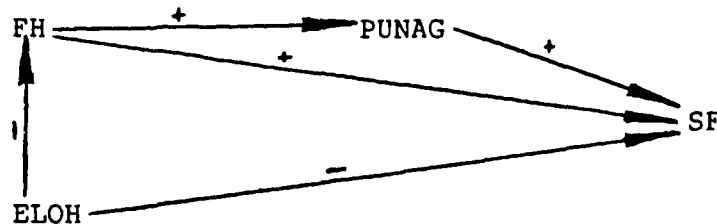
KEY: FH   = female head
      ELOH = educational level of head of household
      PUNAG = proportion of the household population
              under the age of 18 and living with only
              one parent
      SF   = subfamily

Figure 4. Path diagram showing hypothesized
relationships of selected sociocultural
variables on the subfamily.

The relationship that exists between the educational
level of head of household and the subfamily was also
discussed earlier, and as shown in Figure 4, a low educa-
tional level of head of household is predicted to increase
the chances of subfamily living. A low educational level of
head of household also increases the chances of a mother
being a single parent. A qualification must be made here
however, because generally low educational level is asso-
ciated with women with lots of children. The reasoning
behind that association is that some women may have opted
for children instead of education at a younger age and so
when divorce occurs they are more likely to become single

parent and head their own households. In this study a similar assumption is implied between educational level of Head of Household and female head and a negative relationship is expected. The National Academy of Sciences (1976: 43) points out that the less schooling a mother has, the more likely she is to be a single parent.

Economic Characteristics

The economic variables employed in this analysis are the unemployment rate (UNEMP), median family income (MFI), and proportion of household income below 1979 poverty level (PHIBP). Unemployment increases the likelihood of extension. Angel and Tienda (1982) concludes, for example, that full-time employment of the household head is associated with a decrease in the odds of extension. The assumption here is that adverse economic conditions will force people into an extended family situation. The reasoning behind is that unemployment affects income which in turn affects housing affordability which directly affects the subfamily.

Median family income is the second economic variable used in this study. Median income measures a family's income from salaries and wages. Median income is included on the assumption that the lower the median family income, the higher the prevalence of subfamilies. A negative relationship, therefore, is expected.

The final economic indicator used is the proportion of household income below 1979 poverty level. The assumption

here is that families with income below poverty are more likely to extend due to their economic difficulties. Angel and Tienda (1982) noted an increase in the ratio of household income to poverty has a positive.impact on the likelihood of extension.

Based on the preceding discussions, the model in Figure 5 was developed to determine how the three economic variables affect the subfamily.
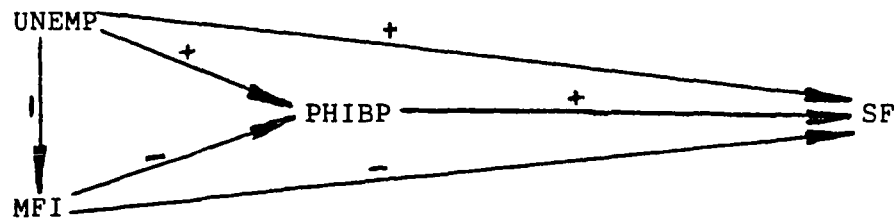
KEY: UNEMP = unemployment rate
      MFI   = median family income
      PHIBP = proportion of household income below
               1979 poverty level
      SF   = subfamily

Figure 5. Path diagram showing hypothesized relationships of selected economic variables on the subfamily.

In the model, the subfamily is predicted to be positively affected by the unemployment rate, and the proportion of household income below 1979 poverty level, and negatively influenced by median family income. The relationships between these variables and the subfamily has earlier been discussed. The unemployment rate, the first variable in the model, is seen to have a negative influence

on the median family income, and the assumption here is that as the unemployment rate increases, the median family income decreases. Other studies have arrived at similar conclusions. Corcoran's study (1979), for example, revealed how drastic the income losses from unemployment can be. Her statistics show that male family heads who lost their jobs in 1976 lost on the average about a fourth of their normal disposable income. The unemployment rate undeniably is associated with the proportion of households with income below the 1979 poverty level, and a positive relationship is expected between the two variables. Median family income is predicted by the model to have a negative effect on the proportion of households with income below the 1979 poverty level, and the assumption here is that as median family income decreases, the proportion of household income below the 1979 poverty level increases.

Housing Characteristics

The two indicators of housing used in our analysis are Housing Costs as a Percent of Income (HCAPI) and vacancy rate (VR). The first variable (HCAPI) isolates the share of a family's or person's income which is spent on housing costs such as mortgages, rent, utilities, property taxes, and insurance. One may expect that a high rent figure, or a high proportion of income to mortgage payment, will increase

the likelihood of subfamily presence, especially during bad economic times.

The second economic variable, vacancy rate, is a measure of the availability of housing. The notion here is that as vacancy rate decreases (i.e., fewer housing units are available) the likelihood of a rise in subfamilies increases; a tight housing supply will force some people to extend. Monahan (1956) for instance has noted in his study that housing shortage led to household sharing.

As previously, a model was also developed to depict the affect of housing cost as percent of income and vacancy rate on the subfamily. That model is depicted in Figure 6 and, as can be seen, subfamily is predicted to be positively affected by housing cost as percent of income and negatively influenced by vacancy rate. The relationship between these two variables and the subfamily was discussed above. Vacancy rate is predicted by the model to be positively affected by housing cost as percent of income. The reasoning here is that an increase in housing cost as percent of income is also likely to result in an increase in vacancy rate because, for instance, a high rent or mortgage payment could force some people out of their homes and increase the vacancy rate until a new match of houses and people occurs. The assumption is that the displaced people will likely share accommodations with others. A positive relationship is thus predicted between these two variables.

As vacancy rates increase (i.e., housing becomes more available) the likelihood of the existence of the subfamily decreases. Conversely, as vacancy rates decrease the chances of living in a subfamily household will increase. A negative relationship is expected between vacancy rate and the subfamily.
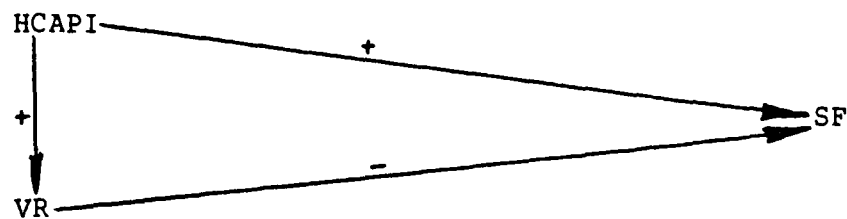
KEY: HCAPI = housing cost as percent of income
VR = vacancy rate
SF = subfamily

Figure 6. Path diagram showing hypothesized relationship of selected housing variables on the subfamily.

THE VARIABLE MODEL OF THE SUBFAMILY

Four models have thus far been developed from the conceptual model depicted in Figure 2 to illustrate the effect of each of the four major independent dimensions on the subfamily. Figure 7 is the fifth model and it represents the operationalized model of Figure 2; it consists of all the indicators of the four major independent variables discussed earlier. This model is the result of the sequential development of the four operationalized models depicted in Figures 3 through 6.
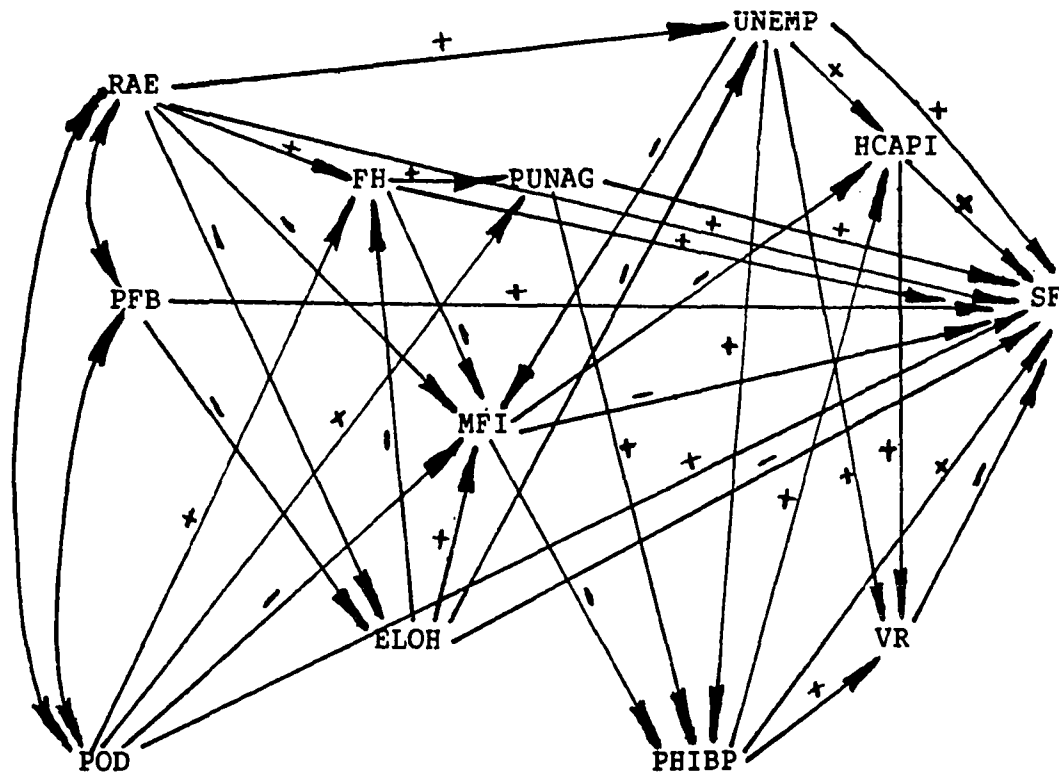
KEY:

RAE = race and ethnicity
PFB = proportion of foreign born
POD = proportion of the population divorced and not remarried
FH = female head
ELOH = educational level of head of household
PUNAG = proportion of the household population under the age of 18 and living with only one parent
UNEMP = unemployment rate
MFI = median family income
PHIBP = proportion of household income below 1979 poverty level
HCAPI = housing cost as percent of income
VR = vacancy rate
SF = subfamily

Figure 7. Schematic path diagram of effects of selected variables on the prevalence of subfamily (the predicted model).

The work of others and the relative importance of individual models developed in Figures 1 through 6 are synthesized into one holistic model (Figure 7). The model has indirect and direct paths that have not been recognized before. In the model, demographic characteristics are seen to influence the subfamily directly and indirectly through sociocultural, economic and housing variables. Sociocultural variables are predicted to influence the subfamily directly and indirectly through economic and housing variables. Economic variables are assumed to affect the subfamily directly and indirectly through the housing variables, while the housing variables are predicted to directly influence the subfamily.

The structuring of the model is largely based on what was covered in the literature, which indicated the direction of influence of the individual paths and also some of the authors assumptions. Demographic variables, for instance, appeared first because they are fixed variables, taken as given. In terms of the time ordering of events, one would also expect them to come first. For example, before making the argument that the proportion of female-headed households are higher among non-white than white households, the first thing to be taken into account to enable that distinction is the race and ethnicity of the females involved. Two examples can be given to show the rationale used in structuring the synthesized model.

1.   RAE $\xrightarrow{\quad + \quad}$ UNEMP $\xrightarrow{\quad + \quad}$ PHIBP $\xrightarrow{\quad + \quad}$ SF

2.   POD $\xrightarrow{\quad - \quad}$ MFI $\xrightarrow{\quad - \quad}$ SF
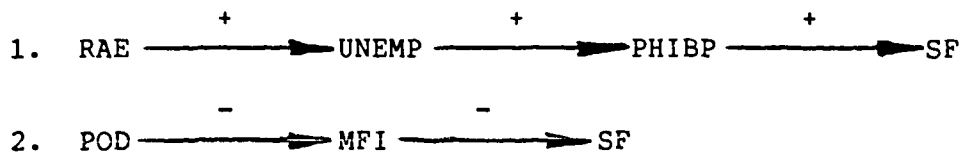
In the first example, race and ethnicity (RAE) is seen to have a positive effect on the unemployment rate (UNEMP), which in turn has a positive influence on the proportion of household income below poverty (PHIBP). PHIBP was posited to affect the subfamily positively. The reasoning behind that structuring is that generally the higher the proportion of ethnic minorities the higher the unemployment rate. A high unemployment rate is reasoned to pose severe financial difficulties on those involved, which in turn will force some families to extend.

In the example number 2, above, it was hypothesized that the higher the proportion of the population divorced and not remarried (POD), the lower the median family income (MFI), and the lower the median family income, the higher the chances that those involved will extend. Thus, the path was ordered and signed as it was in the model. Similar integration of literature was used for all the paths within the predicted model. In general the predicted model follows the simple conceptual models and the integrated one. There are some points however, at which they seem to depart. One of the major differences between the predicted model (Figure 7) and the conceptual one illustrated in Figure 2 is that the former one contains curved, two-headed arrows between

demographic variables. One of the arrows connects race and ethnicity with the population divorced and not remarried, another connects race and ethnicity and the proportion of foreign born, and yet another connects the proportion of foreign born and the population divorced and not remarried. These arrows represent unanalyzed relationships. In the model, the three demographic variables are taken as given, and are referred to as predetermined.

The rest of the relationships that exist between the variables are depicted in the model by single-headed arrows and these can be explained. It should be pointed out that in this study the word positive refers to direct relationships while the word negative denotes inverse relationships. This terminology is used to avoid confusion between variable relationships and "direct" and "indirect" paths in the model. In the model, the subfamily is predicted to be positively influenced by all the variables except the educational level of head of household, median family income and vacancy rate which has a negative effect. The relationship of each of these variables with the subfamily was discussed in Figures 3 through 6.

The first variable in the model is race and ethnicity. It is predicted to influence the unemployment rate, female head, median family income, and educational level of head of household. Earlier studies have noted that there is a relationship between these variables and race and ethnicity.

It is evident that great disparities in joblessness still exist among the races. Bianchi (1981: 72) noted that by the late 1970s about twice as many black men as white men had no work at all. Thus, race and ethnicity have a direct path to unemployment. The second variable that is predicted by the model to be directly influenced by race and ethnicity is female head. Some of the studies reviewed showed a very rapid growth of female-headed families among the minority groups. Currie and Skolnick statistics (1984: 159) show that "by the beginning of the 1980s more than two out of five black families were maintained by a woman, as compared to less than one in eight white families." Bianchi (1981: 31) also noted that since 1960 the growth in non-white families headed by a woman has been twice as fast as that among whites. Gonder and Gordon (1980: 5) pointed out that while over 90% of the heads of one-parent families are women and come from all ethnic groups, non-whites are over represented. Their data reveal that, between 1960 and 1974, Anglo-headed families increased 83% while non-Anglo headed families increased by 155.5%.

The third variable shown to be influenced by race and ethnicity is median family income. The inequality of income among races and ethnic groups is very apparent in U.S. society. Statistics from the U.S. Bureau of Census, Current Population Reports, Series P.60, No. 146 (1984: 1) show, for example, that the 1982 median income was $21,120 for white households, $11,970 for black households, and $15,180 for

Spanish-origin households. Race and ethnicity influence median family income and the predicted direction of influence is negative.

The educational level of head of household is the fourth variable and it is predicted by the model to be influenced by race and ethnicity. Generally racial and ethnic minorities have the greatest disadvantages, and as a result are likely to have lower educational attainment. Currie and Skolnick (1984: 170) noted that, while differences in school attainment are narrowing among the races, they still exist, particularly between Hispanics and Whites. A negative relationship is predicted between race and ethnicity and the educational level of head of household.

The proportion of foreign born is the second demographic variable shown in Figure 7 and it is predicted to have a negative influence on the educational level of head of household. The particular problems of the foreign born discussed earlier will undeniably affect their educational attainment.

The population divorced and not remarried is the next variable and it is predicted by the model to influence female head, the proportion of the household population under the age of 18 and living with only one parent, and median family income. As noted earlier, female head is occurring with increasing frequency and this has been due largely to increasing divorce rate. A positive relationship

is predicted between the two variables because as divorce rate increases, female head is also expected to increase. The proportion of the household population under the age of 18 and living with only one parent is expected to be positively affected by the population divorced and not remarried for similar reasons. The population divorced and not re- married is predicted to have a negative influence on median family income because, as was noted earlier, marriage dis- solutions frequently are accompanied by a loss of property and finances by those involved. An increase in the popula- tion divorced and not remarried, therefore, is likely to result in a decrease in median family income.

Female head is the first sociocultural variable to be discussed in Figure 7 and it is predicted to influence the proportion of the household population under the age of 18 and living with only one parent and median family income. The influence of female head on the proportion of the house- hold population under the age of 18 and living with only one parent has been discussed in Figure 4, and as is shown, a positive relationship is predicted between the two vari- ables. A negative relationship is predicted between female head and median family income, the assumption being that an increase in female head will likely lead to a decrease in median family income. Households headed by females have been shown to have very low median income. Gonder and Gordon (1980: 8) cite statistics (gleaned from the National

Academy of Sciences Report of 1976) which indicate that

> the median income for a two parent family with
> at least one child under age six was $12,886 for
> 1974. The average income for a father-only
> family with children under six in the same year
> was $9,226. The total available income for a
> single mother with children under six in the
> same year was only $3,891.

The educational level of head of household is the second sociocultural variable and it is predicted to affect female head, the unemployment rate, and median family income. The relationship that exists between the educational level of head of household and female head was discussed under Figure 4, and the predicted direction of influence of educational level of head of household on female head is negative. The educational level of head of household is also predicted to have a negative relationship with the unemployment rate. As noted earlier in the discussion of the relationship between the female head and the educational level of head of household in Figure 4, low education was associated with low paying jobs. The negative relationship between the two variables is also evident in the discussion of the influence of the educational level of head of household on median family income. Several studies have shown that there is a strong positive relationship between the educational attainment of the householder and family income. Statistics from the U.S. Bureau of the Census, Current Population Reports, Series P-60, No. 129, (1981: 5), for instance indicate that

> In 1979, the median income for families main-
> tained by householders 25 years old and over
> with 8 or less years of school was $11,500. For
> families with householders who were high school
> graduates, the median income was $20,680, com-
> pared with $28,070 for families with house-
> holders who had completed 4 years of college and
> $32,420 for families with householders who had
> completed 5 or more years of college.

