

THE HOUSING PROGRESS OF YOUNG COHORTS

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Submitted to the Department of Urban Studies  
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of the requirements for the Degree of Doctor of Philosophy  
in Urban Studies and Planning

## ABSTRACT

This study presents both a normative and an empirical investigation of the housing conditions of adults aged 18-39. The study begins with a review of the evolution of normative theories about housing needs and housing progress. Consistent with the emerging normative beliefs about aggregate housing conditions, a new viewpoint is advanced that emphasizes the aggregate longitudinal experience of individuals in their housing careers. It is proposed that individuals' housing experiences can be aggregated through the measurement of birth cohorts' housing conditions over time. The quality of housing experience is normatively defined as the type of housing that young adults seek to acquire. Analysis of consumers' housing preferences shows that most young adults share the goal of attaining single-family homeownership. Thus housing progress can be measured by the life progress of cohorts toward the collectively defined goal of homeownership.

One major empirical finding is that recent cohorts have advanced into single-family homeownership more slowly than the 1937-38 birth cohort while they are in their twenties, but as recent cohorts pass age 30 they achieve ever-higher ownership levels that exceed their predecessors'. A second major finding is that cohorts have been able to recover from their initial shortfall of housing attainment by making family adjustments during their twenties. Among married couples in cohorts that have recently reached ages 26-31, a distinct advantage in homebuying has developed for those who have delayed childbearing. For the first time a pattern has emerged where the chances of single-family ownership attainment are greater for couples with very young children instead of school-age children.

Evaluating the concept and record of lifetime housing progress, the argument is advanced that there is a need to manage cohorts' rate of housing progress. The large baby boom cohorts' struggle to achieve the same per capita progress as their predecessors' is leading to great increases in aggregate demand for single-family homeownership. The increased competition among young cohorts is urging further family and

economic adjustments at the same time that the increasing demand is making single-family homeownership such a good investment for older cohorts. It is publicly beneficial for young cohorts to slow their initial rate of housing progress because this helps to cushion the market impact of their greater size. At the same time, subsidies should be targeted toward middle-aged persons to ensure that diminishment of the rate of progress does not lead to a lower ultimate level of lifetime housing achievement.

Thesis Supervisor: Bernard J. Frieden

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## Chapter 1

## INTRODUCTION

The housing conditions of the nation's young families have re-emerged in the late 1970s as a subject of widespread concern. Two studies published in 1977 proclaimed that the chances for acquiring homeownership were slipping away from the average American family's grasp (U.S. Congressional Budget Office, 1977; Frieden et al., 1977). The public release of these two reports generated a remarkable, sustained barrage of media reports proclaiming "the death of the American dream."<sup>1</sup> The exaggerated media portrayal of the reports' conclusions both reflected and contributed to a rising concern for protecting the quality of middle-class American life.<sup>2</sup> Despite the protests of other researchers that homeownership was becoming more prevalent rather than declining (cf. Weicher, 1977, 1978; Follain and Struyk, 1979), the issue of ensuring access to homeownership for young families has been pushed into a prominent position on the national housing policy agenda.<sup>3</sup>

Alarm expressed over the "crisis of affordability" underscores the crucial role that homeownership plays in most families' struggle for good housing and a decent standard of living. The widespread belief is that homeownership is part of "the American dream." This view has been expressed not only by media reports cited above, but also by average American citizens<sup>4</sup> and by federal officials and political leaders. For example, Senate committee hearings on the proposed "Young Families Housing Act of 1977" elicited several statements emphasizing the importance of homeownership in "the American dream."<sup>5</sup>

The major thrust of the proposals to ensure access to homeownership has focused on making homeownership more affordable to first-time homebuyers. The two primary mechanisms proposed for this have been innovative mortgage plans that reduce the monthly payments required in the initial years and special tax credits on savings accounts reserved for future homeownership downpayments.<sup>6</sup>

What has engendered controversy, however, is the fact that young persons are continuing to buy homes at record rates despite the supposedly high costs. For example, a Census Bureau study found that the ownership rate of married couples where the husband is under age 35 grew from 49.5 percent to 57.0 percent between 1970 and 1976 (U.S. Bureau of the Census, 1977c:5-6).

The paradox of increasing ownership in the face of increasing costs has been explained by most analysts in a similar fashion. The goal of homeownership has continued to be attractive because the strong upward price trend ensures that ownership will provide a hedge against inflation (Sternlieb and Hughes, 1979; Grebber and Mittelbach, 1979: Chapter 4). Over the long run the expected return on the ownership investment offsets much of the current, high out-of-pocket costs of acquiring homeownership (Follain and Struyk, 1979). Nevertheless, it is widely agreed that first-time homebuyers face an increasingly high hurdle to entering ownership because of rising downpayments and high initial mortgage payments under a conventional mortgage contract in an inflationary period (U.S. Congressional Budget Office, 1977; Follain et al., 1978).

### Family Adjustments in the Pursuit of Homeownership

Several commentators have expressed concern that young adults are making extreme adjustments in order to break into homeownership. For example, Frieden (1977) has suggested that families are coping with high costs by relying increasingly on multiple incomes, cutting back other expenses, and buying homes that are in less desirable neighborhoods or that need substantial work. The increasing employment of wives has been singled out most often for special emphasis. Citing the falling rate of real income growth in the 1970s relative to the 1960s, Roistacher and Young (1979:229) suggest that as a result, "...women may now be entering the labor force in an attempt to maintain desired or expected levels of consumption, and in particular, to maintain desired housing consumption."

Demographers have frequently pointed out that the two major social changes involving rising female labor force participation and falling fertility are closely linked together. Although it is difficult to distinguish cause from effect in this matter, Oppenheimer (1976:449) has offered a reasonable conclusion on the relationship between fertility and employment trends: "Since younger wives' labor-force participation and birth postponements are two highly compatible forms of behavior and since, both singly and together, these two behaviors are rational responses to economic stress, I do not see any way of disentangling cause from effect when economic motives are significant" (emphasis added).

Oppenheimer reaches a conclusion similar to that of Roistacher and Young by asserting that married women not only are working more, but they also are reducing fertility so that their families can achieve the

standard of living enjoyed by preceding young adults. Moreover, she suggests that young women have been trapped in a vicious circle so that "... [once] established, this compensatory pattern of increased wives' labor-force participation and reduced fertility would seem to help perpetuate itself among each new group reaching childbearing ages...." (Oppenheimer, 1976:453).

Taken together, these arguments suggest that one of the major adjustments young adults are making in their pursuit of homeownership is to delay childbearing while continuing to work toward accumulating sufficient assets for a homeownership downpayment. Moreover, with the passage of the Equal Credit Opportunity Act in 1975, mortgage lenders are prohibited from discounting wives' incomes for the purposes of calculating families' maximum mortgage limits. The added purchasing power unleashed by this act has been suggested by Grebler and Mittelbach (1979:101-4) as one of the most important factors contributing to escalating house prices between 1975 and 1977. A potentially deeper consequence of this act, however, is that married women are becoming contractually bound to remain in employment if their families assume the highest mortgage commitment permitted under the equal credit opportunity provisions. Whether continuous labor force participation of wives has any consequences for completed family sizes depends on working couples' ability to coordinate wives' childbearing and employment. In fact, a recent study has shown that when young women who have been working give birth to their first child, they now typically leave the labor force for only a few months (Mott, 1978).

What has developed today is a situation where young women's current



behavior is leading them away from their expressed goals for family raising. Masnick et al. (1978) and Masnick (1980) present strong evidence that many of the respondents in surveys of fertility expectations are deluding themselves. The lifestyle patterns that are established during years of postponed fertility greatly increase the chances that their expected fertility will be foregone. In effect, postponed fertility and continued labor force participation lead to achievement of housing goals at the same time as they increase the chances of impeding goals for raising families.

The conflict of homeownership achievement and family raising is difficult to measure empirically. More important, it is not clear that this conflict presents a public problem, and even if it is judged to be a problem there is not a clear, simple remedy. Nevertheless, a vague sense of these issues has developed and concern is often expressed whenever national housing policy is debated. For example, at Senate committee hearings on the issue of reaffirming the national housing goal a representative of the U.S. League of Savings Associations offered the following concluding recommendation:

Public housing policies should recognize that members of the American home buying public are making major social and economic adjustments which allow them to realize the goals of homeownership. First-time home buyers, a major national concern, are buying homes in large numbers despite today's price structure. They are doing so by relying on secondary incomes, having smaller families, and purchasing far less costly existing units. Public policy should recognize these social and demographic changes in the establishment of housing programs and goals. (Thygerson, 1978:302; emphasis added)

The plaintive nature of this concern is underscored by the fact that

proponents have offered no specific recommendations for how housing programs and goals "should recognize" the ongoing family adjustments.

### Focus of the Study

This study does not begin with the assumption that there is an inherent conflict between pursuit of housing and family goals. Nor does the research assume that homeownership is the housing standard that public policy should guarantee for young families. Instead, I intend to critically evaluate these issues by applying a new conceptual model that has not yet been employed in housing analysis or in other public policy research. This "cohort-life course" model emphasizes the lifetime experience of groups of people. Application of this model to housing and family data enables us to measure the aggregate progress of individuals toward their housing goals, and we can learn how this housing progress is related to simultaneous processes of family growth and development. What housing goals are appropriate for this analysis will be determined from analysis of a relatively new survey of housing preferences. This survey shows that virtually all young adults prefer to acquire single-family homeownership. Empirical chapters will measure aggregate lifetime progress toward single-family homeownership and estimate its association with family development patterns.

Birth cohorts are employed as the primary social grouping in the analysis. A cohort consists of all individuals who are born in the same time interval and, hence, who share the same age throughout their lives. For purposes of this analysis cohorts are defined on the basis of two-year birth intervals, and their lifetime development is traced over the

young adult years between 18 and 39. Research has shown that the great majority of family formation, employment career development, and housing upgrading occurs within this age span (Winsborough, 1979; Pitkin and Masnick, 1979). In particular, close examination of this age span is appropriate for investigating the concerns cited above about the housing and family conditions of young adults. Because families and households can be formed, dissolved and reformed over time, we will analyze the housing and family conditions of individuals who belong to different birth cohorts.

More particularly, we will focus on the female half of cohorts. While in the past, most research in housing has focused on husbands instead of wives, there are important advantages to tracing women over time as they marry, divorce, and raise families. The first important advantage is that many of the social changes which have occurred in the present generation are registered most clearly in the behavior of women. The prime examples of this are the decline in childbearing and the rise in female labor force participation. A second major advantage to focusing on females is that they exhibit a greater continuity of family behavior than do males. For example, after divorce women are more likely to continue living with their children, as approximately 90 percent of all single-parent families are female-headed, and these mothers are also more likely to remain in the couples' previous homes.<sup>7</sup> Despite these advantages of focusing on the female cohorts, men and women live together so often and share the same housing goals so closely (see Chapter 3) that the lifetime housing and family experiences of women closely represent those for men as well.

The major contribution of this study is to argue for the usefulness of a new conception of housing progress. Most discussions of progress address improvements for the nation as a whole or for subgroups defined by income or race. The weakness of these conceptions of progress is that they do not directly represent the progress experienced by individuals. The research presented here will show that the housing improvements experienced by individuals (aggregated into cohorts) as they advance toward middle age are far greater than the relatively minor changes for the nation as a whole. Measurement of the changes between cohorts' lifetime progress will lead toward greater sensitivity concerning policy issues of how much progress is enough and how much progress is too much.

#### Overview of the Argument

Chapter 2 begins with a review of normative conceptions of housing needs and housing progress. Four major conceptions of progress are identified in the housing literature. The simplest conception defines progress as advancement toward meeting institutionally prescribed housing goals. Other conceptions emphasize a more loosely defined improvement of the quality of the housing stock or betterment of households' occupancy conditions. The fourth conception of progress emphasizes the relative degree to which disadvantaged population groups have reached equality with the occupancy conditions enjoyed by more advantaged groups.

The second half of Chapter 2 turns to an analysis of the recent evolution in the normative theory of aggregate housing needs. Since the

late 1960s a clear transition has occurred from an exclusive preoccupation with requirements for additional housing stock to a broader conception that emphasizes the experience of housing deprivation. While some dimensions of this experience, such as financial burden and overcrowding, are firmly understood, an increasing number emphasize relative or temporal factors that are difficult both to measure or remedy. The single innovation of the late 1970s that has gained perhaps the most widespread support is the proposal of a homeownership affordability problem. Even this has proven extremely difficult to measure with short-term economic variables.

A new lifetime conception of housing progress is proposed in the conclusion to Chapter 2 as one means for articulating the normative concerns underlying the new conceptions of housing needs. The lifetime definition of progress shares certain features of the other definitions, but it emphasizes the aggregate experience of individuals over time in striving toward their shared personal goals of housing quality.

Chapter 3 then takes up the issue of selecting housing quality standards for measuring lifetime housing progress. The traditional indicators and standards concerning structural condition and overcrowding are judged to be too narrow for two reasons: first, the incidence of deprivation that they measure has dwindled to an extremely low level, and second, analysis of consumer behavior suggests that the conditions defined as poor quality are not often viewed by households as important, undesirable life conditions. The evidence suggests instead that households are most concerned about reducing their financial burden. One serious drawback to this indicator of deprivation, however, is posed by

the ambiguity that financial burden can be reduced either by increasing income or by moving to a lower rent dwelling (that is also likely to be of lower market desirability). The other drawback to the indicator is that it is difficult to measure changes in financial burden over time as households shift from renting to owning. A household that experienced little difficulty making rent payments might be hard-pressed by homeownership, and yet a large portion of the ownership costs will also be retrievable as capital gains when the home is sold at a later point in time. As a consequence, financial burden measures are not suitable for tracking individuals' housing progress over time.

Having discounted the servicability of traditional indicators of housing quality that are used in studies of housing needs, the second half of Chapter 3 turns to an analysis of consumer preferences for different types of housing. The conclusion that is reached is that the overwhelming preference of young adults is for single-family homeownership. Further analysis of individuals' residential histories leads to a proposed life progress model of housing quality. The data support the view that the experience of housing quality at the aggregate level is reflected by the rate at which individuals are moving toward their common goal of single-family homeownership. Although it cannot be tested, the working hypothesis for the remainder of the thesis is that a generation that falls behind the rate of housing progress established by its predecessors will perceive a decline in its housing quality.

The guiding theory for the dissertation is presented in Chapter 4. We begin by demonstrating that cohort aggregates provide a more accurate representation of individuals' experience over a time interval than does

the total population. As a striking example of this principle, data from the 1930s are presented to show that the likelihood of homeownership increased for every individual between 1930 and 1940 (as both cohorts and individuals grew 10 years older) even though the total ownership rate of the nation declined during this depression decade. The second point of the chapter is to show how the cohort-life course approach enables us to model aggregate housing and family careers over time. Emphasis is placed on the age-time shape of the cumulative transition to homeownership and on the relationship between the "trajectory" into ownership and simultaneous family development behaviors. The final section of the chapter is devoted to a discussion of the cohort perspective on social change. Cohorts are precisely defined generations that can be used to measure the rate of social change. Change between the lifetime careers of cohorts amounts to societal change. Moreover, there are certain unique patterns to the way cohorts participate in this change. The impact that one cohort's progress has on another's will be emphasized in the later evaluation of lifetime housing progress.

Chapter 5 addresses the empirical problem of how to estimate cohort family and housing careers with existing data. The essential problem is one of estimating the detailed age-time shape of multi-dimensional statuses with only a few observations widely spaced in time. A constructed cohort method is proposed and tested against a series of annual observations. The constructed method is found to be much more accurate than alternative methods.

The constructed cohort method is used in Chapter 6 to estimate

aggregate housing and family careers for 6 two-year cohorts born between 1925-26 and 1951-52. Separate trajectories are presented for several housing and family dimensions. Then overlapping statuses are estimated by calculating the person years of experience that are spent in two or three statuses simultaneously. In general, the analysis shows much more substantial changes between cohorts with regard to family behavior than for homeownership attainment. Recent cohorts have been shifting into family statuses that have traditionally had lower ownership rates. Yet ownership in these statuses has risen sufficiently between cohorts to counterbalance the large potential ownership decreases that might have accompanied delayed family formation.

Despite this overall lifetime stability of ownership, there is indication that the age-time shape of progress into homeownership is altering for the cohorts born in the 1940s and 1950s. These cohorts are lagging behind the ownership progress of the 1937-38 cohort during their early twenties, but in the late twenties they are accelerating their progress and exceeding the ownership level attained by the earlier cohort. The later acceleration of progress is not due so much to eventual family formation as it is to sharp increases in ownership rates in all family statuses for recent cohorts relative to the 1937-38 cohort.

The changes in homeownership attainment are explored in greater detail in Chapter 7 through a statistical contrast of cohorts of the same age in 1960, 1970, and 1975. This analysis shows that ownership is increasing most rapidly in family statuses where it has been lowest. The major achievement of this chapter is to present strong, direct evidence that married couples who delay parenthood have gained an



advantage for homeownership attainment. Women between the ages of 26 and 31 in 1975 are found to have a significantly higher likelihood of homeownership if they have only very young children in the home than if their oldest child has reached school age. This observation persists even after controlling for differences in family income and wives' employment status, and it represents a statistically and substantively significant reversal of the traditional pattern where couples in more advanced family stages have had higher ownership rates.

The behavioral interpretation that is given this finding is that couples with only young children have delayed parenthood relative to couples the same age whose oldest children have now reached school age. The implication is that the couples who have delayed parenthood have used this childless time to accumulate the assets required for attaining homeownership. This reversal in observed ownership advantage is likely to be only temporary, because once the pre-school children of those who delayed parenthood reach school age these families will establish an even higher reference standard for young couples in subsequent cohorts. It is likely we are witnessing this new adaptive strategy when its chances for relative success are greatest.

The final substantive chapter presents an evaluation of lifetime housing progress by cohorts. Chapter 8 begins with a review of the key empirical findings and summarizes the theoretical framework within which they take on meaning. In addition, this chapter places housing progress in its housing market context and emphasizes the distinction between per capita experience of progress and aggregate housing demand. The rapidly increasing size of cohorts now entering adulthood (attributable to the

postwar baby boom) poses a major challenge to the continuation of past patterns of housing progress. If the current generation of young adults follows the same per capita lifetime consumption path as earlier generations, demand for single-family homeownership will be increased enormously. The increased competition among young cohorts is urging further family and economic adjustments at the same time as the increasing demand is making single-family homeownership such a good investment for slightly older cohorts.

This evaluation then discusses a number of benefits and costs associated with housing progress. The conclusion is reached that the lifetime progress of cohorts needs to be managed within certain limits. It is possible for there to be too much, as well as too little, lifetime housing progress.

Before specific policy proposals can be developed, however, it is important to grasp a conception of the problem. The problem is not that young families are being priced out of the homeownership market, but rather that our society places too much importance on early attainment of homeownership. I argue that it is beneficial for the young cohorts in the baby boom generation to slow their initial rate of housing progress, because this helps to cushion the market impact of their greater size. But this diminishment of the rate of progress should be prevented from becoming a lower level of ultimate, lifetime housing achievement. Public subsidies should be directed to middle-aged persons who have not yet achieved their housing goals before they are provided to young persons who are less advanced in their housing careers. Over time all persons should be guaranteed the same housing subsidies, but we must

recognize that it is not possible to aid all persons simultaneously. In recognition of the fundamental importance of life progress, the proposals expressed in this chapter seek a dynamic distribution of resources that is just.

The concluding chapter offers some thoughts on the value of the lifetime perspective on housing progress. This perspective raises new questions for public policy that have been treated only indirectly in the past. Whether or not single-family homeownership should be adopted as a policy standard for public assessments of progress is uncertain; however, the strong endorsement by the voting age population makes it unlikely that other standards can be substituted.

## NOTES TO CHAPTER 1

1. Two examples of reports stressing this theme are an article entitled "Dream of Home-Ownership Imperiled by Spiraling Costs" (The Washington Post, 4 March 1977) and a national news magazine cover story, "Housing: It's Outasight" (Time, 12 September 1977).
2. Sternlieb and Hughes (1979) assert that homeownership has provided the primary shelter sought by "the scared American" whose "pyramiding of fears" is based on the desire for protection from the declining American dollar. Montgomery and Marshall (1979) identify the central housing problem of the 1980s as the severe, ongoing inflation. This threat to the middle-class lifestyle has changed the politics of housing policy. Among the specific changes that they cite are the increased priority at all levels of government for cutting governmental expenditures and the decline of the external constituency for low and moderate income housing which existed in the late 1960s.
3. The prominence of this issue is evidenced by its emphasis in legislative hearings before the Senate Committee on Banking, Housing, and Urban Affairs. Major examples are the April 12, 1978 hearings on S.2855 (95th Congress), a bill to "Reaffirm and Restate the National Housing Goal" and March 31, 1977 hearings on S.664 (95th Congress), a bill entitled "The Young Families Housing Act of 1977."
4. A 1975 Roper poll asked respondents to identify items on a list that they personally considered to be part of "the good life" in America. The highest scoring item, chosen by 85 percent of the respondents, was "A home you own" (cited by Struyk, 1977).
5. March 31, 1977 hearings on S.664 (95th Congress). See in particular the introductory statement by Sen. Edward Brooke and the statement by Donna Shalala, Assistant Secretary for Policy Development and Research of the Department of Housing and Urban Development.
6. "The Young Families Housing Act" hearings, op. cit., describe both of these primary strategies, as they are included as the two major sections of the proposed act.
7. These findings are reported by an ongoing project at the MIT-Harvard Joint Center for Urban Studies, entitled "Housing Change After Marital Disruption" (mimeographed report of preliminary findings, n.d.).

## Chapter 2

PROGRESS IN HOUSING: NORMATIVE VIEWS OF  
AGGREGATE HOUSING IMPROVEMENT

The meaning of "housing progress" is not self-evident. This chapter explores alternative definitions of progress in the evaluation of housing conditions. The past decade has witnessed a fairly dramatic evolution of thinking on the nature of housing needs and housing progress. An early definition of housing needs in terms of additional required housing units has been replaced by more qualitative definitions of needs that emphasize conditions experienced by households. Congruent with this change, more open-ended conceptions of progress have emerged to supplement the simple preoccupation with progress toward a construction goal. These changes are reviewed in this chapter in order to support a new conception of progress that emphasizes the lifetime experience of housing improvements by individuals.

## ALTERNATIVE CONCEPTIONS OF PROGRESS

Progress is widely understood to mean advancement. Webster's New Collegiate Dictionary (1975) offers three basic definitions. The first is an archaic and largely irrelevant definition meaning procession or tour. The second and third definitions are: "2: a forward or onward movement (as to an objective or to a goal) [synonym is] ADVANCE. 3: a gradual betterment; esp: the progressive development of mankind" (Webster, 1975: 920).

The latter two definitions capture succinctly the understandings that most people likely would express regarding the meaning of "progress."

One definition equates progress with movement towards a goal while the other equates progress with a more open-ended and less specific improvement of conditions. These two definitions certainly are not mutually exclusive; in fact, it is probably sound to consider the goal-oriented usage of "progress" as an effort to either measure or promote progress in its more general sense, that of "betterment."

These two meanings of progress are reflected clearly in the policy discussions related to housing goals and estimates of housing needs. The most explicit usage of progress is with regard to meeting goals for housing provision. For example, the Second Annual Report on National Housing Goals is subtitled, "Progress Toward Meeting the National Housing Goals" (U.S. President, 1970). Nowhere within this 148 page report (or within any of the housing goals or housing needs reports) is the definition, measurement, or assumptions underlying progress discussed. In fact, the word is scarcely used within the report. Evidently the meaning of progress in the goals reports is assumed to be simply the degree of success in achieving previously established goals for housing provision.

The "betterment" usage of progress is more common perhaps than the goal-oriented definition, but the usage is often so non-explicit and ill-defined as to nullify the usefulness of a frequency comparison. The term progress frequently is used to describe changes in housing conditions over some time period, although these changes are more often simply labeled "improvements," "advances," or "increases in quality."

The conceptualization and measurement of goal-oriented progress is fairly clear. Additional housing provision can be categorized in the same terms as the goals are stated, then units are counted, and the

achieved numbers are compared to the goals. The process of conceptualization and measurement is much more variegated, however, in the case of the "betterment" version of progress, partly because there is no single clear standard of what is better. Careful reading of the documents and related literature reveals three different approaches to conceptualizing betterment of housing conditions: increased and/or higher quality housing stock, lower proportions of households in substandard housing, and narrowing gaps between the housing quality of different population groups.

The widespread sentiment of housing needs analysts is that the more housing the better. High housing construction is widely believed to lead to wholesale betterment of housing conditions, and this progress can be measured by simply adding newly constructed units over a period of time. A variation on this approach is to measure progress by the net increase in dwelling units over a time interval.

Equally widespread is the belief that the higher the quality of the housing stock the better. Indicators of improvement in the housing stock that are commonly cited are size of units, structure type, condition of units, and average cost of new construction. An additional set of indicators focuses on occupancy patterns and these are discussed below. Even if new construction is priced well above the means of households with the greatest housing needs, our implicit national housing policy assumes that benefits will trickle down to the poor as middle-income families vacate their old homes to buy new ones (Downs, 1973). Virtually all housing analysts agree that this strategy has worked to improve the overall quality of the national housing stock, but some have observed that these increases in quality have led to a growing problem of excessive

housing costs for the poor (cf. Frieden et al., 1977). Nevertheless, progress reflected by the rising quality of housing is measured simply by computing percentages of high quality units (e.g., single family, large size, or high cost), or low quality units (e.g. dilapidated or lacking plumbing), from the available statistical series.

In contrast to these stock-oriented conceptions of improving housing conditions, the remaining two approaches to estimating betterment in housing focus on the occupancy patterns of households. In practice most analysts utilize data measuring both housing stock and household occupancy characteristics. This eclectic approach to measuring progress seems motivated by the form and availability of data series, but scant recognition is offered that the two measurement strategies carry implicitly different conceptions of housing progress. The decade-long efforts of housing needs specialists to define the appropriate separation and re-combination of these two approaches to needs estimation will be surveyed in a later section. What immediately follows is a description of the two conceptions of progress that emphasize household occupancy experiences.

Substandard occupancy by households usually comprises a major component of housing needs estimates. (The only larger component is net household formations.) Substandard occupancy is most often measured by three indicators: presence of plumbing in the unit, persons per room ratio, and rent to income ratio. These indicators are described in detail and evaluated in the next chapter; however, the main point to observe is that these indicators are used to compute the percentage of households experiencing substandard housing. The first indicator measures



the quality of the dwelling unit, but the other two indicators measure the fit between the household and the unit. Over-crowded or excessively expensive housing units are not themselves substandard. Rather the mismatch of households and dwellings create a substandard occupancy that pertains only to the particular occupants. Thus, the remedies for substandard occupancies based on mismatch of household and dwelling requires an explicit focus on households instead of on dwellings alone. In the household occupancy approach progress is defined as a reduction in the proportion of households that have substandard occupancies. This simple conception could become much more complex, however, if housing needs analysts were to build models of matching between households and units. For example, a more detailed approach might include emphasis on the duration of mismatched conditions. These conditions could be treated differently depending on whether the mismatch developed before or after occupancy of a particular unit.

A second usage of the household occupancy approach subsumes the first, but introduces emphasis on the discrepancies between the level of substandard occupancy by minorities and other population groups. Hence, it might be labeled the equal opportunity approach. These may be thought of as two separate approaches, even though the household approach is a subset of the equal opportunity approach, because two distinct conceptions of progress can be deciphered. In contrast to the first approach where progress is viewed as a falling proportion of substandard occupancies, the second approach implicitly defines progress as a closing of the gap between disadvantaged and advantaged population groups.<sup>1</sup> In other words, if two groups both enjoy the same degree of reduced

substandard occupancy but the gap between their levels is unchanged, the household approach would indicate they enjoy equal progress while the equal opportunity approach would assert that the disadvantaged group made no progress. To reconcile the two approaches one need only observe that each emphasizes a different dimension of progress by households. The first focuses on change over time, while the second focuses on the degree of change over time relative to the change enjoyed by a reference group.<sup>2</sup> Clearly, more than one conceptual model of progress could be employed when developing a comprehensive estimate of housing needs.

Thus far, four different conceptions of housing progress have been inferred from the housing needs and housing goals literature. The simplest approach has been the goal attainment definition of progress. This approach has been equated almost exclusively with emphasis upon producing more housing units. In addition, three different betterment definitions of progress have been discerned. The first emphasizes increases in quantity and quality of housing units, while the other two focus on household occupancy experiences. Of these latter approaches, both measure changes over time in the level of substandard occupancy, but the equal opportunity approach focuses on the changing gap in housing quality between disadvantaged groups and the remainder of the population.

A new conception of housing progress is developed in this study. This new approach conceives of progress as the advancement of households toward their personal goals of housing occupancy. This life progress definition of housing progress stresses the aggregate experience of improvement by individuals rather than improvements for the nation as a whole. The importance of this distinction will be made clear in the

the next two chapters.

The remainder of this chapter reviews the evolving consensus on estimating aggregate housing needs. This review documents the shift over the past decade towards increasing emphasis on household occupancy experiences in addition to the traditional concern for quality of the housing stock per se. This evolution toward experiential definitions of quality implies a changing conception of housing progress that is not yet fully articulated. The proposed "lifetime" definition of housing progress represents an effort to articulate and measure at least part of the expanded conceptions that are embodied in the new definitions of housing needs.

#### HOUSING NEEDS AND HOUSING GOALS

Estimates of housing needs and housing goals are policy statements about housing conditions. It is useful to review these statements because they shed light on the changing notion of housing progress. The chief relationship between progress and housing needs or goals is that definitions of needs and statements of goals define dimensions where betterment is desired. Thus definitions of housing needs contain implicit definitions of housing progress.

Estimates of housing needs are formulated in terms that can be measured, that can be translated into remedies, and that can be transformed into statements of goals. The terms of housing needs estimates are usually selected from a broader set that reflect concepts of good housing and ideas about housing betterment. The concepts that are non-quantifiable (such as a good neighborhood) or non-addressable (such as

overcrowding) have come to be labeled "qualitative" housing needs. Progress toward goals that can be quantified represents only a subset of generalized housing betterment.

Conceptual models of housing needs have expanded over the past decade to include increasing numbers of qualitative dimensions. The growing disparity between the goals established by the Kaiser Committee in 1968 (U.S. President's Committee on Urban Housing, 1968) and the evolving concerns of experts in the field of housing needs is reviewed in the following sections.

#### The National Housing Goal

The general goal of our national housing policy was originally stated by the Congress in the Housing Act of 1949:

The Congress hereby declares that the general welfare and the security of the Nation and the health and living standards of its people require...the realization as soon as feasible of the goal of a decent home and a suitable living environment for every American family ... (emphasis added).