The assumption here is that the higher the educational level, the higher the income; thus, a positive relationship is expected between educational level of head of household and median family income.

The proportion of the household population under the age of 18 and living with only one parent is the third sociocultural variable and it is predicted by the model to influence the proportion of household income below 1979 poverty level. As was noted earlier, the proportion of the household population under the age of 18 and living with only one parent households experience severe economic difficulties. An increase in their number therefore is also likely to increase the proportion of household income below 1979 poverty level. A positive relationship is anticipated between these two variable.

The unemployment rate is the first economic variable in the model. It is predicted from race and ethnicity and the educational level of the head of household and, in turn determines median family income, the proportion of household income below 1979 poverty level, vacancy rate, and housing cost as percent of income. The influence of the unemployment rate on the median family income was discussed earlier

and a negative relationship is predicted between these two variables. The unemployment rate is highly associated with poverty and it is expected to have a positive relationship with the proportion of household income below 1979 poverty level. The unemployment rate is also anticipated to have a positive relationship with vacancy rate, and the assumption is that a high unemployment rate will likely lead to an increase in vacancy rate as some people will be forced to leave their homes.

A positive relationship is predicted between the unemployment rate and housing cost as percent of income. Generally the Population unemployed are known to experience severe economic difficulties, a condition which often limits their ability to pay for rent and mortgages. Data from the Bureau of Labor Statistics (in Rosenfield, 1977: 42-43) for example, reveal that 7 out of 10 unemployed workers were meeting living costs by cutting back on funding for food, transportation, and clothes, and over 1 in 10 had been forced to move to cheaper housing.

Median family income is the second economic variable in the model. It is predicted from race and ethnicity, the proportion of the population divorced and not remarried, educational level of head of household, female head and the unemployment rate. It influences housing cost as percent of income and the proportion of household income below poverty. Median family income is expected to bear a negative

relationship with housing cost as percent of income, the assumption being that a low median family income will increase the difficulty of those involved to pay rent and mortgages. The influence of median family income on the proportion of household income below poverty was discussed earlier in Figure 5 and a negative relationship is predicted between the two variables. Following the median family income in the model is the proportion of household income below 1979 poverty level. It is predicted to influence housing cost as percent of income and vacancy rate. A positive relationship is expected between the proportion of household income below poverty and housing cost as percent of income. The argument is that a high proportion of household income below poverty is likely to increase the difficulty by those involved to pay rent or mortgages. The proportion of household income below poverty is also anticipated to have a positive relationship with vacancy rate. The reasons for this are similar to those earlier cited between the unemployment rate and vacancy rate.

Housing cost as percent of income is the first housing variable in the model. Its immediate determinants are the unemployment rate, median family income and the proportion of household income below the poverty level. It influences vacancy rate and that relationship was discussed earlier, under the housing characteristics subtitle. Vacancy rate is the second housing variable and it influences only one variable--the subfamily. The relationship that exists

between the two variables was discussed under Figure 6. Table I is a summary of the preceding discussions. It contains a list of all variables explained in the model and the variables predicted by the model to be the influence of each of these variables. The expected direction of influence between variables, based on the literature reviewed and the author's argument, is shown in parentheses. The table represents the general hypotheses that were postulated in this dissertation. In view of the preceding discussion, race and ethnicity, the proportion of the population divorced and not remarried, female head, the unemployment rate and housing cost as percent of income are expected to emerge as key variables to the overall model. They should emerge as more important in explaining the subfamily than are the other six variables (PFB, ELOH, PUNAG, MFI, PHIBP and VR). Overall, the validity of the variables will also lend support to the validity of the theoretical model.

DATA SOURCE

The major source of data for this study is the 1980 Census of Population and Housing, Summary Tape File 3-C (known familiarly as The National File). This file contains sample data adjusted to represent the total population. These data are summarized for various geographical levels, including SMSA, census regions, and areas containing 100,000 or more population.

TABLE I

ENDOGENOUS AND CORRESPONDING EXPLANATORY
VARIABLES OF THE SUBFAMILY
VARIABLE MODEL

Endogenous Variables	Explanatory Variables
ELOH	RAE (+), PFB (-)
FH	RAE (+), POD (+), ELOH (-)
PUNAG	FH (+), POD (+)
UNEMP	RAE (+), ELOH (-)
MFI	UNEMP (-), FH (-), RAE (-), ELOH (+), POD (-)
PHIBP	UNEMP (+), MFI (-), PUNAG (+)
HCAPI	UNEMP (+), MFI (-), PHIBP (+)
VR	HCAPI (+), UNEMP (+), PHIBP (+)
SF	RAE (+), PFB (+), POD (+), ELOH (-) FH (+), PUNAG (+), UNEMP (+) MFI (-), PHIBP (+), HCAPI (+), VR (-)

The SMSA level data were obtained from this file. This data base also generated the dependent and independent variables of the study.

The other source of data is the 1980 Census of Population and Housing, Summary Tape File 3-A. This file is identical in form to the Summary Tape File 3-C described above and it is known as the State File. It provides summaries for the state, counties, minor civil divisions, census tracts, and Congressional districts. Data from this source on the same variables will be used for analysis at the census tract level.

CHAPTER V

METHODOLOGY

This chapter discusses the techniques used to determine the adequacy of the model postulated in Chapter IV. The basic technique employed is path analysis which uses Multiple Linear Regression (MLR) to decompose and estimate the structural coefficients causally linking a system of variables. Path analysis was originally introduced by Sewall Wright (1921) as a means of measuring the direct and indirect effects of exogenous variables on endogenous ones through various paths. The method according to Wright (p. 557)

> depends on the combination of knowledge of the degree of correlation among the variables in a system with such knowledge as may be possessed of the causal relations. In cases in which the causal relations are uncertain, the method can be used to find the logical consequences of any particular hypothesis in regard to them.

In subsequent papers, Wright elaborated the proper use of the method by noting that it is not intended to accomplish the impossible task of deducing causal relations from the values of the correlation coefficients (1334: 193) but rather the purpose "is to determine whether a proposed set of interpretations is consistent throughout: (1960: 444).

Wright's original works were developed and disseminated in the social sciences by Duncan in his landmark article (1966). Others who have elaborated and refined the path analysis technique include Land (1969), Houser (1969), and Finney (1972). Two basic requirements of path analysis have emerged from these additional writings. These are (1) a complete theoretical model, and (2) data enabling the estimation of unbiased structural coefficients for the model (Schafer, 1985).

The first requirement is basic to all social survey-type data; that is, causality cannot be inferred from the statistical manipulation of a data set, but that a lack of association disproves causality. It is not possible to differentiate direction of the influence between the variables from the coefficients when an association between variables is demonstrated. The theory must provide the direction of influence (Heise, 1969: 61-65, as cited in Schafer, 1985).

The second requirement pertains to the assumptions of Multiple Linear Regression (MLR). These are interval-level and theoretically continuous variables, linear relationships between the dependent and independent variables, normal distribution of error terms, and no auto-correlation of the independent variables used in the mode (Duncan, 1975: 1-8). Multiple Linear Regression technique is the most predominant and most statistically powerful method available for examining the relationship between a dependent variable and a set

of independent variables. The dependent variable is seen as a linear function of multiple independent variables. The general MLR equation is:

$$Y = a + b_1 x_1 + b_2 x_2 + \ldots b_k x_k$$

Where Y is the dependent variable, x_1, x_2 . . . x_k are the independent variables, a is the regression constant, and b is the regression coefficient.

Path analysis, a specialized application of multiple linear regression, is the technique selected for this study. It facilitates the decomposition and evaluation of causal relationships into constituent direct and indirect effects. The _direct_ effect is that which is mediated by one variable on another, and the _indirect_ effect is that caused by inter-vening variables. One important advantage to using path analysis is that it permits one to visualize relationships. The diagrammatic representation of relationships is of great value to the researcher in working out the empirical logical consequences of a model.

The basic theorem of path analysis, according to Duncan (1366:5), may be written in the general form as:

$$r_{jk} = \sum_{i} P_{ji} r_{ik}$$

where r_{jk} is the correlation between variables j and k. P_{ji} is the direct effect of variable i on the variable j, and the correlation between variables i and k is represented by

r_{ik}. The subscript i is an indexing notation which refers to each variable directly causing j (Finney, 1972: 177).

As was earlier stated, in order to use path analysis technique, two requirements must be met. 1) A model must be developed; and 2) data set must lend itself to MLR assumptions. This study meets the two basic requirements. The data used are consistent with MLR assumptions and a causal model (Figure 7) was also developed. In that model, as is consistent with path diagrams, one-way arrows lead from each determining variable to those dependent on it. The variables not dependent upon others have gone unanalyzed and are shown by two-headed arrows, and their connecting line is curved rather than straight. A full description of the path model shown in Figure 7 was given in Chapter IV.

PROCEDURES OF PATH ANALYSIS

In path analysis each endogenous variable is regressed with all causally prior variables and the regression coefficients of the regressions become the path coefficient of the model. The path coefficients, which are the standardized or unstandardized regression coefficients, are then mathematically manipulated to determine the direct and indirect effects. Standardized coefficients are used if one is interested in the relative amount of variance explained in the dependent variable for a given sample or population by various independent variables, while the unstandardized coefficients are preferred if one is interested in finding

the causal processes and/or comparing parameters of one population to those of another (Nie, et.al., 1975, p. 397).

An example of the procedure of path analysis technique is illustrated graphically in Figure 8. The example, however, does not represent the general hypothesis in this study, which is shown in Table I. In Figure 8 each endogenous variable has a path from all causally prior variables; it is commonly called the saturated model, which is later trimmed. The saturated model is estimated for the purpose of testing both the implicit and explicit hypotheses. The explicit hypotheses are those already stated and are denoted with one-headed causal arrows. The implicit hypotheses does not have causal arrows and the relationship between the variables concerned are generally assumed to be zero, or insignificant. In reality there cannot be a zero relationship, so the saturated model is estimated to recover any significant path, even unanticipated ones.

CALCULATING THE DIRECT AND INDIRECT EFFECTS IN PATH ANALYSIS

The direct effect, which is the standardized regression coefficient between X and Y, can be correctly estimated by the magnitude of the path coefficient.

The indirect effect is the product of the standardized regression coefficient between X and Y that passes through one or more intervening variables. This is illustrated in Figure 9, where the direct effect is .382, while the indirect effect is .621 X .700 = 0.435.
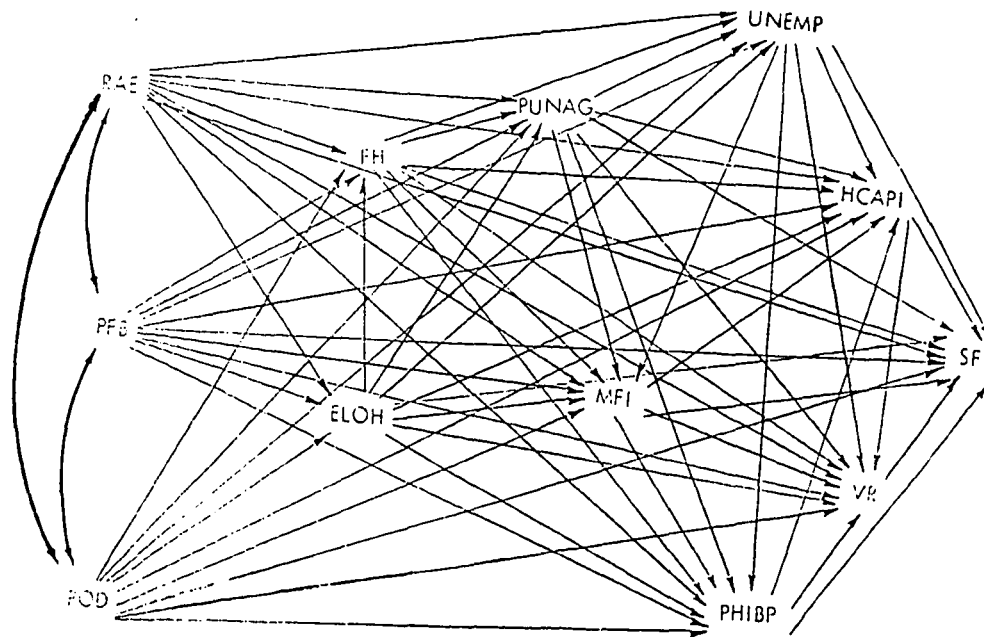
Figure 8. A graphic illustration of a saturated
model of path analysis showing each endogenous variable
regressed with all causally prior variables.

The functional equations implied by the saturated model
depicted in Figure 8:

ELOH *f* (RAE, PFB, POD)
FH   *f* (RAE, PFB, POD, ELOH)
PUNAG *f* (RAE, PFB, POD, ELOH, FH)
UNEMP *f* (RAE, PFB, POD, ELOH, FH, PUNAG)
MFI   *f* (RAE, PFB, POD, ELOH, FH, PUNAG, UNEMP)
PHIBP *f* (RAE, PFB, POD, ELOH, FH, PUNAG, UNEMP, MFI)
HCAPI *f* (RAE, PFB, POD, ELOH, FH, PUNAG, UNEMP, MFI, PHIBP)
VR   *f* (RAE, PFB, POD, ELOH, FH, PUNAG, UNEMP, MFI, PHIBP, HCAPI)
SF   *f* (RAE, PFB, POD, ELOH, FH, PUNAG, UNEMP, MFI, PHIBP, HCAPI, VR)
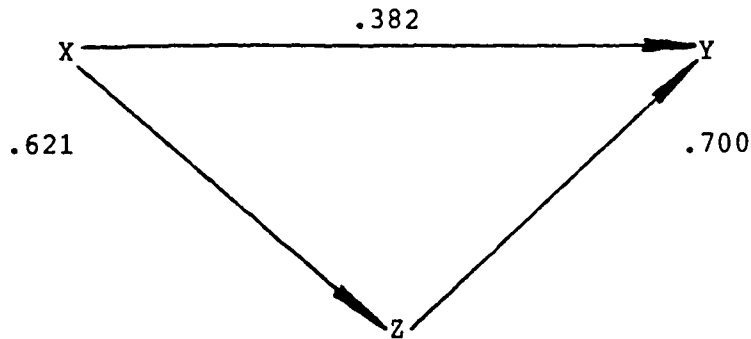
Figure 9. An example of direct and indirect effects in path analysis.

Using a variable from this study as an example, the direct and indirect effects can also be shown. In Figure 7 MFI, for instance, is seen to have a direct and indirect effect on the subfamily. Its indirect effect on the subfamily is through housing cost as a percent of income.

The earlier formula for decomposing effect is:

TOTAL EFFECT = DIRECT EFFECT + INDIRECT EFFECT
(Correlation   (Path
Coefficient)   Coefficient)

From the above formula the indirect effect was easily calculated by subtracting the value of the path coefficient from the value of the correlation coefficient (Finney, 1972: 176). Finney, however, has found fault with such calculations. According to him (1972: 176),

if we as path analysts wish the "indirect effect" component of the total association between two variables to in fact denote indirect causal effect, then the [above formula] yields estimates of indirect effects which are inconsistent with respect to this criterion across various applications.

The three general guides to be used in computing in-direct effects from recursive path models recommended by Finney (1972: 183) are:

1. If the model contains only one predetermined variable, then its indirect effect on any endogenous variable is equal to the difference between the correlation coefficient and the path coefficient.

2. If the model contains more than one predetermined variable, then the indirect effect of one of them on any endogenous variable can be computed by stating the correlation in terms of path coefficients according to the fundamental theorem, and then summing those components which contain only path coefficients, and which do not contain a correlation coefficient. The summing procedure should be performed after the direct effect has been subtracted out of the value of the correlation. In complex path models, this procedure is tedious. A simpler approach is to trace effects through intervening variables, since only these can transmit indirect effects.

3. In computing the indirect effect of one variable not predetermined on another variable, one must trace through intervening variables. There is, in this case, no automatic procedure.

The computing of indirect effects in this study follows the "simpler approach" to guideline #2 recommended by Finney, and it was chosen because more than one predetermined variable is involved. An example of how the computation was done, was in fact, illustrated with Figure 9. As was shown, X has a direct effect of .621 on Z, and a direct effect of .382 on Y. Z has a direct effect of .700 on Y. To obtain an indirect effect of X on Y through Z, the direct effect of X on Z (.621) is multiplied by the direct effect of Z on Y (.700) to get 0.435.

Some of the technical language used in Finney's general guides is elaborated below.

Predetermined or Exogenous Variables. These are variables that are not explained in the model. They are taken as given and are generally assumed to affect the remaining variables in the set. In path diagrams the correlations between them are shown with curved two-headed arrows which denote unanalyzed relationships. According to Land (1969: 6) "the exogenous variables in a particular set may be correlated among themselves; however, the explanation of their intercorrelation is not a problem for the system under consideration."

Endogenous Variables. These are variables within the set that the model attempts to explain. In path diagrams each endogenous variable is shown with one-headed arrows leading into it from each determining variable.

Intervening Variables. Intervening variables are endogenous variables that are causally between the predetermined variables and the main dependent variable.

THEORY TRIMMING AND PATH ANALYSIS

Trimming of the theoretical model has been the generally accepted approach with path analysis; among the researchers who have used it are Merrick (1978), Guest (1981), and Blake (1982). The specific strategy that was used to trim and evaluate the theoretical path model developed in this study (Figure 7) is the one proposed by Heise (1969).

This strategy consists of estimating the fully saturated model, then trimming from that model those paths found to be insignificant relative to some stated criteria (for example, accepting b with an f-test at a given alpha level). The criteria for including or not including a path in the model used in this study was a significance test where alpha was set at $P < .05$.

Once the trimmed model is produced, it is compared to the original theoretical model to discern similarities and differences, and is used as a guide in reformulating the original model. According to Heise, "the potential for refining or trimming a theory, and thus making the theory more parsimonious, clearly is of considerable significance and could be listed among the issues of explanation and simulation as a basic gain to be acquired from the construction of linear models (1969: 59-60)."

THE PROGRAM USED

All statistical techniques were performed using the Statistical Package for the Social Sciences (SPSS), as presented in SPSS, second edition, by Nie, et al., 1975. SPSS was run on a Honeywell 66/40 computer at the facilities of Portland State University, Portland, Oregon.

CHAPTER VI

DATA ANALYSIS AND RESULTS

INTRODUCTION

Analysis was performed on two geographical levels
(Standard Metropolitan Statistical Area and census tracts)
to ascertain if conclusions were consistent at different
levels of geographical aggregation. This was done because
this dissertation is a cross-sectional study. The data is
limited to one point in time, 1980, and temporal stability
could not be tested.

The first phase of the analysis used SMSAs as the
units of analysis to examine variations in the presence of
subfamilies in U.S. metropolitan areas. The results of this
phase of the analysis provides us with a nationwide perspec-
tive on the relationship between demographic, sociocultural,
economic and housing variables and variations in the pre-
sence of subfamilies. The second phase of the analysis used
census tract data, and Los Angeles County was chosen. It
was chosen because its characteristics are unusually useful
to this study. Los Angeles County is a major metropolitan
county with one of the tightest and more expensive housing
markets in 1980, the census year of the study. It was very

expensive to purchase housing in that year because interest rates were very high. Renters faced the same problems because prices increased rapidly and vacancy rates were low. In addition, the county has a high proportion of ethnic minorities and a high percentage of foreign born. It clearly does not conform to the inherent assumptions of the functionalist model. Thus, it is an ideal county in which to test the model.

AN OVERVIEW OF THE GENERAL HYPOTHESIS USING SMSA CENSUS DATA

Table II contains the predicted and the actual results of relationships among the variables and highlights three major observations. First the results in the table show a greater number of relationships between variables than was originally predicted. This indicates the existence of a more complex model.

Second, it can be seen in the table that the direction of associations is different in a number of paths than was originally posited. For instance, subfamily was predicted to be positively influenced by all of the variables except the educational level of head of household and vacancy rate. In the results the unemployment rate is found to be negatively related to subfamily. A detailed analysis of the results of these variables will be given in succeeding sections.

Third, the two housing variables--housing cost as percent of income and vacancy rate were dropped from the

TABLE II

COMPARISON OF PREDICTED RELATIONSHIPS BETWEEN
ENDOGENOUS VARIABLES AND EXPLANATORY
VARIABLES WITH THE RESULTS USING
SMSA CENSUS DATA

ENDOGENOUS VARIABLES	EXPLANATORY VARIABLES (PREDICTED)	EXPLANATORY VARIABLES (RESULTS)*
ELOH	RAE (-), PFB (-)	RAE (-), PFB (+), POD (+)
FH	RAE (+), POD (+), ELOH (-)	RAE (+), PFB (-),
PUNAG	FH (+), POD (+)	RAE (-), PFB (+), POD (+), ELOH (-), FH (+)
UNEMP	RAE (+), ELOH (-)	ELOH, (-), FH (-0, PUNAG (+)
MFI	UNEMP (-), FH (-), RAE (-), ELOH (+), POD (-)	RAE (-), PFB (+), POD (+), ELOH (+), FH (+), PUNAG (-),
PHIBP	UNEMP (+), MFI (-), PUNAG (+)	RAE (+), PFB (-), POD (-), ELOH (+), FH (+), UNEMP (+), MFI (-)
HCAPI	ENEMP (+), MFI (-), PHIBP (+)	PFB (+), ELOH (+), PUNAG (+), PHIBP (-)
VR	HCAPI (+), UNEMP (+), PHIBP (+)	POD (+), ELOH (+), MFI (-), PHIBP (-), HCAPI (-)
SF	RAE (+), PFB (+), POD (+), ELOH (-), FH (+), PUNAG (+), UNEMP (+), MFI (-), PHIBP (+), HCAPI, (+), VR (-)	RAE (+), ELOH (-), FH (+), UNEMP (-), MFI (+), PHIBP (+)

* Significant at $P < .05$

table because they did not significantly impact the subfamily. The saturated model with the path coefficients using SMSA data is presented in Figure 10. The criteria for including or not including a path in Table II and the trimmed model (Figure 11) was a significance test where alpha was set at P < .05. Table III shows the correlation matrix using SMSA data. The decomposition of effects in the overall path analysis is reported in Appendix A and the regression output using SMSA data is shown in Appendix B.

COMPARISON OF THE PREDICTED MODEL WITH THE FINAL TRIMMED ONE, CONTAINING SMSA CENSUS DATA RESULTS

The analysis is divided into two parts. The first part will discuss the direct effects of the individual variables on one another and on the subfamily, and will indicate which paths are validated in terms of their direct effects , as was originally predicted.

The second part of the analysis follows and it will focus on the indirect and total effects of the variables on the subfamily. As will be seen, some paths may not be validated in their direct effects but they are as conceptualized in their indirect effects. The analysis here will proceed in the order in which the variables appear in the trimmed model.

First is the educational level of the head of household, predicted to be negatively influenced by both race and
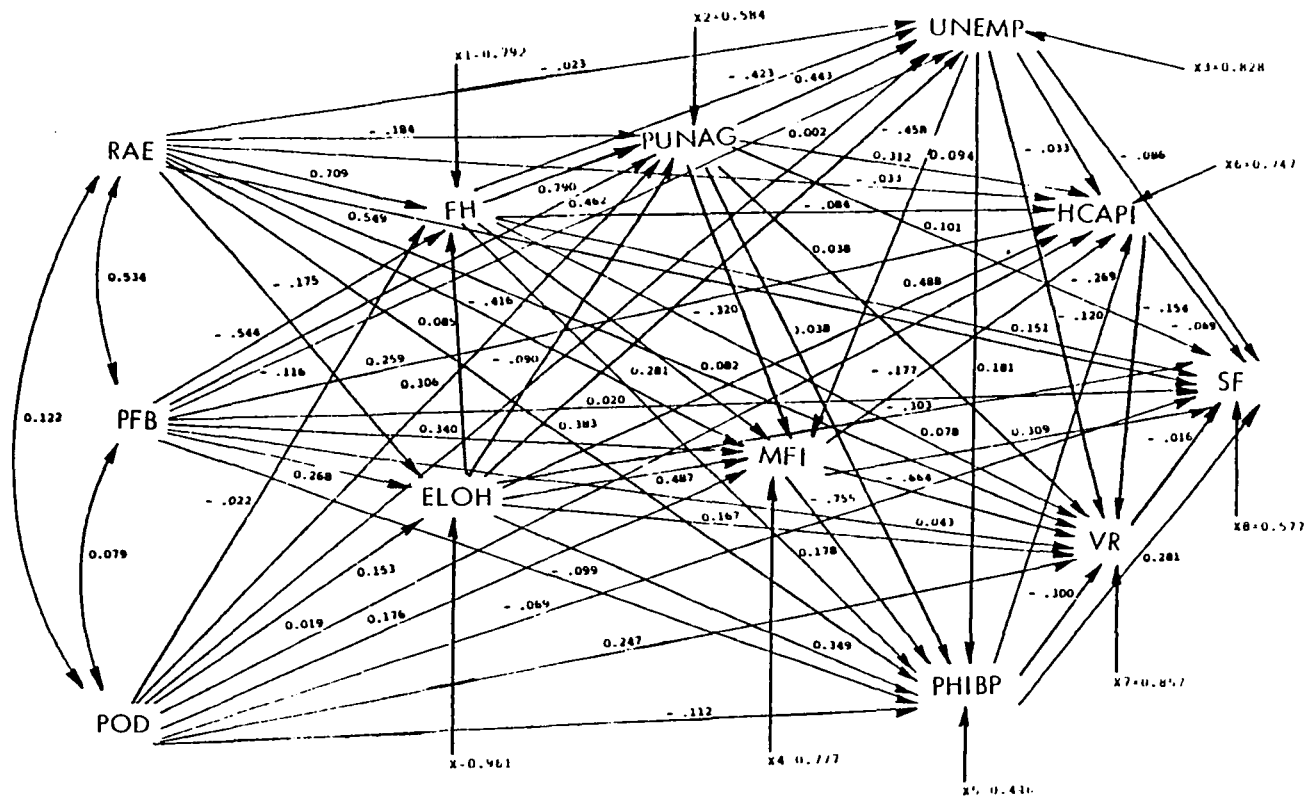
Figure 10. Path diagram of the effects on the Subfamily of Race and Ethnicity (RAE), Proportion of Foreign Born (PFB), Proportion of the Population Divorced and Not Remarried (POD), Educational Level of Head of Household (ELOH), Female Head (FH), Proportion of the Household Population Under the Age of 18 and Living with Only One Parent (PUNAG), Unemployment Rate (UNEMP), Median Family Income (MFI), Proportion of Household Income Below 1979 Poverty Level (PHIBP), Housing Cost as Percent of Income (HCAPI), and Vacancy Rate (VR), using SMSA census data (the Saturated Model).
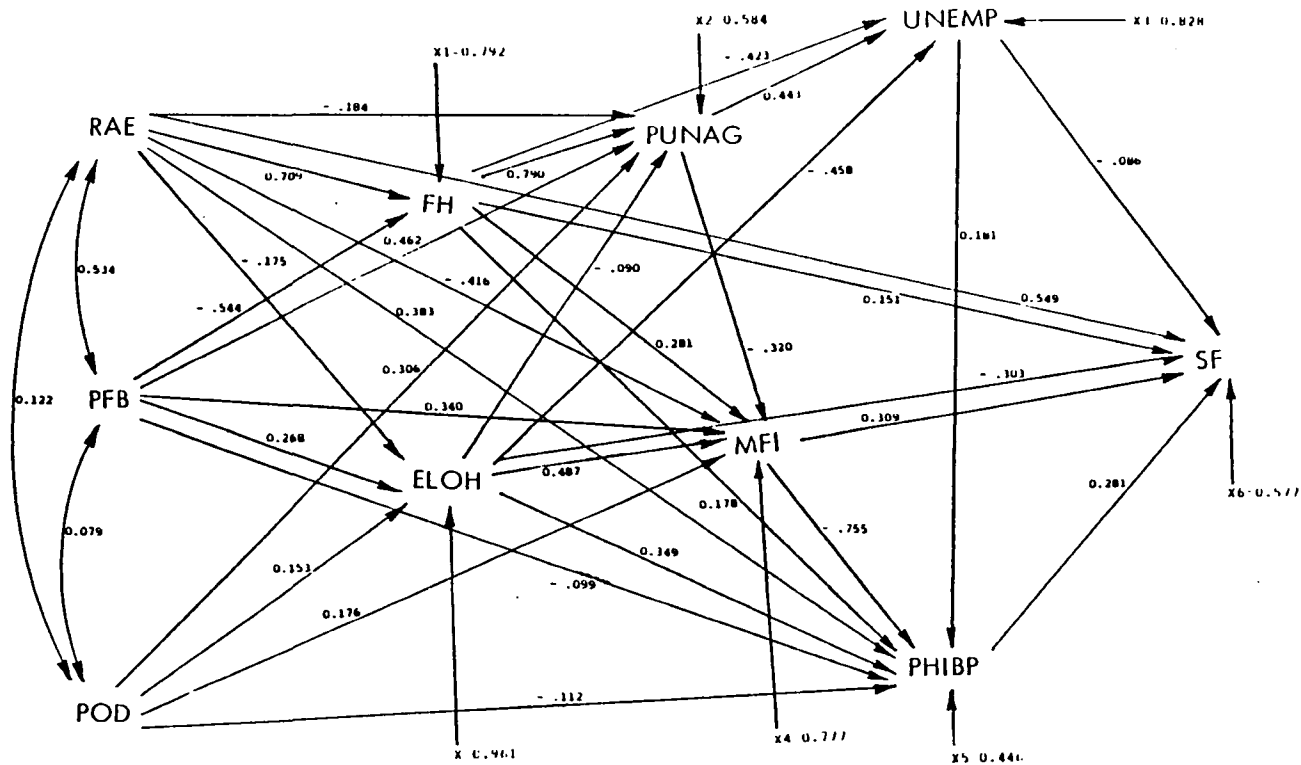
Figure 11. Path diagram of the effects on the Subfamily of Race and Ethnicity (RAE), Proportion of Foreign Born (PFB), Proportion of the Population Divorced and Not Remarried (POD), Educational Level of Head of Household (ELOH), Female Head (FH), Proportion of the Household Population Under the Age of 18 and Living with Only One Parent (PUNAG), Unemployment Rate (UNEMP), Median Family Income (MFI), Proportion of Household Income Below 1979 Poverty Level (PHIBP) using SMSA census data (the trimmed model).

TABLE III

THE CORRELATION MATRIX OF THE VARIABLES IN THE SUBFAMILY MODEL USING SMSA CENSUS DATA

	SP	RAE	PFB	POD	ELOH	FH	PUNAG	UNEMP	MFI	PHIBP	HCAPI	VR
SF	1.00000	0.73450	0.27333	-0.02248	-0.20192	0.52352	0.42605	-0.00096	-0.24286	0.50748	-0.09450	0.10147
RAE	0.73450	1.00000	0.53477	0.12220	-0.01285	0.41413	0.42885	-0.06476	-0.24583	0.54384	0.09969	0.17359
PFB	0.27333	0.53477	1.00000	0.07914	0.18687	-0.15062	0.25150	-0.03914	0.09605	0.04658	0.39664	0.00066
POD	-0.02248	0.12220	0.07914	1.00000	0.15339	0.03440	0.33365	0.05310	0.13482	-0.11774	0.21795	0.20760
ELOH	-0.20192	-0.01285	0.18687	0.15339	1.00000	-0.02922	0.02210	-0.45740	0.52485	-0.17696	0.51897	-0.10964
FH	0.52352	0.41413	-0.15062	0.03440	-0.02922	1.00000	0.65823	-0.11045	-0.17145	0.42265	-0.02471	0.13840
PUNAG	0.42605	0.42885	0.25150	0.33365	0.02210	0.65823	1.00000	0.11559	-0.14738	0.32213	0.26033	0.16861
UNEMP	-0.00096	-0.06476	-0.03914	0.05310	-0.45740	-0.11045	0.11559	1.00000	-0.17404	0.10236	-0.21479	-0.07700
MFI	-0.24286	-0.24583	0.09605	0.13482	0.52485	-0.17145	-0.14738	-0.17404	1.00000	-0.74729	0.28986	-0.37733
PHIBP	0.50748	0.54384	0.04658	-0.11774	-0.17696	0.42265	0.32213	0.10236	-0.74729	1.00000	-0.16966	0.24286
HCAPI	-0.09450	0.09969	0.39664	0.21795	0.51897	-0.02471	0.26033	-0.21479	0.28986	-0.16966	1.00000	-0.09616
VR	0.10147	0.17359	0.00066	0.20760	-0.10964	0.13840	0.16861	-0.07700	-0.37733	0.24286	-0.09616	1.00000

ethnicity and the proportion of foreign born (Figure 7). In Figure 11, which may be regarded as a direct test of Figure 7, race and ethnicity shows a negative path of -.175, and the proportion of foreign born had a positive path of 0.268. Race and ethnicity support the predicted model while the proportion of foreign born did not. The reason for this is not clear, because generally foreign born are associated with low income, a condition which will limit their ability to obtain education. The proportion of the population divorced and not remarried was not hypothesized to influence the educational level of head of household, and yet it reveals a small positive path (0.153). This path and others like it, which came out to be significant even though there was no prior prediction of any relationship, does not appear to affect the overall model. The significance of these paths suggest, however, that they are important as causal links in explaining the subfamily, and future research should take them into account.

Next is female head, predicted to be positively related to race and ethnicity and the proportion of the population divorced and not remarried and negatively related to the educational level of head of household. Race and ethnicity is the only variable validated in Figure 11 and it shows a fairly strong positive path of 0.709. The paths from the proportion of the population divorced and not remarried and the educational level of head of household were dropped at the significance level of $P < .05$. The

proportion of foreign born was not predicted to influence female head and it shows a negative path of -.544.

Third is the proportion of the household population under the age of 18 and living with only one parent, originally predicted to be positively influenced by race and ethnicity and the educational level of head of household. The two variables support the predicted model. Female head shows a high positive path of 0.790, and the proportion of the population divorced and not remarried a positive path of 0.306. Three other variables, race and ethnicity, the proportion of foreign born and the educational level of head of household, were not predicted to influence the proportion of the household population under the age of 18 and living with only one parent; however, they are seen in Figure 11 to do so.

Fourth is the unemployment rate, assumed to be positively influenced by race and ethnicity and negatively affected by the educational level of head of household. Figure 11, however, shows only educational level of head of household, with a negative path of -.458, to support the predicted model. The path from race and ethnicity was dropped, but two other variables not originally predicted to influence the unemployment rate are seen in Figure 11 to do so. These two are female head and the proportion of the household population under the age of 18 and living with only one parent.

Median family income, the fifth variable, was originally posited to be negatively influenced by the unemployment rate, female head, race and ethnicity, and the proportion of the population divorced and not remarried, and positively affected by the educational level of head of household. As can be seen in Figure 11, only race and ethnicity (-.416) and the educational level of head of household (0.487) were validated. Both female head and the proportion of the population divorced and not remarried have positive paths (0.281 and 0.176 respectively). The path from the unemployment rate was dropped because it was not significant. The proportion of foreign born and the proportion of the household population under the age of 18 and living with only one parent were not hypothesized to affect median family income, but each has a path that leads to it in the final model.

The sixth variable is the proportion of household income below poverty, originally predicted to be influenced positively by both the unemployment rate and the proportion of the household population under the age of 18 and living with only one parent, and negatively by median family income. The unemployment rate (0.181) and the median family income (-.755) support the predicted model, but the path from the proportion of the household population under the age of 18 and living with only one parent was dropped. Five other variables not assumed to affect the proportion of household income below 1979 poverty level are seen to do so

in Figure 11. These variables are race and ethnicity, the proportion of foreign born, the proportion of the population divorced and not remarried, the educational level of head of household, and female head.