A continuing source of vexation has been the vagueness of the adjectives "decent" and "suitable." Numerous commentators have noted the difficulty of measuring progress toward a goal that is so vaguely defined. One could argue, nevertheless, that there is a certain amount of wisdom in stating the goal in such general, value-dependent terms. In 1949, and as late as 1968, the amount of national housing data was remarkably sparse,<sup>3</sup> so it would not have been wise to try to numerically specify the volume of a need for a decent home and a suitable environment. In fact, a major attraction of the adjectives "decent" and "suitable" is that they imply relative standards. Had consensus existed on the character of a decent

home in 1949, such a home would be considered woefully inadequate today.

Despite the advantages of a flexible, relative goal definition, recognition grew over the years that it would be useful to develop quantified goals for housing provision. In 1967 President Johnson appointed a Committee on Urban Housing, chaired by industrialist Edgar F. Kaiser (and commonly referred to as The Kaiser Committee), to investigate strategies for satisfying "the most pressing unfulfilled need of our society. That need is to provide the basic necessities of a decent home and healthy surroundings for every American family now imprisoned in the squalor of the slums" (U.S. President's Committee on Urban Housing, 1968:1). In its final report the Kaiser Committee expressed a large number of policy proposals regarding housing subsidies and housing production. The single most important finding of the Committee, however, was an estimate of the magnitude of the nation's housing needs. Based upon an analysis conducted by a private contractor--TEMPO, a Center for Advanced Studies that operated as a subsidiary of General Electric--the Committee recommended "a 10-year goal of 26 million more new and rehabilitated housing units, including at least six million for lower-income families. Attainment of this goal should eliminate the blight of substandard housing from the face of the nation's cities and should provide every American family with an affordable, decent home" (U.S. President's Committee on Urban Housing, 1968:3). Before the Committee even had submitted its final report, this 10-year goal was established as federal policy by the Housing and Urban Development Act of 1968.

Section 1603 of the 1968 Act, as amended by Section 801 of the Housing and Community Development Act of 1974, requires the President to

prepare an annual report on the progress toward meeting the national housing goal. The necessity to prepare such an annual report has elevated questions of housing needs and housing progress to the highest political levels.

### Defining Housing Needs

There currently is little consensus of what constitutes the correct model for estimating housing needs. Not only is there disagreement between various individuals and organizations that have contributed to policy discussions, but even within the Department of Housing and Urban Development there has been recognition that the best procedure is under debate.<sup>4</sup> What is generally agreed upon is that the methodology employed by the Kaiser Committee needs substantial revision.

The 10-year goal set forth by the Kaiser Committee defined "housing needs" in two particular ways. The Kaiser Committee adopted the major definition that housing needs were the number of units that would need to be built if new households were to be housed, if substandard units were to be replaced, if loss of good quality units were to be offset, and if a sufficient number of vacant units were to be maintained for the market to permit free mobility. This major definition of housing needs was stated solely in terms that could be satisfied by new construction.

A secondary definition of housing needs was also stated by the Kaiser Committee. The Committee estimated that six to eight million families a year would require financial assistance in order to occupy decent housing. Much confusion surrounds the derivation of this estimate. As other reviews have pointed out, the calculation of the six to eight

million number seems to be merely an averaging of different indicators of housing deprivation: 7.8 million households were too poor (by certain rules of thumb) to afford decent housing and 6.7 occupied substandard housing as indicated by deteriorated condition or by lack of complete plumbing facilities (Birch et al., 1973:2.4). The apparent assumption was that the two groups are completely overlapping, that elimination of financial burden and substandard housing is possible by subsidizing six to eight million units. Evidently the Committee chose to ignore its own data that indicated only 40-50 percent of the substandard occupants were in fact also suffering from financial deprivation (U.S. President's Committee on Urban Housing, 1968:43).

However the Committee selected an estimate of the number of needy households, this estimate was treated clearly as secondary, as a tag on, to the major estimate that emphasized new construction. The Committee's recommendation quoted above includes the secondary estimate within the major estimate.

The Kaiser Committee's recommendation and President Johnson's charge to the Committee embody several inter-related assumptions that are important to grasp. First, President Johnson called the housing problem "the most pressing unfulfilled need of our society" (U.S. President's Committee on Urban Housing, 1968:1; emphasis added). Although the distinction possibly was not intended the implication of this statement and of the Committee's report is that housing needs are needs of the nation and not of individuals. A second assumption is that needs should be defined in physical terms. The Committee's recommendations were stated in terms of housing construction and included the hope that the "[a]ttainment of this

goal should eliminate the blight of substandard housing from the face of the nation's cities..." (U.S. President's Committee on Urban Housing, 1968:3). Furthermore, President Johnson's charge to the Committee included substantial language suggesting the desirability of eliminating slums and blight through new construction. The conclusion that is drawn from this interpretation is that President Johnson and his Committee operated with two purposes: first, they sought to provide more and better housing conditions for the nation's people, and second, they assumed that the nation needed this to be done by means of new construction and urban renewal.

As the years have passed since the submission of the Kaiser Committee report, definitions of housing needs have shifted steadily toward greater emphasis on households' needs and less on construction needs. In part this evolution in thinking may have occurred because of growing disfavor for urban renewal and a rising interest in demand-side housing strategies (e.g. housing allowances). At least as important has been the strong desire of housing needs analysts to untangle the sticky issues that the Kaiser Committee treated as secondary needs. Efforts to develop sound estimates of housing deprivation have led analysts to focus increasingly on the experiences of households. In addition, the development of new data sources has permitted increasingly detailed analyses which the Kaiser Committee could not have conducted.

#### Joint Center Revision of Housing Needs Definition

The first significant alternative to the Kaiser Committee's methodology was offered by the Joint Center for Urban Studies (Birch et al., 1973). This report was greatly aided by the comprehensive new data collected by



the 1970 Census. More important, however, was the Joint Center's major intellectual assault on the Kaiser Committee's approach. The primary contribution of the Joint Center report was to separate forecasts of expected new construction from estimates of housing deprivation. The report emphasizes that these are two very different kinds of estimates that cannot be added to create a total housing goal (Birch et al., 1973: 4). Instead of subordinating the housing deprivation estimate to the construction forecast, as had the Kaiser Committee, the Joint Center study placed each component on a separate, equal footing and analyzed each component in greater detail.

Utilizing the 1970 Census data, it was possible to separate the overlapping forms of housing definition. In contrast to the Kaiser Committee's murky estimate of six to eight million needy households, the Joint Center report found that 13 million households suffered from one or more forms of housing deprivation: occupying substandard housing, overcrowded, or excessive rent burden. The study included inadequate neighborhood environment in its conceptual model of deprivation, but failed to find an indicator suitable for quantifying this dimension.

The Joint Center report developed two important conclusions. The first was that rising rent burden was rapidly increasing as a major component of housing deprivation while physical substandardness was decreasing in importance at the same rate. The second, and related, conclusion was that the "focus in the recent past on units rather than on households-- and a corresponding emphasis on meeting a national goal for the production of new units--has not been, and will not be, adequate" to fulfill the broad national housing goal established in 1949 (Birch et al., 1973:1.6).

The Joint Center report did not fully explore the implications of its conclusions that households should be emphasized instead of new construction. In fact the very goal that is cited in order to lend legitimacy to this conclusion--"a decent home and a suitable living environment for every American"--is specifically stated in the context of new construction and urban renewal:

The Congress hereby declares that the general welfare and security of the Nation and the health and living standards of its people require housing production and related community development sufficient to remedy the serious housing shortage, through the clearance of slums and blighted areas, and the realization as soon as feasible of the goal of a decent home and a suitable living environment for every American family, thus contributing to the development and redevelopment of communities and to the advancement of the growth, wealth and security of the Nation. (Emphasis added.)

This reading suggests that the Kaiser Committee's assumptions were perfectly congruent with the broad goal set forth in 1949.

A complete statement of the Joint Center's conclusions about emphasis on households would include additional assertions. The conclusion includes the beliefs: that "a decent home and a suitable living environment" constitutes the heart of the 1949 goal and that pursuit of this main purpose should not be tied to the context in which it was originally expected to be achieved; that once the main purpose of the goal has been isolated, it is imperative to focus on the full extent of households' housing burdens; and, that these burdens include not only the deprivation caused by a substandard unit, but also deprivations resulting from a poor neighborhood environment and from a poor fit between the household and its home. In sum, the Joint Center's call for greater emphasis on households' housing conditions, instead of on housing units' conditions, served to

elevate the Kaiser Committee's secondary, and vague, definition of housing needs to primary status.

#### 1975 Contributions to the Definition of Housing Needs

Additional contributions to the changing definition of housing needs were developed in 1975 when Senator William Proxmire, Chairman of the Committee on Banking, Housing and Urban Affairs commissioned several studies on short notice. The purpose of these studies was to re-examine the magnitude of the national housing goal that had been established in 1968 by the Kaiser Committee and to prepare an up-to-date estimate of housing needs. In the process of estimating housing needs, it was necessary, of course, to develop a working definition of "housing needs." Coming two years after the release of the Joint Center report it is revealing to see how much support these studies give the Joint Center approach relative to the Kaiser Committee's approach.

Five reports were prepared for the Senate Committee at Proxmire's request. The contribution by the Joint Center for Urban Studies was essentially a summation of its 1973 report. The other four studies were conducted by the Department of Housing and Urban Development (HUD), the Federal Home Loan Bank Board (FHLBB), the Department of Urban Affairs of the AFL-CIO, and by the National Association of Home Builders. Of these studies, only the report by the National Association of Home Builders continued to use largely the same approach as the Kaiser Committee. The emphasis of this organization upon housing stock and housing production should not be surprising.

The study by HUD expressed the Administration's current views of what

constituted housing needs. This study strongly embraced the household emphasis approach in theory, yet the analysis was conducted largely in terms of housing units. HUD justified this conceptual retreat by referring to the letter of Proxmire's request for housing needs studies and also by indicating a desire to prepare estimates in terms similar to the original goal estimates. The submitted estimates were strongly qualified, however, by reservations about the conceptual assumptions.

HUD believed that "'housing needs' are not expressed in terms of single family homeowners or renter units, multifamily renter or homeowner units, or mobile home homeowner or renter units. Housing need is fundamentally expressed in terms of the need of a household, or a potential household, for a housing unit which meets a wide variety of personal demands, household requirements, and desired lifestyles" (HUD, 1975: 31-32). In addition, HUD strongly questioned the wisdom of stressing new construction to meet housing needs: "Mere production of housing units does not ipso facto assure attainment of the national housing goal" (HUD, 1975:7). HUD cited several drawbacks to pursuing a schedule of annual production targets. Among these were the problems of coordinating housing production with competing demands within the economic sector, and the fact that there is "no guarantee that the additional housing will reach those who need it most, that is, those currently in inadequate units" (HUD, 1975:8). A related concern was that emphasis on meeting production goals ignored the issue of matching between households and housing units (over-crowding and excessive rent burden).

The HUD report did not offer a new methodology or even a new conceptualization of housing needs. Essentially the report expressed the beliefs

of the Joint Center report but practiced the method of the Kaiser Committee. Nevertheless, this study is interesting for its demonstrated acceptance of the Joint Center's arguments and for its introduction of one important innovation. The HUD study opened the issue of household formations to policy debate. Not only did the report stress the difficulty of forecasting future household formations, but it also suggested that there was two-way causation between household formation and new construction.

HUD examined the source of new household formations by comparing alternative projections, and it suggested that to plan construction of sufficient units to meet the maximum projected household expansion was to condone separate households for people in categories where the projections were most variable--young unmarried persons.

[I]t is the rate of growth of primary individuals' households which is most sensitive to the series used... Based on experience from 1970 to 1974, many of these additional primary individual households would be elderly persons, but a large proportion are young people under age 35, coming out of group quarters (college dormitories, or the military)...or leaving home and parents to set up independent housekeeping. This may be an expression of individual freedom and independence, reflecting the affluence of our society as well as changing folkways and life styles. However, it is questionable whether there ought to be a national housing policy which explicitly encourages this in light of other pressing demands upon the nation's limited resources. (HUD, 1975:13; emphasis added.)

[There is] a greatly increased demand for additional housing units resulting from a decrease in shared living accommodations and an increase in independent living arrangements. It is doubtful whether life style shifts of this sort are encompassed in the national goal of a 'decent home and a suitable living environment for every American family.' (HUD, 1975:14; emphasis added.)

HUD has extended the household emphasis approach to include detailed analysis of the needs of "unborn" households. To be sure, all housing

needs estimates include a large component for net household formations, but these estimates normally have not examined the kinds of people forming new households. Leaving aside HUD's question about the relative rights to housing deserved by different household types, there is a serious methodological problem involved in the measurement of changing rates of household formation. HUD has measured (and conceptualized) household formations as total growth per year. With the emergence of the large baby boom cohorts into early adulthood it is not surprising that the number of young households is growing. Before making judgements about relative rights it would be preferable to know how much of this growth results from increased formation rates for each cohort.

The Federal Home Loan Bank Board (FHLBB) decided that its report would not prepare quantitative estimates, and instead that it would concentrate on giving its beliefs about the estimation of housing needs. The FHLBB emphatically embraced the household emphasis approach.

This report supported the Joint Center's judgement on separating estimates of needs from forecasts of construction. Two justifications for such a separation were offered. The first was that housing needs could be measured more accurately if they were not mixed in with the much larger and imprecise estimates of total demand. The second justification was that:

Such a separation permits us to view the housing problem of low and moderate income households in a framework that does not imply that the only solution is through construction (or substantial rehabilitation) of additional housing units. It gets away from the trap into which we believe the Kaiser Committee--perhaps unwittingly--fell of equating housing needs with construction goals. (FHLBB, 1975:53; emphasis added.)

The FHLBB also made two independent contributions to the household emphasis approach. This report emphasized that criteria of housing deprivation are based on arbitrary standards. The report concluded that, because good housing is a relative concept, "even with continued improvements in housing conditions, the percentage of households deemed to be suffering from housing deprivation might not change significantly through time" (FHLBB, 1975:54). Numerous commentators have made similar observations about housing standards (cf. Baer, 1976; Holleb, 1978). The 1973 Joint Center report devoted an entire chapter to consumer preferences by different social classes and that discussion emphasized individuals' perceived relative status. But this work never addressed changing standards for the nation. Moreover, it is unclear how the issue of relative standards should be treated in housing needs estimates.

The most important contribution made by the FHLBB to the definition of housing needs was to suggest the importance of duration of deprivation. The FHLBB chided the Joint Center for not considering the possibility that transitory deprivation was much less significant for housing needs than permanent deprivation:

The Center fails to note an extremely important distinction that must be made when housing deprivation is applied to households rather than the structures themselves. Many households are subject to housing deprivation for all or most of their lives. Insofar, however, as housing 'deprivation' is a transitory state for many households, it may be of little or no social concern. It is, thus, necessary to know the number of households who suffer from housing deprivation over a significant number of years, not those who are in a state of household deprivation at a specific point in time. (FHLBB, 1975:48)

Direct measurement of the duration of deprivation for each household is

not possible because housing surveys have not collected the necessary information. Nevertheless, despite the difficulties of direct measurement, it should be possible to construct indirect measures of this concept.

The housing needs estimates prepared by Henry Schecter, Director of the Department of Urban Affairs of the AFL-CIO, focused more heavily on the financial burden of housing costs than did the other 1975 studies. The important innovation in Schecter's submission to the Senate committee is his emphasis on the financial burden of homebuyers. Proxmire's letter to Schecter (and the others) requesting a housing needs study mentioned that it would be desirable to use pertinent new information on family income and housing costs, and Schecter cited this portion of Proxmire's directive in the forward to his study. However, in the body of his report Schecter raised the homeownership issue without offering any substantial justification. Following an account of the changing number of families in different age groups, Schecter simply stated:

In conjunction with the foregoing, some perspective as to housing assistance needs can be gained by comparing estimated required housing expenses with the proportion of families in the various age (of head) groups who could "qualify" for homeownership by meeting the required housing expenses with 25 percent of income. (Schecter, 1975:106)

The importance of Schecter's offer of "some perspective" is that recent studies of national housing needs had disregarded the financial burdens faced by prospective homeowners. Over half of Schecter's study was devoted to an analysis of housing costs and incomes, and the bulk of the financial burden discussion was devoted to homeownership.<sup>5</sup> Schecter emphasized the high proportion of young families who could not "qualify" financially for homeownership, and he included a portion of these excluded



families in his overall estimates of assisted housing needs.

Schecter did not offer a conclusion to his analysis and, given his very indirect introduction of the homeownership topic, it appears he was reluctant to discuss the justification for his housing needs innovation. Placing homeownership costs on an equal footing with the problem of high rental costs ignores the fact that much of the homeowner's expenditures are building wealth in the form of equity. Nevertheless, as discussed in the next chapter, homeownership is a vital housing concern of most Americans.<sup>6</sup>

#### A New Homeownership Dimension of Housing Needs

Schecter's study struck a responsive chord with housing experts as well. Less than two years later major reports were released by the Congressional Budget Office (1977) and the Joint Center for Urban Studies (Frieden et al., 1977) proclaiming that homeownership affordability had become a problem worthy of public intervention. In contrast to Schecter, these studies offered a clearly stated justification for stressing the homeownership problem. Both reports emphasized that the financial burdens of prospective home buyers had increased between 1970 and 1975. While media reports exaggerated the empirical findings to imply the death of the American dream, the clear normative implication of these studies was that homeownership should not become more difficult to achieve for the current generation of young families. In a later article Frieden (1977) summarized the new housing cost problem as a problem of "intergenerational inequity."

Despite its seemingly clearcut justification, the new affordability

definition of housing needs has been attacked on the basis that the problem has been measured incorrectly and might be nonexistent. Hardly had the ink dried on the two 1977 reports before Weicher (1977) criticized their measurement of the trend in affordability. He pointed out that house prices in the base year (1970) used by both studies were abnormally depressed and the increase in costs relative to median family income would not appear as great if earlier years were used for the base. A subsequent analysis by Weicher (1978) compared seven alternative measures of affordability over time and concluded that all the measures bore absolutely no relationship to aggregate housing market trends. He explained this by the fact that most households already own a home and these previous owners can use their accumulated equity to help them purchase new homes when they move.

A second line of attack has been pursued by James Follain and his associates at the Urban Institute (Follain et al., 1978; Follain and Struyk, 1979). These authors have called attention to the fact that the quality of new homes has increased steadily over the years, thus contributing to higher costs, and they also have cited the abnormally low house prices in 1970 as misleading data. But the major criticism has been that estimates of affordability do not separate the costs of consumption from the costs of investment. In particular, a high rate of inflation has the effect of raising the initial level of payments a homebuyer faces, but high inflation also promises to reduce the real cost of mortgage payments over time at the same time as it leads consumers to expect large future capital gains. In the view of these authors affordability measures are

misguided because they focus on the first year payments instead of on the long term housing expenditures and benefits of the household. Follain and Struyk (1979) explain the continued growth of ownership rates by the fact that consumers take the longer view.

Despite these reservations Follain et al. (1978:40) conclude that "...there definitely is a problem for first-time homebuyers during the initial years of the mortgage." Regardless of the affordability measurement problem, it is widely agreed that buying a first home is becoming an increasingly difficult hurdle in the housing careers of young families. The affordability debate has centered more on the proper time frame for measuring financial burden than it has on the fact of high nominal housing costs. What is becoming apparent is the need for a longitudinal approach to measuring housing experience, much as the FHLBB argued in the case of deprivation duration.

#### Summary of the Evolving Housing Needs Conceptions

The preceding review has documented the progressive expansion of housing needs definitions to include an ever-widening number of qualitative concerns. These concerns stretch far beyond the Kaiser Committee's implicit belief that housing needs could be defined as the nation's need for additional housing units in standard condition. The 1973 Joint Center study was instrumental in promoting the belief that household occupancy experiences--particularly the size and income fits of households to units--were just as valid measures of housing deprivation as structural substandardness.

The 1975 housing needs studies commissioned by the Senate Banking

Committee bear testimony to the widespread, strong acceptance of the Joint Center revisions. Indeed three of these studies sought to expand the household occupancy interpretation still further. The HUD report raised questions about the appropriate policy stance regarding household formation by different sectors of the population. HUD's suggestion was that the number of new households responds to the number of new units constructed, and hence the need for new construction cannot be determined separately from the need for household formation. In particular, HUD suggested that household formation by families might be viewed as higher priority than household formation by unrelated individuals (whose household formation is more sensitive to changes in housing supply), and so HUD asserted that different population sectors' need for household formation must be evaluated before the need for new construction can be determined.

Further complexities were introduced into the household occupancy approach when the FHLBB asserted that housing standards are so relative that deprivation might never be eliminated. A second important suggestion made by the FHLBB was that the duration of a household's deprivation is an important contributor to the urgency of its housing need. The FHLBB stressed the importance of estimating how many households suffering poor housing conditions were only temporarily in that state. The FHLBB's rationale was that emphasis on household occupancy experience implied the necessity for longitudinal measurement of households' housing conditions.

A third major addition to the expanding definition of housing needs was proposed by Henry Schecter of the AFL-CIO and amplified by the 1977 reports of the Joint Center and Congressional Budget Office. The addition was an assertion that rising costs of homeownership indicated a new source

of housing needs. The argument did not suggest that homeownership should become the new standard of minimally acceptable quality for all Americans; rather, the proposal was that access to homeownership (as represented by its cost) should not be allowed to become more difficult. This argument essentially represented a plea for relative parity between generations-- acquisition of homeownership should not become more difficult for today's young families than for yesterday's (cf. Frieden, 1977).

#### CONCLUSION

One decade after the Kaiser Committee report the definition of housing needs has grown to be many faceted. Later definitions have not excluded earlier ones; instead, they have emphasized new features while incorporating the old. The general thrust of the proposed revisions has been to argue that housing needs should be conceptualized as arising from the aggregate qualitative experience over time of individuals or households.

Methodologies for quantitative estimates of needs have lagged considerably behind these conceptual advances. The 1975 HUD study, for example, preached the philosophy of the 1973 Joint Center report while practicing the methodology of the Kaiser Committee. Most likely, HUD adopted this paradoxical approach for several complimentary reasons. To begin with, HUD stated that it wanted to prepare estimates in the same terms as the Kaiser Committee estimates so that they could be more easily compared. If comparability alone were the concern, it would have been quite easy to prepare different sets of estimates, one of which could have copied the Kaiser Committee method. Instead, HUD probably discovered that it is much more difficult to count households having different qualitative

experiences than it is to count dwelling units. A third explanation for the paradoxical approach that HUD adopted is that, despite the commonsensical appeal of the new conceptions about housing needs, it is much more difficult to evaluate the new qualitative housing needs dimensions than it is to rely on traditional normative judgements that have focused on dwelling units. Finally, underlying all of these explanations is the fact that HUD has traditionally preferred problem definitions that call for remedies emphasizing new construction or rehabilitation of the existing housing stock. For all these reasons HUD employed a traditional quantitative methodology even while admitting that its estimates failed to realistically address the experience of housing deprivation.

The conceptual advances subsequent to the 1973 Joint Center report are difficult to put into practice. For example, how do we measure experience over time, whether the issue is duration of overcrowding or costs of homeownership? More important, and partly as a consequence of non-measurement, there are no clear-cut normative interpretations of what is an acceptable duration of either overcrowding or renting (instead of owning). Even were there normative agreement about these problems, the means for their remedy is not as obvious as in the case of construction needs.

How may these conceptions of housing needs be related to the alternative conceptions of housing progress? The first half of this chapter identified two broad types of progress--goal-oriented and general betterment. Housing progress is institutionally defined as progress toward the quantitative goal established by the Kaiser Committee. A second, more general conception of housing progress concerns the rising quality (or

betterment) of the housing stock, irrespective of particular goals. A third definition of housing progress also emphasizes general betterment but expresses this in terms of the improved occupancy experiences of households, e.g. reduced overcrowding or reduced financial burden. The fourth major definition of housing progress focuses on the occupancy experiences of one population group, such as blacks, relative to others. This equal opportunity approach measures progress in terms of reducing the differential between groups. Even though the relative definition of progress operates with an explicit goal-orientation--equality between groups--this goal is not expressed in terms that are readily translated into program remedies. Most often, the goal of equality in housing is used as a reference point by which to measure social conditions; and, despite the growth of fair housing and affirmative action programs, equality is not a specific target established by institutional commitments.

The new conception of housing progress that is developed in this study emphasizes the lifetime advancement of households toward individually held goals of housing achievement. This definition of progress shares certain features of the conceptions above. Although the lifetime conception is not expressed in terms of institutional goals of housing construction, it resembles goal-oriented progress insofar as progress is measured as advancement toward personal housing goals. A second similarity is that lifetime progress emphasizes household occupancy experiences instead of characteristics of the housing stock. A final similarity of lifetime progress is that it resembles the equal opportunity conception of progress insofar as one way to normatively define how much progress is enough is to compare the lifetime progress of one generation with another.

Not only does the lifetime conception of housing progress share features of the other definitions, but it also provides a better articulation of the normative concerns underlying the new conceptions of housing needs. Although the lifetime conception does not address each specific dimension of housing needs, it does provide a means for simplified, parsimonious measurement of certain elements of the new concerns. The major advantage is that the lifetime conception stresses longitudinal housing experience aggregated from the experiences of individuals. Subsequent chapters will show how the average duration of experiences can be calculated and how the struggle to attain homeownership can be measured. Using the lifetime conception of progress, comparisons can also be made between generations to measure the changing pattern of housing consumption relative to family formation. These relative comparisons provide an approach to normative evaluation of progress.

The methodology for measuring lifetime progress relies heavily on the cohort-life course behavioral theory that is discussed in Chapter 4. Before proceeding to a discussion of this theory, however, the next chapter evaluates alternative measures of housing quality. Lifetime progress assumes that households strive to achieve better housing as they grow older. If we are to measure this progress, we must first identify appropriate indicators of housing quality.



## NOTES TO CHAPTER 2

1. The series of annual reports put out by the National Urban League, entitled "The State of Black America," exemplifies this conception of progress. For example, in the chapter on housing trends in the 1980 report all 12 of the statistical tables are devoted to a comparison of black housing conditions with those for the total population (Leigh, 1980).

2. How to best measure relative progress is a matter of debate. As Levitan et al. (1973:14) describe, one major decision is whether to measure relative progress by ratios or absolute changes:

One measure of relative status is the ratio of black/white incomes. This is appropriate to assess the rate of progress of blacks toward equality. But this ratio may rise and, indeed, has risen, while the gap between the incomes has increased.... There is no proof whether blacks feel better off because of proportionate gains, or worse off because of widening dollar disparities; so both ratios and gaps must be considered in assessing relative progress.

In addition, as Hill (1980) has pointed out, measurement of relative progress based on individuals can yield very different conclusions than measurement based on families. Differences can arise when one population group has a much higher proportion of single parent families or a higher proportion of two-earner married couples. It is important to be clear about what types of units are being compared over time.

3. The Douglas Commission (1969:68-69) stressed the extreme limitations imposed on housing analysts by the paucity of national data.

4. The Tenth Annual Report on the National Housing Goal (U.S. President, 1979), drafted by HUD, mentions that there are alternative approaches to estimating housing needs and devotes an appendix to a review of European procedures. This report refers to a 1975 study prepared by HUD for a review of alternative United States housing needs estimates (HUD, 1975: 35-40).

5. As an indicator of Schecter's emphasis on homeownership, despite his casual introduction of the subject, 4 out of 5 numbered tables in his report deal solely with homeownership.

6. In fact, although he did not cite it in his report to Proxmire's committee, Schecter had very recently directed a study of the AFL-CIO members' housing conditions (AFL-CIO, 1975). The major conclusion of this study was the very strong desire for homeownership, and the report stressed the need for financial assistance to persons who had not yet bought homes. This study of his constituency was surely fresh in his mind as Schecter prepared his report for the Senate committee.



## Chapter 3

INDICATORS OF HOUSING QUALITY:  
TOWARD A LIFE PROGRESS MODEL

It is essential to identify standards of housing quality if we are to measure the progress made by cohorts in their housing careers. Without some yardstick for measuring housing consumption it is impossible to conduct an empirical investigation of changing housing conditions. Moreover, it is impossible to make normative assessments of housing progress if standards are not defined for identifying good and bad housing conditions. Although this chapter makes a strong effort to distinguish the normative from the empirical measurement of housing quality, the two purposes are not completely separable and in fact they are confused by many authors. At the very least, an effort is made to be explicit about the assumptions and purposes under discussion.

There are several ways in which the normative and empirical definitions of quality are related. A major, structural link is that normative assessments of quality depend upon empirical measurement of conditions. Baer (1976) has argued that housing indicators are used for empirical measurement, whereas housing standards constitute normative definitions of what level on the indicator represents "good" housing:

An indicator represents a facet of some state of affairs singled out for attention. Usually an indicator is quantified for purposes of comparing different situations.... But an indicator is a means of measurement only. It says nothing about whether a particular level (of crowding, say) is desirable or undesirable, customary or unusual. Standards are normative terms stipulating the quality of what is measured by an indicator. (Baer, 1976:364)

Of course, it should be recognized that the decision to single out a facet of reality for special attention is also a normative act involving judgements about what is important. Baer recognizes that "[i]nvariably, policy judgements, not just technical expertise and scientific findings, determine the selection of both indicators and standards, although policy judgement is more pronounced in the latter" (1976:365). Whatever the means of selecting indicators for certain aspects of housing conditions, once the indicators are employed they exert a strong influence on subsequent policy options. The mere act of measurement can raise an issue to prominence, and the nature of the indicator selected can steer the search for policy remedies.

In some cases, the definition of housing indicators is virtually synonymous with the definition of housing standards. Such cases are those involving discrete measurement, i.e. when the indicator is a categorical variable such as structure type or tenure. When for practical reasons the indicator can only measure two states, usage of the indicator implies a standard that one category is bad and the other good. Which is the preferred category may be open to judgement, but the point is that discrete indicators leave no room for normative definitions of standards involving fine gradations, such as is the case with rent burden or another interval level indicator.

The present chapter has one broad purpose and two specific objectives. The broad purpose is to select a housing standard by which to measure and evaluate the housing progress of young cohorts. Toward this end, the first objective is to review and evaluate the usefulness of traditional housing standards for measuring housing quality. A single, major normative

assumption is allowed to guide this search for useful empirical measures. This assumption is that housing standards for measuring progress should reflect the preferences of households and not simply the judgements of housing professionals. This assumption is justified primarily on the theoretical grounds that persons who perceive progress in their housing careers are likely to direct their consumption toward preferred housing and away from unpreferred housing. The second objective of the chapter, therefore, is to analyze surveys of housing preferences for evidence of preferred housing standards. This analysis will lead to the formulation of a life progress model of housing quality.