The seventh and final variable, the subfamily, was posited to be positively influenced by all the variables in the model except for the educational level of head of household, median family income and vacancy rate, which were assumed to have a negative effect. As can be seen in Figure 11, only four variables, race and ethnicity (0.549), female head (0.151), the educational level of head of household (-.303), and the proportion of household income below poverty level (0.281), support the predicted model. The unemployment rate, with a small negative path of -.086, and median family income with a positive path of 0.309 do not support the model. The two paths from the housing variables (housing cost as percent of income and vacancy rate) were dropped because they do not have an effect on the subfamily, based on the significance level of $P < .05$. The paths from the proportion of foreign born, the proportion of the population divorced and not remarried and the proportion of the household population under the age of 18 and living with only one parent were also dropped.

The proportion of foreign born did not affect the subfamily. This is surprising, because generally foreign born experience economic problems which incline them toward

extended family living situations. This finding, however, agrees with Angel and Tienda's (1982) study which showed that foreign birth of the head of household had a negative impact on extension.

The proportion of the population divorced and not remarried was not validated and the theoretical reason for holding it may be faulty. The results suggest, however, that it is not an important variable in explaining the subfamily.

The proportion of the household population under the age of 18 and living with only one parent also did not support the predicted model. The reason for this may be due to multicolonearity. Since this variable is directly related to female head of household, which was validated, its impact may have been reduced. The correlation coefficient between the two variables, as is seen in Table III, is high (0.658).

The unemployment rate was not validated when SMSA data was used, but it was validated with the LA data as will be seen shortly. This result may be due to data sensitivity to aggregation. The SMSA data based on summary information, has limited variability, which makes relationship less significant. A more detailed discussion of data sensitivity to aggregation will be presented later in the chapter. The result of the unemployment rate, using SMSA data, is contrary to the literature reviewed.

Median family income did not support the predicted model. This might be attributed to the problems of timing

in measuring the variable. The data used in this study measures household income after extension, not before, so that what is seen is the effect of extension on median family income and not vice versa as was originally predicted. Extension, then, increases family income. This explanation is consistent with Angel and Tienda's study (1982) which showed that the earnings of nonnuclear members is significantly and positively related to total household income in minority households.

The two housing variables were not statistically significant. Vacancy rate has been an important variable in assessing the need for housing. Housing cost as a percentage of income was predicted to be a key variable in the overall model. The dropping out of the housing variables is surprising and it suggests that they are not important in explaining the subfamily. Perhaps they only function during a severe housing shortage.

While other conclusions will be reached as more data is reviewed, it can be said now, based on the preceding discussion, that the subfamily, using SMSA data, is a function of race and ethnicity, female head, the educational level of head of household, and the proportion of household income below poverty level. This can be represented as:

SF = f (RAE, FH, ELOH, PHIBP).

The paths that were not supported do not render the conceptual model invalid. However, the final model is more parsi-

monious than was originally conceptualized and it holds fairly well except for the housing variables.

COMPARISON OF THE CONCEPTUALIZED MODEL WITH THE RESULTS USING SMSA CENSUS DATA

This is the second part of the analysis and it will focus on Table IV, which shows the decomposition of effects for only one variable--the subfamily. The discussion will follow in the order in which the variables appear in Table IV. First is race and ethnicity which has its most indirect effect (0.146) through female head and its second most indirect effect (0.108) through poverty level. Race and ethnicity has the greatest total indirect effect (0.248), the greatest direct effect (0.549), and the greatest total effect (0.797) on the subfamily. It has a relatively small noncausal effect of -.062. These attributes combine to make it the most important variable in the model in explaining the subfamily. As conceptualized, this demographic variable affects the subfamily directly and indirectly through socio-cultural variables (ELOH, PH and PUNAG) and economic variables (MFI and PHIBP). It does not, however, like the rest of the variables in the model, affect the subfamily through the housing variables (HCAPI and VR). These variables were dropped from the model due to a lack of statistical significance. The second variable is the proportion of foreign born which has its greatest indirect effect (-.112) through female head and its second greatest indirect effect (-.038) through the educational level of

TABLE IV

DECOMPOSITION OF EFFECTS OF ONE VARIABLE (SUBFAMILY) IN A PATH MODEL OF THE SUBFAMILY USING SMSA CENSUS DATA

Dependent Variable	Predeter-mined Variable	CAUSAL									Direct Effect	Total Effect	Noncausal
		INDIRECT EFFECT VIA								Total Indirect Effect			
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
SF	RAE	0.025	0.146	0.009	-	- .040	0.108	-	-	0.248	0.549	0.797	- .062
	PFB	- .038	- .112	- .022	-	- .033	- .028	-	-	- .167	-	- .167	0.440
	POD	- .021	-	- .014	-	0.017	- .031	-	-	- .049	-	- .049	0.027
	ELOH	-	-	- .001	0.016	0.047	0.098	-	-	0.160	- .303	- .143	- .059
	FH	-	-	- .037	0.015	0.027	0.050	-	-	0.055	0.151	0.206	0.318
	PUNAG	-	-	-	- .016	- .031	-	-	-	- .047	-	- .047	0.473
	UNEMP	-	-	-	-	-	0.051	-	-	0.051	- .086	- .035	0.034
	MPI	-	-	-	-	-	- .212	-	-	- .212	0.309	0.097	- .340
	PHIBP	-	-	-	-	-	-	-	-	-	0.281	0.281	0.108
	HCAPI	-	-	-	-	-	-	-	-	-	-	-	-
	VR	-	-	-	-	-	-	-	-	-	-	-	-

head of household. This demographic variable has no direct effect on the subfamily, as was conceptualized. However, it affects it indirectly through sociocultural and economic variables. In addition, it has the second highest noncausal effect (0.440) in the table. The high noncausal effects of foreign born and other variables in the model seem to warrant additional research to identify the causal links implied by them. Specifying these links will help strengthen the model. This is one possibility for further investigation.

The proportion of the population divorced and not remarried is third and its greatest indirect effect (-.031) is through the proportion of household income below poverty level, and its second greatest indirect effect (-.021) is through the educational level of head of household. It does not have a direct effect on the subfamily. However, it affects it indirectly through sociocultural variables (ELOH and PUNAG) and economic variables (MFI and PHIBP). It's total indirect effect equals its total effect (-0.049) and it has a very small noncausal effect of 0.027.

The fourth variable is the educational level of head of household and its highest indirect effect (0.098) is through the proportion of household income below poverty level followed by the median family income (0.047). This sociocultural variable affects the subfamily directly and indirectly through economic variables as conceptualized. It has a negligible indirect effect (-.001) through the propor-

tion of the household population under the age of 18 and living with only one parent. Its total indirect effect is 0.0160, while the direct effect is -.303. The total effect (-.143) is relatively small compared to its direct impact because the direct and the indirect effects have opposite signs which cancels each other out. This variable has a small noncausal effect of -.059.

Female head is the fifth variable and its greatest indirect effect (0.050) is through the proportion of household income below poverty level, followed by the proportion of the household population under the age of 18 and living with only one parent. It has the third highest total effect (0.206) on the subfamily. This total effect is composed of a total indirect effect of 0.055, a direct effect of 0.151 and a noncausal effect of 0.318. This sociocultural variable affects the subfamily indirectly through economic variables as conceptualized.

The sixth variable is the proportion of the household population under the age of 18 and living with only one parent. Its highest indirect effect (-.031) is through the median family income. As conceptualized it affects the subfamily indirectly through economic variables (UNEMP and MFI). However, it does not directly impact on the subfamily. Thus, its indirect effect (-.047) equals its total effect (-.047). In addition, it has the highest noncausal effect (0.473) of all the variables in the model.

The unemployment rate is the seventh variable. As noted in Table IV, it affects the subfamily directly and indirectly through the proportion of household income below poverty level. Its total indirect effect is 0.051 while the direct effect is -.086, combining to produce a total effect of -0.035. It has a noncausal effect of 0.034.

The eighth variable is median family income and it affects the subfamily directly and indirectly through the proportion of household income below poverty. It has a total indirect effect of -.212 and a direct effect of 0.309 both ranking the second highest in their respective effects. It also has the third highest noncausal effect (-.340). The total effect is reduced and this is due to the fact that the total indirect effect and the direct effect have opposite signs.

The proportion of household income below poverty level is the ninth and final variable that has any effect on the subfamily. It has no indirect effect on the subfamily but has the third highest direct effect (0.281) and the second highest total effect (0.281). Its noncausal effect is 0.108.

From the analysis demographic, sociocultural and economic characteristics are independent of the housing conditions in affecting the subfamily. It suggests that subfamily will exist regardless of the housing variables. The model holds very well as conceptualized except for the housing variables.

AN OVERVIEW OF THE RESULTS OF THE LOS ANGELES
CENSUS TRACT DATA

Table V contains the general hypothesis and results
using Los Angeles census tract data. The observations made
earlier in Table II are applicable here as well. Table VI
shows the correlation matrix using LA data. The saturated
model using the LA census data is shown in Figure 12 while
the trimmed model is shown in Figure 13. The decomposition
of effects in the overall path analysis using Los Angeles
County census tract data is reported in Appendix C, and the
regression output is shown in Appendix D.

COMPARISON OF THE PREDICTED MODEL WITH THE FINAL
TRIMMED ONE CONTAINING LOS ANGELES COUNTY
CENSUS TRACT DATA

The discussion here will follow the causal ordering of
the variables as posited by the model. The trimmed model
(Figure 13), using Los Angeles County results, is also based
on the significance level of $P < .05$. The analysis here is
divided into two parts. The first part, which is this
section, will discuss the direct effects of the individual
variables on each other and on the subfamily. The second
part follows, and it will focus on the indirect and total
effects of the variables on the subfamily. Discussion will
proceed in the order in which the variables appear in the
trimmed model.

The educational level of head of household, the first
variable, was predicted in Figure 7 to be negatively in-
fluenced by race and ethnicity and the proportion of

TABLE V

COMPARISON OF PREDICTED RELATIONSHIPS BETWEEN
ENDOGENOUS VARIABLES AND EXPLANATORY
VARIABLES WITH THE RESULTS
USING LA COUNTY CENSUS
TRACT DATA

ENDOGENOUS VARIABLES	EXPLANATORY VARIABLES (PREDICTED)	EXPLANATORY VARIABLES (RESULTS)*
ELOH	RAE (-), PFB (-)	RAE (-), PFB (+)
FH	RAE (+), POD (+), ELOH (-)	RAE (+), PFB (-), POD (+), ELOH (+)
PUNAG	FH (+), POD (+)	RAE (+), PFB (+), POD (+), ELOH (-) FH (+)
UNEMP	RAE (+), ELOH (-)	RAE (+), PFB (+), ELOH (-), FH (+), PUNAG (+)
MFI	UNEMP (-), FH (-), RAE (-), ELOH (+), POD (-)	RAE (-), PFB (-), POD (-), ELOH (+), PUNAG (-), UNEMP (+)
PHIBP	UNEMP (+), MFI (-), PUNAG (+)	RAE (+), PFB (+), POD (+), FH (+), PUNAG (+), UNEMP (+), MFI (-)
HCAPI	UNEMP (+), MFI (-), PHIBP (+)	RAE (-), PFB (+), POD (+), ELOH (-), FH (+), PUNAG (+), MFI (+), PHIBP (+)
VR	HCAPI (+), UNEMP (+), PHIBP (+)	RAE (-), PFB (-), POD (+), ELOH (+), FH (-), MFI (-), PHIBP (+), HCAPI (-)
SF	RAE (+), PFB (+), POD (+), ELOH (-), FH (+), PUNAG (+) UNEMP (+), MFI (-), PHIBP (+), HCAPI (+), VR (-)	RAE (+), POD (-), ELOH (-), FH (+) UNEMP (+), MFI (+),

* Significant at P < .05

TABLE VI

THE CORRELATION MATRIX OF THE VARIABLES IN THE SUBFAMILY MODEL USING LA COUNTY CENSUS TRACT DATA

	SP	RAE	PPB	POD	ELOH	PH	PUNAG	UNEMP	MFI	PHIBP	HCAPI	VR
SP	1.00000	0.48892	0.17647	-0.43790	-0.43790	0.32316	0.22284	0.41060	-0.30521	0.38808	0.09603	-0.05037
RAE	0.48892	1.00000	0.52973	-0.14517	-0.64889	0.40926	0.33714	0.58813	-0.63724	0.69171	0.13051	-0.01965
PPB	0.17647	0.52973	1.00000	-0.09686	-0.23159	-0.19742	0.03564	0.28361	-0.36079	0.46234	0.27356	0.01629
POD	-0.12969	-0.14517	-0.09686	1.00000	0.11329	0.21705	0.48356	0.11867	-0.17876	0.11603	0.31213	0.18963
ELOH	-0.43790	-0.64889	-0.23159	0.11329	1.00000	-0.22838	-0.23767	-0.49330	0.75306	-0.51227	-0.13820	0.04230
PH	0.32316	0.040926	-0.19742	0.21705	-0.22838	1.00000	0.56813	0.43168	-0.27342	0.41482	0.16846	0.01961
PUNAG	0.22284	0.33714	0.03564	0.48356	-0.23767	0.56813	1.00000	0.57494	-0.42709	0.63649	0.47329	0.14467
UNEMP	0.41060	0.58813	0.28361	0.11867	-0.49330	0.43168	0.57494	1.00000	-0.50138	0.78074	0.33436	0.10750
MFI	-0.30521	-0.63724	-0.36079	-0.17876	0.75306	-0.27342	-0.42709	-0.50138	1.00000	-0.62701	-0.26240	-0.16837
PHIBP	0.38808	0.69171	0.46234	0.11603	-0.51227	0.41482	0.63649	0.78074	-0.62701	1.00000	0.46392	0.16837
HCAPI	0.09603	0.13051	0.27356	0.31213	-0.13820	0.16846	0.47329	0.35436	-0.26240	0.46392	1.00000	0.10147
VR	-0.05037	-0.01965	0.01629	0.18963	0.04230	0.01961	0.14467	0.10750	-0.08115	0.16837	0.10147	1.00000
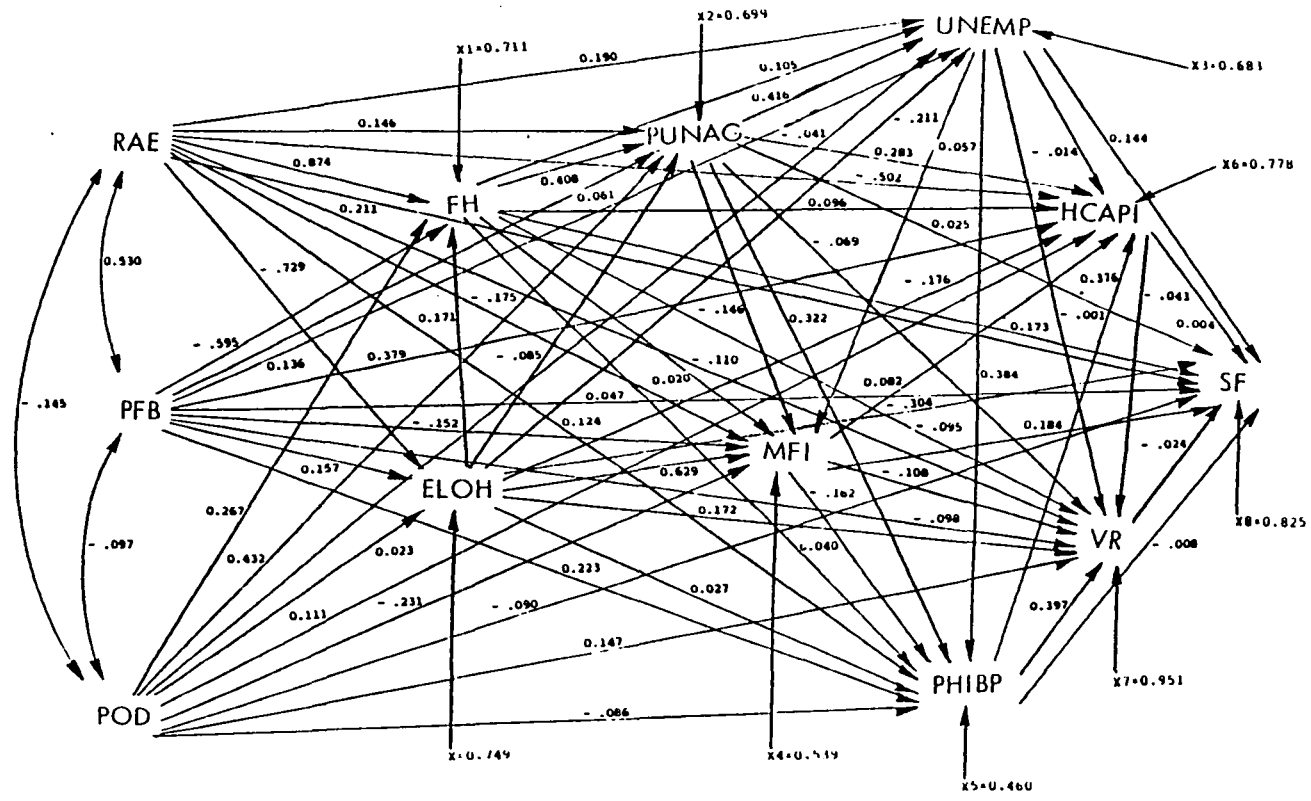
Figure 12. Path diagram of the effects on the Subfamily of Race and Ethnicity (RAE), Proportion of Foreign Born (PFB), Proportion of the Population Divorced and Not Remarried (POD), Educational Level of Head of Household (ELOH), Female Head (FH), Proportion of the Household Population Under the Age of 18 and Living with Only One Parent (PUNAG), Unemployment Rate (UNEMP), Median Family Income (MFI), Proportion of Household Income Below 1979 Poverty Level (PHIBP), Housing Cost as Percent of Income (HCAPI), and Vacancy Rate (VR), using LA county census data (the Saturated Model).
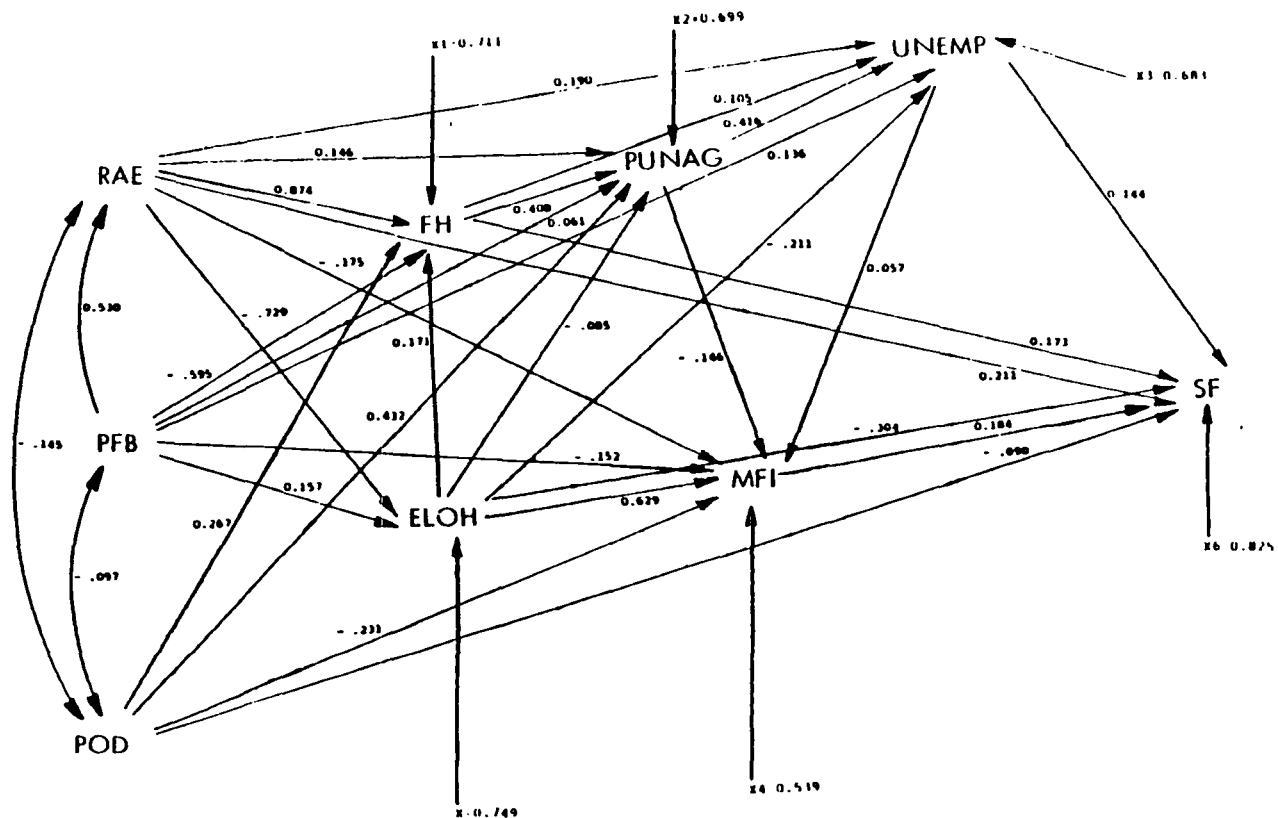
Figure 13. Path diagram of the effects on the Subfamily of Race and Ethnicity (RAE), Proportion of Foreign Born (PFB), Proportion of the Population Divorced and Not Remarried (POD), Educational Level of Head of Household (ELOH), Female Head (FH), Proportion of the Household Population Under the Age of 18 and Living with Only One Parent (PUNAG), Unemployment Rate (UNEMP), Median Family Income (MFI), Proportion of Household Income Below 1979 Poverty Level (PHIBP) using LA County census data (the trimmed model).

foreign born. Race and ethnicity, as can be seen in Figure 13 supports the predicted model. It shows a negative path of -.729. The proportion of foreign born, showing a positive path of 0.157, does not support the model.

Female head is the second variable in the model. As can be seen in Figure 13 only two (race and ethnicity and the proportion of the population divorced and not remarried) of the three variables predicted to influence female head were validated. The educational level of head of household, the third variable, was not validated. Race and ethnicity shows a large positive path of 0.874, and the proportion of the population divorced and not remarried shows a positive path of 0.267. The educational level of head of household, showing a positive path of 0.171, does not support the predicted model. This variable, as was the case with the SMSA data, was not validated and the theoretical reason for holding it may be faulty. The proportion of foreign born, not assumed to influence female head, shows a negative path of -.595.

The proportion of the household population under the age of 18 and living with only one parent, the third variable, was predicted to be positively influenced by female head and the proportion of the population divorced and not remarried. These two paths were validated. Female head shows a positive path of 0.408, and the proportion of the population divorced and not remarried a positive path of 0.432. Race and ethnicity and the proportion of foreign born were not predicted to affect the proportion of the

household population under the age of 18 and living with only one parent, but they are seen to do so in Figure 13.

The fourth variable, the unemployment rate, was predicted to be positively affected by race and ethnicity and negatively influenced by the educational level of head of household. The two variables support the model. Race and ethnicity has a positive path of 0.190, and educational level of head of household shows a negative path of -211. Three other variables--the proportion of foreign born (0.136), female head (0.105), and the proportion of the household population under the age of 18 and living with only one parent (0.416)--were not predicted to influence the unemployment rate; however, they are seen to do so in Figure 13.

Median family income, the fifth variable, was posited to be negatively influenced by the unemployment rate, female head, race and ethnicity, and the proportion of the population divorced and not remarried, and positively influenced by the educational level of head of household. Three of the variables, race and ethnicity (-.175), the educational level of head of household (0.629), and the proportion of the population divorced and not remarried (-.231), were validated. The path from female head was dropped at the significance level of P < .05. The unemployment rate did not support the predicted model, showing a negligible positive path of 0.058. This path was also not validated using SMSA

data. The proportion of the household population under the age of 18 and living with only one parent was not predicted to have an effect on median family income and it comes with a small negative path of -.146.

The proportion of household income below poverty, the sixth variable, was predicted to be positively influenced by the unemployment rate and the proportion of the household population under the age of 18 and living with only one parent and negatively by median family income (Figure 7). Figure 13 shows the three variables to be validated. The unemployment rate has a positive path of 0.384, the proportion of the household population under the age of 18 and living with only one parent a positive path of 0.322, and median family income a negative path of -.162. Four other variables not thought to influence the proportion of household income below poverty are seen in Figure 14 to do so. Female head has a negligible positive path of 0.040, race and ethnicity a small positive path of 0.124; proportion of foreign born has a positive path of 0.223, and the proportion of the population divorced and not remarried a negative path of -.086.

Subfamily, the seventh variable, was predicted to be positively influenced by all of the variables except the educational level of head of household, median family income and vacancy rate, which was posited to have a negative influence. Figure 13 shows four variables, the unemployment rate (0.144), race and ethnicity (0.211) female head

(0.173), and the educational level of head of household (-.304) to be validated. The proportion of the population divorced and not remarried (-.090) and median family income (0.184) do not support the model as is the case when using SMSA data. The two housing variables, housing cost as percent of income and vacancy rate, were also dropped here on the basis of the significance level of $P < 0.5$. While this result will indicate that housing variables are not important in explaining the subfamily (as was the case with SMSA), its dropping out of the model at the LA level is surprising, since there is such a high proportion of ethnic minorities in the city who would be expected to experience difficulty with rent and mortgage. Los Angeles is also generally known to have expensive housing which could have exacerbated affordability and thus lead to extension. The paths from the proportion of foreign born, the proportion of the household population under the age of 18 and living with only one parent and the proportion of household income below poverty were dropped at the significant level of $P < 0.5$.

The proportion of foreign born and the proportion of the household population under the age of 18 and living with only one parent do not support the predicted model. Foreign born generally experience economic problems which incline them to extend. This finding, however, agrees with Angel and Tienda's study (1982) which showed that foreign birth of the head of household had a negative impact on extension.

The proportion of the household population under the age of 18 and living with one parent does not support the predicted model. Since this variable is directly related to female head of household which was validated, its impact may have been reduced. The correlation coefficient between the two variables, as is seen in Table VI, is high (0.568). Median family income did not support the predicted model here also for similar reasons cited when discussing the SMSA data.

The proportion of household income below the poverty level did not affect the subfamily with LA data. This can be attributed to multicolonearity problems. As can be seen in Table VI the proportion of household income below poverty level is highly correlated with other income related variables--the unemployment rate (0.780) and median family income (-.627) which were validated.

From the preceding discussion the subfamily using LA data can be said to be a function of the unemployment rate, race and ethnicity, female head and the educational level of the head of household. This can be represented as:

SF = f (UNEMP, RAE, FH, ELOH).

While some paths were not supported it does not render the overall model invalid. Most paths came out as predicted except for the housing variables. These findings reinforce those of the SMSA analysis.

COMPARISON OF THE CONCEPTUALIZED MODEL
WITH THE RESULTS USING LOS ANGELES CENSUS TRACT DATA

This is the second part of the analysis using LA data and it will focus on Table VII which shows the decomposition of effects for only one variable--the subfamily. The discussion here will also proceed in the order in which the variables appear in Table VII. The first variable is race and ethnicity and its greatest indirect effect (0.179) is through female head followed by the educational level of head of household (0.160). It has the largest total indirect effect (0.390), the greatest total effect (0.601) and the second highest direct effect (0.211). Its noncausal effect is -.112. These attributes make it the most important variable in explaining the subfamily, as was the case when using SMSA data. As conceptualized, it affects the subfamily directly and indirectly through sociocultural and economic variables. It does not, however, affect the subfamily through the housing variables which were dropped due to a lack of statistical significance.

The second variable is the proportion of foreign born which has its greatest indirect effect (-.121) through female head followed by the educational level of head of household (-.034). This demographic variable does not have direct effect on the subfamily as conceptualized. However it affects it indirectly through sociocultural and economic variables. It has the second highest total indirect effect

TABLE VII

DECOMPOSITION OF EFFECTS OF ONE VARIABLE (SUBFAMILY) IN A PATH MODEL OF THE SUBFAMILY USING LOS ANGELES COUNTY DATA

| Dependent Variable | Predetermined Variable | CAUSAL | | | | | | | | | | | Noncausal |
| | | INDIRECT EFFECT VIA | | | | | | | | Total Indirect Effect | Direct Effect | Total Effect | |
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
SF	RAE	0.160	0.179	0.054	0.029	- .032	-	-	-	0.390	0.211	0.601	- .112
	PFB	- .034	- .121	- .002	0.029	- .028	-	-	-	- .152	-	- .152	0.328
	POD	-	0.054	0.016	-	-	-	-	-	0.070	- .090	- .020	- .110
	ELOH	-	0.035	- .003	- .033	0.116	-	-	-	0.115	- .304	- .189	- .249
	FH	-	-	0.015	0.016	-	-	-	-	0.031	0.173	0.204	0.119
	PUNAG	-	-	-	0.064	- .027	-	-	-	0.037	-	0.037	0.186
	UNEMP	-	-	-	-	0.010	-	-	-	0.010	0.144	0.154	0.257
	MPI	-	-	-	-	-	-	-	-	-	0.184	0.184	- .489
	PHIBP	-	-	-	-	-	-	-	-	-	-	-	-
	HCAPI	-	-	-	-	-	-	-	-	-	-	-	-
	VR	-	-	-	-	-	-	-	-	-	-	-	-

(-.152) and the second highest noncausal effect (0.328).
Its total indirect effect equals its total effect (-.152).

The proportion of the population divorced and not
remarried is the third variable and it affects the subfamily
indirectly only through two variables--FH (0.054) and PUNAG
(0.016). It has a total effect of -.020. The total effect
is reduced because the total indirect effect and the direct
effect have opposite signs. This variable has a noncausal
effect of -.110. As conceptualized it affects the subfamily
directly and indirectly through sociocultural variables,
however it does not affect it indirectly through economic
variables.

The fourth variable is the educational level of head
of household and its highest indirect effect (0.116) is
through median family income and its second most indirect
effect (0.035) is through female head. This sociocultural
variable affects the subfamily directly and indirectly
through economic variables as conceptualized. It has the
third highest total indirect effect (-.115) the greatest
direct effect (-.304) and the third highest total effect
(-.189). The total effect here is also reduced because the
total indirect effect and the direct cancels itself out.
This variable has a noncausal effect of -.249.

The fifth variable is female head and its indirect
effect is through only two variables--PUNAG (0.015) and
UNEMP (0.016) whose coefficients are almost equal. As con-
ceptualized it affects the subfamily directly and indirectly

through economic variables. It has a total indirect effect of 0.031, a direct effect of 0.173 and the second highest total effect of 0.204. It's noncausal effect is 0.119.

The proportion of the household population under the age of 18 and living with only one parent is the sixth variable and it has its greatest indirect effect (0.064) through the unemployment rate. It does not have direct effect on the subfamily as conceptualized. However, it affects it indirectly through economic variables. It's total indirect effect (0.037) is the same with the total effect (0.037). It has a noncausal effect of 0.186.

The seventh variable is the unemployment rate and it affects the subfamily directly as conceptualized. Its indirect effect is through only one variable, the median family income. It has a total indirect effect of 0.010, a direct effect of 0.144 and a total effect of 0.154. Its noncausal effect is the third highest.

Median family income is the eighth and final variable in the table that has an effect on the subfamily. As conceptualized, it has direct effect on the subfamily. However, it does not affect it indirectly through any variable. It has the third highest direct effect (0.184) and the highest noncausal effect (-.489). Its total effect is 0.184.

From the analysis, demographic, sociocultural and economic characteristics are independent of the housing

characteristics in affecting the subfamily. It suggests that the subfamily will exist regardless of the housing variables. The model as conceptualized holds very well here, except for the housing variables, as was the case with the SMSA level data.

COMPARATIVE ANALYSIS OF THE GENERAL SMSA RESULTS WITH THOSE OF LOS ANGELES COUNTY

The results of the unstandardized beta for direct effects in the SMSA and LA data is shown in Table VIII and the mean and standard deviation of the two levels is presented in Table IX. A general review of the two trimmed models presented in Figure 11 (SMSA) and in Figure 13 (Los Angeles County) and Table VIII shows differences and similarities. First, some of their major differences will be discussed. Then their similarities will be covered.

The two models show that there are more paths among endogenous variables in Figure 13, the Los Angeles application, than in Figure 11. For example, the unemployment rate, as shown in Figure 13, has five paths leading to it, while in Figure 11 it has only three. Predicted relationships between the variables are more frequently validated in Figure 13 than in Figure 11. For example, in Figure 13 all of the variables assumed to influence the proportion of the household population under the age of 18 and living with only one parent and the unemployment rate are validated. For the data in Figure 11 this can be said only for the

TABLE VIII

COMPARISON OF THE UNSTANDARDIZED BETA (B) OF SMSA CENSUS DATA WITH
THE UNSTANDARDIZED BETA (B) OF LA COUNTY CENSUS DATA

INDEPENDENT VARIABLE	DEPENDENT VARIABLE				
	SF	SMSA DATA B	F	LA COUNTY DATA B	F
RAE		0.0278	81.877*	0.0145	23.284*
PFB		0.0038	0.129	0.0094	1.950
POD		- .0419	2.913	- .0682	10.663*
ELOH		- .0571	29.158*	- .0738	65.310*
FH		0.0058	5.249*	0.0066	30.207*
PUNAG		0.0216	2.644	0.0055	0.489
UNEMP		- .0329	4.067*	0.1111	17.434*
MPI		0.0001	16.888*	0.0001	22.568*
PHIBP		0.0612	13.730*	- .0026	0.031
BCAPI		- .0369	2.418	0.0028	0.020
VR		- .0047	0.167	- .0164	1.225
		R^2 = 0.667 F = 55.657		R^2 = 0.319 F = 69.639	

Significant (*) at $P < .05$
Number of cases: SMSA = 318
LA   = 1644

TABLE IX

COMPARISON OF THE MEAN AND STANDARD
DEVIATION OF SMSA CENSUS DATA
WITH LA COUNTY CENSUS DATA

VARIABLE	MEAN		STANDARD DEVIATION	
	SMSA DATA	LA DATA	SMSA DATA	LA DATA
SF	0.0211	0.0310	0.0084	0.0296
RAE	0.1887	0.5786	0.1661	0.4318
PFB	0.0457	0.2141	0.0449	0.1493
POD	0.0626	0.0869	0.0139	0.0390
ELOH	0.1417	0.1558	0.0447	0.1221
FH	0.2186	0.3590	0.2189	0.7709
PUNAG	0.1721	0.2315	0.0394	0.1354
UNEMP	0.0644	0.0628	0.0219	0.0384
MFI	19944.9119	21931.4136	2862.9661	10397.0408
PHIBP	0.1226	0.1211	0.0387	0.0937
HCAPI	0.1410	0.1702	0.0158	0.0397
VR	0.0679	0.0417	0.0282	0.0430

Cases: SMSA 318
LA 1644

proportion of the household population under the age of 18 and living with only one parent.

In Table VIII the proportion of household income below poverty, for instance, has a b of (-.0026) with LA data, while it has a b of (0.0612) with the SMSA data. The primary explanation of the differences between SMSA and Los Angeles County results lies with the fact that each belongs to a different geographical level. The differences in the results above and in such variables like the unemployment rate which was validated with LA data but not with SMSA also indicate that data may be sensitive to aggregation.

At lower aggregation (the LA Census Tract) there is more variability and relationships at a given strength tend to be more statistically significant. In this study the model works also better at the LA level because it is closer to individual level data.

Further differences can be noted in the results of the two geographical levels. For instance the R^2 for the SMSA data is 0.667 and its F-ratio is 55.657 while the R^2 for LA data is 0.319 and it comes with an F-ratio of 69.639. This result, however, is an aberration. Generally the higher the R^2, the larger the F-ratio. The differences in the F-ratios can be attributed to different number of cases and different variances in the two data sets. LA data has a total case of 1644 while SMSA has 318 (Table IX). With a larger sample size, lower R^2s may be associated with more extreme F-ratios.