#### TRADITIONAL INDICATORS

Housing analysts have relied on three principal indicators to assess the housing circumstances of the American people: over-crowding (measured by persons per room), structural substandardness (measured by lack of some plumbing and/or by observations of dilapidation), and financial burden (measured by the ratio of gross rent payments to income). These measures comprise the primary housing indicators included in the social indicator reports prepared by the U.S. Office of Management and Budget, and they provide the fundamental yardsticks for the numerous local and national studies of housing needs.<sup>1</sup>

Despite their widespread usage, however, these indicators have come under increasing criticism. A common complaint is that the three indicators do not measure enough structural characteristics of the housing unit to reflect adequately the true quality of a family's housing experience. In perhaps the fullest accounting to date, Budding (1978) has estimated that

the evaluation of 78 detailed features of housing condition among a sample of low income households yields an estimate of physical housing deprivation that is three times greater than what would be estimated with traditional measures. A major drawback to the fuller accounting approach, however, is that it is difficult to develop a standardized assessment procedure that will enable comparisons between interviewers or across time (cf. U.S. Bureau of the Census, 1967).

A second fundamental weakness of virtually all surveys of housing quality is that they are based on assumptions by survey designers about what constitutes a housing deficiency. Although such assumptions might be declared an operational necessity for the design of indicators, the method of a priori indicator definition gives little respect to the actual preferences of households and their perceptions of quality. Were the independent judgements of housing professionals consistent with the preferences of households there would be little problem. However, there is only weak evidence that households possess strong preferences about dimensions of housing quality that have been professionally identified.

In addition to this weakness, which is assessed below, a third problem is that two of the traditional indicators measure deficiencies that have a very low incidence that is diminishing over time. Table 3-1 shows how few households are over-crowded or occupying units without complete plumbing facilities. Useful social indicators for housing should measure characteristics that show more substantial variation in their occurrence.

#### Structural Condition

Many analysts have expected that more detailed measurement of housing

Table 3-1: TRENDS IN THE TRADITIONAL INDICATORS OF HOUSING DEPRIVATION

Indicator	Year						
	1960	1970	1973	1974	1975	1976	1977
<b>Over-crowding<sup>a</sup></b>							
Renters	16.1%	10.6%	7.0%	6.9%	6.7%	6.2%	6.2%
All Households	11.5	8.0	5.6	5.3	5.0	4.6	4.4
<b>Lack Plumbing<sup>b</sup></b>							
Renters	21.3	8.3	6.0	5.5	4.8	4.6	4.2
All Households	14.7	5.9	3.5	3.2	2.9	2.6	2.4
<b>Financial Burden<sup>c</sup></b>							
Renters	21.4	25.3	24.4	25.1	27.9	28.6	30.3
All Households	NA	NA	NA	NA	NA	NA	NA

SOURCE: U.S. Bureau of the Census (1962: Tables A-1, A-2, and A-3), (1972: Table A-5), (1973: Table A-5), (1975a-1979a: Table A-1), and (1979c: Table A-1); U.S. Department of Commerce (1977: Tables 3.3 and 3.7).

a. Over-crowding is defined as more than 1.0 occupants per room

b. Lacking some or all plumbing.

c. Financial burden is defined as a ratio of gross rent to income that exceeds .34 (a conservative standard).

NA. Not applicable.

structural condition would produce larger and "truer" estimates of physical housing deprivation. Indeed, Budding's (1978) study, based on Housing Allowance Demand Experiment data, has produced the expected, larger estimate of deprivation. However, because of its national coverage and annual replication, greater interest has been expressed in the housing quality portions of the Department of Housing and Urban Development's Annual Housing Survey. This survey records 30-odd separate characteristics of the housing unit and collects household data permitting construction of innumerable household occupancy indicators.

Two studies have attempted to select key indicators of physical housing quality from the large number of observations about housing unit characteristics. A brief analysis was prepared by HUD as part of the Tenth Annual Report on the National Housing Goal (U.S. President, 1979). This study made no reference to an earlier study completed under contract by HUD to the Urban Institute (Goedert and Goodman, 1977). The Urban Institute study was more detailed and more explicitly reasoned than the HUD report, and the two studies came to different conclusions.

Both reports selected quality indicators on the basis of household preferences inferred from the correlation of income with specific deficiencies. The basic reasoning is that households with higher incomes will avoid occupying homes with particular deficiencies if they hold strong preferences about those housing dimensions. The Urban Institute report concluded that there was no strong revealed preference for any housing quality feature recorded by the Annual Housing Survey: "It is shown that no item from an extensive list of housing characteristics clearly distinguishes the housing of low-income households from that of higher



income families...." (Goedert and Goodman, 1977:xi).

In contrast, HUD concluded that "...analysis of information reported in the Annual Housing Survey has isolated several housing characteristics and defects which appear to be strongly related to the income of households...." (U.S. President, 1979:58). HUD cites 10 deficiencies but does not report data substantiating the claim of a strong income effect on the incidence of individual features. Data are presented, however, to summarize the combined incidence of 23 different housing deficiencies within different income groups. More than two deficiencies are reported by 5.8 percent of all households, but this incidence rises from only 2.0 percent within the highest income category to 11.0 percent within the lowest. No deficiencies are reported by 68.9 percent of all households, but the freedom from defects declines only from 78.0 percent among the highest income group to 58.3 percent among the lowest. (U.S. President, 1979: Table 10)

These data indicate that income has a clear effect on the likelihood of occupying lower quality housing. The data do not support the conclusion, however, that this is a strong relationship. The majority of the lowest income households report no deficiencies at all, while the highest income group is only 20 percent more likely to be free of housing defects. Of course, one might stress that the incidence of more than two defects is five times as great among the poorest group as the richest, but it should also be emphasized that this comparison is based on the ratio of two very low percentages (11.0 and 2.0 percent). Moreover, it must be recalled that these percentages refer to the combined incidence of 23 different housing defects. HUD claims that 10 different defects are

strongly related to income. If this were true one would expect that the combined incidence of multiple defects would be much greater than 11.0 percent for the lowest income group.

The Urban Institute study is far more explicit about its methodology and presents more data than the HUD analysis. This study conducted a separate analysis of urban and rural households, and it used a different conception of income for estimating revealed preferences. The authors sought to estimate preferences on the basis of the relationship between permanent income and housing consumption. Reasoning that the incomes of the very young and very old are likely to be more transitory, they focused on persons aged 30-64. Furthermore, the most stable consumption units were assumed to be married couples, so the analysis was further restricted to this marital status. It is likely that this population subgroup will yield less biased estimates of revealed housing preferences. For example, elderly persons of very low income might occupy higher quality housing that they selected when their income was higher, or divorced women might choose housing more in response to their shift in living arrangements than in response to their current income.

The most frequently reported deficiency was lack of air conditioning (42.0 percent), and the next most frequent deficiencies were location on a noisy street (34.5 percent) and heavy traffic (27.8 percent). However, the nature of these three indicators raises several analytic problems. First, the indicators are included in the analysis simply because data were collected on these questions in the Annual Housing Survey. The types of indicators that can be analyzed are restricted by this availability. Second, the traffic and noise indicators are based on subjective reports

and their relationship to income cannot be strictly interpreted as a measure of revealed preference. A final issue concerns the essentialness of air conditioning--why not swimming pools? In some parts of the country air conditioning is probably as important as heating equipment is in colder regions, but the Urban Institute did not classify this indicator by climate.

Presumably, if air conditioning is not perceived to be an essential aspect of housing quality by many Americans, the absence of air conditioning would occur for both poor and rich. In fact, among urban households 56.7 percent of the lowest income group and 32.9 percent of the highest income group lack air conditioning. (Goedert and Goodman, 1977: Table 1) It is clear that, although the poor have a higher incidence of this deficiency, the richest households have not chosen to eliminate the defect.

The effect of income is even less for the indicators involving perceptions of traffic and noise. From the lowest to the highest income groups the incidence of these problems among urban households declines from 32.4 percent to 23.6 percent and from 40.2 percent to 30.0 percent, respectively. It should be restated that these indicators, together with air conditioning, are the ones with the highest incidence of reported deficiencies for the lowest income households.

The greatest effect of income on housing deficiencies is observed for the traditional indicator of structural condition--lacking complete plumbing facilities. Measured by the ratio of low-income to high-income defect incidence, this effect is 38.0-to-1. However, this ratio is based on extremely low incidences--3.8 percent for low-income households and 0.1 percent for high-income households (Goedert and Goodman, 1977: Table 1).

In general, among urban households, the effect of income is not very strong for those defects that have substantial occurrence among the lowest income households. The strongest effects are observed for indicators pertaining to heating systems. Among the lowest income households 30.2 percent have one or more rooms that lack a heat source, an incidence that is 2.2 times higher than for the highest income households (13.7 percent). An even stronger effect is found for the absence of a central heating system: the incidence for low income households (22.2 percent) is 7.4 times greater than for high income households (3.0 percent). In all other cases where the low income incidence exceeds 20 percent the low income incidence is less than two times greater than the high income incidence.

In conclusion, the Urban Institute conclusion seems justified that none of the Annual Housing Survey housing quality indicators sharply distinguishes the housing conditions of low and high-income households. There is not more than a 20 percentage point difference between high and low-income households with regard to most housing deficiencies. If households truly perceived these deficiencies to be important aspects of housing quality, one would expect that high income would be used to avoid the defect, but such is not the case. The chief advantage of the housing deficiencies reported by the Annual Housing Survey is that much more detailed (and higher) estimates of physical housing condition are possible than have been provided by the single traditional indicator based on presence of complete plumbing facilities. The two chief drawbacks to the plumbing indicator are that it is unidimensional and that it currently measures an extremely low level of structural deficiencies. The new indicators obviate these drawbacks but introduce new problems: it is

less certain that the new indicators measure housing defects which are perceived as important quality dimensions by most households.

### Over-crowding

A second major dimension of housing conditions has been measured by indicators of dwelling unit utilization. Throughout the twentieth century the primary indicator has been the ratio of persons per room in the dwelling unit. Baer (1976) demonstrates how the standard applied to this indicator has become increasingly stringent as crowding has decreased. In the first half of the century standards of 2.0 or 1.5 persons per room were usually employed to signify thresholds of over-crowding, whereas in the past twenty years a standard of 1.0 persons per room has been used most often. Even under this strict standard the incidence of over-crowding in the United States has declined to a very low level. The trend in crowding between 1960 and 1977 is depicted in Table 3-1. Over this 17 year interval the number of over-crowded households declined from 11.5 percent to 4.4 percent of all households. If Baer's analysis of this indicator's evolving standard bears any indication of future standards, one would expect a new standard of less than one person per room to be introduced after the 1980 census data are analyzed.

In addition to the issues of shifting standards and declining incidence of measured crowding, two major criticisms have been voiced about the nature of crowding as a component of housing quality. Both criticisms were expressed quite early by Nathan Glazer (1967). Glazer first pointed out that the notion of crowding is extremely relative and has no relationship to health needs or social pathologies. As evidence

he cited the extremely dense living conditions among Chinese in Hong Kong where entire families share a single room without apparent physical or psychic harm.

The second major criticism introduced by Glazer is that the persons per room crowding indicator does not measure conditions to which people are very sensitive. He conducted a simple revealed preference analysis by calculating 1960 crowding rates for different income groups. Glazer's conclusion was that crowding is not that important to people because it does not decline sharply and disappear as income increases.

Table 3-2 presents data on the crowding incidence in 1975 by income and tenure type. In order to isolate crowding from other housing problems these data pertain only to households with complete plumbing facilities. Crowding is clearly more prevalent for renters than owners and it declines with income. The explanation for the drop off in crowding at the lowest income levels is most likely that these income groups are dominated by elderly persons living in small (one to two person) households. The highest rate of crowding (7.9 percent) is observed for renters with 5-10,000 dollar incomes. Renters with very high incomes, however, still have a crowding rate of 4.0 percent. A similar pattern obtains among owners--crowding declines from a peak of 4.9 percent to a minimum of 2.2 percent at the highest income level. The magnitudes of these declines do not suggest a strong preference for eliminating crowding (as measured by persons per room).

Another way of assessing households' preferences is to ask them directly. When analyzing a 1969 Baltimore survey Grigsby and Rosenberg (1975:76) were surprised to find an essentially random relationship between

Table 3-2: INCIDENCE OF OVER-CROWDING<sup>a</sup> IN HOUSING UNITS  
WITH COMPLETE PLUMBING FACILITIES, BY TENURE  
AND INCOME, AMONG U.S. HOUSEHOLDS IN 1975

Income	Tenure		All Households
	Owners	Renters	
Under \$5000	2.1%	4.9%	3.6%
\$5000-\$9999	4.4	7.9	6.0
\$10,000-\$14,999	4.9	6.5	5.4
\$15,000-\$19,999	4.3	5.6	4.6
\$20,000-\$24,999	4.1	5.4	4.3
\$25,000-\$34,999	3.4	4.0	3.4
\$35,000 and over	2.2	4.0	2.5
TOTAL	3.9	6.2	4.7

SOURCE: U.S. Bureau of the Census (1977b: Table A-1)

a. Over-crowding is defined as more than 1.0 persons per room.

persons per room and self-perceptions of crowding:

[O]nly a bare majority (53%) of the respondents who considered their dwellings too small actually had too few rooms by our standard [i.e. more than one person per room]; and conversely among the families with less than one room per person, those who complained that their homes were too small were a minority (43%).

The 1973 Joint Center study of housing needs (Birch et al., 1973) also commented on the disjuncture between the persons per room indicator and perceptions of crowding. Based on detailed interviews this study concluded that perceptions of crowding vary along separate dimensions and cannot be simply related through ratios. Large families have greater acceptance of crowdedness than small families, and owners of large homes have greater satisfaction than owners of small homes, regardless of their respective crowding levels. Moreover, these judgements vary by social class and life cycle stage. In addition, the report found that perceptions of crowding are based not on the total number of rooms but on the number of rooms for specific functions (especially sleeping). All of these observations would be difficult to summarize in an indicator of crowding; hence, analysts continue to rely upon the simple, traditional indicator despite its inadequacies.

In conclusion, the traditional indicator of over-crowding does not reflect adequately the preferences of households. Conceptually the indicator is very important because it emphasizes that the quality of housing experience depends as much on the match between household and dwelling as it does on the nature of the housing unit itself. However, the traditional indicator does not capture the detailed experience of crowding in a realistic way; nor does it address directly the issue of



relativism in the evaluation of crowdedness. Moreover, given that crowding has declined to such a low level of incidence, the current crowding standard contributes very little to the public evaluation of housing quality.

### Financial Burden

In contrast to the structural and crowding indicators, the indicator of financial burden has measured a large and rising amount of housing deprivation. As shown in Table 3-1, the incidence of very high rent burden (a ratio of gross rent to income that exceeds .34) has increased from 21.4 percent of all renters in 1960 to 30.3 percent in 1977. Given that the incidence of deprivation due to overcrowding or structural substandardness has been declining, excessive rent burden is becoming the dominant component of aggregate housing deprivation measured by the traditional indicators (Frieden et al., 1977).

A second form of financial burden was discussed in Chapter 2. Rising costs of homeownership have been recently identified as reflecting housing need. This form of financial burden is not evaluated in the present chapter. One problem is that the measurement of homeownership costs is so complex and the identification of the problem is so recent that no consensus has been reached about the construction of an affordability indicator (Weicher, 1978). A second problem involves the issue of comparability between tenures. How do we compare financial burdens of renters and owners? Some families that are hard pressed by homeownership costs might be able to afford easily the costs of renting. Conversely, elderly persons who own their homes and have paid off the mortgage would have low financial burdens (under some homeownership indicators) but would have high

financial burden if they paid rent monthly. The costs of homeownership are very uneven over time and, unlike renters, part of these costs are actually savings that are stored as equity in the home. Finally, as the analysis of rent burden will make clear, it is inappropriate to use an indicator of an income problem as a measure of improving housing quality.

Preceding indicators of housing quality have been evaluated in relation to the degree that they reflect the revealed preferences of households. It is questionable whether it makes sense to conduct the same type of revealed preference analysis for financial burden, because the primary measure of preference is based on income and income is defined to be part of the financial burden indicator. If rent is held constant, but income rises, the ratio of rent to income will fall. If all households paid the same rent, we would expect to find no financial burden above an income level that is unique to each standard. Because income is built into the indicator of burden, we cannot interpret this pattern to indicate a preference for avoiding financial burden.

Nevertheless, all households do not pay the same rent. Higher income households pay higher rent, but these increases are much less than proportional, and as a consequence rent burden declines with income. Feins and White (1977:134) report that in 1973 the mean rent burden fell from 0.47 among the lowest income group to 0.12 among the highest income households. This decline was especially steep between the one to three thousand dollar class and the three to five thousand dollar class (1960 dollars). In this lower income range the rent burden fell from 0.47 to 0.27.

It is difficult to judge whether this declining rent burden reflects preferences or whether it merely reflects change in the denominator of

the indicator. Most likely, both effects are at work. The fact that rent burden falls so sharply between income categories over the lower income range suggests that households with annual incomes of \$2000 are paying nearly as much rent as households with incomes of \$4000. Housing is a "lumpy" consumer good and, due to building codes and other regulations, market rents are not easily found below some minimum threshold. Thus extremely low income households may be forced to choose the same apartments as slightly richer households. Under this circumstance it is clear that slightly richer households might prefer to avoid the excessive rent burden that is imposed upon the very poor. In fact, one of the major conclusions to come out of the federal government's Experimental Housing Allowance Program is that families were much less interested in using their new rent subsidies to purchase better housing quality than they were eager to reduce their rent burden (Frieden and Walter, 1980).

How can an occupancy condition that is based on too high a rent and/or too low an income be used as a measure of housing progress? If a household finds a cheaper housing unit, this unit is likely to be smaller or of lower quality. Alternatively, if the household manages to increase its income, while retaining the same unit at the same rent, this escape from high rent burden would not reflect housing progress so much as it would economic progress of the household. Housing is the largest consumer expenditure that most households make, and consequently the cost burden of housing merely reflects deeper financial problems. Moreover, the fact that either cheaper rent or higher income will reduce households' rent burden makes this improvement ambiguous to interpret. In conclusion, indicators of financial burden in housing, while important measures of

housing experience, are difficult to employ for measuring housing quality and housing progress.

#### A Note on Neighborhood Quality

The long-time national housing objective of providing every family with a "decent home" is accompanied by the additional stipulation that this home should be in a "suitable living environment." Virtually every analyst of housing needs has noted the importance of the neighborhood environment for housing quality (cf. Budding, 1978; Frieden et al., 1977). Efforts to quantify this dimension have been stymied by several factors. First, unlike a household's housing unit, it is difficult to define what is the relevant neighborhood unit. The relevant unit could be an apartment building, the block face, or the entire residential district served by a shopping area or by a municipal service (such as schools or transportation). The problem is that for different purposes, and for different persons, alternative neighborhood definitions are appropriate.

A second problem concerns the identification of important dimensions of neighborhood quality. Important features might include the physical appearance of the neighborhood, its social composition, location, freedom from crime, and even its access to public services of different kinds. Measuring these dimensions for each household's immediate neighborhood would be extremely difficult, so the approach adopted by the Annual Housing Survey is to ask each respondent to provide a subjective rating for a number of these dimensions. One major fault with this approach was cited by an independent evaluation of the neighborhood quality measures in the Annual Housing Survey (Bielby, 1979). In common with other subjective

surveys of quality (cf. Campbell et al., 1976), one problem was that the subjective ratings revealed relatively little variation in quality from neighborhood to neighborhood. Apparently, rich and poor people do not evaluate conditions as favorably or as poorly as the objective conditions might suggest. To conclude his evaluation Bielby (1979:28) stated: "Finally, it is imperative that subjective reports of neighborhood quality be validated against independent assessment of objective neighborhood conditions."

Bielby's conclusion leads us back to the problem of objectively measuring different neighborhood features over a relevantly defined neighborhood area. While some work has been done toward summarizing neighborhood quality by means of hedonic indices (cf. Merrill, 19 ), these summary measures are still based on data collected for individual neighborhood quality dimensions. The general conclusion of housing analysts is that "[n]eighborhood quality or condition is even more difficult to measure than housing quality" (U.S. President, 1979). In sum, the available measures of neighborhood quality are so inadequate as to be of little value for measuring housing progress.

#### Summary of Traditional Quality Indicators

Indicators have been reviewed for three different facets of housing quality: structural condition, crowding, and financial burden. None of these indicators has been judged suitable for the purpose of measuring housing progress. Two major drawbacks nullify the usefulness of indicators of structural condition and crowding. The incidence of deprivation measured by the first two indicators is very low and getting lower, and there is

only weak evidence that households prefer to avoid the deficiencies measured by these indicators. The financial burden indicator has been rejected on different grounds. In contrast to the other housing deficiencies, the incidence of excessive rent burden is fairly high and growing. However, it is difficult to interpret changes in financial burden as a measure of housing progress. Decreases in burden can come about through decreases in housing unit size or quality as well as through increases in income. The financial burden of homeowners is even less meaningful, because at least part of ownership costs are retrievable through home sale at a later date.

One might well ask about the usefulness of combining different indicators to arrive at a summary measure of housing quality. Two studies that pursued this objective failed to find any useful relationships among the different indicators. Goedert and Goodman (1977) searched for linkages among the detailed indicators of structural condition. They found very little clustering of incidence among sets of the indicators and they reported that most of the specific structural deficiencies were scattered widely across all income groups. Goedert and Goodman (1977:29) concluded "that the prospects for developing a single, simple measure of housing quality are dim."

Pursuing this goal, Goodman (1978) widened the search to include rent burden and a measure of neighborhood quality. He employed a sophisticated statistical technique in an effort to infer a single unobservable quantity (housing quality) from multiple indicators. This effort proved so futile as to lead Goodman to the conclusion that the notion of housing quality "is the creation of policy makers and policy analysts. Within the framework

imposed by the model estimated in this paper, the concept of housing quality has no single counterpart in the preferences of households" (Goodman, 1978:207).

What then can we use to measure the changes in households' housing quality? The second half of this chapter evaluates the evidence accumulated by surveys of consumers' expressed preferences. Our objective is to discover whether there are any indicators (and standards) of housing quality that strongly reflect the desires of most households.

#### CONSUMERS' HOUSING PREFERENCES

The chief problem with the traditional indicators of housing quality is that they are bottom-oriented. They are used to measure how many households fall below some minimum standard rather than how many households have achieved a preferred consumption level. As the preceding sections have documented, with the exception of financial burden, there is only weak evidence that households actually prefer to avoid housing conditions that fall below traditional standards. Traditional measures of housing quality are based on pre-judgements by policy makers and housing professionals. They are not selected on the basis of consumer preferences or consumer behavior.

The behavioral assessment of housing progress requires that we choose indicators and standards of housing quality that reflect the motivations of households. What is sought is a measurable housing dimension encapsulating a housing standard that most households strive to achieve, but which has not been universally attained. The most direct way to ascertain housing aspirations is to examine individuals' responses to questions about

their housing ideals and preferences.

Housing sociologists are in agreement that the central dimensions of most persons' housing aspiration are tenure and structure type. "It seems quite clear that cultural norms prescribe ownership of a single-family dwelling for most families throughout the stages of the family life cycle" (Morris and Winter, 1978:105). In fact, Fischer (1976:57) has concluded that "the single-family house is probably as close to a universally accepted ideal as there exists in our pluralistic American society...."

If it is true that the American people are largely unanimous in their preference for single-family or owned housing, then the structure type and tenure indicators could provide a single measure of housing quality that reflects the consumer's interests instead of the imposed judgements of housing experts. Unfortunately, a recent study of housing preferences concluded that we have remarkably little data about Americans' housing preferences (Dillman et al., 1979). This study noted several shortcomings in the existing preference literature. First, Dillman and his associates (1979:2) "...could locate no study that surveyed a representative sample of the entire United States or even of one state." Most studies have been limited to a single city or have surveyed the attitudes of particular subpopulations. A second shortcoming is that the surveys have posed a more limited range of housing alternatives than is currently available. Not all possible structure types are considered, or tenure preference is not queried in addition to structure type. In part this failure to offer a comprehensive set of options to the survey respondent is due to the third weakness, namely that sample sizes have been very



small. The largest sample that Dillman could locate was 748.

All of these shortcomings have been allayed with the release of the 1978 HUD Survey on the Quality of Community Life.<sup>2</sup> A stratified, random sample of 7074 adults were surveyed across the country, and one section of the questionnaire was devoted to housing preferences and experiences. Respondents were presented with a wide range of structure types, both owned and rented, that could be selected to describe their preferences, expectations, or actual experiences regarding the housing they live in. The alternatives that were presented to the survey respondents are listed in their exact order and with their exact wording in Table 3-3.

However, an additional drawback that this survey cannot remedy is the lack of a survey in an earlier time period which could be used to estimate both preferences in earlier years and also changes over time. A search was commissioned of the survey holdings at the Roper Center to learn whether any questions about major housing dimensions such as ownership or structure type had been included in surveys during the 1950s or 1960s, but this proved fruitless.<sup>3</sup> The only data of any value were collected in two surveys, in 1963 and 1965, by John Lansing (1966) of the Michigan Survey Research Center. These surveys were restricted to the metropolitan population other than the New York City area, and they only asked respondents whether they preferred an apartment or a single-family house. In both surveys 83.0 percent said that they would prefer a house.<sup>4</sup> Remarkably, preference for single-family housing among metropolitan residents in 1978 was virtually identical, 82.9 percent.<sup>5</sup>

It is unfortunate that the Lansing surveys did not present a question about tenure choice to all the respondents.<sup>6</sup> It is possible that economic

changes since the early 1960s have increased the overall preference for ownership because of its tax benefits and value as a hedge against inflation. Nevertheless, condominiums were not a widespread option early in the 1960s and people who prefer owning today need not also prefer single-family structures. Whatever has happened to the preference for ownership over the years, it is clear that no significant changes have occurred in structure preferences. In addition, as Morris and Winter (1978) observe, the structure and tenure preferences are so closely linked in practice that it is desirable to consider them jointly. The 1978 HUD survey permits us to do this, and we will have to assume that the 1978 findings reflect the same detailed concerns that might have been surveyed in the preceding decade.

#### Preferences in the 1978 HUD Survey

The 1978 respondents expressed a clear preference for single-family homeownership. The distribution of first and second choices is reported in Table 3-3. Whereas three-quarters (75.6 percent) of the respondents indicated their first preference was for a detached single-family home that they owned, no more than 5.0 percent agreed on any other single house type. The distribution of second preferences, however, is less focused on any particular house types. The category with the largest second choice is attached single-family ownership (24.8 percent), while six other house types receive at least 5.0 percent of the second choice "votes." It is important to note, however, that over a third of the sample (2827) did not even venture a second preference. Very likely, many of the respondents prefer owning a detached single-family home so

Table 3-3: EXPRESSIONS OF FIRST AND SECOND PREFERENCES  
AMONG ALTERNATIVE HOUSE TYPES

House Type <sup>a</sup>	Percentages	
	First Preference	Second Preference
A. Single-family detached house that you own	75.6	8.4
B. Single-family detached house that you rent	2.4	18.1
C. Single-family attached house that you own	5.0	24.8
D. Single-family attached house that you rent	0.7	3.2
E. Two-family house that you own	2.0	11.7
F. Two-family house that you rent	1.0	2.4
G. Apartment that you rent in low-rise building (no more than 3 stories)	4.2	8.1
H. Apartment that you own in low-rise building (condominium or cooperative)	2.3	8.0
I. Apartment that you rent in high-rise building (more than 3 stories)	2.1	3.3
J. Apartment that you own in high-rise building (condominium or cooperative)	1.0	4.1
K. Mobile home	2.4	6.3
L. Other	1.3	1.6
Missing cases	315	2827
TOTAL excluding missing cases	6757 (100)	4245 (100)

SOURCE: HUD (1979: 638).

a. Order and definition of house types as presented to respondents.

strongly that they refused to offer a second choice.

It is striking how few respondents expressed a first preference for renting a single-family home or for non-conventional forms of ownership (such as mobile homes or condominiums). Among those persons who did state a second choice, preferences were concentrated in house types that most closely resemble detached single-family ownership: attached single-family ownership (24.8 percent), detached single-family renting (18.1 percent), and two-family ownership (11.7 percent).

Very likely these preferences vary according to the respondents' current house types. For example, persons who have experienced condominium living might be more favorably disposed toward that house type. Of course, the causal relationship could also run the other direction: persons who prefer condominium living might choose that house type. Nevertheless, Table 3-4 shows that expression of preference for respondents' current house type is much higher for dwellers in owned single-family homes than it is for any other house type. Table 3-4 also reports the percentage of occupants in each house type that would prefer living in an owned, detached single-family home. In all but three cases the majority of occupants would prefer switching to this dominant house type. The exceptions are attached single-family owners (30.7 percent), low rise apartment owners (25.3 percent), and high rise apartment renters (40.4 percent).

Another way of measuring people's attitudes toward their housing is to ask them how satisfied they are with their current home. Given the strong preference for detached single-family homeownership, we would expect persons in that type of house to be more satisfied on average than

Table 3-4: PREFERENCES AND SATISFACTION OF RESPONDENTS  
ACCORDING TO THEIR CURRENT HOUSE TYPE

Current House Type	Percentages			Minimum Sample Size (N)
	Prefer Detached Single-Family Ownership	Prefer Current House Type	Satisfied <sup>a</sup> With Current Home	
<b>Owner-occupied:</b>				
Detached single-family	90.4	90.4	73.5	3493
Attached single-family	30.7	60.2	72.7	339
Two-family	49.4	34.6	67.2	162
Low-rise apartment	25.3	58.7	65.4	75
High-rise apartment	51.2	22.0	68.9	41
Mobile home	51.6	30.7	65.7	124
<b>Renter-occupied:</b>				
Detached single-family	67.7	16.9	44.8	467
Attached single-family	58.9	18.6	49.7	129
Two-family house	62.1	10.8	48.9	314
Low-rise apartment	52.9	22.7	48.5	577
High-rise apartment	40.4	26.4	41.0	349
Other	61.5	19.2	57.1	78

SOURCE: Estimates are derived from unweighted tabulations of the survey data tape.

a. Satisfaction with housing is the percent who say they are "delighted" or "pleased" with their current home when asked: "How do you feel about your house/apartment?" Other possible responses are: mostly satisfied, mixed, mostly dissatisfied, unhappy, terrible, or not sure.

occupants of other house types. In fact, Table 3-4 shows that occupants of single-family homes are most satisfied, other owners are slightly less satisfied, and that renters are the least satisfied. These differences do not measure differences in satisfaction with house types per se; rather, they also reflect differences in dwelling size, condition, and other factors. Nevertheless, to the extent that specific features are correlated with house type, differences in overall quality are proxied by differences in house type.

What Table 3-4 clearly shows is that single-family owners prefer their own house type and are most satisfied with their homes, and the table shows also that most other households would prefer to be single-family owners as well. In order to proceed further with the analysis we will combine the other house types into an "other" category that includes all renters, mobile home owners, and multi-family homeowners. The attached single-family owners will be combined, however, with the detached single-family owners because of the great similarity in structure type and expressed attitudes. This broadened single-family category is the first preference of 80.6 percent of all the survey respondents.

Although these data show that preference for single-family homeownership is widespread, they do not indicate that it is universal. It is possible that the 20 percent who do not prefer the dominant house type are concentrated in particular segments of the population. If this were true, we would be guilty of improperly disregarding these persons' preferences by claiming that single-family ownership is a preferred housing standard. On the other hand, if non-preference for single-family ownership is distributed fairly randomly through the population, we can avoid

the dangers of systematic bias. For this reason it is important to learn what kind of people prefer the dominant house type.

The distribution of single-family ownership preference by selected characteristics is reported in Table 3-5. Moderate variation in preferences is discernible across these characteristics. Whereas there is absolutely no difference between men and women in their preference for single-family homeownership, elderly persons are much less likely to prefer this house type (69.3 percent) than are persons aged 25-34 (88.2 percent) or 35-44 (88.3 percent). This age difference also shows up in marital status as widowed persons have lower ownership preference (63.8 percent) than do married persons (86.8 percent). Among families with children, between 82 and 89 percent prefer single-family homeownership. By far the largest number of respondents (3333) have no children living at home, and their low rate of preference (73.8 percent) reflects an amalgamation of persons in many different family stages: e.g. never-married individuals, pre-parent couples, child-free couples, empty-nester couples, and divorced, separated or widowed persons. Less variation is seen among income groups. Preference for single-family homeownership falls below 82 percent only under \$10,000 family income. Many of these persons are probably also elderly or from the non-married family statuses.

In sum, single-family homeownership comes closest to being a universally preferred housing standard for persons under age 44 who are raising families. Even among this group 10 percent prefer some other house type; yet as was seen in Table 3-3 there is no other single house type that this minority prefers. Given the relative unanimity of preference among the young adults who are the subject of this study, it seems appropriate to

Table 3-5: PREFERENCES FOR SINGLE-FAMILY HOMEOWNERSHIP  
 BY SELECTED DEMOGRAPHIC CHARACTERISTICS  
 Percentages (Weighted Sample Sizes in Parentheses)

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SEX OF RESPONDENT		<u>Male</u>		<u>Female</u>	
		80.7		80.7	
		(3237)		(3520)	
AGE OF RESPONDENT	<u>18-24</u>	<u>25-34</u>	<u>35-44</u>	<u>45-64</u>	<u>65 and over</u>
	77.7	88.3	88.2	78.5	69.3
	(1277)	(1436)	(1077)	(1973)	(993)
MARITAL STATUS OF RESPONDENT	<u>Single</u>	<u>Married</u>	<u>Div./Sep.</u>	<u>Widowed</u>	
	71.4	86.8	67.2	63.8	
	(1137)	(4471)	(442)	(683)	
AGES OF CHILDREN	<u>Under 5</u>	<u>5-18</u>	<u>Over 18</u>	<u>Multiple Ages</u>	<u>None</u>
	89.2	88.1	82.0	87.8	73.8
	(627)	(1464)	(339)	(933)	(3333)
FAMILY INCOME	<u>Under \$10,000</u>	<u>\$10,000- \$14,999</u>	<u>\$15,000- \$19,999</u>	<u>\$20,000 &amp; Higher</u>	
	71.5	82.2	85.5	86.9	
	(2140)	(1462)	(1191)	(1962)	

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SOURCE: HUD (1979: 640-43).



adopt single-family homeownership as a generalized standard of housing quality. This standard is normatively sanctioned by the great majority of the population. Whether or not this standard should also be adopted publicly for the purposes of guiding housing policy will be discussed in Chapter 8. For the present, this standard should be considered a useful measure of perceived housing quality by young cohorts.

#### A Life Progress Model of Housing Quality

Substantial changes occur in the attainment of single-family homeownership as persons grow older and advance in their housing careers. In 1977 approximately two-thirds of all households owned a home of some kind, but the proportion is much higher for married couples in late middle age (87 percent) and much lower for young married couples who are just starting their housing careers (35 percent).<sup>7</sup> The 1978 HUD survey collected data on the housing histories and hopes of American adults, and this information can be analyzed to give us a more individualized perspective on the process of single-family ownership attainment.

In addition to housing preferences, Table 3-6 reports respondents' expectations for owning their next home, their current ownership level, and their ownership level in respondents' previous housing. These data are tabulated for persons in different life stages, defined by respondent's age and, alternatively, by the ages of children in the family. The dimensions of single-family ownership form a revealing pattern across these life stages. According to the figures in Table 3-6, fewer people expect to own their next home than wish to do so. The gap is greatest for young adults and for persons with children under age 18. In addition,

Table 3-6: PREFERENCES, EXPECTATIONS, AND EXPERIENCES REGARDING SINGLE-FAMILY HOMEOWNERSHIP, BY AGE OF RESPONDENT AND BY AGES OF CHILDREN (Percentages)

Households	Age of Respondent						Ages of Children in Home		
	TOTAL	18-24	25-34	35-44	45-64	65 Plus	Under 5 Only	5-18 Only	Over 18 Only
Preferring Homeownership	80.6	77.7	88.3	88.2	78.5	69.3	89.2	88.1	82.0
Expecting to Own Next Home <sup>a</sup>	69.9	56.1	79.5	82.0	70.7	56.0	82.1	80.4	68.5
Owning Present Home	65.4	44.6	58.0	75.8	74.7	71.9	46.2	75.1	80.9
Previous Home <sup>b</sup> Was Owned	46.0	40.0	30.3	45.3	54.1	60.2	23.2	46.4	62.7
Minimum Sample Size (n)	5905	1176	1355	967	1705	703	584	1342	287

SOURCE: HUD (1979: 622-643).

a. Percentages are adjusted for respondents who were not sure of the correct response to the survey question or who claimed that the question was not applicable. Over 16 percent of the responses to the question about future dwelling type were excluded for these reasons. Lack of response occurred most frequently in the elderly age group and in the lowest income category (which includes many elderly).

b. The home need not have been owned by the respondent. As will be discussed in a following section, half the household heads under age 25 were not the head of their previous household. For this reason a higher proportion of 18- to 24-year-olds have moved from an owner-occupied home than is true of the next older age group.

the distance between current ownership and expected or desired ownership is greatest for the youngest persons and for families with only pre-school children.

In their study of the quality of American life, Angus Campbell and his colleagues (1976) found that the best single predictors of housing satisfaction (their measure of well-being) were the gaps between the levels of housing aspiration or housing expectation and the self-assessment of present housing condition. Just as in the Table 3-6 data, the gaps between aspirations or expectations and reality were by far the greatest for persons under 35 years old. In accordance with these findings the authors advanced what might be termed a "life progress theory" of satisfaction. Curiously, they found that income and education bore little consistent relationship to housing satisfaction. Instead, they emphasized the "strong and pervasive age gains in satisfaction," and explained these age gains by reference to progressive mobility over the life course into objectively or subjectively better situations (Campbell et al., 1976:164). One conclusion to be drawn from this research on housing aspirations, expectations, and satisfactions is that a relative delay in families' expected progress decreases the quality of their housing experience.

A key assumption proposed here is that the level of consumption is not the only way to perceive housing quality. Housing quality is also a function of the rate of change in each family's housing career.<sup>8</sup> Households' housing circumstances are not fixed. Households move relatively frequently, particularly at young ages.<sup>9</sup> A recent study of the housing experiences of birth cohorts has documented the strong shift toward larger and better housing units over the early half of the housing career

(Pitkin and Masnick, 1979). Lifetime progress toward single-family homeownership is illustrated by the housing career data that was reported in Table 3-6. For example, adults aged 25-34 have a current ownership rate that is 28 percentage points higher than in their previous homes, and the next time that they move they expect to close nearly half of the 30 point gap between their current and preferred ownership level. By age 35-44 the current ownership level approaches the expected and preferred level, but at older ages expectations (among those who plan to move) are for an ownership rate lower than at present.

The drive toward single-family homeownership is clearly strongest for young families with children. The figures in Table 3-6 show that families with pre-school children prefer an ownership level that is nearly twice as high (89.2 percent) as at present (46.2 percent). Moreover, these families have already experienced strong relative advancement toward single-family ownership, as their current ownership rate is twice as high as the ownership level in their previous homes (23.2 percent). Perhaps it is this history of advancement that causes these young families to express such high expectations (82.1 percent) for acquiring single-family ownership the next time that they move.<sup>10</sup>

In sum, the evidence on housing preferences over the early half of the housing career leads to a conceptual formulation of housing quality that may be termed "housing progress." This definition emphasizes the average person's experience of improving housing quality, rather than the nation's record of an improving housing stock. That the average experience deviates substantially from the total change is demonstrated in the following chapter. In addition, the proposed definition of housing progress

not only emphasizes the average experience of quality change, it also defines quality in terms of the predominant personal preference--single-family homeownership--rather than in terms of the inadequate, institutionalized indicators selected by housing professionals.

#### CONCLUSION

We can measure the housing progress of young cohorts by the record of their advancement toward single-family homeownership in their lifetime. Progress within cohorts is measured by the increase in ownership as each cohort grows older, and a cohort's housing career can also be related to its simultaneous movement into marriage and family formation. Progress between cohorts is measured as the difference between the careers of cohorts and, as will be argued in the next chapter, it is these changes between cohorts that amount to societal progress. It is important to distinguish these two temporal dimensions of progress.

In this chapter we have critically evaluated the traditional standards that have been assumed by housing professionals and policy-makers, and we have affirmed the notion that consumer preferences have importance when normatively defining good housing. In part, this new conception of progress has been supported by the ongoing changes in the public definition of housing needs. Nevertheless, the changes in the definition of housing quality that are proposed here are so substantial that they should be treated as only a working definition until the record of housing progress is evaluated in Chapter 8. While it is useful to conceptualize and measure progress as the average individual's experience, there is no obvious mandate that public policy should facilitate this progress to its furthest.

## NOTES TO CHAPTER 3

1. These studies include the major national housing needs studies of the sixties and seventies, such as U.S. President's Committee on Urban Housing (1968), Birch et al. (1973), and Frieden et al. (1977). Other studies include the numerous state and local studies of housing needs reviewed by Grossman et al. (1976). The rent burden measure has come to be considered a "traditional" indicator only within the past ten years; as a result it is not employed quite as frequently as the other two indicators.

2. This survey was conducted by Louis Harris and Associates between December 1, 1977 and January 10, 1978. A stratified random sample of United States residents aged 18 and over was selected for one-hour interviews (HUD, 1979).

3. Roper staff conducted a search for key words in survey questions on or before April 11, 1979. This search was designed to identify questions combining reference to housing with reference to attitudes such as prefer, ideal, want, or satisfaction. Not a single question was turned up that asked about housing preferences.

4. The question wording was: "If you could do as you please, would you live in an apartment or a single family house?" The sample size in 1963 was 824 and in 1965 was 735. This information, together with the percentage preferring a single-family home, is reported in Table 7 of Lansing (1966).

5. The question wording was: "I would like you to rank these possibilities in the order of preference for your next home. Which would you prefer as your next home?" (HUD, 1979:766) The list of 12 options presented to the survey respondents is depicted in Table 3-3. The percentage preferring a single-family is calculated from data published by HUD (1979:638).

6. Lansing's study was conducted under contract to the U.S. Bureau of Roads, and apparently he surveyed housing preferences for the information that might be gained about future trends in residential densities. Given this preoccupation, Lansing focused on single-family structure preference while neglecting tenure choice. As an afterthought in the 1965 survey he asked those persons who did not prefer apartments whether they also wanted to own their homes. Of this subgroup, 76 percent replied that they would prefer to own (Lansing, 1966:18). No other data are reported about this question.

7. The comparisons of ownership rates are between husbands aged 45-64 and under 25 (U.S. Bureau of the Census, 1979b: Table A-1).

8. This theme has been argued by Burkhard Strumpel (1973:86), among others, who concludes: "Satisfaction with [personal] standard of living

in the United States is largely a response to a dynamic phenomenon: to the change rather than to the level of income and standard of living."

9. Over 30 percent of people in their twenties change residence at least once in a year. The frequency of residential changes declines sharply with age. At age 25-44 only 13.4 percent have recently moved to a different home, and the mobility rate falls to under 6 percent for elderly persons (U.S. Bureau of the Census, 1977e: Table 4).

10. Katona et al. (1971) argue that in affluent societies the expectation for future economic progress is strongly related to the history of progress that individuals have already experienced.





## Chapter 4

## THE COHORT-LIFE COURSE APPROACH

The preceding chapters have introduced the concept of lifetime housing progress, and single-family homeownership has been identified as a housing standard that most young adults strive to achieve within their housing careers. If we are to make quantitative estimates of housing progress, it is necessary to develop a methodology that enables measurement of advancement into homeownership by cohorts. A particularly difficult task is to measure the relationship between housing progress and the family development of cohorts. Only after we have achieved a satisfactory longitudinal measurement of these lifetime behaviors will it be possible to measure changes that have occurred between the housing and family patterns of different cohorts.

The emerging new behavioral theory that addresses life course development and cohort differentiation is especially suitable for this task. This cohort-life course theory conceptualizes behavior as a developmental process and it emphasizes that change occurs along two separate time dimensions--over the life span and between generations. This chapter will argue the strong advantages for empirical research that flow from the cohort-life course approach.

In addition to its empirical application, the cohort-life course approach leads to new insights about normative questions of housing improvement. This chapter will demonstrate that measurement of improving housing conditions for the nation as a whole does not reflect the experience of change by most individuals. Cohort aggregates provide a preferable

means by which to summarize the experience of individuals. More fundamentally, the cohort-life course approach supports the new, lifetime conception of housing progress that was introduced in the preceding chapters. Rather than emphasize the nation's progress toward housing goal attainment, or the general betterment of the nation's housing conditions, the cohort-life course approach guides us to analyze progress along the separate life span and generational time dimensions. While the major argument of this dissertation is that housing progress is best conceived as the life progress of individuals (aggregated in cohorts) over their life span, progress for the nation as a whole can also be measured as the change between successive generations.

Three major arguments for the usefulness of the cohort-life course approach are developed in this chapter. The first, and most extensive, argument is that cohorts provide a better means of aggregating individuals' housing experiences over time. The second argument is that the cohort-life course model provides a flexible, detailed method for measuring changes in the linkage between housing and family behaviors. The final section argues that social change transpires through changes in cohorts' lifetime behavior. Changes over the lifetime must be measured before changes between generations (between cohorts' lifetimes) can be assessed.

#### THEORETICAL OVERVIEW

In his essay on age differentiation and the life course, Elder (1975a) states that the cohort-life course approach, as it is termed here, stems from the confluence of three separate research traditions "...and their temporal perspectives: lifetime and its focus on the process of

aging from birth to death; social time, as expressed in the age patterning of social roles and career lines; and historical time, location of the individual in the historical process through cohort membership" (Elder, 1975a:186; emphasis added). On the basis of research emphasis it is possible to contrast the cohort-historical approach with the first two traditions that form the life course approach. In the past, research on lifetime and social time has made use of the well known life cycle concept, but in recent years, for reasons to be discussed, this older concept has been increasingly subsumed by the more flexible life course concept. Research on the historical location of individuals, however, has emphasized differences across generations rather than the life developmental processes of individuals.

Confluence of these traditions has come about as the cohort analysts strived for better behavioral explanations of cohort differences and as life course analysts sought to place their analyses in an historical context. Moreover, the cohort aggregate provides the most meaningful population base for many statistical analyses of life course behavior. Further discussion of these theoretical linkages will be presented in subsequent sections. The emphasis of this chapter, however, is on the advantages of cohort-life course theory for applied research. To place this theory in its proper perspective it is useful to review the strengths and weaknesses of alternative approaches in housing research that emphasize population or family correlates of housing consumption. Three different traditions are observable in the housing literature, and these will each be discussed in turn.

### The Unstructured Population Model

Studies of trends in residential construction or in aggregate housing demand often make use of demographic variables in a highly simplistic fashion. For example, the landmark study on residential capital formation by Grebler et al. (1956) identified population growth as a basic factor determining construction trends. Devoting an entire chapter to discussion of this factor, Grebler and his associates stressed that population growth influences construction by producing new household formations. These authors, however, employed an unstructured conception of the linkage between population increase and household formation. They emphasized declining household size as the proximate cause and made seemingly random reference to underlying causes such as changing tastes, higher incomes, changing marriage rates and the like (Grebler et al., 1956:76-89). In short, Grebler and his associates treated the population that was generating housing demand as little more than an unstructured "blob."

Other studies in the same research area have also employed conceptual models about the role of population factors that are little more sophisticated than Grebler's unstructured model. Gottlieb's (1976) cross-national study of cyclical swings in urban development has made more systematic use of marriage rates for modeling the linkage between population growth and household formations. Yet he ignores all other population or family variables besides total population growth. Given the recency of this work, it is possible that he ignores other factors because of limitations in the historical data base. Yet Rosen's (1979) respected study of seasonal fluctuations in housing starts also emphasizes marriage rates even though more detailed data are available for his recent study

period. More recent research by Jaffee and Rosen (1979) has begun to make use of more structured models of the population that emphasize consumption by different age groups and family types. Perhaps the population blob conceptual model has continued to be employed because of its great simplicity.

#### The Family Life Cycle Model

The family life cycle model has become the most common conceptual device for representing the linkage between population or family factors and housing consumption. This conceptual model is especially prominent in research on residential mobility<sup>1</sup> and on the tenure choices of households.<sup>2</sup> Housing research has most often followed a version of the family life cycle model that was developed by Lansing and Kish (1957). Demographers and family sociologists, however, have more often used a formulation developed by Paul Glick (1947; 1965; 1977). The difference between the two approaches is that Glick calculates the median age at which adults enter different family stages, whereas the Lansing and Kish method is to construct a typology of life cycle stages and use this typology as an explanatory variable in models of consumption.

From this description of the two approaches it should be evident why the Lansing and Kish model is preferred for housing analysis. Whereas the Glick method uses vital statistics data to estimate the timing of transitions between different demographic states, sufficient housing data are not available to estimate the simultaneous transition into different housing statuses. The Lansing and Kish approach forsakes any concern for the age timing of housing achievement and simply emphasizes the explanatory

value for housing consumption of a household's membership in different life cycle stages.<sup>3</sup>

The two methods share major drawbacks. Definition of the life cycle typology or sequence excludes some types of families or lumps them into an "other" category. Elder (1975b) has criticized the family life cycle approach for the reason that it assumes a particular sequencing and clustering of events, rather than treating this as an issue for empirical verification. In fact, Uhlenberg (1974) has documented great variation in the life cycle patterns of United States women who were born in different decades, and he concludes that relatively few women have lived through a "typical" life cycle. Taeuber and Sweet (1976), among others, have argued that the life cycle approach's emphasis on median ages and typical household types disguises the great variation that exists. Indeed, Modell et al. (1976:10) argue that the Glick approach represents reality only to the extent that all persons enter each stage and do so at the median age. The information that is discarded by this approach might be the most interesting to know.

The Lansing and Kish approach avoids part of this criticism by ignoring age, but this raises other serious problems. By avoiding estimation of the age timing of entry into different stages this approach ignores the lifetime dimension in favor of a family time dimension (which may not apply equally to all persons). In particular, the Lansing and Kish approach obfuscates comparisons between generations because it gives no information on cohort membership, age of entry, or duration of staying in a given stage. The most that can be gained from historical analysis with this method is a comparison over time of consumption rates within a

stage. A final criticism is that in practice analysts have often constructed a different life cycle typology to fit a particular data base without offering any justification for its design.<sup>4</sup> The effects of life maturation are so strong, however, that any typology is a powerful predictor of consumption at a given point in time, and hence analysts have not needed to give careful attention to the issue of typology construction. In sum, the family life cycle model's explanatory power has diverted attention from the many inaccuracies in its construction.

#### The Headship/Occupancy Rate Model

Increasingly, studies of aggregate housing demand have adopted a third approach that employs a more structured model emphasizing consumption rates of different subgroups in the population. Headship rates are defined as the ratio of households to population and are almost always calculated separately for each age group.<sup>5</sup> Applying these age-specific headship rates to population growth in each age group yields a much more accurate estimate of household formations than does the older method of using marriage rates for the entire population. While entry into marriage remains the most powerful predictor of household headship (Carliner, 1975) this correlation has weakened considerably over time (Kobrin, 1973; 1976). In principle, the more detailed are the subgroups for which headship rates are calculated, the more accurate will be the estimate of total household formations created by population growth distributed across these subgroups. It is this potential for greater disaggregation that makes the headship/occupancy rate model so useful.

The headship rate method was extended by Campbell (1966) to include

ownership rates, i.e. the proportion who are homeowners within specific subgroups. Campbell's classic study provided rich documentation of the impact of changing population age composition on aggregate housing demand in the twentieth century. He used headship rates to reflect a basic demand consisting of household formations, and he employed ownership rates to measure a second, higher level of consumption by households. Like Winnick's (1957) pioneering effort, Campbell emphasized the "normal" housing requirements associated with different age structures. With this approach it is possible to decompose fluctuations in aggregate housing demand into components due, first, to underlying age shifts of population growth and, second, to shifting consumption rates for different age groups. In most decades Campbell found that age shifts accounted for most of the demand fluctuations, whereas in the 1950s the great construction boom was fueled by dramatic increases in both headship rates and ownership rates.

Most recently, Pitkin and Masnick (1979; 1980) have extended this approach to include a much larger number of housing occupancy types (21), and they have calculated occupancy rates for different family types (defined by marital status and number of children) within five-year age groups. This extremely detailed version of the headship/occupancy rate approach introduced the further innovation of estimating the future changes in occupancy rates as cohorts move to older age groups. The Pitkin and Masnick study employed the most complex model linking population, family, and housing behavior that has been developed to date.

The headship/occupancy rate approach has three important advantages. First, it provides complete population coverage; no one is excluded by virtue of atypical status or failure to follow a typical sequence of



statuses. Second, this method permits relatively precise measurement of the variation in consumption by different types of persons. Third, the method emphasizes age-specificity and the lifetime perspective. In fact, both Winnick (1957:80) and Campbell (1966:16-17) argue that age patterns in housing behavior are both reflective of the family life cycle and more informative than family statuses alone. Nevertheless, with the exception of the Pitkin and Masnick (1979; 1980) application to cohort data, this method does not provide a longitudinal framework for measuring experience. The only ways in which the headship/occupancy rate method have been used to measure changing housing consumption is through comparisons of patterns in different time periods or, erroneously, through the implicit reading of longitudinal patterns from age cross-sections at one point in time. True measurement of change over the lifetime or between generations has not been conducted with either the occupancy rate or family life cycle approach.

#### The Cohort-Life Course Model

The cohort-life course approach stresses conceptualization and measurement of longitudinal processes. Following sections will demonstrate, first, that aggregation of individuals into cohorts permits truer estimation of housing experience over time. Second, the presentation will argue that the life course model permits better estimates of the linkage between family and housing behavior and of its changes over time. Finally, the last section will argue for the value of a cohort perspective on societal change.

## COHORT AGGREGATES

Defined by their common birth year, cohort members share this unique feature throughout their lives. The cohort members absorb each year's history when they are at the same age. All other birth cohorts experience a different shared history because the impact of the same event is different for persons in different ages in that year. In a general sense, the shared feature of a common age at each year in history suggests that the life courses of cohort members are synchronized. Although it should be noted that there is considerable variation in cohort members' behavior at the same age, these behaviors are more similarly timed within cohorts than between cohorts.

For purposes of aggregate analyses, the cohort aggregate provides a fortunate compromise that retains the advantages of aggregation while securing the advantage of representing the longitudinal movement of individuals. Ryder has summarized well this advantage of the cohort aggregate:

It is a device for providing a macroscopic link between movement of the population and movements of individuals. The conceptual gap between individual behavior and population behavior is provided with a convenient bridge, in the form of the cohort aggregate, within which individuals are located and out of which the population as a function of time is constructed from the sequence of cohort behavior patterns. Thus the cohort is a macroanalytic entity like the population, but it has the same temporal location and pattern of development as the individuals that constitute it. (Ryder, 1972:105)

The implication of Ryder's statement is that individuals have very different behavior over time than is observable for the whole population. In fact, the primary argument for a cohort approach to measuring changing

housing experiences relies on the fact that individuals' personal progress often deviates from national progress. The cohort aggregate more accurately reflects the sum of individuals' experiences than does the total population.

#### Aggregate Measurement of Changing Housing Experience

Rarely will the national trend reflect exactly the record of progress experienced by individual households; some households will enjoy more progress, and some less. Still another dimension of variation is the time shape of progress. Are improvements experienced steadily over time, or is progress concentrated more at the beginning or end of the time period? Households are unlikely to experience a steady rate of progress because sharp discontinuities are introduced into the record of housing experience whenever a household moves and, thereby, exchanges occupancies. To experience steady progress a family would need either to move regularly or else stay in the same home and follow a careful program of housing maintenance and improvement.

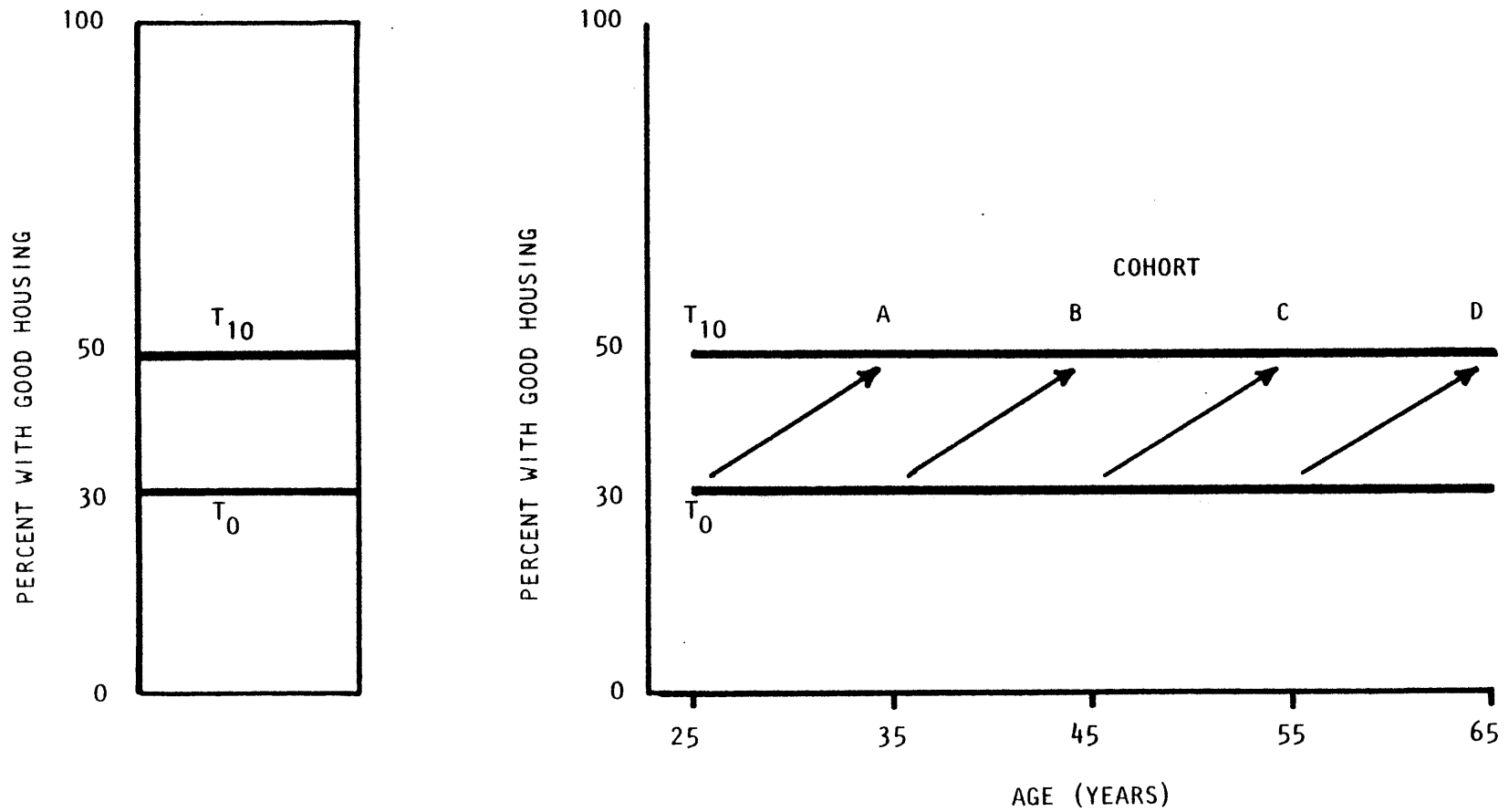
It would be impossible to keep an accounting of the housing history for every individual in the nation. As a consequence, housing analysts have sought summary measures of average changes in housing conditions. Yet recourse to summary statistics for the total population implies that these measures reflect the average experience of change for all households over the time interval. This assumption is incorrect for two reasons. First, not all individuals present at the beginning or end of the time interval will occupy, or have occupied, housing for the entire interval of time. At the end of the time interval young persons may have just

entered the market, and older persons may not survive from the beginning to the end of the time span. Secondly, because of the continuing entrance of young people and exit of old people, the average lifetime housing experience can differ substantially in shape from the trend over time for the population as a whole. It is possible for individuals to follow fairly marked life cycle paths of housing improvement while the population as a whole stands still.

Total population summary measures reflect the average experience over time of households only under a highly restricted condition. For example, Figure 4-1 shows that 30 percent of the population has "good" housing at the initial time of observation ( $t_0$ ) and 50 percent has "good" housing at the second measurement point ( $t_{10}$ ). Over the time interval housing progress equals 20 percentage points for the population. Assuming the number of people in each population subgroup remains constant, this rate of progress reflects the average experience of population members only if the initial level of good housing has been shifted upwards by 20 percentage points for every subgroup of the population and there are no age differences in the frequency of good housing. For example, if poor people had an initial level of good housing equal to only 10 percent, then their final level would have to be 30 percent; and, if rich people had an initial level of 50 percent, then their final level would have to be 70 percent.