The LA data also has higher variances in all the variables used than the SMSA set (Table IX). For example, the variance for the subfamily using LA data is 0.0296 almost three times as high as that of SMSA (0.0084). What these differences suggest is that the variables are related with subfamilies at the LA census tract in a more conceptually appropriate manner than the SMSA level. At the SMSA's level, the model is operating in general because it is aggregated and has limited variability. It is more removed from the conceptual literature than the less aggregated Los Angeles Census Tract.

Despite these differences there are a great many similarities between the results of the two geographical levels. In Table VIII the betas are relatively equal. For instance, the beta for the proportion of foreign born using SMSA data is 0.0038 and that with LA data is 0.0094. The beta for the educational level of the head using SMSA is -.0571 and that of LA data is -.0738. The means for the two geographical levels are about the same. With SMSA data the mean for the subfamily is 0.0211 and with LA data it is 0.310.

The two trimmed models presented in Figure 11 (SMSA) and in Figure 13 (LA) show similar results. Subfamily has the same number of variables affecting it in the two models. The two housing variables were also insignificant in both models. The results suggest that variations of subfamilies is consistent between the two aggregate levels. In both

analyses the subfamily is systematically predicted by demo-graphic, sociocultural and economic characteristics and not the housing variables. It suggests that subfamily will exist regardless of the housing conditions.

CHAPTER VII

SUMMARY AND CONCLUSIONS

A major finding of this dissertation is that the sub-family is systematically predicted by demographic, socio-cultural and economic characteristics and not by the housing variables. It suggests that the subfamily will exist regardless of the housing conditions. A summary of the findings and their implications for future research are discussed below.

THE DEMOGRAPHIC CHARACTERISTICS

Drawing on the literature, it was conceptualized that demographic characteristics would influence the subfamily in accordance with the views of life-cycle theory, and with Angel and Tienda's study. This concept was then operationalized with race and ethnicity, the proportion of foreign born, and the proportion of the population divorced and not remarried, and was used in a causal model (Figure 7) and tested on two geographical levels--SMSA and Los Angeles census tract. Race and ethnicity was validated and it affects the subfamily directly and indirectly as conceptualized. The result of its direct effect on the subfamily is consistent with those of Angel and Tienda (1982); its effect on sociocultural variables is in accordance with the

findings of Currie and Skolnick (1984).

The proportion of foreign born did not have direct effect on the subfamily as conceptualized. However, it affects it indirectly through sociocultural and economic variables. The proportion of the population divorced and not remarried was not validated in its direct effect on the subfamily. This finding is at variance with the literature reviewed. However it is still an important variable in explaining the subfamily because it affects it indirectly through sociocultural and economic conditions as assumed.

THE SOCIOCULTURAL CHARACTERISTICS

On the basis of the literature reviewed, sociocultural characteristics were also conceptualized to influence the subfamily. This follows the views of life cycle theory and Angel and Tienda's study. It was then operationalized with the educational level of head of household, female head of household, and the proportion of the household population under the age of eighteen and living with only one parent.

The educational level of head of household and the female head affect the subfamily directly and indirectly through economic variables as assumed. The results of the direct effect of the two variables on the subfamily is in accordance with the findings of Angel and Tienda (1982). The proportion of the household population under the age of eighteen and living with one parent did not affect the sub-family directly as the literature suggests it would. The

reason for this may be due to multicolonearity. Since this variable is directly related to female head which was validated, its impact may have been reduced. The correlation coefficient between the two variables is high (0.658). The proportion of the household population under the age of eighteen and living with one parent however affects the subfamily through economic variables as conceptualized.

THE ECONOMIC CHARACTERISTICS

On the basis of a literature review, economic characteristics were conceptualized to affect the subfamily following the life cycle theory, the studies of Angel and Tienda (1982), and that of Agresti (1979). The variables used to operationalize economic characteristics are the unemployment rate, median family income, and the proportion of household income below 1979 poverty level. The unemployment rate was not validated in its direct effect on the subfamily when using SMSA data, but it did with the Los Angeles County data. Results like this are attributable to data sensitivity to aggregation. The SMSA, based on a broader, aggregated referent set, has limited variability, which makes relationship less significant. On the other hand at lower aggregation (the Los Angeles census tract) there is more variability and relationships at a given strength tend to be more statistically significant. The direct association between the unemployment rate and the subfamily when using Los Angeles County data is consistent

with the findings of Angel and Tienda (1982).

The median family income was not validated in its direct effect on the subfamily when the data from the two geographical levels was used. The reason for this is attributable to the problem of timing in measuring the variable. The data used in this study measures income after extension, not before, so that what is seen is the effect of extension on the median family income and not vice versa as was originally predicted. Extension, then, increases family income. This explanation is consistent with Angel and Tienda's study (1982) which showed that the earnings of nonnuclear members is significantly and positively related to total household income in minority households.

The direct effect of the proportion of household income below poverty level on the subfamily was validated when using SMSA data, but it did not with LA data. This result can be attributed to multicolonearity problems. As was seen in Table VI the proportion of household income below poverty level is highly correlated with other income related variables--the population unemployment rate (0.780) and median family income (-.627) which were validated. Their validation may have reduced its influence on the subfamily.

IMPLICATIONS FOR FUTURE RESEARCH

The research findings indicate that demographic, social and economic circumstances are important determinants for

variations in the presence of the subfamily. The results also showed that racial and ethnic minorities (groups known to have a long history of preference for extended family living) have the greatest total effect on the subfamily. It may be inferred from this that ethnically related subfamily living represents a preference for extended family life, while the subfamily living associated with social and economic difficulties represents a forced condition. The subfamily, then, may be considered both as a voluntary and an involuntary phenomenon. If subfamily living is voluntarily chosen as a way of life it can be inferred that it is not a problem, but if it is forced and long term, then problems are implied. However, when the subfamily arrangement is involuntary but short term, it may be considered a means of assisting families with temporary social and economic problems.

It cannot be determined from the data used in this study whether subfamily living is a symptom of a major social problem or if it is an acceptable alternative family structure for some families in contemporary society. It might even represent both possibilities simultaneously. Futhermore, it is impossible to tell from the data the duration or consequences of subfamily living arangements. Future research should be directed toward addressing these questions. If subfamily living is determined to be a problem, future research should help planners and policy

makers formulate and implement programs that will alleviate the negative consequences of subfamily life.

LIMITATIONS OF THE STUDY

The major limitations of this study stems from the use of aggregate data. This topic would have been better researched with individual level data. However, to do an adequate job on this, a panel design survey with repeated observations over time would be needed. Presently this type of data is not available. The model developed, therefore, is heuristic rather than predictive.

MERITS OF THE STUDY

A major merit of this dissertation is taking disparate theoretical and empirical literature on the extended family and synthesizing it into a causal model that accounts for the systematic variations in the presence of the extended family living situations (subfamily) in modern American metropolitan areas. In addition, the findings raise a number of questions that must be addressed in determining whether subfamily living is a symptom of a major social problem or if it is an acceptable alternative family structure for some families in contemporary society. At least this type of extended family living was shown here to be a systematic deviation from the nuclear family and the attendant functionalist theory.

APPLICATION TO OTHER AREAS

The model developed in this study provides one explanation of the determinants in the variations of a particular type of extended family (the subfamily), specifically on the metropolitan and the census tract levels. However, this model or similar ones may also be applied to other geographical units, and to other types of extended families.

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APPENDIX A

DECOMPOSITION OF EFFECTS IN A PATH MODEL OF THE SUBFAMILY USING SMSA CENSUS DATA

Dependent Variable	Predeter-mined Variable	CAUSAL											Noncausal
		INDIRECT EFFECT VIA									Direct Effect	Total Effect	
		ELOH	FH	PUNAG	UNEMP	MFI	PHIBP	HCAPI	VR	Total Indirect Effect			
ELOH	RAE	-	-	-	-	-	-	-	-	-	- .175	- .175	- .162
	PPB	-	-	-	-	-	-	-	-	-	0.268	0.268	- .081
	POD	-	-	-	-	-	-	-	-	-	0.153	0.153	0.001
FH	RAE	-	-	-	-	-	-	-	-	-	0.709	0.709	- .295
	PPB	-	-	-	-	-	-	-	-	-	- .544	- .544	- .393

APPENDIX A (continued)

Dependent Variable	Predetermined Variable	CAUSAL											Noncausal
		INDIRECT EFFECT VIA									Direct Effect	Total Effect	
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR	Total Indirect Effect			
FH	POD	-	-	-	-	-	-	-	-	-	-	-	-
	ELOH	-	-	-	-	-	-	-	-	-	-	-	-
PUNAG	RAE	0.016	0.560	-	-	-	-	-	-	0.576	- .184	0.392	0.037
	PFB	-	-	-	-	-	-	-	-	- .453	0.462	0.009	0.243
	POD	- .014	-	-	-	-	-	-	-	- .014	0.306	0.292	0.042
	ELOH	-	-	-	-	-	-	-	-	-	- .090	- .090	0.112
	FH	-	-	-	-	-	-	-	-	-	0.790	0.790	- .132

APPENDIX A (continued)

Dependent Variable	Predeter-mined Variable	CAUSAL											Noncausal
		INDIRECT EFFECT VIA								Total Indirect Effect	Direct Effect	Total Effect	
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
UNEMP	RAE	- .073	- .051	- .082	-	-	-	-	-	- .206	-	- .206	- .141
	PPB	- .112	0.040	0.205	-	-	-	-	-	0.133	-	0.133	- .172
	POD	- .064	-	0.136	-	-	-	-	-	0.072	-	0.072	- .019
	ELOH	-	-	- .039	-	-	-	-	-	- .039	- .458	- .497	0.040
	FH	-	-	0.349	-	-	-	-	-	0.349	- .423	- .074	- .036
	PUNAG	-	-	-	-	-	-	-	-	-	0.443	0.443	- .327

APPENDIX A (continued)

Dependent Variable	Predetermined Variable	CAUSAL									Direct Effect	Total Effect	Noncausal
		INDIRECT EFFECT VIA								Total Indirect Effect			
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
MPI	RAE	- .080	0.020	0.059	-	-	-	-	-	- .001	- .416	- .417	0.941
	PFB	0.123	- .015	- .148	-	-	-	-	-	0.040	0.340	0.380	- .284
	POD	0.071	-	- .098	-	-	-	-	-	- .027	0.176	0.149	- .014
	ELOH	-	-	0.029	-	-	-	-	-	0.029	0.487	0.516	0.009
	FH	-	-	- .253	-	-	-	-	-	- .253	0.281	0.028	- .199
	PUNAG	-	-	-	-	-	-	-	-	-	- .320	- .320	0.173
	UNEMP	-	-	-	-	-	-	-	-	-	-	-	-

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Dependent Variable	Predeter-mined Variable	CAUSAL											Noncausal
		INDIRECT EFFECT VIA								Total Indirect Effect	Direct Effect	Total Effect	
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
PHIBP	RAE	- .106	0.102	- .059	-	0.314	-	-	-	0.251	0.383	0.634	- .090
	PFB	0.023	- .073	0.149	-	- .257	-	-	-	- .204	- .099	- .303	0.350
	POD	0.020	-	0.099	-	- .133	-	-	-	- .054	- .112	- .166	- .284
	ELOH	-	-	- .029	- .083	- .368	-	-	-	- .480	0.349	- .131	- .046
	FH	-	-	0.254	- .077	- .212	-	-	-	- .035	0.178	0.143	0.280
	PUNAG	-	-	-	0.080	0.242	-	-	-	0.322	-	0.322	0.000
	UNEMP	-	-	-	-	-	-	-	-	-	0.181	0.181	- .079
	MPI	-	-	-	-	-	-	-	-	-	- .755	- .755	1.502

APPENDIX B

REGRESSION OUTPUT USING SMSA CENSUS DATA

- - - - - - - - - - - - - - - - - - - M U L T I P L E   R E G R E S S I O N - - - - - - - - - - - - - -

DEPENDENT VARIABLE.. ELOH

VARIABLE LIST 1
REGRESSION LIST 1

VARIABLE(S) ENTERED ON STEP NUMBER 1.. AAE
PFB
POB

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
REGRESSION	3.	0.04802	0.01601	8.60386
RESIDUAL	314.	0.58416	0.00186

MULTIPLE R	0.27561
R SQUARE	0.07596
ADJUSTED R SQUARE	0.06713
STANDARD ERROR	0.04313

--------- VARIABLES IN THE EQUATION --------- | | | | | | --------- VARIABLES NOT IN THE EQUATION ---------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
AAE	-0.0470953	-0.17514	0.01734	7.375					
PFB	0.2669424	0.26838	0.00386	17.471					
POB	0.4927602	0.15356	0.17542	7.891					
(CONSTANT)	0.1075168								

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

- - - - - - - - - - - - - - - - - - - M U L T I P L E   R E G R E S S I O N - - - - - - - - - - - - - -

DEPENDENT VARIABLE.. ELOH

VARIABLE LIST 1
REGRESSION LIST 1

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
AAE	0.01285	0.00017	0.00017	-0.01265	-0.0470958	-0.17514
PFB	0.22964	0.05274	0.05257	0.18687	0.2669424	0.26838
POB	0.27561	0.07596	0.02322	0.15359	0.4927602	0.15356
(CONSTANT)					0.1075168

APPENDIX B (continued)

DEPENDENT VARIABLE..   FH   REGRESSION LIST   2

VARIABLE(S) ENTERED ON STEP NUMBER   1..   RAE
                                            PFB
                                            POD
                                            ELOH

MULTIPLE R	0.61003		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.37214		REGRESSION	4.	5.65198	1.41299	46.37946
ADJUSTED R SQUARE	C.36412		RESIDUAL	313.	9.53585	0.03047	
STANDARD ERROR	0.17455						

------------------ VARIABLES IN THE EQUATION ------------------   ------------- VARIABLES NOT IN THE EQUATION --------------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	0.9340864	0.70869	0.07100	173.102						
PFB	-2.6507558	-0.54372	0.26553	99.656						
POD	-0.3492021	-0.02220	0.71873	0.236						
ELOH	0.4161123	0.08490	0.22837	3.320						
(CONSTANT)	C.1262868									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

DEPENDENT VARIABLE..   FH   REGRESSION LIST   2

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.41413	0.17150	0.17150	0.41413	0.9340864	0.70869
PFB	0.60448	0.36540	0.19390	-0.15062	-2.6507558	-0.54372
POD	0.60455	0.36548	0.00009	0.03440	-0.3492021	-0.02220
ELOH	0.61003	0.37214	0.00666	-0.02922	0.4161128	0.08490
(CONSTANT)					0.1262868	

APPENDIX B (continued)

. . . . M U L T I P L E   R E G R E S S I O N . . . .   VARIABLE LIST   1
                                                                                                                REGRESSION LIST   3

DEPENDENT VARIABLE..   PUNAG

VARIABLE(S) ENTERED ON STEP NUMBER   1..   RAE
                                             PFB
                                             POD
                                             ELOH
                                             FH

MULTIPLE R   0.81113   ANALYSIS OF VARIANCE   DF   SUM OF SQUARES   MEAN SQUARE   F
R SQUARE   0.65794   REGRESSION   5.   0.32396   0.06479   120.02309
ADJUSTED R SQUARE   0.65246   RESIDUAL   312.   0.16843   0.00054
STANDARD ERROR   0.02323

---------------- VARIABLES IN THE EQUATION -------------------   ------------- VARIABLES NOT IN THE EQUATION --------------

VARIABLE   B   BETA   STD ERROR B   F   VARIABLE   BETA IN   PARTIAL   TOLERANCE   F
RAE   -0.0437277   -0.18426   0.01178   13.785
PFB   0.4053933   0.46183   0.04058   99.780
POD   0.8674062   0.30629   0.09571   82.139
ELOH   -0.0798159   -0.09044   0.03056   6.321
FH   0.1424094   0.79092   0.00752   358.246
(CONSTANT)   0.0876880

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

. . . . M U L T I P L E   R E G R E S S I O N . . . .   VARIABLE LIST   1
                                                                                                                REGRESSION LIST   3
DEPENDENT VARIABLE..   PUNAG

                                                 SUMMARY TABLE

VARIABLE   MULTIPLE R   R SQUARE   RSQ CHANGE   SIMPLE R   B   BETA
RAE   0.42885   0.18391   0.18391   0.42885   -0.0437277   -0.18426
PFB   0.42965   0.18460   0.00069   0.25150   0.4053983   0.46183
POD   0.51446   0.26467   0.08007   0.33565   0.8674062   0.30529
ELOH   0.51495   0.26517   0.00050   0.02210   -0.0798159   -0.09044
FH   0.81113   0.65794   0.39276   0.65823   0.1424094   0.79092
(CONSTANT)   0.0876880

APPENDIX B (continued)

DEPENDENT VARIABLE..   UNEMP

VARIABLE(S) ENTERED ON STEP NUMBER   1..   RAE
PFB
POD
ELOH
FH
PUNAG

			ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE		F
MULTIPLE R	0.56020							
R SQUARE	0.31383		REGRESSION	6.	0.04774	0.00796		23.70644
ADJUSTED R SQUARE	0.30059		RESIDUAL	311.	0.10439	0.00034		
STANDARD ERROR	0.01832							

---------------- VARIABLES IN THE EQUATION ------------------   ------------- VARIABLES NOT IN THE EQUATION --------------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	-0.0030888	-0.02342	0.00949	0.106						
PFB	-0.0567126	-0.11623	0.03676	2.380						
POD	0.0036387	0.00231	0.08492	0.002						
ELOH	-0.2249141	-0.45849	0.02436	85.252						
FH	-0.0423545	-0.42320	0.00870	23.724						
PUNAG	0.2461238	0.44279	0.04464	30.397						
(CONSTANT)	0.0661246									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

DEPENDENT VARIABLE..   UNEMP

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.06476	0.00419	0.00419	-0.06476	-0.0030888	-0.02342
PFB	0.06498	0.00422	0.00003	-0.03914	-0.0567126	-0.11623
POD	0.08952	0.00801	0.00379	0.05310	0.0036387	0.00231
ELOH	0.49337	0.24342	0.23540	0.23540	-0.2249141	-0.45849
FH	0.49675	0.24676	0.00334	-0.11045	-0.0423545	-0.42320
PUNAG	0.56020	0.31383	0.06707	0.11559	0.2461238	0.44279
(CONSTANT)					0.0661246	