A hypothetical situation of no age differences at either the beginning or end of the time interval is illustrated in Figure 4-1. At each time of observation all age groups experience the same level of good housing. Over the time interval all persons increase their age by ten years (cohorts

FIGURE 4-1: SCHEMATIC REPRESENTATION OF HOUSING IMPROVEMENT BETWEEN TWO TIME INTERVALS

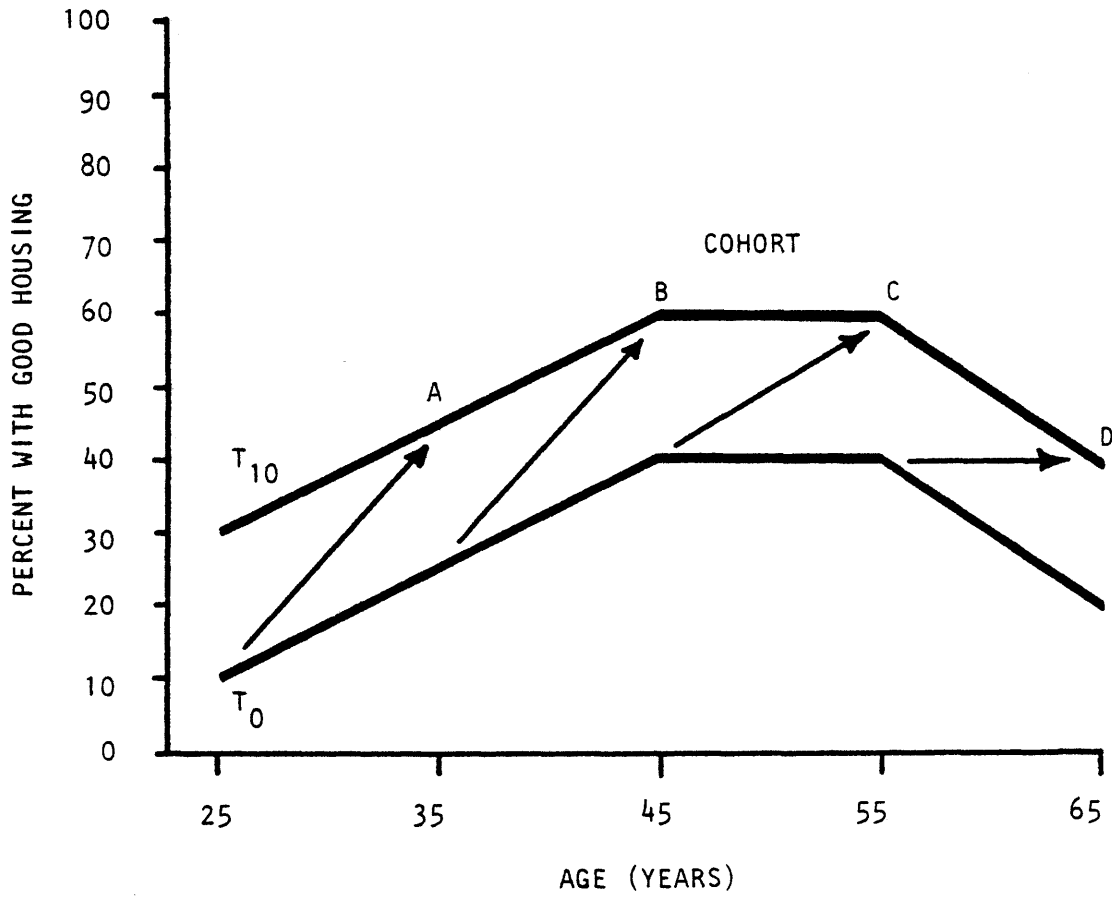


advance ten years), and the rate of progress for each cohort is the same because they share the same starting and ending levels of housing quality. If positive age differences in housing quality do exist in the population, however, these augment the housing progress of cohorts over the time interval. As illustrated in Figure 4-2, cohorts experience not only the average increase over the time interval, but they also gain improvements by advancing to older ages where the quality of housing is higher. In the present hypothetical example, the cross-sectional age pattern shows a drop-off of 20 points in housing quality from age 55 to age 65. This potential cohort decline in housing quality is offset, however, by the fact that the whole age cross-section is elevated 20 points at the end of the interval.

What Figure 4-2 makes clear is that any pattern of age differences in housing quality implies unequal rates of housing progress for persons advancing between different ages. Where age differences are marked it is clearly advisable to adopt a cohort framework for measuring changes in housing quality, rather than to rely on summary statistics for the total population. The cohort approach capitalizes on the unique qualities of age as indicators of individuals' experience: age indicates duration of time as a potential household head and age changes predictably (unlike all other variables) over time intervals. Hence, the cohort framework improves our ability to summarize individual households' experiences over time with aggregate data.

Two illustrations are offered here. Between 1960 and 1970 the median age of the United States population decreased by 1.4 years (U.S. Bureau of the Census, 1975b:19). From this information one could state that our

FIGURE 4-2: SCHEMATIC REPRESENTATION OF HOUSING IMPROVEMENT WHEN AGE DIFFERENCES EXIST



population as a whole grew younger between 1960 and 1970. Yet the median change for each individual over this time interval was an increase of exactly 10.0 years. The average experience of individuals was clearly different from the average for the nation! The explanation for this discrepancy is that, even though all persons grew older over the decade, fewer persons aged past the 1960 median of 29.5 years and survived at older ages than were born during the decade. Hence the population was simultaneously growing younger by adding babies and losing older people through death while it grew older through the aging of individuals. The point of the illustration is that the average change for cohorts is the same as for individuals, while the total change tells very little about individual experience.

#### Comparing Cohort and National Housing Progress in the 1930s

A more detailed, and more dramatic, illustration of the cohort perspective on housing changes is provided by the decade of the Great Depression. This period of history marked the beginning of sustained federal efforts to help provide for the nation's housing needs. A host of programs were initiated, largely because the impact of the Depression on homeowners was viewed as catastrophic. The decade of the 1930s is the only known time in our nation's history when homeownership decreased. The early years of the 1930s witnessed a

...drastic impact upon homeowners: some 50 percent of all home mortgages in the Nation were in default; foreclosures neared the astronomical rate of 1,000 per working day in late 1931 and 1932; and new mortgage lending and new homebuilding were sharply reduced, dropping still further in the year following. (U.S. Department of Housing and Urban Development, 1974:7).



Surely events of this magnitude should leave their imprint on the housing patterns of the nation's population. National housing data for this period of history are very sparse, the principal source being the decennial census. The 1930 census was conducted only a few months after the stock market crash in the fall of 1929, and so the 1930 data reflect the state of the nation at the end of the prosperous 1920s and before the ravages of the 1930s had begun. If a mid-decade census had been conducted in 1935, we would be able to construct a picture of housing conditions that reflected the depths of the Great Depression. Lacking such an optimally-timed survey, we can make use of data from the 1940 census. Coming at the end of the decade, this survey collected data on housing conditions that were most likely somewhat improved. Nevertheless, the cumulative impact of the Depression years should still be clearly apparent in early 1940.

Homeownership data have been collected for 1930 and 1940, and they are assembled by age group in Table 4-1. Just as one might expect, the ownership of the nation fell over the decade. The ownership rate of all households fell from 46.8 to 43.5 percent, while that of all male-headed families fell from 46.7 to 43.2 percent. The Census Bureau published age breakdowns only for male-headed households (85 to 87 percent of all households) and these are used to compute age-specific ownership rates for 1930 and 1940. In each survey year there is a monotonic pattern of increased ownership at older ages. In both years the highest ownership rates were recorded for male heads age 75 and over. Because of this pattern of higher ownership at older ages, the total ownership rate can rise if the population shifts toward older ages. To control for this

TABLE 4-1: TRENDS IN HOMEOWNERSHIP BY AGE GROUP, 1930-1940

	Homeownership Rates (in Percentages)									
	All Households	All Male Households <sup>a</sup>		Male Households by Age of Head						
		Actual	Adjusted <sup>b</sup>	< 25	25-34	35-44	45-54	55-64	65-74	75+
1940	43.5	43.2	42.1	12.1	23.4	38.6	51.0	59.0	65.4	71.8
1930	46.8	46.7	46.7	10.3	25.8	44.4	55.7	65.1	72.4	75.6
Change 1930-1940	-3.3	-3.5	-4.6	+1.8	-2.4	-5.8	-4.7	-6.1	-7.0	-3.8
Cohort <sup>c</sup> Change 1930-1940	--	--	--	--	+13.1	+12.8	+6.6	+3.3	+0.3	-0.6
Ratio of Actual to Expected Cohort Change	--	--	--	--	.845	.688	.584	.351	.041	-.188

SOURCE: U.S. Bureau of the Census (1943: Table 12)

a. Male-headed households were 87.3 percent of all households in 1930 and 84.9 percent in 1940.

b. Calculated with a constant age distribution of male-headed households.

c. Cohorts indexed on age in 1940.

compositional influence, the 1940 data were adjusted to conform to the same age distribution as the 1930 data. This adjustment suggests that, other things being equal, ownership in 1940 would have been even one percentage point lower (42.1) if the population had not shifted to slightly older ages.

Special attention should be directed to the changes in age-specific ownership rates in Table 4-1 (line 3). With the exception of the youngest age group, every age group shows a lower ownership rate in 1940 than in 1930. These decreases range in magnitude from a loss of 2.5 percentage points to a loss of 7.0 percentage points. From these data one might conclude, therefore, that the adjusted total ownership rate decline of 4.6 percentage points summarizes fairly well the experience over the decade of persons in all age groups. Yet such a conclusion is clearly incorrect. Changes in ownership of age groups over time cannot reflect experience of individuals because individuals do not remain within the same age category as time passes.

It is necessary to adopt a cohort perspective in order to measure housing experience over time. The fourth line of Table 4-1 reports the cohort changes in homeownership over the Depression decade. The startling observation is that all cohorts save the one aged 75 and over enjoyed increased homeownership. For cohorts under age 45 in 1940 these increases were quite substantial, the level of ownership was elevated by about 13 percentage points. At the upper end of the age distribution cohorts showed progressively weaker improvements--only negligible changes were experienced by cohorts that had arrived at retirement age.

There is a simple explanation for the seemingly anomalous situation

where most cohorts experience substantial positive progress at the same time that the whole population is slipping backwards. Because homeownership increases greatly with age, the normal movement of cohorts from age group to age group produces more than enough increased homeownership to offset the wholesale slippage downward. This is not to say that cohorts were unaffected by the events of the Great Depression. None of them achieved as much improvement over the decade as we would have expected in 1930. For example when the 25-34 year old group of 1930 became 35-44 years old in 1940, their level of ownership was 5.8 percentage points lower than what would have been expected on the basis of 1930 age patterns. Their actual progress over the decade was only 69 percent of what would be expected had national ownership patterns held constant. The figures in the bottom row of Table 4-1 indicate that younger cohorts experienced much less dampening on their expected progress than did older cohorts. The progress of young cohorts was not only absolutely greater, but it was also more resistant to disruption by the events of the decade.

The analysis of homeownership trends during the Great Depression decade clearly demonstrates that the average person did not experience the same decreased likelihood of homeownership as was registered for the nation as a whole. In striking contrast to the downward trend for the nation, and for each age group, the average individual experienced a greater chance for homeownership at the end of the decade. The impact of the Depression was not to decrease individuals' homeownership chances between 1930 and 1940; rather, the impact was to alter the normal patterns of progress that might have been made over the decade.

### Evidence on Perceptions of Progress

The conclusion that all cohorts experienced increased homeownership withstanding the negative national trend during the depression decade is so striking that one might ask whether individuals perceive that they are faring better than the nation as a whole. It is possible that the cohort measurements of progress are merely statistical artifacts that are irrelevant to individuals' own sense of well-being. That this hypothesis is not true can quickly be demonstrated by marshalling relevant survey data.

Data on perceptions of progress have been collected by different researchers through the administration of surveys that utilize variations on Cantril's "self-anchoring striving scale" (Cantril, 1965). Respondents are presented with a diagram of a ladder whose rungs are numbered 0 to 10 or 0 to 100. They are asked to imagine that the top rung represents their best possible life and that the bottom rung represents their worst possible situation. Then the respondents are asked to peg the level of their current life situation, the level of their life five years previous, and the level of their life five years in the future. These rankings are completely subjective, but they can be interpreted to reveal degrees of experienced or expected personal progress. In addition, the surveys directed respondents through a similar ranking process for the state of the nation or for the typical American.

Ladder ratings from 1959, 1964, and 1971 national surveys are reported in Table 4-2. These data are categorized in broad age groups. There is strikingly little variation in the evaluation of current condition, either over time or by age. With the exception of the 1971 rating for the

Table 4-2: LADDER RATINGS OF PERCEIVED PERSONAL AND NATIONAL PROGRESS BY AGE GROUP, 1959, 1964, AND 1971

Survey Year	Age	Personal Rating			National Rating		
		Present	Improvement		Present	Improvement	
			Past <sup>a</sup>	Future <sup>b</sup>		Past	Future
1971	21-29	6.3	+1.6	+1.8	5.1	-0.6	+1.0
	30-49	6.6	+1.1	+1.2	5.4	-0.8	+0.9
	50+	6.7	+0.2	+0.1	5.5	-1.0	+0.7
1964	21-29	6.4	+1.3	+1.9	6.3	+0.4	+1.1
	30-49	6.8	+1.2	+1.3	6.5	+0.6	+1.3
	50+	7.0	+0.3	+0.3	6.5	+0.1	+1.1
1959	21-29	6.3	+1.1	+1.6	6.4	+0.3	+0.8
	30-49	6.5	+0.8	+1.4	6.5	+0.2	+0.9
	50-64	6.8	+0.5	+0.7	6.9	+0.1	+0.7
	65+	6.5	-0.4	+0.1	7.1	+0.2	+0.4

SOURCE: Cantril, 1965: Table 18, Appendix D; Cantril and Roll, 1971: Table A-6.

- a. Experienced over past 5 years.
- b. Expected over next 5 years.

nation the present ratings are all between 6.3 and 7.1.

Some consistent differences are apparent, however, in the evaluation of experienced and expected life improvement. The average level of experienced or expected progress for persons over age 49 is near 0, while that for young persons ranges between 1 and 2 rungs on the ladder. Contrasting these personal ratings with the national assessments is our main purpose in examining these data. The most noticeable feature of Table 4-2 is that the 1971 respondents perceived that the country regressed in the preceding five years. Cantril and Roll (1971) present other data suggesting that this negative assessment is related to rising concerns brought on by the social dislocations of the late 1960s. Assessments of national progress were more positive in the earlier survey years, yet in every age group save the elderly in 1959, perception of personal progress was twice as great as that estimated for the nation.

These data ought not be accepted without question. Granted that these rankings are intended to be subjective and specific to each respondent; nevertheless, it is not clear whether the personal and national scales are sufficiently comparable to permit the comparisons we desire. In defense of the data, the best that can be said is that these ratings average out individual idiosyncracies, and the pattern of greater personal progress has persisted across three widely spaced surveys. The pattern indicated by these data lends support to our theoretical discussion about the divergence of personal and national progress. In particular, it appears that young people experience a high degree of personal progress even when they feel the nation is regressing.

As a final example, Campbell et al. (1976:175) have reported self-

anchored ratings that specifically address the issue of housing. This survey asked a national sample of respondents to imagine a scale from 0 to 100. The mean rating given for respondents' present housing was 75.1. The rating of their homes five years previous averaged 71.6, and the rating of their expected homes five years in the future averaged 82.9. These respondents clearly believed that they were experiencing housing progress. Interestingly, the mean rating for the "typical American's" home was 71.7, at the level where the average respondent was five years earlier. If we can assume that perceptions of the typical American's housing condition represent perceptions about the nation's housing condition, then these data also seem to suggest that individuals tend to feel that they are faring better than the nation.

### Summary

This section has argued for the advantage of the cohort aggregate for representing the average experience of individuals over time. Changes in homeownership during the decade of the Great Depression were analyzed as a major example of the divergence of cohort and national trends. A brief examination of survey data on perceptions of personal and national progress showed that individuals also perceive that their personal progress is greater than the nation's progress. The probable explanation for this phenomenon is that, as they grow older, individuals advance in their housing careers and in other dimensions of their lives as well. The magnitude of this housing and family career progress is examined in Chapter 6.

## INTERRELATED DIMENSIONS OF THE LIFE COURSE

The presentation thus far has emphasized the importance of cohort life



progress in housing achievement. What has been neglected by the discussion is the question of how the family and housing dimensions are related in this life progress. For example, at one level we might be interested in measuring the housing achievements of different family types and comparing these achievements between cohorts. Family types of special interest might include married couples with children, single-parent families, and childless couples. It would be useful to know whether housing conditions have improved between cohorts more for some family types than for others.

In addition to a static comparison of family types, however, a more complex set of questions concerns the relationship between processes of family development and housing progress. How are the acts of getting married, forming families, or becoming divorced related to housing achievement? Are the relationships between family and housing careers different for more recent cohorts? These questions emphasize the longitudinal experience of individuals and are difficult to answer with population data. It has been argued above that the cohort-life course approach provides an analytical model for addressing these sorts of questions. The present section explains how the separate family and housing dimensions can be related within the overall life course development of cohorts.

#### The Life Course Concept

The life course is a multidimensional concept. The central dimension is the lifetime, whose duration is indexed by age, and this dimension is identical for all members of the same birth cohort. Other dimensions of the life course are defined by social behaviors. Major dimensions that are

pertinent to young adults include: residential history, employment career, dating and marital relations, and childrearing. Because each of these behaviors involves repeated participation over a period of time, each behavior can be conceptualized as constituting a separate career line. Thus, each person's life course is composed of multiple, concurrent careers in which he or she is participating. Unlike the family life cycle model, the life course approach stresses that these different careers can be related to varying degrees. Although decisions and events in one life dimension influence decisions in other dimensions, we should not assume that these events always occur in a predetermined sequence or combination. As Elder (1975b) has emphasized, the empirical task should be to determine what are the behavioral combinations and strengths of interrelationships for each cohort.

The fundamental approach by which life course analysis investigates how the different life course dimensions are related to one another is to focus on the transitions between statuses. The transitions that are most commonly studied in life course analysis are entry into marriage and entry into parenthood.<sup>6</sup> These transitions (and others such as entry into labor force, leaving the parental home, or entry into widowhood) constitute major milestones or break points in the life course. The existence of these visible changes provides an important "window" through which the organization of life course processes can be studied.

#### Prevalence of a Life Course Transition

Three major research questions about transitions have been identified by Modell et al. (1976). The first question concerns the likelihood that

a given transition will occur. The prevalence of a transition is usually estimated from the percentage of persons who have ever experienced the transition (e.g. percent ever-married). Frequently, however, data on life course dimensions are not reported in a retrospective fashion that permits estimation of the percentage ever experiencing a transition. In such cases Modell et al. (1976:13) recommend measuring the prevalence of a transition by the maximum percentage in any age group that has currently achieved the transition. For example, if we did not know the percentage of a cohort who have ever bought homes, we could estimate this from the percentage who are currently homeowners around age 50 or 60. Because homeownership is a reversible status, the current estimate is an underestimate of those who have ever been owners. Nevertheless, this method provides a reasonable estimate for comparative purposes as long as the transition is relatively permanent and cumulative over a portion of the life span.<sup>7</sup>

Even when prevalence is estimated on the basis of data pertaining to ever-achievement of a status, it is necessary to distinguish between prevalence at a given age and prevalence within the entire lifetime. For example, if 80 percent of a cohort has been married by age 30, it is likely that the lifetime prevalence of the marriage transition will be even greater as additional persons enter marriage after age 30. The only way that cohorts can be compared is by calculating their transition prevalences at the same age.

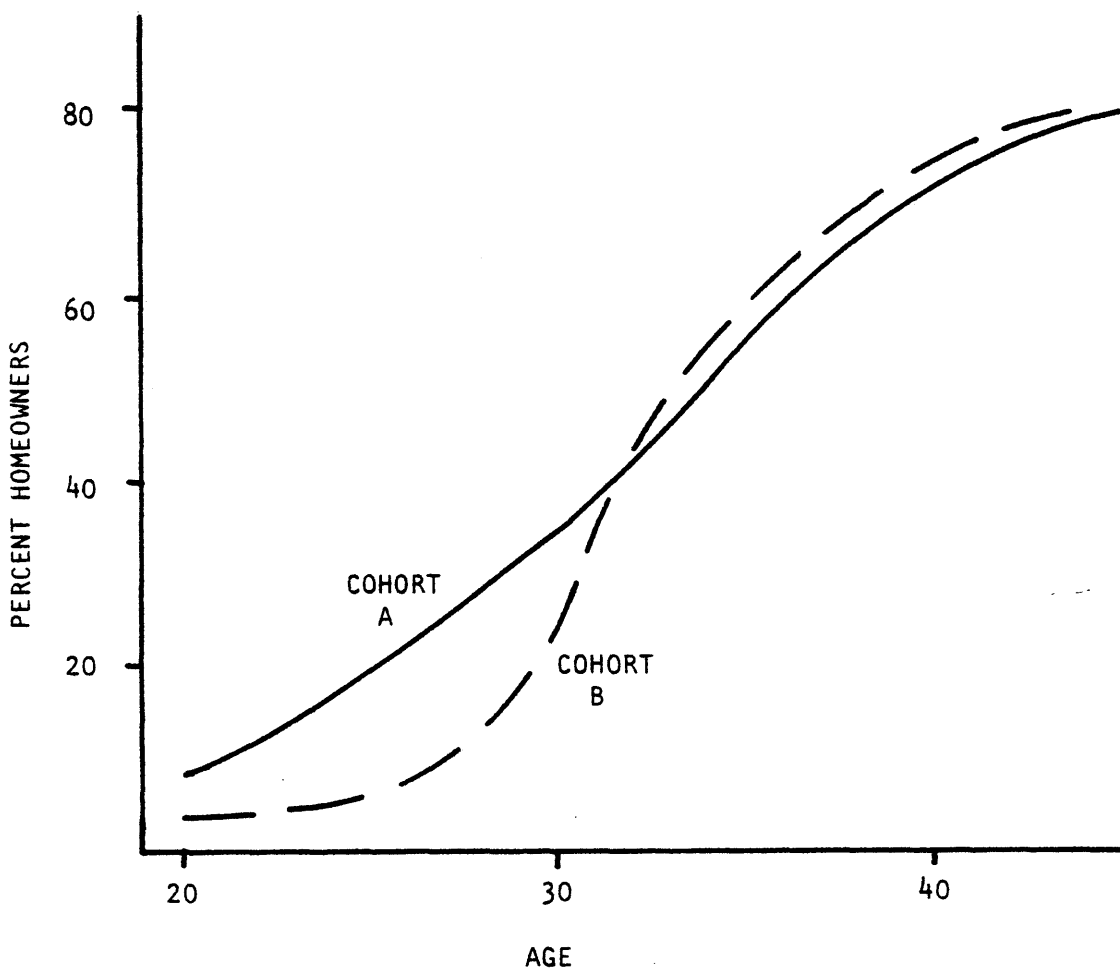
#### Age-Time Shape of Transitions

This leads to the second question about transitions that has been

emphasized by Modell and other life course researchers: at what age does the transition typically occur? A measure of the age timing of a transition is developed by relating a transition in one life course dimension to the duration (age) of the central, lifetime, dimension of the life course. When the ages at transition are aggregated for a group of people, a picture of the cumulative transition into motherhood, for example, can be constructed. In sharp contrast to the Glick method of emphasizing median ages of transitions, this approach emphasizes the age distribution of transitions. Several researchers have argued that the dispersion or spread of a transition's timing is at least as important as its central tendency (Modell et al., 1976; Winsborough, 1978; Taeuber and Sweet, 1976).

Cumulative transitions of cohorts between one status and another may be thought of as developmental trajectories. Figure 4-3 depicts two very different hypothetical trajectories for the transition into homeownership. Cohort A has pursued a rather flat, slow-paced entry into ownership, whereas Cohort B has followed an S-shaped trajectory with a very fast-paced transition to ownership concentrated around age 30. There are two points to be made from this graph. First, despite the very different age-time shapes of the entry into ownership, it is possible for the median ages at entering ownership to be virtually identical. (In this case, half of the maximum number have entered ownership by age 32.) The median age does not reflect the fact that Cohort A has pursued a fairly age-random, though steady, transition into ownership; nor does the median age reflect the highly scheduled transition of Cohort B. Two methods for indicating the differences in trajectories are to calculate the interquartile range of the transition ages or, alternatively, to calculate the ratio of cumulated

FIGURE 4-3: HYPOTHETICAL TRANSITIONS TO HOMEOWNERSHIP



ownership at one age to the cumulated ownership at a younger age (cf. Modell et al., 1976; Winsborough, 1976). In the example, Cohort A passes from 20 to 60 percent ownership over a 12-year span, while Cohort B makes this transition in only 6 years. The ratio of progress between ages 25 and 35 is about 3.0 for the first cohort and 10.0 for the second.

The second point to observe about Figure 4-3 is the very different implications for aggregate consumption of ownership that arise from the two different trajectories toward the same ultimate level of ownership. The lifetime prevalence of the ownership transition for both cohorts is 80 percent, yet the lifetime housing consumption of Cohort B is less than for Cohort A because of Cohort B's initial delay in entering ownership. The importance of this observation is that it shows that two cohorts can achieve the same lifetime housing progress without consuming the same amount of housing.<sup>8</sup>

There are several reasons why the age-time shape of the ownership transition is important. First, different shaped trajectories yield different lifetime volumes of housing consumption, as measured by the area under the trajectory. Second, different shaped trajectories imply different rates of progress toward ownership. Although it is unclear how individuals evaluate the fact that their cohort is making fast or slow progress into ownership, the implication is that the average waiting time for fulfilling housing goals will be shorter for the cohort that is making fast progress. A more complicated case is that depicted in Figure 4-3. Cohort B experienced very rapid progress only after an initial delay. While we cannot say whether the members of Cohort A or B are happier with their progress, it seems important to at least ascertain what differences

may exist in their age-time shapes of housing progress.

The shape of the trajectory into ownership is important for other reasons as well. Differences in shape can lead us to discover forces that are impinging on cohorts' life development. A very concentrated transition into ownership (such as by Cohort B in Figure 4-3) might imply that the cohort members have a high degree of consensus about the preferred age for ownership. An alternative interpretation might stress that a concentrated transition implies that cohort members have less discretion about the timing of their transitions. For example, they might feel forced to take advantage of an opportunity that is available only for a short time, such as a special housing program or a peculiar set of market conditions. A final possibility is that the cohort members might feel compelled to coordinate their home purchases with other life events that are also age-dependent, such as establishing job security or entering parenthood.

#### Interrelated Transitions

The third set of questions that are addressed about transitions focuses on the type of relationship suggested above: how is the timing of one transition related to another? One approach that can be taken when data on individual life histories are available is to study the order of two or more transitions (cf. Hogan, 1978). This type of analysis seeks to determine the causes and consequences of differently ordered transition sequences.

This life history approach cannot be pursued with data from census or other replicated surveys, however; instead, we must analyze the interplay between life course transitions that are aggregated for cohorts.

There are two basic approaches to this analysis: one method is to estimate the overlap of two or more status transitions, the other is to analyze the contingent relationship between statuses at one point in time (Modell et al., 1976). Each of these approaches is addressed in turn.

The concept of overlapping transitions emphasizes the degree to which two different status transitions are age-synchronized. For example, we might ask whether or not the cumulative transitions into parenthood and into homeownership occur within the same age span. It is possible that for one cohort the majority have become parents before many members of the cohort have begun to buy homes, while in a more recent cohort the two transitions are conducted more simultaneously. Modell et al. (1976) propose measuring this "age-congruity" by calculating the proportion of the average of the two transition age spans that is shared in common by the two transitions. A drawback to this measurement, of course, is that it "...is a joint property of a pair of aggregate distributions, and does not refer to the closeness in time of transitions of the individual level" (Modell et al., 1976:13).

Another approach to the measurement of overlap, developed by Sweet (1979), avoids this weakness by aggregating individual records into multi-dimensional status distributions. In effect, the Sweet method calculates the cumulative person years spent in a status over an age span. (This amounts to calculating the area under the curve of a transition trajectory.) Then this total can be partitioned into fractions of experience that are also spent in other statuses. For example, over a 10-year age span 4.5 years might be spent in homeownership, and none or perhaps 3.0 years of this ownership could be spent without being a parent. These quantitative



estimates can be compared easily between cohorts.

Although the Sweet method will be examined in greater detail in the next chapter, a number of its advantages relative to the Modell method can be summarized here. As noted above, the Sweet method measures overlap on the basis of associations observed for individuals. Also unlike the Modell approach, this method can be applied to age spans of any length and does not require age spans long enough for full transitions to be completed. A third advantage is that the Sweet method can measure the overlap of three status transitions as easily as two. Finally, the Sweet method generates quantitative estimates that are more compatible with the concept of housing demand. The person years of experience in a given housing status are equivalent to the cumulative housing occupancy, or demand, of a cohort.

The second fundamental approach to linking different life course transitions is to statistically analyze the status contingencies at one point in time. Whereas this might seem to forsake the longitudinal, process emphasis of the life course concept, much can be gained from creative use of adult's age, child's age, duration of residence, and other temporal variables that are recorded by many surveys. The contingency approach emphasizes the correlation between different status attributes, or what Modell et al. (1976) call "integration." Statistical analysis permits more reliable estimates of changes between cohorts. For example, controlling for women's age, we can test the changing effect of parenthood on homebuying. Or, controlling for both women's age and parent status, we can test the effect of marital disruption on housing progress. These questions are explored in Chapter 7. Because there is nothing unique

about statistical analysis of life course variables, further discussion of methods need not be pursued here.

#### Summarizing the Advantages of Life Course Analysis

The preceding discussion has reviewed the basic approach employed in life course analysis. It would be useful to summarize the advantages that this approach offers relative to the alternative methods that were reviewed earlier in this chapter. To begin with, it should be clear that the unstructured population model ought to be discarded for purposes of analyzing housing consumption. The cohort-life course model should be compared only with the family life cycle model and the headship/occupancy rate model.

The cohort-life course model has clear advantages over the two variations of the family life cycle model. We can summarize the major advantages as follows: first, the life course method empirically discovers how different life events are clustered and sequenced, rather than assuming a constant typology of life stages; second, the life course approach estimates the variation in timing for different events instead of focusing on the median age of transitions, as in the Glick method; and, third, contingency analysis with life course variables provides the same explanatory information as the Lansing and Kish approach without sacrificing information on the linkage between age and family behavior.

An additional advantage of the cohort-life course model relative to both the family life cycle and headship/occupancy rate models is that it emphasizes longitudinal processes instead of cross-sectional states. The headship/occupancy model avoids the weaknesses cited above for the family

life cycle model by affording the potential for very detailed cross-tabulation of age, family, and housing statuses. However, the great detail of statuses that are generated confuses the longitudinal interpretation of processes. The Pitkin/Masnack approach seeks to avoid this pitfall by conducting analysis within a cohort framework and by conceptualizing the family statuses in life course terms. Nevertheless, the Pitkin/Masnack model of 21 house types and 16 family types for each age group generates such a large number of possible longitudinal paths that it is difficult to use for purposes of comparing cohorts' housing careers.