APPENDIX B (continued)

· M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · · · VARIABLE LIST   1

REGRESSION LIST   5

DEPENDENT VARIABLE..   MFI

VARIABLE(S) ENTERED ON STEP NUMBER 1..   RAE
PFB
POD
ELOH
FH
PUNAG
UNEMP

MULTIPLE R	0.63008		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.39701		REGRESSION	7.	1031544463.97044	147363494.85292	29.15724
ADJUSTED R SQUARE	0.38339		RESIDUAL	310.	1566769793.56416	5054096.10827	
STANDARD ERROR	2248.13169						

---------------- VARIABLES IN THE EQUATION -------------------   ------------- VARIABLES NOT IN THE EQUATION ---------------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	-7175.1875462	-0.41620	1164.67418	37.954						
PFB	21692.4383475	0.34013	4528.60759	22.945						
POD	36238.6090478	0.17615	10408.57511	12.122						
ELOH	31230.2681724	0.48714	3374.02993	85.675						
FH	3679.9027075	0.28134	1106.99423	11.051						
PUNAG	-23247.5823483	-0.32003	5739.39924	16.407						
UNEMP	12265.4458677	0.09385	6953.21714	3.107						
(CONSTANT)	16019.6141211									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

· M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · · · VARIABLE LIST   1

REGRESSION LIST   5

DEPENDENT VARIABLE..   MFI

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.24583	0.06043	0.06043	-0.24583	-7175.1875462	-0.41620
PFB	0.36458	0.13292	0.07249	0.09605	21692.4383475	0.34018
POD	0.39883	0.15907	0.02615	0.13432	36238.6090478	0.17615
ELOH	0.60345	0.36415	0.20508	0.52485	31230.2691724	0.48714
FH	0.60369	0.36444	0.00029	-0.17145	3679.9027075	0.28134
PUNAG	0.62527	0.39096	0.02653	-0.14738	-23247.5823483	-0.32003
UNEMP	0.63008	0.39701	0.00604	-0.17404	12265.4458677	0.09385
(CONSTANT)					16019.6141211	

APPENDIX B (continued)

. . . . M U L T I P L E   R E G R E S S I O N . . . .   VARIABLE LIST 1
REGRESSION LIST 6

DEPENDENT VARIABLE..   PHIDP

VARIABLE(S) ENTERED ON STEP NUMBER 1..   RAE
CYL
POD
ELOM
FH
PHIMAG
UNEMP
RFI

MULTIPLE R   0.87515
R SQUARE   0.80120
ADJUSTED R SQUARE 0.79615
STANDARD ERROR   0.01746

	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
	REGRESSION	8.	0.37745	0.04744	155.75741
	RESIDUAL	300.	0.04415	0.00010	

------------ VARIABLES IN THE EQUATION ------------

VARIABLE	B	BETA	STD ERROR B	F
RAE	0.0891855	0.34510	0.00958	86.660
CYL	-0.0850291	-0.09975	0.03644	5.445
POD	-0.3104467	-0.11175	0.08238	14.201
ELOM	0.302G067	0.34885	0.02960	104.124
FH	0.0315059	0.17838	0.00875	12.974
PHIMAG	-C.0366957	-0.03741	C.04573	0.644
UNEMP	0.1201739	0.18142	0.05430	35.773
RFI	-0.0000102	-0.75501	0.00000	534.524
(CONSTANT)	0.2684791			

------------ VARIABLES NOT IN THE EQUATION ------------

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

. . . . M U L T I P L E   R E G R E S S I O N . . . .   VARIABLE LIST 1
REGRESSION LIST 6

DEPENDENT VARIABLE..   PHIDP

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.54394	0.29574	0.29576	0.54386	0.0891855	0.34510
CYL	0.61598	0.37931	0.08355	0.04658	-0.0850291	-0.09975
POD	0.64189	0.41202	0.03271	-0.11776	-0.3104467	-0.11175
ELOM	0.66676	0.41830	0.00647	-0.17696	0.3020067	0.34885
FH	0.65364	0.42775	0.00895	0.42265	0.0315059	0.17838
PHIMAG	0.67020	0.44917	0.02192	0.52213	-0.0366957	-0.03741
UNEMP	0.67663	0.45756	0.00839	0.10256	0.1201739	0.18142
RFI	0.89515	0.80120	0.34373	-0.74729	-0.0000102	-0.75501
(CONSTANT)					0.2684991	

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APPENDIX B (continued)

· · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · VARIABLE LIST   1
                                                                                            REGRESSION LIST   7

DEPENDENT VARIABLE..   MCAP1

VARIABLE(S) ENTERED ON STEP NUMBER 1..   HAY
                                          PHD
                                          PUD
                                          ELOH
                                          FM
                                          PUMAG
                                          UNEMP
                                          RFI
                                          PHIBP

MULTIPLE R   0.66446   ANALYSIS OF VARIANCE   DF   SUM OF SQUARES   MEAN SQUARE   F
R SQUARE   0.44154   REGRESSION   9.   0.03439   0.00380   27.05708
ADJUSTED R SQUARE 0.42527   RESIDUAL   306.   0.04425   0.00014
STANDARD ERROR   0.01199

-------------- VARIABLES IN THE EQUATION -------------   ------------ VARIABLES NOT IN THE EQUATION -----------

VARIABLE   B   BETA   STD ERROR B   F   VARIABLE   BETA IN   PARTIAL   TOLERANCE   F

HAY   -0.0031628   -0.03322   0.00744   0.181
PHD   C.0031234   0.25078   C.02524   13.032
PUD   0.0221318   0.01968   0.05785   0.146
ELOH   0.1727613   0.48795   0.02350   54.036
FM   -C.0000777   -0.08414   0.00613   0.982
PUMAG   0.1251355   0.35194   0.03143   15.869
UNEMP   -0.0240609   -0.03331   0.03933   0.374
RFI   -0.0000010   -0.17690   0.00000   3.816
PHIBP   -0.1099170   -0.26878   0.03906   7.917
(CONSTANT) 0.1258840

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

· · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · VARIABLE LIST   1
                                                                                            REGRESSION LIST   7

DEPENDENT VARIABLE..   MCAP1

SUMMARY TABLE

VARIABLE   MULTIPLE R   R SQUARE   RSQ CHANGE   SIMPLE R   B   BETA
HAY   0.09966   0.00994   0.00994   0.09960   -0.0031628   -0.03322
PHD   0.41836   0.17503   0.16509   0.39664   0.0091234   0.25078
PUD   0.46460   0.21589   0.04089   0.23793   0.0221318   0.01968
ELOH   0.62073   0.38544   0.17016   0.51497   0.1727613   0.48795
FM   0.62921   0.39591   0.01047   -0.02471   -0.0000777   -0.08414
PUMAG   0.66904   0.42242   0.02652   0.26035   0.1251355   0.35194
UNEMP   0.65328   0.42678   0.00435   -0.21479   -0.0240609   -0.03331
RFI   0.65359   0.42718   0.00041   0.28986   -0.0000010   -0.17690
PHIBP   0.66448   0.44154   0.01436   -0.16965   -0.1099170   -0.26878
(CONSTANT)   0.1258840

APPENDIX B (continued)

· M U L T I P L E   R E G R E S S I O N ·

DEPENDENT VARIABLE...   VR

VARIABLE(S) ENTERED ON STEP NUMBER 1..

VARIABLE LIST 1
REGRESSION LIST 0

HAF
CF1
POB
ILOH
IH
PUHAG
UVERP
NF1
PHIBP
HCAPI

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.51599	REGRESSION	10.	0.00693	0.00669	11.19955
R SQUARE	0.26624	RESIDUAL	307.	0.18445	0.00060	
ADJUSTED R SQUARE	0.24234					
STANDARD ERROR	0.02453					

----------- VARIABLES IN THE EQUATION ----------- ·········· VARIABLES NOT IN THE EQUATION -----------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
HAF	0.0138257	0.08153	0.01523	0.824						
CF1	0.0267998	0.04272	0.01220	0.258						
POB	0.5046607	0.24242	0.11816	17.459						
ILOH	0.1035674	0.16741	0.05210	4.106						
IH	0.0100881	0.07861	0.01256	0.645						
PUHAG	0.0271140	0.03795	0.00509	0.169						
UVERP	-0.1564829	-0.12033	0.08047	3.695						
NF1	-0.0000065	-0.44622	0.00000	46.275						
PHIBP	-0.2187384	-0.30030	0.08091	7.310						
HCAPI	-0.2747599	-0.15425	0.11652	5.559						
(CONSTANT)	0.2106661									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

· M U L T I P L E   R E G R E S S I O N ·

DEPENDENT VARIABLE...   VR

VARIABLE LIST 1
REGRESSION LIST 0

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
HAF	0.17359	0.03013	0.03013	0.17359	0.0138257	0.08153
CF1	0.20502	0.04203	0.01190	0.00066	0.0267998	0.04272
POB	0.27926	0.07799	0.03595	0.27240	0.5046607	0.24242
ILOH	0.30731	0.09139	0.01140	0.10906	0.1035674	0.16741
IH	0.30602	0.09279	0.00140	0.11540	0.0100881	0.07861
PUHAG	0.30605	0.09367	0.00088	0.16661	0.0271140	0.03795
UVERP	0.35064	0.12291	0.02864	-0.07700	-0.1564829	-0.12033
NF1	0.48565	0.23586	0.11335	-0.44733	-0.0000065	-0.44622
PHIBP	0.50795	0.25926	0.01326	-0.24266	-0.2187384	-0.30030
HCAPI	0.51599	0.26624	0.01349	-0.09016	-0.2747599	-0.15425
(CONSTANT)					0.2106661	

APPENDIX B (continued)

. . . . M U L T I P L E   R E G R E S S I O N . . . .

DEPENDENT VARIABLE.. 5F

VARIABLE(S) ENTERED ON STEP NUMBER 1..

VB
RAL
PET
PUD
ELOK
FM
PJMAG
UNEMP
NFL
PHIDP
HCAPI

| | | | VARIABLE LIST 1 |
| | | | REGRESSION LIST 0 |

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.81955	REGRESSION	11.	0.01495	0.00136	55.65687
R SQUARE	0.66373	RESIDUAL	306.	0.00767	0.00002	
ADJUSTED R SQUARE	0.65577					
STANDARD ERROR	0.00494					

---------- VARIABLES IN THE EQUATION ---------- ---------- VARIABLES NOT IN THE EQUATION ----------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
VB	-0.0047035	-0.01575	0.01151	0.167						
RAL	0.0278131	0.54924	0.00307	81.877						
PET	0.0038243	0.02041	0.01003	0.120						
PUD	-0.0418912	-0.06932	0.02454	2.913						
ELOK	-0.0576092	-0.10317	0.01057	29.158						
FM	0.0058068	0.15112	0.00253	5.240						
PJMAG	0.0216142	0.10128	0.01329	2.644						
UNEMP	-0.0329127	-0.08572	0.01632	4.067						
NFL	0.0000009	0.30880	0.00000	16.388						
PHIDP	0.0615281	0.28311	0.01630	13.750						
HCAPI	-0.0038631	-0.06929	0.02370	2.418						
(CONSTANT)	0.0036136									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

. . . . M U L T I P L E   R E G R E S S I O N . . . .

DEPENDENT VARIABLE.. 5F

| | | | VARIABLE LIST 1 |
| | | | REGRESSION LIST 0 |

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
VB	0.10147	0.01030	0.01030	0.10147	-0.0047035	-0.01575
RAL	0.73698	0.54019	0.52989	0.73650	0.0278181	0.54924
PET	0.74918	0.56127	0.02108	0.27211	0.0038243	0.02041
PUD	0.77674	0.57220	0.01091	-0.02748	-0.0418932	-0.06932
ELOK	0.77674	0.59550	0.02330	-0.26152	-0.0576092	-0.10317
FM	0.80023	0.64164	0.04583	0.54403	0.0058068	0.15112
PJMAG	0.80103	0.64217	0.00053	0.00094	0.0216142	0.10128
UNEMP	0.80365	0.64631	0.00416	-0.26488	-0.0000009	-0.08572
NFL	0.81401	0.66431	0.01778	0.50748	0.0615281	0.28311
PHIDP	0.81655	0.66675	0.00265	-0.09650	-0.0036136	-0.06929
HCAPI						
(CONSTANT)						

DECOMPOSITION OF EFFECTS IN A PATH MODEL OF THE SUBFAMILY USING LOS ANGELES COUNTY TRACT DATA

Dependent Variable	Predeter-mined Variable	CAUSAL											Noncausal
		INDIRECT EFFECT VIA									Direct Effect	Total Effect	
		ELOH	PH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR	Total Indirect Effect			
ELOH	RAE	-	-	-	-	-	-	-	-	-	- .729	- .729	1.378
	PPB	-	-	- ،	-	-	-	-	-	-	0.157	0.157	- .389
	POD	-	-	-	-	-	-	-	-	-	-	-	-
PH	RAE	- .125	-	-	-	-	-	-	-	- .125	0.874	0.749	- .708
	PPB	0.027	-	-	-	-	-	-	-	0.027	- .595	- .568	0.765

APPENDIX C (continued)

Dependent Variable	Predeter-mined Variable	CAUSAL									Direct Effect	Total Effect	Noncausal
		INDIRECT EFFECT VIA											
		ELOH	FH	PUNAG	UNEMP	MFI	PHIBP	HCAPI	VR	Total Indirect Effect			
FH	POD	-	-	-	-	-	-	-	-	-	0.267	0.267	- .050
	ELOH	-	-	-	-	-	-	-	-	-	0.171	0.171	- .399
PUNAG	RAE	0.011	0.357	-	-	-	-	-	-	0.368	0.146	0.514	- .177
	PFB	- .002	- .243	-	-	-	-	-	-	- .245	0.061	- .184	0.220
	POD	-	0.109	-	-	-	-	-	-	0.109	0.432	0.541	- .057
	ELOH	-	0.070	-	-	-	-	-	-	0.070	- .085	- .015	- .223
	FH	-	-	-	-	-	-	-	-	-	0.408	0.408	0.160

APPENDIX C (continued)

Dependent Variable	Predetermined Variable	CAUSAL											Noncausal
		INDIRECT EFFECT VIA								Total Indirect Effect	Direct Effect	Total Effect	
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
UNEMP	RAE	0.146	0.240	0.061	-	-	-	-	-	0.447	0.190	0.637	0.049
	PFB	- .031	- .163	0.025	-	-	-	-	-	- .169	0.136	0.033	0.317
	POD	-	0.073	0.179	-	-	-	-	-	0.252	-	0.252	- .133
	ELOH	-	0.047	- .035	-	-	-	-	-	0.012	- .211	- .199	- .294
	FH	-	-	0.170	-	-	-	-	-	0.170	0.105	0.275	0.157
	PUNAG	-	-	-	-	-	-	-	-	-	0.416	0.416	0.159

APPENDIX C (continued)

Dependent Variable	Predetermined Variable	CAUSAL									Direct Effect	Total Effect	Noncausal
		INDIRECT EFFECT VIA								Total Indirect Effect			
		ELOH	FH	PUNAG	UNEMP	MPI	PHIBP	HCAPI	VR				
MPI	RAE	- .462	- .052	- .018	0.011	-	-	-	-	- .521	- .175	- .696	0.059
	PFB	0.099	0.025	- .008	0.008	-	-	-	-	0.124	- .152	- .028	- .333
	POD	-	- .011	- .053	-	-	-	-	-	- .064	- .231	- .295	0.116
	ELOH	-	- .007	0.010	- .012	-	-	-	-	- .009	0.629	0.620	0.133
	FH	-	-	- .050	0.006	-	-	-	-	- .044	-	- .044	- .229
	PUNAG	-	-	-	0.024	-	-	-	-	0.024	- .146	- .122	- .305
	UNEMP	-	-	-	-	-	-	-	-	-	0.057	0.057	0.558

APPENDIX D

REGRESSION OUTPUT USING LOS ANGELES COUNTY CENSUS TRACT DATA

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. . . . . . . . . . . . . . . . . . . . .  M U L T I P L E   R E G R E S S I O N  . . . . . . . . . . . . . . . .

DEPENDENT VARIABLE..   ELOH                                                                    VARIABLE LIST  1
                                                                                           REGRESSION LIST  1

VARIABLE(S) ENTERED ON STEP NUMBER  1..   RAE
                                          PFB
                                          POB

                                          ANALYSIS OF VARIANCE      DF      SUM OF SQUARES      MEAN SQUARE
MULTIPLE R        0.66281                  REGRESSION                3.          10.75617         3.58539          427.86946
R SQUARE          0.43905                  RESIDUAL               1640.          35.76260         0.00838
ADJUSTED R SQUARE 0.43902
STANDARD ERROR    0.09156

-------------- VARIABLES IN THE EQUATION --------------            ----------- VARIABLES NOT IN THE EQUATION --------------

VARIABLE         B         BETA        STD ERROR B        F        VARIABLE     BETA IN    PARTIAL    TOLERANCE       F
RAE        -0.2060308   -0.72851       0.00621       1102.441
PFB         0.1280262    0.15652       0.01784         51.497
POB         0.0716747    0.02269       0.05857          1.472
(CONSTANT)  0.2414130

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

. . . . . . . . . . . . . . . . . . . . .  M U L T I P L E   R E G R E S S I O N  . . . . . . . . . . . . . . . .