In sum, each of the models has certain unique advantages. The family life cycle model is very simple to use and is intuitively appealing; yet, these advantages are also found in simplified versions of the headship/occupancy method. The special attraction of the family life cycle model is that it implies a longitudinal depiction of life stages. We have argued that this is a false representation, however, and the cohort-life course model has been proposed as a more accurate representation of longitudinal experience along simultaneous housing and family dimensions. What this method loses to the more detailed versions of the headship/occupancy rate model, it more than makes up through a more clear depiction of major life processes. In addition, a further, unique advantage of the cohort-life course model is its identification of individuals' historical location by means of their cohort membership. The advantages of this feature of the cohort-life course model for measuring social change are discussed in the final section of this chapter.

## COHORTS AND SOCIAL CHANGE

Preceding sections have argued two major points: first, that the cohort aggregate provides the most appropriate vehicle for conceptualizing and measuring aggregate individual experience, and second, that the life course conceptual model provides the best approach for measuring the linked development of housing and family behavior within cohorts' lifetimes. The present section develops a third theoretical point that emphasizes the role of cohorts in social change. The general point to be developed has been summarized by Ryder (1972:105-6): "...social change occurs to the extent that successive cohorts do something other than merely repeat the patterns of behavior of their predecessors." We will also discuss some hypotheses about how cohort behavior changes in response to historical conditions, and about how this behavior is influenced by the lifetime patterns established by preceding cohorts.

Cohort Differentiation

Norman Ryder's (1965) article on the usefulness of the cohort concept in the study of social change was especially influential for sociologists. His argument was that birth cohorts provide the fundamental mechanism by which social change is introduced into a population. The infusion of new cohorts and the flow of all cohorts toward older ages, together with the deaths of older individuals, constitute a "massive process of personnel replacement, which may be called 'demographic metabolism'" (Ryder, 1965: 843). Although societies seek stability through socialization of the young and continuing efforts at social control, each cohort makes fresh contact with existing traditions. Cohorts are differentiated by their

composition at birth and they are made more different by the unique impact of history at each age of their lives. These cohort differences can interact with period conditions to create still further social change:

...each cohort is a possible intermediary in the transformation process, a vehicle for introducing new postures. The new cohorts provide the opportunity for social change to occur. They do not cause change; they permit it. If change does occur, it differentiates cohorts from one another, and the comparison of their careers becomes a way to study change. (Ryder, 1965:844; emphasis added.)

The proposed orientation to temporal differentiation of cohorts emphasizes the context prevailing at the time members of the cohort experience critical transitions. (Ryder, 1965:847)

Four major points are contained in these quotations. First, Ryder asserts that cohorts provide a vehicle for social change. Second, cohorts are made different by the interaction of their prior differences with current conditions. Third, similar to the emphasis of life course theory, Ryder argues that the greatest chance for differentiation is found at life stages where cohorts are experiencing critical life transitions. The fourth point is less explicit: once cohorts have participated in social change they alter the prevailing context that faces other cohorts.

Indeed, Ryder took great pains in his essay to point out that cohorts making the major life transition from adolescence to adulthood have by far the greatest likelihood of participating in social change: "In particular, the potential for change is concentrated in the cohorts of young adults who are old enough to participate directly in the movements impelled by change, but not old enough to have become committed to an occupation, a residence, a family of procreation or a way of life." (Ryder, 1965:848) This suggests that generational differences in life course

development will be most prominent in the early adult stages.

### The Easterlin Hypothesis

Although detailed mechanisms of social change have not been empirically proven, stimulating hypotheses have been offered. A major postulate suggested by Ryder and, in particular, by Easterlin (1961) is that cohort size influences the life course development of cohort members. This view has been expressed most coherently by Waring (1975). Her suggestion is that cohorts would tend to accelerate or decelerate their transitions depending upon their size relative to preceding cohorts. The argument is that society is composed of an age-graded role structure (cf. Riley, 1972) and that fluctuations in cohort size pose problems for the expansion and contraction of available role slots. If a new cohort is larger than its predecessors the relative paucity of role positions appropriate to a given age will cause the new cohort to slow its transition into new roles. Conversely, a relatively undersized cohort will enjoy a surplus of new role positions, and its advancement can be expected to be accelerated (cf. Harter, 1977). This does not imply that entire cohorts will speed up or slow down uniformly, rather that portions of the cohorts will either fall behind or catch up to the segment that is earliest to make the transition.

The significance of relative cohort size has received its greatest attention through the interest given Richard Easterlin's research (1961; 1968; 1973; 1978). The Easterlin hypothesis emphasizes the role that small cohort size played in advancing the employment careers of young men in the 1950s. In an era of economic expansion, and possessing superior educational training, these small cohorts experienced rapid advancement.

The prospect of economic success is assumed to have encouraged them to marry early and to form families.

The basic idea is that if young men--the potential breadwinners of households--find it easy to make enough money to establish homes in the style desired by them and their actual or prospective brides, then marriage and childbearing will be encouraged. On the other hand, if it is hard to earn enough to support the desired style of life, then the resulting economic stress will lead to deferment of marriage, and for those already married, to the use of contraceptive techniques to avoid childrearing, and perhaps also the entry of wives into the labor market.  
(Easterlin, 1973:181)

Easterlin presents data to show how the upswing and downswing of fertility generally parallel his measures of young men's employment experience.

While working with cohort data, Easterlin clearly is trying to represent the changing nature of life course experience for persons growing up in slightly different historical times. Leaving aside the substantive content, the most important theoretical contribution is the suggestion of mechanisms by which cohorts might influence each others' behavior. Easterlin has suggested a simple process of intergenerational status comparison between fathers and sons. The young adult sons gauge their economic well-being relative to the standards established by their fathers when they were growing up. If the status comparison is favorable for the sons, they form families rapidly.

Oppenheimer (1976) has enriched this hypothesis in several ways by addressing the more variable behavior of wives' labor force participation. First, she argues that older women were urged back into the labor force because the size of the baby boom cohorts that they had borne raised average child-rearing expenses. A second cohort influence she suggests

is that the example set by working mothers encouraged young adult daughters to work after marriage. Their childhood standard of living had been increasingly based on two earners and mothers' behavior also served as a role model. The third suggested influence is that through a process of cumulative causation more young wives in successive cohorts worked in order to keep up with the standard of living established by the immediately preceding cohorts who matured at a more advantaged time of history. In sum, Oppenheimer has suggested that cohorts influence each other via parent-child linkages and also by means of sibling or peer linkages between adjacent cohorts. The broad theoretical contribution of the Easterlin hypothesis about relative economic status is to suggest how aspirations for standards of living are transmitted between cohorts.

Housing occupies a prominent role in most persons' concerns about their standard of living. Analysis of survey data in Chapter 3 showed the strong emphasis on homeownership in the United States. The importance of homeownership in the average person's conception of standard of living was revealed in a 1975 Roper poll.<sup>9</sup> When respondents were asked to select one or more items from a list that reflected their personal conception of "the good life," the feature chosen most often, by 85 percent of the respondents, was "a home you own."

As part of the postwar rise in standard of living, between 1940 and 1970 the percentage of homeowners among households headed by males under age 35 rose from 21.5 percent to 49.3 percent.<sup>10</sup> Related to the increase in ownership, the housing conditions of most American families increased markedly during this period. Echoing the Easterlin hypothesis, Anthony Downs (1977:168) has cited this increase in the supply of high-quality



homes as "...one of the factors that generated record levels of new babies in the late fifties and early sixties...." Although there is no proof that high-quality housing leads to greater fertility than low-quality housing, housing is not only an important manifestation of improving standards of living, but it also serves as the immediate setting for family raising. Whatever validity the Easterlin hypothesis has for explaining the postwar baby boom, acquisition of higher-quality housing at earlier ages would seem to aid the process of family formation.

Of course, as family sizes increased on average, so did the average size of occupied dwellings (Pitkin and Masnick, 1979). Richard Coleman has ventured the further hypothesis that the norms for appropriately sized homes in each social class have been elevated by the birth of the baby boom generation, but the norms for social status assignment have not adjusted downwards in the face of falling family sizes (Birch et al., 1973: Chapter 5). Once again the behavior of earlier cohorts may be guiding the behavior of following cohorts.

#### Continuities Between Cohorts

An important regularity of cohort studies of social change concerns the rarity with which sharp discontinuities emerge between the behavior patterns of cohorts. Most often social change proceeds as a continuous process of progressive deviations across successive cohorts. Even where the direction of social change reverses itself, this change is still discernible across successive cohorts as a chain of incremental deviations. While it is difficult to document the extent to which this regularity holds, we can review some examples of social change that have been reported

by cohort analysts. Before doing so, however, it might prove useful to discuss how we would expect social change to respond to different sorts of stimuli. It is important to understand the cohort continuity factor because we will build upon this regularity for one of our empirical estimation procedures.

Some changes are cataclysmic and affect the entire population. The most prominent twentieth century example of such change is the Great Depression. Social scientists have found, however, that this event affected people differently at different ages. For example, Elder (1974) and Thernstrom (1973) have both argued that the Great Depression had its heaviest impact on the employment careers of young men who had recently entered, or who were about to enter, the labor force for the first time. If we assume that men aged 20 in 1930 were near the epicenter of this great employment shock, we would expect to find gradients of adverse impact extending across successive older and younger cohorts. The older that cohorts were in 1930 (short of retirement age) the less likely they might be to lose their jobs during the Depression. This relative security stems from their greater skills, connections, or seniority. Similarly, the younger that cohorts were in 1930 the less delay they might experience in gaining their first job. This is because the Depression lasted fewer than 10 years, and so a cohort aged 10 in 1930 faced a much improved employment market by the time it reached 20 in 1940.

Were the appropriate data available for the 1920-1940 time interval, these gradients of differential adverse impact would very likely be visible as a pattern of continuous, though abrupt, social change across successive annual birth cohorts. In fact, Winsborough (1978) reports data collected

by a retrospective survey of occupational changes that contains some evidence of one expected impact gradient. For those aged 19 in 1930, the median age at beginning their first job was 17.4 years. This median age rose steadily for successive younger cohorts, reaching a peak of 18.9 years for those aged 15 in 1930. Thereafter, the median age declined steadily to 18.0 years for those aged 10 in 1930 (Winsborough, 1978:244). This pattern clearly indicates that cohorts were experiencing, first, delay in acquiring jobs, and, later, increasing speed as the economy strengthened in the later part of the Depression decade. While these fluctuations of the median age at first employment might seem slight and of only temporary inconvenience, the fluctuations only provide an indication of the cohort location of adverse impacts. Indeed, Thernstrom (1973:70) has concluded that "...the damage done to [young cohorts] was not temporary but permanent." He found that unskilled and semiskilled workers, in particular, developed later career trajectories that were fundamentally different (i.e. less occupationally mobile) from other classes or other decades. Ruggles and Ruggles (1977) also report data showing that the cohort aged 19 in 1930 experienced lower earnings during the 1960s than older or younger cohorts. In fact, the adjacent cohorts fared progressively better, yielding a pattern consistent with our hypothesis about gradients of adverse impact.

In contrast to the changes wrought by the Great Depression, most social change probably occurs in response to more diffuse or slow acting pressures. Some potential causes of such change were discussed in the preceding section. It would be useful to examine some cohort patterns for the fertility, labor force, and housing behaviors that were discussed

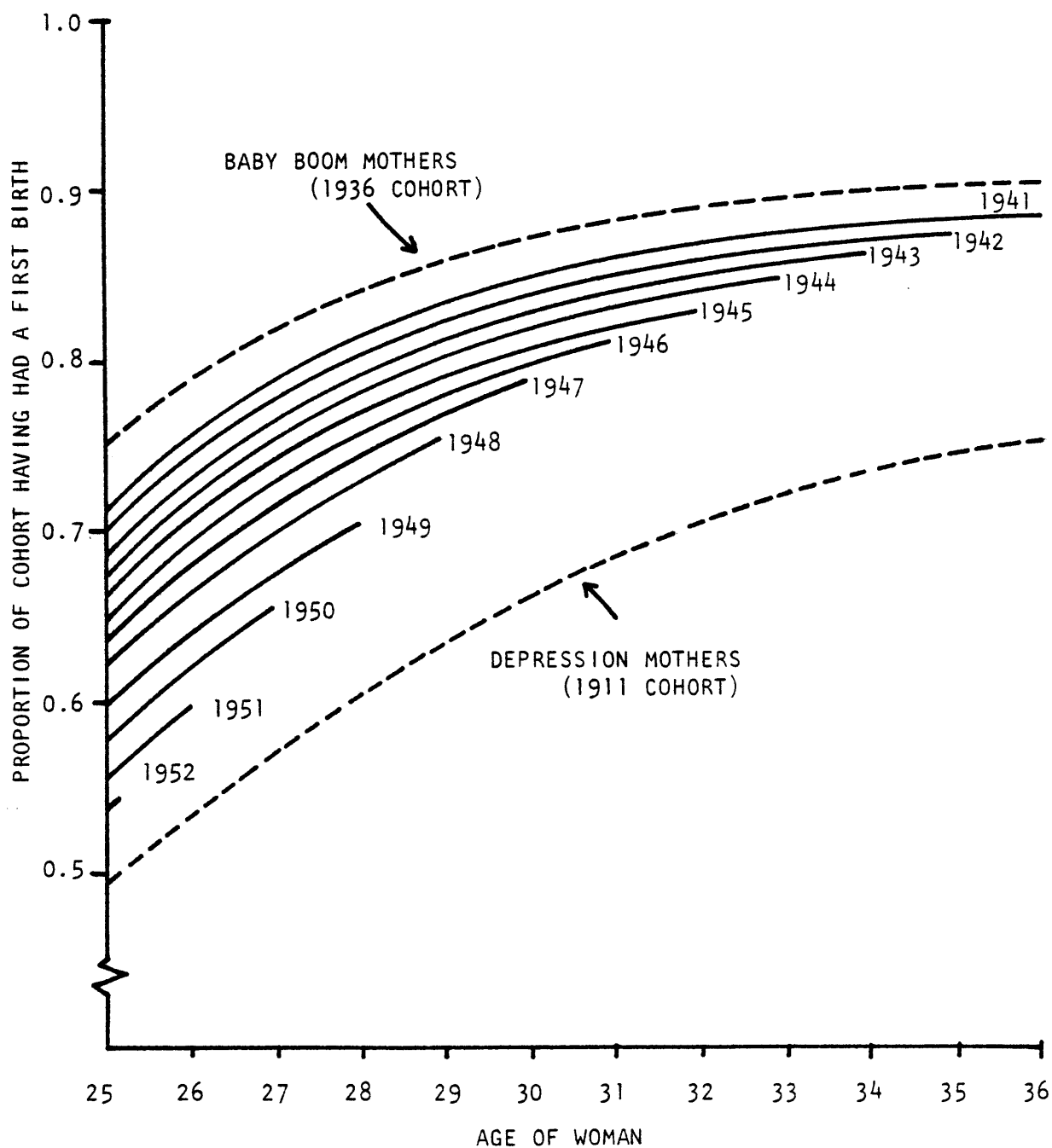
above. These examples also reveal gradients of change across cohorts, and they will illustrate more graphically the concept of cohort continuity.

Perhaps the most clear-cut example has been provided by Masnick et al. (1978). Using data on the fertility of annual cohorts born since 1940, these researchers have shown how each successive cohort entering adulthood in an era of declining fertility has embarked on a progressively lower trajectory toward motherhood. Figure 4-4 shows how remarkably orderly is the continuous process of social change across cohorts. The proportion of the cohort that has arrived at motherhood by age 27, for example, declines nearly 14 percentage points in successive decrements between the 1941 cohort and the 1950 cohort.<sup>11</sup> Each cohort appears to select a trajectory below its predecessor quite early in adulthood, and these trajectories show great stability over time.

A second example addresses the twentieth century trends in female labor force participation. This behavior differs from fertility in that it is reversible, i.e. women can enter or leave the labor force at any time, and the labor force participation rate only measures the current proportion that is in the labor force. Kreps and Clark (1975) have published two graphs that are especially interesting because they contrast the cross-sectional and cohort viewpoints on labor force trends (see Figure 4-5). Kreps and Clark (1975:10-12) contrast the two viewpoints as follows:

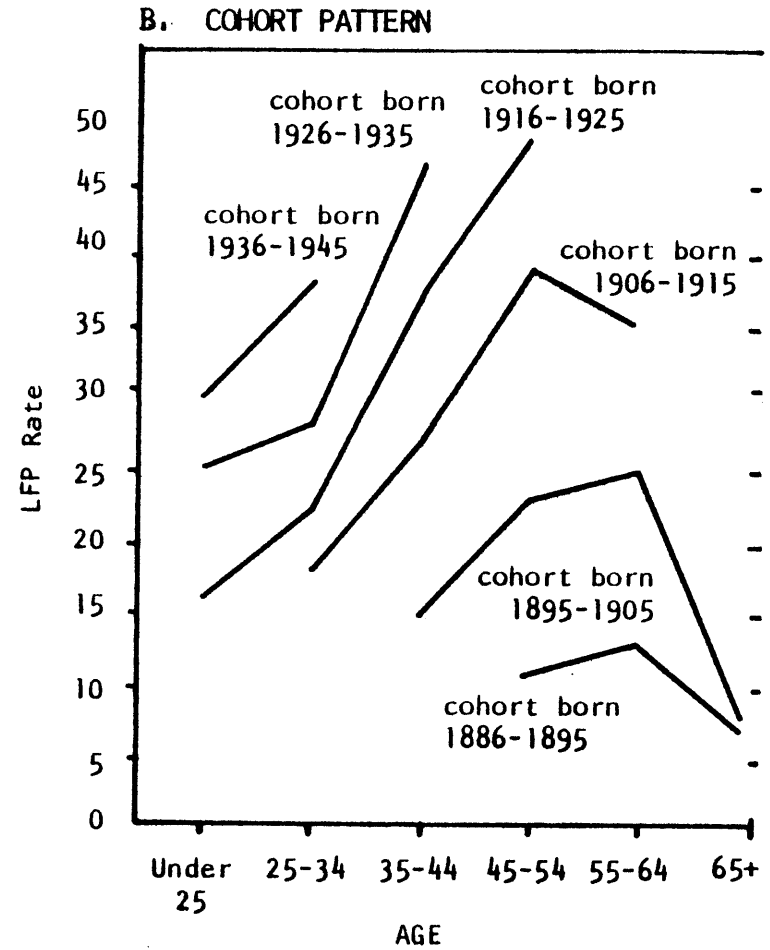
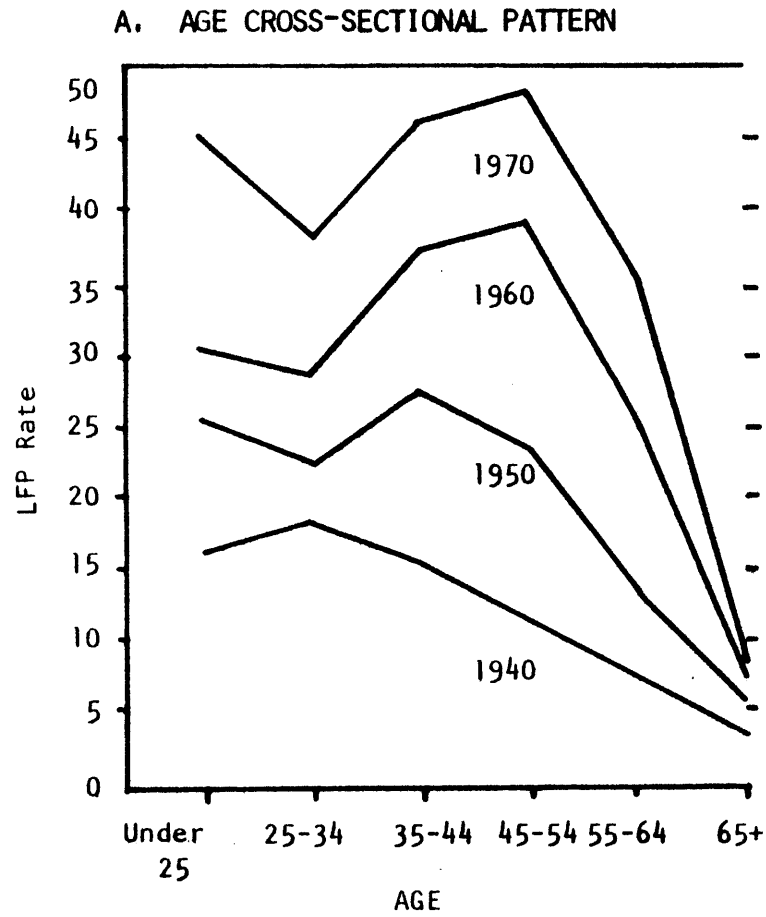
[T]he participation rate for each cohort rises continuously (with the exception of one observation) until retirement. Within an age group (sic), there is no evidence of a decline in participation rates during the childbearing years, as indicated by the cross-sectional patterns.... Patterns of lifetime labor supply for married women derived from cohort

FIGURE 4-4: TRANSITION TO MOTHERHOOD FOR FEMALE COHORTS BORN 1941-1952



SOURCE: Adapted from Masnick et al. (1978: Figure 3)

FIGURE 4-5: AGE CROSS-SECTIONAL AND COHORT PATTERNS OF LABOR FORCE PARTICIPATION  
AMONG U.S. FEMALES



SOURCE: Adapted from Kreps and Clark (1974: Figures 2.1 and 2.2)

analysis are thus dramatically different from the one drawn cross-sectionally. In addition, a higher percentage of women in each succeeding cohort has been in the labor force; that is, the lifetime pattern of each cohort lies above that of its predecessor. (Emphasis added)

The Kreps and Clark conclusion that there is no decline in labor force participation during childbearing years should be qualified by the understanding that brief life course changes might be disguised by the usage of ten-year cohorts observed at decadal intervals. In fact, analysis based on more precisely defined cohorts shows that a dip in labor force participation around age 30 has occurred for most twentieth century cohorts (Masnick et al., 1978; Miller, 1978).

The point of major interest, however, is Kreps and Clark's observation about the lifetime patterns of successive cohorts. Just as in the Masnick fertility graph (Figure 4-4), social change is occurring progressively across cohorts. In fact, Masnick et al. (1978) and Miller (1978) even show that the dip at ages 25-29 is being progressively reduced by a process of incremental change across adjacent cohorts.

Other researchers have commented on this feature of cohort behavior. For example, Ruggles and Ruggles (1977) used Social Security Administration data on earnings by age and year to construct a set of real income trajectories for cohorts. They summarize their findings as follows: "[The] shape of the age-earnings profile results from faster growth for younger generations than for older generations, each generation passing those older than itself and in turn being passed by still younger generations" (Ruggles and Ruggles, 1977:155). The result of this process is that the cohort trajectories are all parallel to one another and fairly evenly spaced apart.

In the present decade, as real income growth has slowed, we would expect to see the gaps between successive cohorts narrow, particularly at young ages where careers are just being established.

A final example depicts the cohort acquisition of large housing units (seven or more rooms and situated in structures with fewer than five units), and is drawn from Pitkin and Masnick (1980). Figure 4-6 shows that there has been a progressive upward shift in the slope of the housing trajectories between the 1911-15 cohort and succeeding cohorts as they travel through the middle adult years. In contrast to this clean, fan-shaped pattern of cohort housing improvement, the pattern is much less organized at older ages. The transition between the two cohort patterns occurs with the 1906-10 and 1910-15 cohorts. These are the cohorts who reached homebuying age during the Depression and war years. The cohorts that followed them entered the housing market in decades when both economic conditions and housing supply improved markedly. The increasing success of cohorts in the postwar era is reflected by the fan-shaped pattern of increasing acquisition of large homes.

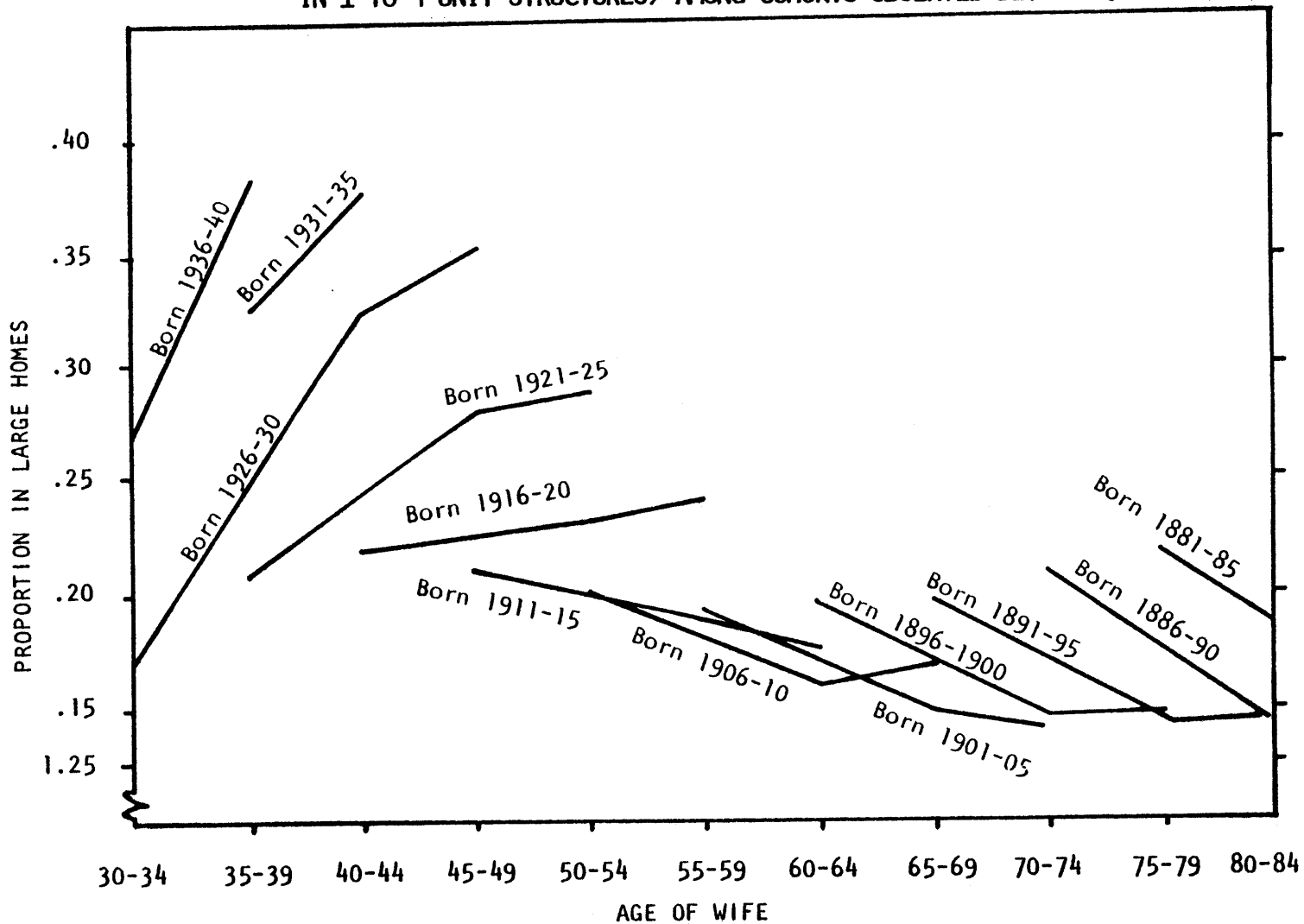
In sum, these examples all show how social change leaves its imprint on successive cohorts. The pattern that these examples all have in common is that they show social change as a continuous process incrementally affecting successive cohorts. This is an important regularity that will be capitalized upon when developing the methodology for analysis in the next chapter.

#### CONCLUSION

Three main themes have been developed in this overview of cohort-



FIGURE 4-6: PROPORTION OF MARRIED COUPLES OCCUPYING LARGE HOUSING UNITS (7 OR MORE ROOMS IN 1 TO 4 UNIT STRUCTURES) AMONG COHORTS OBSERVED BETWEEN 1960 AND 1975



SOURCE: Adapted from Pitkin and Masnick (1980: Figure 3)

life course theory. The first is that the life course approach provides a detailed and flexible approach for studying the shifting linkage of behaviors over the lifetime. The second theme is that the cohort aggregate is the best means for measuring average experience of individuals over time. The final theme is that social change can be conceptualized and measured as occurring between cohorts. In order to satisfactorily measure social change, however, it is necessary to account for variations in life course organization. Thus both dimensions of change--lifetime and generational--must be analyzed simultaneously.

The cohort-life course approach provides a means by which housing and family behaviors can be linked longitudinally and changes between generations can be estimated. The family life cycle or headship/occupancy rate approach cannot be used for either purpose. The major weakness is that neither approach develops a longitudinal focus. This not only prevents measurement or change over the lifetime, but it also makes it impossible to compare careers of different cohorts.

For purposes of housing analysis the cohort-life course approach has perhaps two weaknesses. First, this method requires detailed life histories which are largely unattainable and burdensome to analyze. Cohort analysis affords a compromise which sacrifices detail while permitting usage of a life course perspective with existing large files of census data that can be formatted for cohort analysis. The second weakness is that the proposed approach addresses individuals and not households or families. Since it is the latter units which occupy housing units, this might appear to be an undesirable feature for housing analysis. However, there is a tradition in housing analysis of classifying households by

characteristics of their heads.

Similarly, it is possible to classify heads by characteristics of their households--so many heads that live alone and so many heads that are married, etc. What is proposed here is to analyze cohorts of women and classify their households by their marital, parent, labor force, age, and housing characteristics (cf. Rein and Rainwater, 1977). While men would seem to be neglected by this approach, most often they live with women and so their households will be represented. Given the strong role of female behavior in defining recent family changes, this approach seems to make much more sense than the common practice of ignoring females in favor of male households heads.

These shortcomings of the cohort-life course approach are vastly outweighed by the advantages it offers of truer representation of average experience over time. Moreover, the multidimensional life course concept leads to more precise measurement of the relationship between family status and housing consumption. Rather than rely on vague identification of the "age of households" or "marital status of households," the proposed approach clearly specifies the individuals whose housing and family characteristics are being compared. In particular, by separating lifetime and generational dimensions of housing progress, the proposed approach prepares the way for a more clear identification of the policy issues regarding housing improvement.

## NOTES TO CHAPTER 4

1. The landmark study by Rossi (1955) concluded that the primary reason why families move is to adjust their housing to the needs of the family over the life cycle. Subsequent to Rossi's study all the literature has made use of variables such as age, marital status, and family size or household composition. These variables are frequently referenced as being "life cycle factors." In a review of this literature, Quigley and Weinberg (1977:50) concluded that there "...is widespread agreement that the most important determinant of intra-metropolitan mobility is the family life cycle, but far less agreement on the definition and measurement of that cycle."
2. Kain and Quigley (1972) and Goldstein (1973), among others, have employed an explicit life cycle typology in efforts to model households' tenure choice. Li (1977a) has investigated life cycle effects by incorporating the interaction of age and family size in his explanatory model. Others, such as Carliner (1974), have emphasized the importance of life cycle variables such as age, marital status, and family size. In general, however, the family life cycle model is not as dominant in explaining tenure choice as in explaining residential mobility.
3. In fact, in an unfortunate precedent, Lansing and Kish (1957) argue for the importance of the family life cycle effect by setting up a contest between age and family life cycle. Their conclusion is that the life cycle typology has more explanatory power than age, and the implication is that this typology can be substituted for age in future research.
4. The variety of designs for incorporating life cycle factors are shown by the applications cited above. The variety stems from vaguely stated theoretical preferences as well as from constraints imposed by data bases, such as sample sizes that force categories to be combined or variables to be eliminated from analysis.
5. The first published usage of the headship rate concept in the housing literature appears in Winnick (1957), although he notes the fact that Glick, and perhaps others, had previously made use of age-specific headship rates. The concept is now accepted as being in the public domain, and reference is rarely made to Winnick's introduction.
6. Marriage is one of the clearest milestones in the transition to adulthood. To measure this transition, Hogan (1978) selected marriage as one of three indicators, while Winsborough (1978) selected marriage as one of four indicators and Modell et al. (1976) selected it as one of five indicators. Entry into marriage is also the strongest determinant of living arrangements (Carliner, 1975). Parenthood has not been used to indicate entry into adulthood. Instead, entry into motherhood has been used to measure the timing of a major change in family organization and in women's allocation of time (cf. Sweet, 1979; Masnick et al., 1978).

7. Pitkin and Masnick (1979) have documented the strong, net cumulation of ownership as cohorts advance into their middle and late years. Once they have acquired ownership, households are less likely to move again (cf. Speare, 1970), and if they do move they have much higher chances of buying another home than renters have (Myers, 1980). Moreover, those renters who had previously owned a home have a substantially greater likelihood of returning to ownership than other renters have of buying a home for the first time (Li, 1977b). These research findings reinforce the popular notion that the transition into homeownership is relatively permanent (at least until retirement time), and it seems justified to treat homeownership as a quasi-cumulative status.

8. It might be helpful to provide an illustration of how to compute lifetime housing consumption. Assume that we have traced 1,000,000 households over a 10-year time interval. Their ownership rate was found to be 10 percent the first year and it increased 10 percent each year until 100 percent of the sample were owners the last year. If the 100 percent ownership rate had persisted for the entire decade, our sample would have occupied 1,000,000 homes times 10 years, or 10,000,000 person years of ownership. Fortunately, however, our sample did not reach 100 percent ownership attainment until the last year. Therefore, the cumulative housing consumption amounts to the sum of 1,000,000 times the ownership proportion in each year:  $100,000 + 200,000 + \dots + 1,000,000 = 5,500,000$  person years of ownership. As a consequence of a delayed ownership attainment schedule, our sample consumed many fewer owned homes over the decade than it had the potential for.

9. The results of this poll are cited by Struyk (1977:1) in an essay evaluating the public importance of homeownership.

10. The 1940 figure is calculated from data given in the U.S. Bureau of the Census (1943: Table 12) and the 1970 figure is calculated from data given in U.S. Bureau of the Census (1977c: Table D). While it would be useful to know the ownership rate for married couples, the only age detail in the 1940 table is provided for all male-headed households. The great majority of these are probably husbands.

11. The direction of change across earlier cohorts was the reverse. Between the 1915 and 1935 birth cohorts, the percentage who were mothers by age 27 rose from 59.5 percent to 81.9 percent. Between the 1935 and 1941 cohorts the percentage who were mothers at age 27 fell, slowly at first, and then with larger decrements to the 1941 value of 78.7 percent (National Center for Health Statistics, 1976: Table 6A).



## Chapter 5

ESTIMATION OF COHORT CAREERS  
WITH A CONSTRUCTED COHORT METHOD

This chapter turns to the methodological task of estimating the development of family and housing careers for different cohorts. Preceding chapters have presented the argument that the cohort-life course approach is the most suitable method for measuring aggregate individual housing progress over the lifetime. The experience of this progress can be further described in terms of the simultaneous family behaviors that persons pursue. The primary objective of this chapter is to develop a method for constructing multidimensional cohort careers over designated age spans from data collected by replicated surveys at irregular, wide intervals.

## THE METHODOLOGICAL PROBLEM

The cohort-life course approach guides us to analyze the longitudinal development of individuals' different career dimensions. Although such an analysis requires relatively frequent observations of individuals' behavior states, much of the available data has been collected in surveys such as the census at widely separated points in time. Thus, the essential methodological problem becomes how to estimate the age-time shape of multidimensional status change when observations are widely spaced in time. To illustrate the importance of this problem, it is possible to observe a cohort when it is aged 25 in 1960 and again when it is aged 35 in 1970. While these two observations provide useful information on the net direction of change over the time interval, without observations for intervening years we are uncertain about the age-time path of change over

the interval. Although we might assume that the cohort has experienced a constant rate of change over the interval, such a linear portrayal of change could lead to serious inaccuracies in certain cases.

The age-time shape problem assumes deep importance when analysis is based on irregularly spaced reporting intervals, such as 1960, 1970, and 1976. We cannot compare the careers of two different cohorts over these time intervals without knowing the age-time path of change between observations. For example, we might wish to compare a cohort aged 25 in 1960 and 35 in 1970 with a later cohort aged 25 in 1970 and 31 in 1976. Most likely, the earlier cohort will have experienced greater change over the 10-year interval than the later cohort over the 6-year interval. In order to compare their careers, however, we would need to contrast the cohorts over identical age spans. If change has proceeded linearly between the two observation points for each cohort, this would not pose a problem, as the first cohort's experience can simply be reduced proportionately to reflect 6 instead of 10 years of change. But if change has proceeded curvilinearly, the method of linear scaling would lead to an estimate of change for the first cohort that is too low (if the true age-time shape is concave downward) or too high (if the shape is concave upward). Comparisons of the two cohorts' careers would be biased accordingly.

The age-time shape problem, and methods to handle it, will be discussed more fully in later sections. In the following section, a number of alternative methods for cohort analysis are evaluated. This review finds fault with the methods in current use and establishes the need for developing a new, constructed cohort method that will provide more accurate estimates of different cohorts' age-time career shapes.



### Methods of Cohort Analysis

Large-scale survey data bases are required for the detailed analysis to be conducted in the following chapters. The large Census Bureau data files that will be analyzed constitute a repeated sampling of the population and do not contain longitudinal records for individuals. Some methods for analyzing the interplay of housing achievement and family formation behavior in aggregate cohort careers were introduced in the preceding chapter. The objective of this section is to evaluate the application of these methods in the context of constraints imposed by the nature of the data base.

An important clarification at the outset is to emphasize that the intended analysis does not require decomposition of cohort, age, and period effects. This causal analytical issue (and the attendant problem of over-identification) is very prominent in the social science literature on aging, cohorts, and social change (cf. Riley, 1976; Mason et al., 1973; Palmore, 1978; Fienberg and Mason, 1978). Decomposition of independent cohort, age, and period effects has proven problematic because any two of the variables determine the third, and thus the system of variables is over-identified. For example, if age and cohort membership are entered into a model, the year of observation is indirectly (but exactly) specified, and so it cannot be entered as a third independent variable. Similarly, if cohort and year are entered into a model, age is automatically defined and cannot be analyzed independently. There is no statistical technique that can separate the three factors without forcing the analyst to make certain limiting assumptions based on either theory or exogenous information (cf. Palmore, 1978).

This decomposition problem is resolved in the present research by assuming that the cohort dimension includes the effect of year of observation. Thus, a comparison of cohorts at the same age implies that the observation years are also being compared. For our purposes it does not matter whether an observed difference can be ascribed uniquely to cohort membership or whether the difference also includes period effects operating on all cohorts at the same time. The present research is designed to describe the experience of cohorts at the same ages but in different years. Even if the same period effect (e.g. rising house prices) is impacting all cohorts at the same time, each cohort will be affected at a unique age, and this effect will become part of the cohort's unique lifetime career. Differences in these careers can be analyzed without need to specify the separate age, cohort or period causes of these differences.<sup>1</sup>

The methods for this descriptive analysis can be evaluated in two stages. The first methodological decision for cohort analysis concerns the best way to link observations into a record of continuous cohort experience over time. Following this decision we can elaborate on a second problem that involves the best way of linking different career dimensions over time.

The ideal data for cohort analysis consist of annual observations of the complete population classified by single-years of age. These data would permit the linkage of a continuous (i.e. annual) series of observations on each cohort's life history. Such data are rare and typically contain only a handful of variables such as age and fertility or marital status.<sup>2</sup> For the present research purposes, however, we must make use of data that are collected at much less frequent intervals. The key problem

is how to link these sparse observations into a continuous life history.

The most common solution to this problem is to linearly link the observations. Observation of a cohort aged 25 in 1960, for example, is linked to an observation of the cohort at age 35 in 1970. As outlined above, this method ignores the age-time shape problem by assuming that the time path of change between observations is linear. While this might not be problematic for some uses of cohort analysis, it is a serious fault when the goal is to analyze experience over time. Moreover, as discussed above, with this method substantial biases can intrude on the comparison of two cohorts over time intervals of different length.

A second common approach to generating a continuous life history from sparse data observations is the cross-sectional synthetic cohort method. The basic assumption of this method is that the age pattern of behavior at one time point reflects the lifetime experience of a cohort over time. Because the synthetic cohort is formed by observing the behavior of many actual cohorts (at their unique ages) at one point in time, the synthetic cohort is an abstraction from the real behavior of many cohorts and does not represent the actual experience of any single cohort.

The synthetic cohort method is very widely used because it can be constructed from a single survey of current statuses. Probably the best known usage of this method is the total fertility rate (TFR). This widely referenced indicator of fertility trends is constructed by adding together all the age-specific fertility rates in a given year, and so it is a literal summation of current fertility behavior. An additional interpretation that is often given the TFR, however, is that it serves as a barometer of population replacement. This interpretation derives from the fact that

the TFR provides an estimate of the average completed family size that young women will experience if they bear children during their lifetime at the current age-specific rates and if they survive to the end of the childbearing age span (Shyrock et al., 1976:287). Studies have shown, however, that the assumed link is imperfect between the current age cross-sectional fertility pattern and cohorts' lifetime fertility careers. Campbell (1978) has argued in particular that the TFR is distorted in a manner that exaggerates the eventual differences that occur between different cohorts' completed fertility.

The problem is that the synthetic cohort method is a rather crude device. It is most useful for comparing fertility, or other behavior, in different countries or in very different time periods. The method is not suitable for measuring ongoing changes between individual cohorts because the synthetic cohort is a summation of current behavior in many cohorts at the same time. Nevertheless, the method has maintained its attractiveness because of the simplicity of its construction and because it is often useful to have a summary measure of current behavior.

Let us now turn to the methods that have been proposed for studying the aggregate development of cohort careers. The preceding chapter identified two main approaches to this aggregate cohort analysis, both of which measured the changing prevalence and overlap of behavioral statuses over a cohort's lifetime. The first method was developed by Modell et al. (1976) and emphasizes the overlap in time of two different status transitions. The second method, proposed by Sweet (1979), is to construct life tables of the allocation of time (in person years) by cohort members into different combinations of statuses. Both of these methods were applied to

synthetic cohort data, even though the authors recognized the weaknesses of that approach. Constraints imposed by available data necessitated their reliance on synthetic cohorts.

The essential difference between the Sweet and Modell et al. methods is that Modell et al. estimate the age intervals within which different transitions are completed while Sweet calculates the cumulative person years of experience that cohort members spend in different statuses or combinations of statuses. The cumulative person years measure the area under the curve formed by a cohort's transition trajectory between statuses, but person years do not describe the shape of the trajectory. As discussed in the preceding chapter, the age span within which a transition is completed, or the ratio between behavior states at two ages, indicates how steep is the trajectory.

In general, the Sweet life table method is more flexible and permits more detailed analysis than does the Modell method. Modell and his associates propose their method for measuring the overlap between only two status transitions, whereas the Sweet method can calculate the number of person years that are spent in several statuses at the same time. A second advantage, developed more fully in the next chapter, is that the person year quantification is more compatible with housing demand analysis than is measurement of age intervals. However, the most important advantage of the Sweet method is that it can analyze behavior over age spans of any length and does not require that transitions be fully completed.

This point deserves further development because it is a crucial impediment to applying the Modell et al. method to actual cohort data. The Modell et al. method is predicated on using complete life histories for

cohorts. A synthetic cohort resembles such a complete history because it is a comprehensive chain of age-specific observations. Among actual cohorts, however, complete life histories can be collected only for cohorts that are old enough to have completed the transitions under investigation. Recent cohorts might only be 30 or 40 years old, and as a consequence we cannot know what their completed transition trajectories will look like. None of the transition measures developed by Modell, and surveyed in the preceding chapter, can be estimated for cohorts that have only just begun a transition between statuses. For example, we cannot measure the ultimate prevalence of a transition for a cohort only aged 30; nor can we measure the age timing of a transition that has not yet been completed. Modell et al. escaped this problem of incomplete transitions by using synthetic cohorts covering the complete adult age span.

The Sweet method is not subject to such constraints. The time allocation of cohorts can be measured over the entire life span, or it can be measured over limited age spans such as 20-29. The selection of relevant age spans is constrained only by the availability of data for particular cohorts and not by the requirements of the analytic method.

### Summary

The Sweet life table method provides a suitable means for describing and comparing cohort careers over different age spans. Its only drawback is that it does not provide a way of measuring the shape of transition trajectories. For this purpose, however, we can simply use the ratio between status proportions at two different years.

The major obstacle that remains is the methodological problem of

estimating the age-time shape of cohort careers with replicated surveys widely separated in time. Lacking annual observations of cohort behavior it seems that some variety of synthetic cohort must be used. Yet the cross-sectional synthetic cohort method is not suited for describing the careers of specific cohorts or for comparing the careers of two or more actual cohorts. The following section turns to the task of developing a new synthetic cohort method that provides estimates of the careers experienced by specific cohorts.

#### A CONSTRUCTED COHORT METHOD FOR DESCRIBING AGGREGATE CAREERS

The conventional cross-sectional synthetic cohort method assumes that the age distribution of behavior at a single point in time represents the behavior of current cohorts. When more than one cross-section is available it is easy to check on the validity of this assumption. A cohort aged 40, for example, in a 1970 cross-section can be examined at age 30 in a 1960 cross-section, and this true value can then be compared with the 1970 observation for age 30. Deviations between cohorts' actual behavior states and the cross-sectional age pattern at one point in time indicate the inaccuracy of the synthetic cohort method.

In addition, there are more creative ways in which the information in two cross-sections can be utilized. This section will develop a constructed cohort method that is based on interpolations between cross-sections. We will begin by exploring the relationship between age cross-sectional behavior patterns and cohort careers. We will make use of the cohort continuity factor discussed in the preceding chapter to propose a principle of progressive deviation. This principle is the foundation for

the interpolation technique.

While the cohort career estimates generated by the constructed cohort method are subject to error, it can be shown that these estimates are much truer representations of actual cohort behavior than can be attained with other methods. A series of annual data on actual cohorts will be used to test the accuracy of alternative methods. This test will show that the constructed cohort method closely represents the true age-time shape of cohort careers and that any mis-estimates err on the side of conservatively estimating the differences that exist between cohorts.

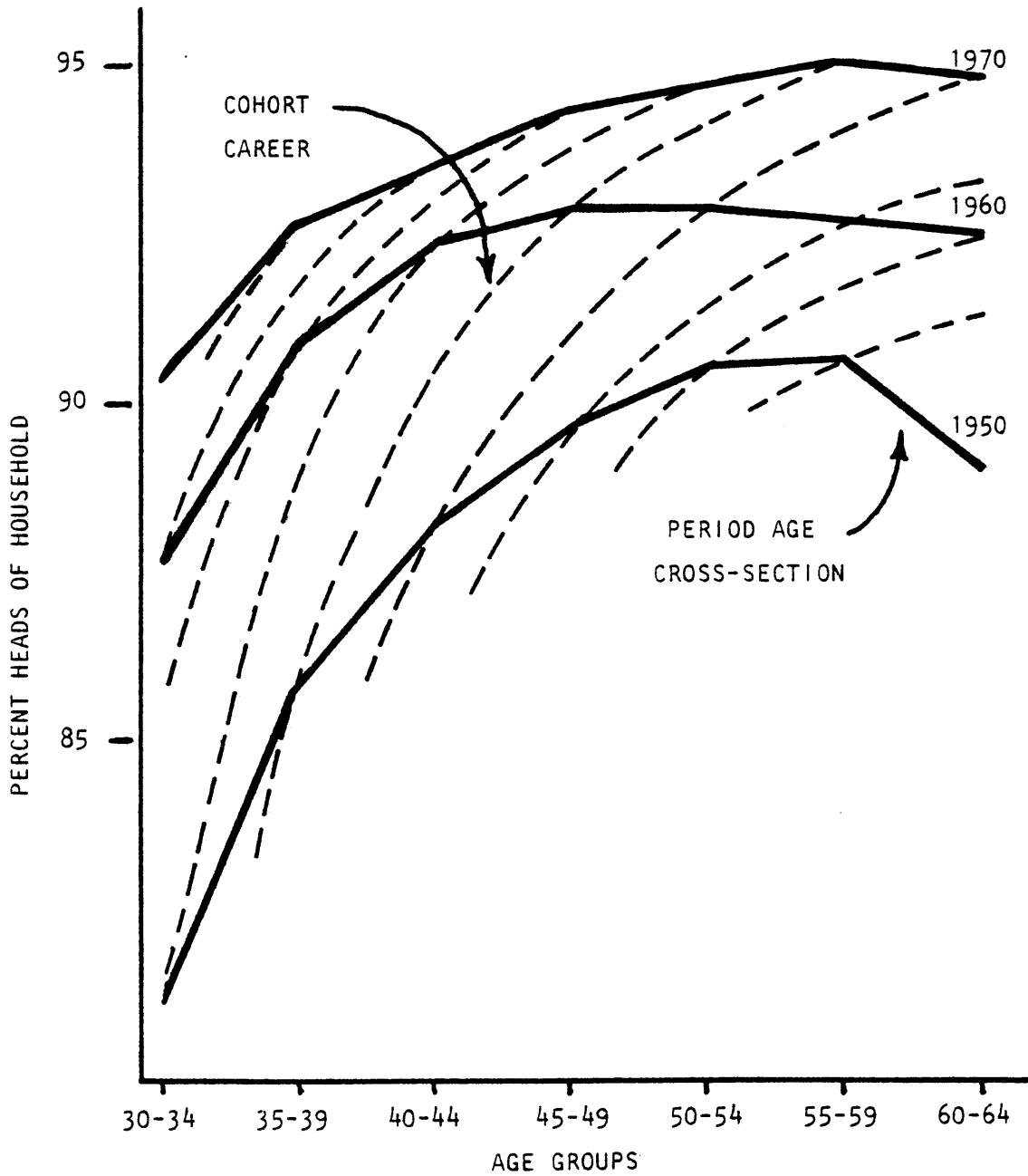
#### Translating Between Cross-Sections and Cohorts

In order to construct realistic synthetic cohorts from cross-sectional data it is essential to understand the relationship that exists between cohorts and cross-sections. The fundamental connection is that the cross-sectional age pattern of behavior is formed by observing different cohorts at their respective ages in the same year. The cross-sectional pattern resembles a "snap shot" of movement over time that "freezes" different cohorts at different points in their life course. A corollary of this relationship is that every cohort's lifetime career must intersect the cross-section at some point. Figure 5-1 depicts the intersection between cohort household headship careers and different age cross-sections in 1950, 1960 and 1970.

The degree to which a cross-sectional synthetic cohort reflects the lifetime pattern of a real cohort depends on the differences that exist between the patterns of actual cohorts. When cohorts follow substantially different careers, as in Figure 5-1, the synthetic cohort career assumes



FIGURE 5-1: AGE-SPECIFIC MALE HOUSEHOLD HEADSHIP RATES:  
RELATIONSHIP BETWEEN PERIOD AGE CROSS-SECTIONS  
AND COHORT HEADSHIP CAREERS



SOURCE: Calculated from data provided in Masnick and Bane (1980: Table B.2)

a substantially different shape than any of the actual cohorts. In such cases the synthetic cohort provides an accurate representation of actual cohorts only at the unique age where each cohort intersects the cross-section.

For example, Figure 5-1 shows that the cohort aged 60-64 in 1970 (and also aged 50-54 in 1960 and 40-44 in 1950) has experienced a very different household headship career than suggested by the 1970 cross-section. The true career has climbed from about 88 to 95 percent headship between ages 40-44 and 60-64, while the 1970 synthetic cohort indicates a career change only between 93 and 95 percent over the same age span. The discrepancy is caused by the fact that younger cohorts, such as that reaching age 40-44 in 1970, have experienced earlier advancement into headship and are pushing up the headship rates at the lower end of the age cross-section. Not only does the 1970 status of the younger cohorts not reflect the earlier status of older cohorts, but also the 1970 status of older cohorts probably does not reflect the future status of young cohorts as they grow older.

The preceding chapter introduced the notion of the cohort continuity factor in social change. This notion asserts that social change unfolds as a continuous process across successive cohorts, with the result that cohort lifetime patterns are roughly parallel to one another and evenly spaced apart. The cohort headship careers portrayed in Figure 5-1 are generally consistent with this assumption. However, the shapes of the cohort careers that have been superimposed on the age cross-sections are merely guesses based on "eyeball" judgements. We cannot be certain of the shape of the headship trajectories without knowledge of the cohorts'

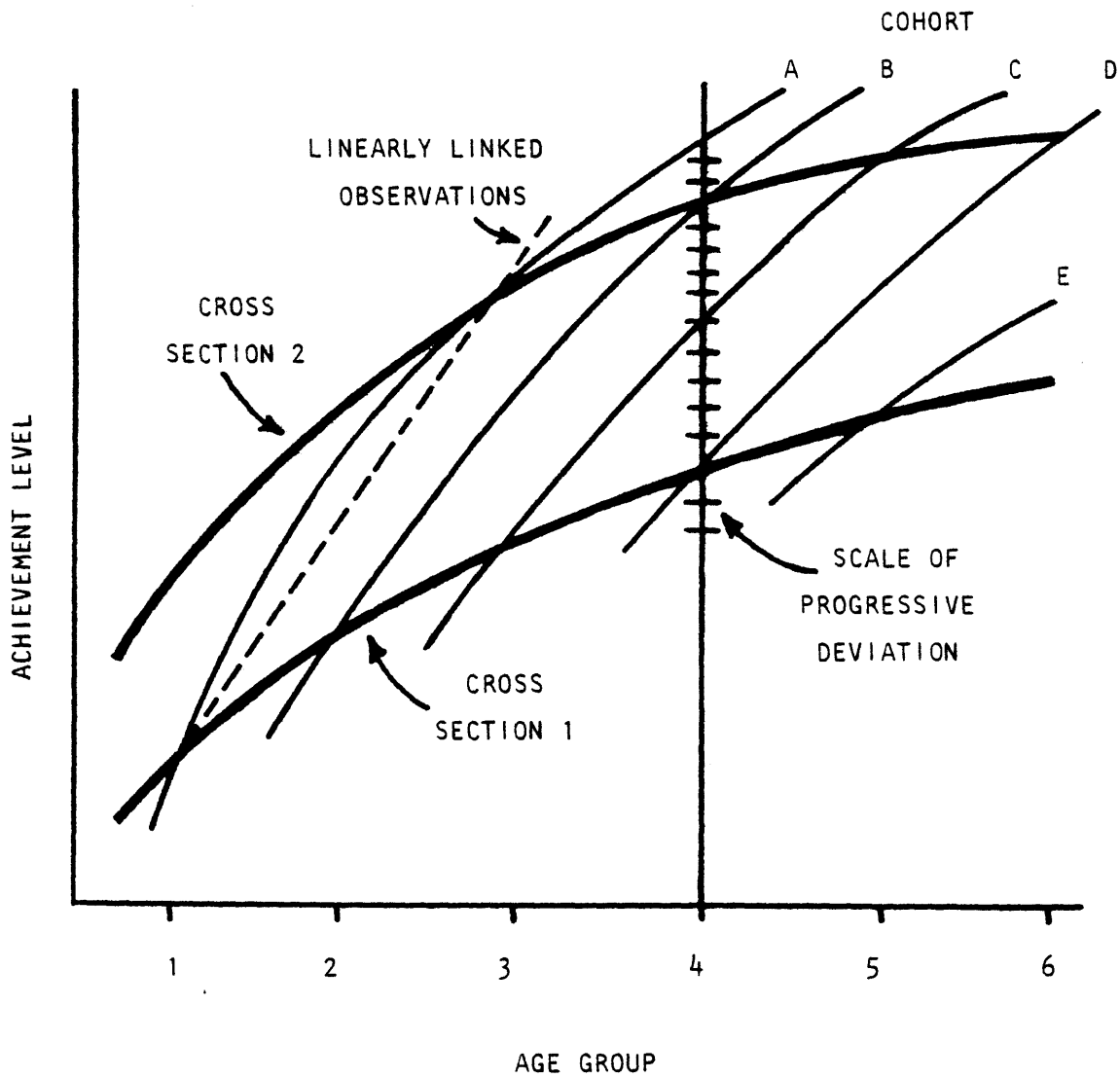
statuses between census years.

A more systematic approach to estimating the shape of cohort careers can be developed by applying the assumption of cohort continuity to changes between cohorts. This assumption leads to a principle of progressive deviation. This principle states that, although only one actual cohort must match the synthetic cohort at each age of the cross-section, the immediately preceding and following cohorts (adjacent cohorts) deviate only slightly from this value and successive cohorts deviate progressively more. For example, at age 40-44 only one cohort exhibits the headship rate depicted by the 1960 synthetic cohort (see Figure 5-1). The immediately older and younger cohorts deviate from the 1960 value, but not as much as the more remote cohorts aged 40-44 in 1950 and 1970.

The principle of progressive deviation is diagrammed more clearly in Figure 5-2. To begin with, there are two important pieces of information provided when a second age cross-section is added to a single cross-section. The first contribution is that the second cross-section gives us the second end point to each cohort's trajectory. Without further information these observations might be linked linearly, as by the dashed line in Figure 5-2. However, if we suspect that the career path is actually curvilinear, this is not satisfactory for reasons discussed earlier in the chapter.

The second contribution of the additional cross-section is that it defines a boundary for the progressive deviations at each age as successive cohorts cross through. That is, even though we know that the values for cohorts at a given age deviate progressively across successive cohorts, we do not know how wide a range of values this entails. Given the age

FIGURE 5-2: SCHEMATIC REPRESENTATION OF RELATIONSHIPS BETWEEN COHORTS AND CROSS-SECTIONS



values in the second cross-section, and knowing the interval of time between the two cross-sections, we can calculate the average inter-cohort deviation under the assumption of a constant rate of change across cohorts. This interpolation process is illustrated in Figure 5-2 for the fourth age group. The midpoint between the values for Cohorts B and D locates the estimated value for Cohort C, which is situated midway in time between Cohorts B and D. If these two cohorts are born 10 years apart, the age values for each successive intervening annual cohort can be interpolated by adding increments of one-tenth the deviation between the known values for Cohorts B and D to the value for Cohort D.

When the principle of progressive deviation is applied to entire, finely-disaggregated age cross-sections, it becomes possible to interpolate the intervening age locations of cohorts between the two end points of cohort trajectories. No longer need we connect the two end points by a straight line; instead, it is possible to estimate the age-time shape of the cohort trajectory by interpolating each individual age value. With this method we can estimate a matrix of age-specific behavior rates through which cohort trajectories can be traced. The specific procedure is described in the following section.

#### A Constructed Cohort Method

Earlier sections of this chapter have established that one of the most common methods for describing cohort experience over time is a synthetic cohort method based on cross-sectional data. The review of alternative methods concluded that the absence of frequently spaced observations in time required a synthetic formulation of cohort experience over

time. The only alternative is to make a straight line interpolation of cohort trajectories; but this method is not suitable for the reason that, because real cohort trajectories are curvilinear, it is misleading to represent them as linear. First, linear interpolation over a ten-year time span grossly violates our sense of curvilinear age patterns which is learned from studying age cross-sectional patterns. Second, when true careers are curvilinear it is impossible to make reasonable comparisons between cohorts if their careers are portrayed as linear interpolations over different time lengths. We must know the age-time shape of the career trajectory in order to compare career segments of uneven length.

The method proposed here improves on both these methods for representing cohort experience over time. In contrast to the cross-sectional synthetic cohort technique the proposed method estimates careers that are specific to real cohorts rather than specifying a career that is the summation of many cohorts' behavior at a single point in time. And in contrast to the linear interpolation technique, the proposed method tries to capture the shape of real cohort trajectories by making use of the information present in age cross-sectional patterns.

The new technique also relies on linear interpolation, but this interpolation is applied to age groups and not cohorts. In effect, new cross-sections are interpolated between two known age cross-sections. These intermediate cross-sections are assumed to exist because of the pervasive continuity factor in cohort behavior, and their location is defined on the basis of the principle of progressive deviation together with an assumption that there is a constant rate of change across cohorts between two times of observation. The background to the new technique is

described in the preceding sections. What follows is a description of the interpolation technique.

Three cross-sections were selected for the analysis reported in the next chapter. These cross-sections are behaviors classified by age that were observed in the April censuses of 1960 and 1970, and the fall 1975 Annual Housing Survey. These data bases are described in Appendix A. The fact that the 1975 survey was conducted in the fall, after the busy summertime housing season, creates a problem for purposes of comparison with the spring censuses. My assumption is that this fall survey records housing and family conditions that are closer to those in spring 1976 than they are to spring 1975. Therefore, part of the interpolation routine applied to this cross-section is to adjust the data by extrapolating across the fall 1975 cross-section to form a spring 1976 cross-section.

The proposed constructed cohort method proceeds in two stages. First, the intervening cross-sections are interpolated, and second, cohort careers are traced across successive cross-sections. Thus each cohort's synthetic career is defined as a weighted average of the two cross-sections, with different weights applying at each age. The 1975 cross-section receives a weight of 0 when interpolating values prior to 1970, and the 1960 cross-section receives a weight of 0 when interpolating values after 1970.