DEPENDENT VARIABLE..   ELOH                                                                    VARIABLE LIST  1
                                                                                           REGRESSION LIST  1

                                                    SUMMARY TABLE

VARIABLE    MULTIPLE R    R SQUARE    RSQ CHANGE    SIMPLE R          B              BETA
RAE          0.64869      0.42106      0.42106      -0.64869      -0.2060308       -0.72851
PFB          0.66223      0.43855      0.01748      -0.23559       0.1280262        0.15652
POB          0.66261      0.43905      0.00050       0.11329       0.0710749        0.02269
(CONSTANT)                                                         0.2414130
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APPENDIX D (continued)

• M U L T I P L E   R E G R E S S I O N • • • • • • • • • • • • • • • •   VARIABLE LIST 1
                                                                                                        REGRESSION LIST 2

DEPENDENT VARIABLE..   FH

VARIABLE(S) ENTERED ON STEP NUMBER 1..   RAE
                                           PFB
                                           POD
                                           ELOH

MULTIPLE R   0.70292   ANALYSIS OF VARIANCE   DF   SUM OF SQUARES   MEAN SQUARE   F
R SQUARE   0.49410   REGRESSION   4.   482.47780   120.61945   400.19665
ADJUSTED R SQUARE   0.49287   RESIDUAL   1639.   493.99534   0.30140
STANDARD ERROR   0.54900

----------------- VARIABLES IN THE EQUATION ------------------   ------------- VARIABLES NOT IN THE EQUATION ---------------

VARIABLE   B   BETA   STD ERROR B   F   VARIABLE   BETA IN   PARTIAL   TOLERANCE   F
RAE   1.5604310   0.87396   0.04812   1051.400
PFB   -3.0725300   -0.59500   0.10866   799.538
POD   5.2796538   0.26695   0.35144   225.685
ELOH   1.0776483   0.17069   0.14809   52.952
(CONSTANT) -0.5116567

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

• M U L T I P L E   R E G R E S S I O N • • • • • • • • • • • • • • • •   VARIABLE LIST 1
                                                                                                        REGRESSION LIST 2
DEPENDENT VARIABLE..   FH

                                            SUMMARY TABLE

VARIABLE   MULTIPLE R   R SQUARE   RSQ CHANGE   SIMPLE R   B   BETA
RAE   0.40926   0.16749   0.16749   0.40926   1.5604310   0.87396
PFB   0.63718   0.40600   0.23851   -0.19742   -3.0725300   -0.59500
POD   0.69120   0.47776   0.07176   0.21705   5.2796538   0.26695
ELOH   0.70292   0.49410   0.01634   -0.22838   1.0776483   0.17069
(CONSTANT)   -0.5116567

APPENDIX D (continued)

DEPENDENT VARIABLE..   PUNAG

VARIABLE(S) ENTERED ON STEP NUMBER   1..   RAE
PFH
POD
ELOH
FH

MULTIPLE R	0.71537	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.51175	REGRESSION	5.	15.42364	3.08473	343.36998
ADJUSTED R SQUARE	0.51026	RESIDUAL	1638.	14.71528	0.00898	
STANDARD ERROR	0.09478					

---------------- VARIABLES IN THE EQUATION ------------------   ------------- VARIABLES NOT IN THE EQUATION --------------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	0.0456487	0.14553	C.01064	18.390						
PFB	0.0554890	0.06116	0.02288	5.880						
POD	1.5002404	0.43177	0.06472	537.373						
ELOH	-0.0941799	-0.08491	0.02598	13.144						
FH	0.0715990	0.40754	0.00426	281.892						
(CONSTANT)	0.0517742									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

DEPENDENT VARIABLE,.   PUNAG

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.33714	0.11366	0.11366	0.33714	0.0456487	0.14553
PFB	0.37692	0.14207	0.02841	0.03564	0.0554890	0.06116
POD	0.65391	0.42759	0.28553	0.48356	1.5002404	0.43177
ELOH	0.65461	0.42773	0.00013	-0.23767	-0.0941799	-0.08491
FH	0.71537	0.51175	0.08403	0.56813	0.0715990	0.40754
(CONSTANT)					0.0517742	

APPENDIX D (continued)

• M U L T I P L E   R E G R E S S I O N • • • • • • • • • • • • • • •   VARIABLE LIST 1

DEPENDENT VARIABLE..   UNEMP

VARIABLE(S) ENTERED ON STEP NUMBER 1..   RAE
                                     PFB
                                     POD
                                     ELOH
                                     FH
                                     PUNAG

MULTIPLE R	0.73060	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE		F
R SQUARE	0.53407	REGRESSION	6.	1.29384	0.21564		312.72957
ADJUSTED R SQUARE	0.53236	RESIDUAL	1637.	1.12878	0.00069		
STANDARD ERROR	0.02626						

----------------- VARIABLES IN THE EQUATION ------------------   ------------- VARIABLES NOT IN THE EQUATION ---------------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	0.0168897	0.18991	0.00297	32.435						
PFB	0.0350216	0.13616	0.00635	30.408						
POD	-0.0399041	-0.04051	0.02066	3.730						
ELOH	-0.0663889	-0.21112	0.00723	84.415						
FH	0.0052427	0.10526	0.00128	16.800						
PUNAG	0.1178493	0.41567	0.00685	296.389						
(CONSTANT)	0.0301036									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

• M U L T I P L E   R E G R E S S I O N • • • • • • • • • • • • • • •   VARIABLE LIST 1

DEPENDENT VARIABLE..   UNEMP

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.58813	0.34589	0.34589	0.58813	0.0168897	0.18991
PFB	0.58905	0.34698	0.00108	0.28361	0.0350216	0.13616
POD	0.62367	0.38921	0.04223	0.11867	-0.0399041	-0.04051
ELOH	0.64152	0.41154	0.02233	-0.49330	-0.0663889	-0.21112
FH	0.67060	0.44971	0.03316	0.43168	0.0052427	0.10526
PUNAG	0.73080	0.53407	0.08436	0.57494	0.1178493	0.41567
(CONSTANT)					0.0301036	

APPENDIX D (continued)

• **M U L T I P L E   R E G R E S S I O N** • • • • • • • • • • • • • • • VARIABLE LIST   1
                                                                                                      REGRESSION LIST   5

DEPENDENT VARIABLE..   MFI

VARIABLE(S) ENTERED ON STEP NUMBER   1..   RAE
                                            PFB
                                            POD
                                            ELOH
                                            FH
                                            PUNAG
                                            UNEMP

MULTIPLE R	0.84208	ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
R SQUARE	0.70909	REGRESSION	7.	0.12594E 12	17991295660.76977	569.68536
ADJUSTED R SQUARE	0.70785	RESIDUAL	1636.	0.51667E 11	31581109.39569	
STANDARD ERROR	5619.70723					

---------------- VARIABLES IN THE EQUATION ------------------   ------------- VARIABLES NOT IN THE EQUATION ---------------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	-4216.6002014	-0.17511	640.92340	43.283						
PFB	-10580.3102611	-0.15192	1371.72944	57.492						
POD	-61498.4200429	-0.23057	4427.04053	192.975						
ELOH	53520.7504166	0.62859	1585.76068	1137.119						
FH	271.1929069	0.02011	275.13819	0.972						
PUNAG	-11228.6272251	-0.14627	1592.07927	49.742						
UNEMP	15584.0276166	0.05756	5289.43114	8.680						
(CONSTANT)	25165.3589427									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

• **M U L T I P L E   R E G R E S S I O N** • • • • • • • • • • • • • • • VARIABLE LIST   1
                                                                                                      REGRESSION LIST   5
DEPENDENT VARIABLE..   MFI

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.63724	0.40607	0.40607	-0.63724	-4216.6002014	-0.17511
PFB	0.63782	0.40682	0.00075	-0.36079	-10580.3102611	-0.15192
POD	0.69454	0.48239	0.07557	-0.17876	-61498.4200429	-0.23057
ELOH	0.83663	0.69996	0.21757	0.75306	53520.7504166	0.62859
FH	0.83660	0.70024	0.00028	-0.27342	271.1929069	0.02011
PUNAG	0.84116	0.70755	0.00731	-0.42709	-11228.6272251	-0.14627
UNEMP	0.84208	0.70909	0.00154	-0.50138	15584.0276166	0.05756
(CONSTANT)					25165.3589427	

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APPENDIX D (continued)

· · · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · · · ·   VARIABLE LIST   1
REGRESSION LIST   6

DEPENDENT VARIABLE..   PHILIP

VARIABLE(S) ENTERED ON STEP NUMBER   1..   AAL
PFE
POL
ELON
FA
PUHAG
UNEMP
RFI

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.84794	REGRESSION	6.	11.18019	1.42256	761.77837
R SQUARE	1.73647	RESIDUAL	1655.	3.03313	0.00187	
ADJUSTED R SQUARE	0.78743					
STANDARD ERROR	0.04321					

---------- VARIABLES IN THE EQUATION ----------   ---------- VARIABLES NOT IN THE EQUATION ----------

VARIABLE	B	BETA	STD ERROR B	F		VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
AAL	0.027OCAR	1.12642	0.00490	27.258						
PFE	0.16C4078	0.27352	0.01074	170.484						
POL	-0.2073250	-0.06622	0.03599	33.178						
ELON	0.0207460	0.02703	0.01588	1.706						
FA	0.0043357	0.03977	0.00212	4.421						
PUHAG	0.2228391	0.32201	0.01243	321.542						
UNEMP	0.9381812	0.38637	0.04078	579.237						
RFI	-0.0000035	-0.16160	0.00000	53.867						
(CONSTANT)	0.0099852									

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

· · · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · · · ·   VARIABLE LIST   1
REGRESSION LIST   6

DEPENDENT VARIABLE..   PHIBP

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
AAL	0.69171	0.47846	0.47846	0.69171	0.027OO88	0.12642
PFE	0.70089	0.49125	0.01279	0.48254	-0.1602078	0.22352
POL	0.73506	0.54031	0.04907	0.11603	-0.2073250	-0.06622
ELON	0.74344	0.55270	0.01238	-0.51227	0.0207460	0.02703
FA	0.76672	0.59248	0.03978	0.41482	0.0043357	0.03977
PUHAG	0.84576	0.71551	0.12283	0.63649	0.2228391	0.32201
UNEMP	0.86366	0.78035	0.06534	0.78074	0.9381812	0.38637
RFI	0.88796	0.78867	0.00762	-0.62701	-0.0000035	-0.16160
(CONSTANT)					0.0099852	

APPENDIX D (continued)

· · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · ·   VARIABLE LIST   1
REGRESSION LIST   2

DEPENDENT VARIABLE...   MCAPI

VARIABLE(S) ENTERED ON STEP NUMBER 1..

MULTIPLE R	0.62035
R SQUARE	0.39482
ADJUSTED R SQUARE	0.39169
STANDARD ERROR	0.03096

ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
REGRESSION	9.	1.02194	0.11355	118.46806
RESIDUAL	1636.	1.56662	0.00096	

--------- VARIABLES IN THE EQUATION ----------

VARIABLE	B	BETA	STD ERROR B	F
PAS	-0.040183	-0.50213	0.00363	163.537
PFB	0.1006097	0.37842	0.00608	154.855
POD	0.1129513	0.11091	0.02605	18.794
ELOM	-0.0372851	-0.17424	0.01338	25.318
FH	0.0069588	0.04951	0.00152	19.660
PUNAG	0.0829339	0.28300	0.00074	72.498
UNEMP	-0.0145127	-0.01404	0.03362	0.186
NFI	-0.0000003	-0.08244	0.00000	5.152
PHIBP	0.1591065	0.37571	0.01972	80.624
(CONSTANT)	0.1282566			

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

· · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · ·   VARIABLE LIST   1
REGRESSION LIST   2

DEPENDENT VARIABLE...   MCAPI

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
PAS	0.13051	0.01703	0.01703	0.13051	-0.040183	-0.50213
PFB	0.27208	0.07512	0.05809	0.27356	0.1006097	0.37842
POD	0.43706	0.19102	0.11590	0.31213	0.1129513	0.11091
ELOM	0.45437	0.20065	0.01563	-0.13820	-0.0372851	-0.17424
FH	0.50543	0.25544	0.04899	0.16846	0.0069588	0.04951
PUNAG	0.59728	0.35675	0.10131	0.47329	0.0829339	0.28300
UNEMP	0.60403	0.36483	0.00807	-0.35436	-0.0145127	-0.01404
NFI	0.60412	0.36498	0.00014	-0.26240	-0.0000003	-0.08244
PHIBP	0.62535	0.39482	0.02986	0.46592	0.1591065	0.37571
(CONSTANT)					0.1282566	

APPENDIX D (continued)

. . . . M U L T I P L E   R E G R E S S I O N . . . . VARIABLE LIST 1
REGRESSION LIST 8

DEPENDENT VARIABLE..   VR

VARIABLE(S) ENTERED ON STEP NUMBER 1..   RAE
PFO
POD
LLOM
FM
PUNAG
UNEMP
MIL
PHILWP
MCAPI

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.30319	REGRESSION	10.	0.28852	0.02885	17.13701
R SQUARE	0.09478	RESIDUAL	1655.	2.74826	0.00168	
ADJUSTED R SQUARE	0.08944					
STANDARD ERROR	0.04102					

------- VARIABLES IN THE EQUATION ------   ------------ VARIABLES NOT IN THE EQUATION ------------

VARIABLE	B	BETA	STD ERROR B	F	VARIABLE	BETA IN	PARTIAL	TOLERANCE	F
RAE	-0.0109869	-0.11034	0.00502	4.798					
PFO	-0.0282288	-0.09803	0.01121	6.343					
POD	0.1617961	0.14670	0.03521	21.724					
LLOM	0.0604756	0.17177	0.03320	13.627					
FM	-0.0052768	-0.09462	0.00202	6.815					
PUNAG	-0.0218074	-0.06899	0.01319	2.737					
UNEMP	-0.0010057	-0.00090	0.04454	0.001					
MIL	-0.0000004	-0.10808	0.00000	5.900					
PHILWP	0.1821146	0.39704	0.02405	57.340					
MCAPI	-0.0465864	-0.04301	0.03278	2.020					
(CONSTANT)	0.0353694								

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

. . . . M U L T I P L E   R E G R E S S I O N . . . . VARIABLE LIST 1
REGRESSION LIST 8

DEPENDENT VARIABLE..   VR

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
RAE	0.01965	0.00039	0.00039	-0.01965	-0.0109869	-0.11034
PFO	0.03711	0.00138	0.00099	-0.01629	-0.0282288	-0.09803
POD	0.19318	0.03732	0.03594	0.18963	0.1617961	0.14670
LLOM	0.19323	0.03811	0.00080	0.04430	0.0604756	0.17177
FM	0.19586	0.03837	0.00026	0.01961	-0.0052768	-0.09462
PUNAG	0.21402	0.04587	0.00744	0.16467	-0.0218074	-0.06899
UNEMP	0.23353	0.05446	0.00861	0.10750	-0.0010057	-0.00090
MIL	0.25134	0.06317	0.00873	-0.00115	-0.0000004	-0.10808
PHILWP	0.30637	0.09386	0.05069	0.16817	0.1821146	0.39704
MCAPI	0.30819	0.09498	0.00112	0.10167	-0.0465864	-0.04301
(CONSTANT)					0.0353694	

APPENDIX D (continued)

· · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · ·

DEPENDENT VARIABLE..   SF

VARIABLE(S) ENTERED ON STEP NUMBER 1..   VM
                                          MAL
                                          PFB
                                          POD
                                          ELOM
                                          FM
                                          PUMAG
                                          UNEMP
                                          MFI
                                          PHIBP
                                          MCAPI

| | | | VARIABLE LIST 1 |
| | | | REGRESSION LIST 0 |

		ANALYSIS OF VARIANCE	DF	SUM OF SQUARES	MEAN SQUARE	F
MULTIPLE R	0.56519	REGRESSION	11.	0.40037	0.04187	69.43903
R SQUARE	0.31943	RESIDUAL	1632.	0.98123	0.00060	
ADJUSTED R SQUARE	0.31485					
STANDARD ERROR	0.02452					

------------ VARIABLES IN THE EQUATION ------------ | ------------ VARIABLES NOT IN THE EQUATION ------------

VARIABLE	B	BETA	STD ERROR B	F
VM	-0.0163681	-0.02373	0.03679	1.225
MAL	0.0144595	0.21318	0.00100	21.284
PFB	0.0093728	0.04724	0.00671	1.950
POD	-0.0087010	-0.08974	0.02089	10.603
ELOM	-0.0373015	-0.30414	0.00913	65.310
FM	-0.0066459	0.17296	0.00121	30.207
PUMAG	0.0055195	0.02524	0.02789	0.489
UNEMP	0.1111698	0.14410	0.02662	17.414
MFI	0.0000005	0.18369	0.00000	22.568
PHIBP	-0.0025289	-0.00491	0.01443	0.031
MCAPI	0.0023991	0.00375	0.01060	0.020
(CONSTANT)	0.0163772			

VARIABLE	BETA IN	PARTIAL	TOLERANCE	F

ALL VARIABLES ARE IN THE EQUATION

STATISTICS WHICH CANNOT BE COMPUTED ARE PRINTED AS ALL NINES.

· · · · · · · · · · · · · · M U L T I P L E   R E G R E S S I O N · · · · · · · · · · · · · ·

DEPENDENT VARIABLE..   SF

| | | | VARIABLE LIST 1 |
| | | | REGRESSION LIST 0 |

SUMMARY TABLE

VARIABLE	MULTIPLE R	R SQUARE	RSQ CHANGE	SIMPLE R	B	BETA
VM	0.05037	0.00254	0.00254	-0.05037	-0.0163681	-0.02373
MAL	0.49062	0.24071	0.23817	0.48892	0.0144595	0.21318
PFB	0.49965	0.24965	0.00923	0.17647	0.0093728	0.04724
POD	0.50303	0.25302	0.00308	-0.12969	-0.0087010	-0.08974
ELOM	0.52269	0.27320	0.01294	-0.43790	-0.0373015	-0.30414
FM	0.54480	0.29691	0.02391	0.32316	0.0066459	0.17296
PUMAG	0.54651	0.29867	0.00176	0.22284	0.0055195	0.02524
UNEMP	0.55638	0.30956	0.01089	0.11060	0.1111698	0.14410
MFI	0.56518	0.31942	0.00986	0.16621	0.0000005	0.18369
PHIBP	0.56518	0.31943	0.00001	0.18808	-0.0025289	-0.00510
MCAPI	0.56519	0.31944	0.00001	0.09603	0.0023991	0.00375
(CONSTANT)						