The interpolated cross-sections are estimated according to the following formula:

$$CS_t = w_t 1960 + m_t 1970 + n_t 1975$$

where

$CS_t$  = the estimated cross-section at each date

$w_t$  = the 1960 weight for each estimated cross-section

$m_t$  = the 1970 weight for each estimated cross-section

$n_t$  = the 1975 weight for each estimated cross-section.

The specific weights used for each interpolation are listed in Table 5-1.

Cross-sections are estimated only for alternate years because cohorts were defined for this analysis as two-year birth cohorts. In general, precisely defined cohorts are preferable to ten-year or five-year cohorts, and for this analysis it was determined that two-year cohorts represented a suitable compromise between the need for precision and limitations imposed by sample size in the 1975 survey (see Appendix A). Given the choice of two-year cohorts, age groups must also be defined as two-year categories, and cross-sections must be defined at two-year intervals so that the cohorts can be traced across successive age categories in successive cross-sections.

The second, and final, stage in the constructed cohort method is to assemble cohort histories from the successive cross-sections. First, the interpolated cross-sections of behavior at each age are layered together in a three-dimensional matrix of behavior by age by year.<sup>3</sup> The behavioral dimension of the matrix consists of any number of behavioral states attached to each age in each year. This dimension can be treated as a fixed characteristic of each age-year group, and so is not central to the remainder of the procedure.

The next step in assembling the cohort histories is to collect the string of age-year groups defined by the diagonals of an age by year table. This amounts to working only with the last two dimensions of the three-



Table 5-1: WEIGHTS APPLIED TO KNOWN 1960, 1970, and 1975  
CROSS-SECTIONS WHEN INTERPOLATING THE INTER-  
VENING CROSS-SECTIONS

Interpolated Cross-Sections	Known Cross-Sections		
	1960	1970	1975 <sup>a</sup>
1960	1.00	0	0
1962	0.80	0.20	0
1964	0.60	0.40	0
1966	0.40	0.60	0
1968	0.20	0.80	0
1970	0	1.00	0
1972	0	0.636364	0.36364
1974	0	0.27273	0.727273
1976 <sup>b</sup>	0	-0.09091	1.09091

SOURCE: Author's calculations.

a. As discussed in text, the 1975 cross-section is from a fall survey rather than from a spring survey as are the 1960 and 1970 cross-sections. Therefore, the interval between the 1970 and 1975 surveys is 5.5 years. The interpolation routine applies weights based on this time span.

b. The fall 1975 cross-section is extrapolated by 6 months to resemble a spring 1976 cross-section.

dimensional matrix defined above. In a rectangular table the diagonals are of different length. Some cohorts are relatively old when first surveyed and leave the age range before the final survey. Other cohorts are too young to be sampled by the first survey and appear only in later cross-sections. The main diagonal in the two-dimensional age by year table is formed by the youngest cohort to be surveyed in the first cross-section. With each successive cross-section this cohort moves to an older age group. By indexing on age and time, we can collect the string of behavior states applying to this or other cohorts as they grow older with each cross-section.

This procedure is illustrated with hypothetical data in Table 5-2. Given two age cross-sections of ownership rates, observed in 1960 and 1970, we can interpolate the intervening cross-sections by taking weighted averages of the 1960 and 1970 cross-sections. Using the weights given in Table 5-1 we would estimate ownership rates at each age in 1962, for example, as one-fifth the distance between the 1960 and 1970 values for the same age. Similarly, the 1966 values are estimated as three-fifths the distance between the 1960 and 1970 values for each age. Table 5-2 gives the values for each interpolated age cross-section between 1960 and 1970.

Once the interpolated ownership values are estimated, the completed age-time matrix of ownership rates can be used to assemble the constructed cohort careers. There are eleven cohorts represented in Table 5-2. These range from the cohort aged 40-41 in 1960 to the cohort aged 30-31 in 1970. Cohort careers are constructed by tracing along the diagonals of the age-time matrix. For example, the cohort aged 36-37 in 1960 has an ownership rate of 43 percent in 1960, 47.6 percent in 1962, and 51.6 percent in 1964,

Table 5-2: EXAMPLE OF THE CONSTRUCTED COHORT METHOD APPLIED TO HYPOTHETICAL OWNERSHIP RATES OBSERVED IN 1960 AND 1970 FOR AGES 30-31 THROUGH 40-41

Age Groups	Ownership Rates (in Percentages)					
	Observed in 1960	Interpolated Cross-Sections <sup>a</sup>				Observed in 1970
		1962	1964	1966	1968	
30-31	30	32	34	36	38	40
32-33	35	37	39	41	43	45
34-35	40	42	44	46	48	50
36-37	43	45.4	47.8	50.2	52.6	55
38-39	45	47.6	50.2	52.8	55.4	58
40-41	46	48.8	51.6	54.4	57.2	60

SOURCE: Author's calculations.

a. The interpolated cross-sections are estimated as the weighted average of the ownership rates for specific age groups in 1960 and 1970. (The weights are given in Table 5-1.) For example, the age values in 1962 are one-fifth the distance between the 1960 and 1970 values, the age values in 1964 are two-fifths the distance, etc.

b. Cohort careers are constructed by tracing along the diagonals of an age-time matrix of ownership rates. For example, the cohort aged 30-31 in 1960 has an ownership rate of 30 percent in 1960, a rate of 37 percent when it is aged 32-33 in 1962, a rate of 44 percent at age 34-35 in 1964, a rate of 50.2 percent at age 36-37 in 1966, a rate of 55.4 percent at age 38-39 in 1968, and a rate of 60 percent at age 40-41 in 1970.

after which it matures beyond the relevant age span. The 1960 value for this cohort is observed, while the 1962 and 1964 values are estimated as weighted averages of the 1960 and 1970 values (see above). Similar procedures are followed to construct the careers of each of the other cohorts.

How accurate is this interpolated synthetic cohort method? In the remaining section of this chapter the proposed new method is applied to a data set containing real data for single-year cohorts surveyed annually. The estimated cohort careers can be compared to the actual careers, and the relative accuracy of this method is assessed through comparison with other methods of representing cohort experience.

#### A Test of the Constructed Cohort Method

There are extremely few data sources that provide annual observations of single-year cohorts. Perhaps the only source that provides data pertaining to the entire United States population is the National Center for Health Statistics. This agency has published annual data on the fertility behavior of American women (National Center for Health Statistics, 1976). The data can be formatted in both cross-sectional and cohort form. By applying the interpolated synthetic cohort method to the cross-sectional data we can estimate cohort fertility careers and then compare these estimates to the actual cohort data.

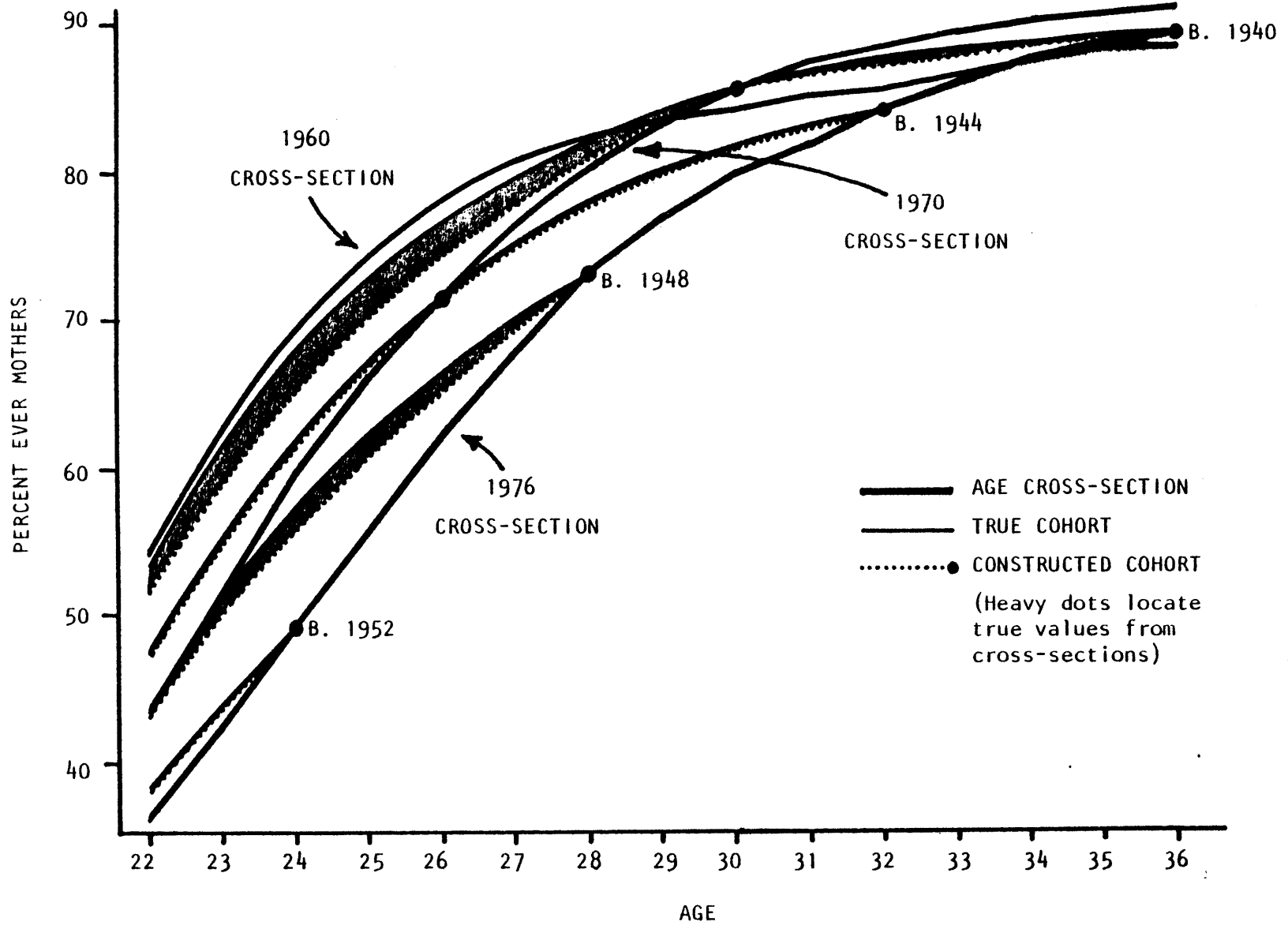
Following the reasoning of Masnick et al. (1978), the fertility data are categorized into a dichotomous variable reflecting a key life course status--the attainment of motherhood. For cohorts this amounts to measuring the transition to motherhood. The task here is to estimate the trajectory by which each cohort passes from no children ever born to

increasing fractions with one or more children ever born. For this analysis we will make use of 1960, 1970, and 1976 cross-sections. The interpolation procedure is the same as described in the preceding section, with the single exception that the six-year time span between 1970 and 1976 requires appropriately different weights.<sup>4</sup>

A comparison test was conducted for every fourth single-year cohort born between 1936 and 1952. These cohorts experienced young adulthood between 1960 and 1976, and so their true behavior can be compared with their estimated behavior over the 20-36 age span. Figure 5-3 portrays four of these cohorts over the 22-36 age span. (The 1936 cohort is omitted to make the figure more legible.) This figure superimposes three different cohort representations: a) the 1960, 1970, and 1976 cross-sectional synthetic cohorts; b) the constructed cohorts; and, c) the true cohort data.

Some initial observations need to be made about the cross-sectional synthetic cohorts. At young ages they are layered chronologically, with the 1970 cross-section evidencing higher motherhood than the 1976 cross-section and with the 1960 cross-section showing still higher incidence of motherhood. At older ages, however, the cross-sectional cohorts cross one another. This happens because the cohorts in higher ages in 1960 had achieved relatively low motherhood, while higher fractions of older women in 1970 and 1976 had borne children. This might seem anomalous given that 1960 was near the height of the baby boom, but the explanation is simply that older women in 1960 had entered the prime childbearing years before the baby boom commenced. The relatively low motherhood at older ages in 1960, thus, can be explained as a relic of an earlier historical era.

FIGURE 5-3: GRAPHICAL COMPARISON OF COHORT METHODS



Conversely, the relatively high attainment of motherhood by older ages in 1970 or 1976 can be explained as the passage of baby boom mothers from young ages in 1960 to older ages later on. As the result of the shifting alignment of cohorts with different motherhood histories, each of the cross-sections has a somewhat different shape.

The constructed cohort method seeks to adjust for these differences between cross-sections, and the shape of the estimated curves much more closely resembles that of the true cohort motherhood trajectories. Nevertheless, the estimated curves do not replicate the true curves in every case. Because the test cohorts are spaced four years apart, the true cohort curves appear on the graph paired with their respective estimated curves. The gap between the estimated and true curves has been shaded to highlight the deviations that occur. The 1944 and 1952 estimated curves closely resemble the true curves for these cohorts. The 1948 curve is also a fairly close approximation of the true data, but the 1940 cohort estimate deviates more substantially.

Part of the explanation for this differential success is that the estimate is closest in those cases where true values from the cross-sections are strategically positioned in the curve (e.g. 1944 or 1952). Because the curvature of the trajectories is so great in the 20-29 age span, the availability of known values in the mid-twenties greatly improves the constructed estimates. Congruent with the principle of progressive deviation, the estimates within each curve are more accurate closer to the ages where true values exist.

A second explanation, however, for the differential success concerns the appropriateness of the constant change assumption for interpolating

intervening age cross-sections. In particular, the interpolations over the long 1960-1970 time span are especially vulnerable to fluctuations in the rate of change across cohorts. It is possible, for example, that a disproportionate amount of the change over the 1960s occurred in the latter part of the decade. In this event, the interpolations of the early 1960s would deviate substantially from the actual data, and the interpolations would be substantially more accurate in the later part of the decade as actual behavior caught up to the pattern assumed under a constant rate of change.

In order to fully evaluate the proposed constructed cohort method it is necessary to compare its estimates with those of other methods. The two competing methods that have been identified are the cross-sectional synthetic cohort method and the linked linear cohort method. The latter approach also involves interpolation, but rather than interpolating intervening cross-sections in order to estimate cohort curves, this approach directly interpolates a straight line between known values at different ages for the same cohort. Applied to the test data this approach involves direct interpolation between 1960 and 1970 values and between 1970 and 1976 values. From what has been learned already, such a linear approach would substantially underestimate a cohort's status midway between two observation points.

A quantitative analysis has been conducted to help evaluate the relative accuracy of the different methods. This analysis measures the deviation of alternative estimates from the true cohort career. Table 5-3 summarizes the results of this analysis for each of the five cohorts selected for the test. The deviations summarized in the analysis are



expressed as percentages of the total maximum person years of motherhood that a cohort could experience over a time span. For example, in ten years of life (e.g. ages 25 through 34) a cohort of 1000 women has 10,000 person years of experience. If 100 percent of the cohort had achieved motherhood by age 25, then all 10,000 person years (or 100 percent of the cohort's lifetime) would be experienced in the ever-mother status. In reality the fraction who are mothers starts off low and grows over time. In Table 5-3 the deviation of the estimated from the true motherhood experience is expressed as a percentage of the total person years lived over the given age span. This amounts to a statement of the percentage of a cohort's lifetime that has been misallocated by each cohort estimation procedure.

The estimates presented in Table 5-3 give clear support to the constructed cohort method. As suggested by inspection of Figure 5-3, the estimate for the 1940 cohort is least accurate, and this mis-estimate equals 1.18 percent of the cohort's total person years (time) over the 20-36 age span. The linear cohort method produces a much worse estimate for this cohort; the misallocation of time equals 5.42 percent. Three synthetic cohorts were tested, one for each of the cross-sections. The 1960 synthetic cohort performed slightly better than the constructed cohort (a misallocation of 1.12 percent), but the 1970 synthetic cohort (4.10) and 1976 synthetic cohort (9.27) performed much worse. In fact, despite the 1960 synthetic cohort's superior estimate of the 1940 cohort's motherhood experience, in all other cases the constructed estimate is more accurate. With the exception of the 1960 synthetic cohort estimate of the 1936 cohort, which is only somewhat less accurate than the constructed cohort estimate (1.93

Table 5-3: COMPARISON OF THE ACCURACY OF THREE COHORT CONSTRUCTION METHODS (Deviations of Estimates from True Values Expressed as a Percentage of Total Person Years)<sup>a</sup>

Cohort		Method				Linked Linear
		Constructed	Cross-Sectional			
			1960	1970	1976	
1936	Under-estimate	-1.14	-1.93	-3.06	-8.99	-3.26
	Over-estimate	0	0	0.03	0	0
	Total					
	Mis-estimate	1.14	1.93	3.09	8.99	3.26
1940	Under-estimate	-1.18	-0.71	-3.74	-9.27	-5.42
	Over-estimate	0	0.41	0.36	0	0
	Total					
	Mis-estimate	1.18	1.12	4.10	9.27	5.42
1944	Under-estimate	-0.25	0	-1.60	-7.14	-1.33 <sup>b</sup>
	Over-estimate	0.04	4.66	1.43	0	0
	Total					
	Mis-estimate	0.29	4.66	3.03	7.14	1.33 <sup>b</sup>
1948	Under-estimate	-0.67	0	-0.12	-4.98	-2.22 <sup>c</sup>
	Over-estimate	0.15	10.39	2.78	0	0
	Total					
	Mis-estimate	0.82	10.39	2.90	4.98	2.22 <sup>c</sup>
1952	Under-estimate	-0.21	0	0	-1.70	NA
	Over-estimate	0.03	14.40	4.87	0	NA
	Total					
	Mis-estimate	0.24	14.40	4.87	1.70	NA

SOURCE: Calculations based on data reported by the National Center for Health Statistics (1976).

a. May be interpreted as the percentage of a cohort's time that is misallocated by the estimate procedure.

b. Observations available for this method include only 1970-1976 (ages 26-32).

c. Observations available for this method include only 1970-1976 (ages 22-28).

NA No observations available for this method.

vs. 1.14 percent), no other cross-sectional synthetic cohort estimate is less than 2.7 times as inaccurate as the constructed cohort estimate.

In addition to the estimate of total deviation, Table 5-3 reports how much the constructed cohort under-estimates and over-estimates the true cohort. The linear cohort method produces estimates that fall beneath the true cohort curve at every age. The entire mis-estimate of the linear cohort method is an under-estimate of each true cohort. The bulk of the constructed cohort method's mis-estimates are also under-estimates; only a small amount of over-estimation occurs in three cohorts. In contrast, the cross-sectional synthetic cohort method produces both under-estimates and over-estimates. Most important, for three cohorts (1940, 1944 and 1948) the best fitting synthetic estimate of the true cohort is composed of both under-estimates and over-estimates for the same cohort. These deviations are not distributed randomly between under- and over-estimates; instead, there is a systematic bias in the pattern. Under-estimates are recorded at young ages and over-estimates are observed at older ages. This bias has the effect of tilting the slope of the trajectory upward, with the fulcrum point and the shift from under- to over-estimate located at the age where the cohort intersects the age cross-section that forms the synthetic cohort. (See, for example, the 1944 cohort and 1970 cross-section in Figure 5-3.)

In summary, the constructed cohort method provides a reasonably accurate estimate of true cohort behavior. In general, the constructed cohort estimates are much more accurate than any provided by the other methods. In addition, the constructed method provides a more faithful representation of the age-time shape of the cohort trajectory than do the other methods.

The linear method assumes a linear cohort trajectory, while the cross-sectional synthetic cohort method exaggerates the slope of the trajectory. For these reasons, the constructed cohort method is clearly preferable.

The constructed cohort method could be made still more accurate by modifying the assumption that a constant rate of change occurs across cohorts between two observation points. Sufficient data exist to make this adjustment for the estimation of fertility behavior, but adequate data do not exist for other behaviors that are to be investigated in the following chapter. Therefore, the necessary assumption is that each behavior is characterized by a constant rate of change across cohorts over the time interval.

#### CONCLUSION

In this chapter we have evaluated the alternative methods by which cohort careers may be described. The nature of the available data necessitates reliance on a form of synthetic cohort analysis. The Sweet life table method of analyzing cohort participation in different life course behavior combinations provides the most useful method for descriptive analysis. The most serious drawback to this approach, however, is that Sweet has relied on cross-sectional synthetic cohorts. The second purpose of this chapter has been to propose an improved synthetic cohort method that utilizes multiple cross-sections to interpolate cohort careers. This constructed cohort method generates more accurate estimates of true cohort behavior than do other methods, although these estimates are still imperfect. Nevertheless, the estimates of cohort careers are sufficiently accurate to permit analysis of differences between cohorts over time. The major

weakness of the proposed method is that change is assumed to proceed at a constant rate between observations. When change is increasing or decreasing during the time between observations, this creates a bias that reduces the differences estimated to exist between cohorts. Recognizing the conservative bias of the proposed method, let us turn now to analysis of cohort changes during the 1960-1970 period.

## NOTES TO CHAPTER 5

1. Chapter 7 presents a causal analysis of cohort differences at a single point in time. While this analysis still maintains the assumption that cohort differences include period effects, the conclusion to the chapter discusses the likely sources of differences that are observed.

2. The Annual Housing Survey, conducted by the Bureau of the Census for the Department of Housing and Urban Development, surveys housing and family characteristics annually. This important data source was initiated by a 1973 survey of 60,000 dwelling units, and subsequent surveys have questioned between 70 and 80,000 households (Goering, 1979). Unfortunately, no survey of comparable scope or quality was conducted between 1960 and 1970, so the wealth of data in the 1970s stands in marked contrast to housing data for prior periods.

3. The APL programming language (cf. Gilman and Rose, 1976) was employed for both the interpolation and cohort construction programming operations. APL is especially designed for matrix operations and contains facilities that permit restructuring of matrices in ways ideally suited to the constructed cohort method.

4. The weights required for interpolation between 1970 and 1976 are as follows:

Interpolated Cross-Sections	1970 Cross-Section	1976 Cross-Section
1970	1.00	0
1972	.6666667	.3333333
1974	.3333333	.6666667
1976	0	1.00

## Chapter 6

## CHANGING COHORT FAMILY AND HOUSING CAREERS

The preceding chapter has laid the methodological groundwork for estimating cohort family and housing careers. In the present chapter the constructed cohort method is applied to 1960, 1970 and 1975 cross-sectional data. As discussed in the preceding chapter, the fall 1975 data are transformed to a spring 1976 population estimate, and the intervening cross-sections are interpolated between 1960 and 1970, and between 1970 and 1976. This method introduces a conservative bias into the measurement of changes over time because of the assumption that change occurs at a constant rate between the known cross-sections. Nevertheless, the constructed cohort method has been shown to be superior in estimation accuracy to the alternative methods. The changes described in this chapter can be viewed as reasonable, but understated, estimates of true behavioral changes.

Three main research questions will be investigated in this chapter. The review of cohort-life course theory in Chapter 4 established the importance of the age-time shape of cohort transitions between statuses. The first research objective is to estimate the transition trajectories of different cohorts for several, separate life course dimensions. The age-time shapes of cohorts' transitions will be compared by calculating the ratios of status proportions between two ages. The second objective is to estimate and compare cohorts' cumulative person years of experience in different statuses. The major dimension of interest is the aggregate lifetime consumption of housing, measured both at the level of household

formations and at the level of single-family owner occupancy. The third research question to be addressed concerns the overlap between years of housing consumption and participation in different family statuses. We will begin by exploring the overlap in time of the two levels of housing consumption and individual family statuses. After this initial analysis, the lifetime differences in housing consumption between cohorts will be decomposed into components of change due to differences in family behavior and due to changes in the consumption rates of specific family types at each age. This analysis will provide summary estimates of the impact of changing family formation patterns on cohorts' housing consumption careers.

#### CAREER DIMENSIONS OF THE LIFE COURSE

Six life course dimensions have been selected for analysis. These variables are age, marital status, parental status, family income, labor force participation, and housing consumption. These dimensions were selected on the basis of their prominence in the life course literature, subject to constraints imposed by the data base. Although living arrangements are a frequent consideration in life course studies, housing consumption is not. The following analysis represents one of the first efforts to study changes in housing consumption within a life course framework. The definition and significance of each of the six life course dimensions is discussed in turn.

##### Definition of Life Course Variables

Age plays a central role in the structure of life course analysis. As discussed in Chapter 4, age forms the core life course dimension around which the other dimensions are related. Age defines stages in life



and it provides a metric for measuring the timing and cumulative years experienced in other statuses. For the purposes of my analysis age has been grouped in two-year categories from 18-19 through 38-39. Grouping was necessary in order to reduce sampling error of rare statuses in the 1975 survey. (See Appendix A.)

The 18-39 age range was defined for analysis because it encompasses the bulk of the lifetime years when families are formed and housing improvements are achieved. Starting the analysis as early as age 18 is difficult because of the great turmoil in residential location and social roles that occurs at these ages. Survey estimates and census counts of these individuals are relatively unreliable because so many live outside of households, move too frequently to be located by researchers, or give incorrect reports of their current residential status. The analysis presented in Appendix A (describing the data base) suggests that the age groups above age 21 are relatively free of these problems. The age range was terminated at 39 because beyond this age a significant number of mothers have children who have already left home. Because of reliance on a children-present variable (described below), inclusion of women older than age 39 would confuse empty nesters with women who never had children at home. In addition, the analysis of housing preferences in Chapter 3 indicated that the strong aspiration for homeownership began to weaken in the 40-44 age range. Furthermore, the U.S. Bureau of the Census has long published age break-downs for household heads (primarily male) that separate 35-44 year-olds from those aged 45 and older. The under 45/over 44 split has also been long recognized in family life cycle analysis. Given that these ages usually are applied to males and that

females typically arrive at the same life stage two or three years earlier, it seems reasonable to limit analysis of young adult development among females to those under 40.

Marital status is one of the most common life course variables. In their marital careers individuals pass from being never-married to being married and, less often, to being previously-married. The latter state is defined here as including women who are divorced, widowed, or living with their spouse absent. The transition from never-married to ever-married is a permanent life change, but women may pass back and forth between being married and previously married. This reversible status poses some difficulties for studying marital histories with aggregate data, but they are not great.

Parental status is another very common life course variable. The presence or absence of children has major implications for life styles and social roles, and it increases the size of the family unit that seeks housing. Childbearing may be conceptualized largely as a permanent life change. Women who have ever borne a child are destined to be mothers for a large subsequent portion of their lives. The 1975 data base does not include a variable for children ever born. Instead, we make use of a set of variables recording the presence of "own" children.

For this analysis, parental status has been categorized in a unique way. Women without any children present are classified as childless, and women with one or more children present are classified according to the age of their oldest child. Two categories are established for women with children--those whose oldest child is under age six and those whose oldest child is six or older. The family life cycle approach also

categorizes parents by age of child, but the most common categorization specifies the age of the youngest child. This categorization appears in the life cycle typology proposed by Lansing and Kish (1957), apparently because they were trying to measure a childbearing stage equivalent to the interval between Glick's (1947) age at first birth and age at last birth. (They offer no explanation for their typology.) Lansing and Kish adapted Glick's earlier family life cycle approach to different data sources and for different purposes. Because the Lansing and Kish typology has been so widely imitated, the common reliance on age of youngest child is largely a relic of Glick's original formulation.

What is most important for housing consumption, in fact, is the age of the oldest child. For example, Long (1972) and Speare (1970) suggest that families with children age six or older are likely to make location decisions based on school considerations. This widely stated observation is frequently coupled with another belief that young couples traditionally have stayed in apartments while their children were very young and that they tended to move to homeownership as their children reached school age (cf. Abu-Lughod and Foley, 1960). This belief can be tested with data on the housing consumption of families with children, classified by age of the oldest child. An additional advantage of specifying the age of the oldest child is that it reflects the duration of a woman's motherhood experience. Women of the same age can be "young" mothers or "older" mothers, depending on how long they have been mothers. Thus the age of the oldest child provides additional information about life course timing. This information is obscured by emphasis on age of youngest child, and for this additional reason the proposed categorization scheme is preferred.

The analysis in the next chapter focuses heavily upon this variable for the information it contains about family timing.

Income is less often cited as a life course variable, partly because it cannot be measured as a well-defined set of statuses, but its importance is such for housing consumption that it cannot be ignored. There is a wide range of possible treatments for this continuous variable, but in order to better integrate it into the analysis of the other discrete variables it must be categorized in some fashion. Nevertheless there are some nettlesome issues regarding the income life course dimension. Among these are the fact that income is a transitory characteristic that can change from year to year, that family income can be earned by various numbers of household members, and that cohorts have acquired income in a period of both inflation and real income growth.

As regards the first issue, we must treat cohort income growth as a net change over time. We can expect income status to be relatively stable for established married couples, but income status is extremely volatile for newly-married or for previously-married persons. In fact, the nature of the 1975 income data restricts analysis of income to married couples (see Appendix A). The multiple earner problem can be addressed for married couples by adding a separate variable for labor force participation by the wife, although this does not reveal the exact contributions of each spouse. The inflation effect can be removed from the data by deflating the current dollars with scalars based on the consumer price index,<sup>1</sup> but real income growth is retained in the data. One way of removing the latter effect is to create relative income categories such as quartiles of the current income distribution. While this has some

additional advantages such as permitting relative income comparisons, the method also has the drawback of disguising the actual dollar values of the different income categories. It was decided instead to treat income in categories of constant (1969) dollars: under \$5000, \$5000-9999, \$10,000-14,999, and \$15,000 and greater. This categorization divides the sample in 1970 reasonably equally<sup>2</sup> and it has the additional advantage of specifying income in equal \$5000 increments. This will enable comparison of the changing income effect over time. Analysis of these income effects will be reserved for the next chapter.

Labor force participation is widely recognized as another important life course variable. It has been used as one dimension of the entry into adulthood (Modell et al., 1976; Winsborough, 1979), and it has been shown to be interrelated (for women) with childbearing. A labor force participation (LFP) variable is constructed from data on female earnings. It was decided somewhat arbitrarily to measure LFP according to whether or not the woman earned at least \$1000 (1969 dollars) in the tax year preceding each survey. Examination of the income distribution in \$100 increments revealed that there was no tapering of the distribution from 0 to higher values. There was no empirical means by which to determine an income value that reflected sustained employment, and so \$1000 was selected as the cut-off point. Limitations of the 1975 data base preclude using this income-based variable for all but the married couples. Therefore LFP will be analyzed in detail only for wives in the next chapter.

Two levels of housing consumption have been selected for analysis, each of which is a discrete status. The most basic level of consumption is household headship, whether or not a woman is the head or co-head (if

married) of an independent household. The Joint Center data base has been constructed with a female-dominant structure. This means that all housing and household characteristics are organized in reference to the woman (if any) in the family unit. This permits assignment of household headship to wives instead of husbands as is the normal census practice.

The second level of housing consumption is owner-occupancy of a single-family home. Chapter 3 established that this housetype is the overwhelming preference of young adults, and it is included here as the indicator of desired housing by which lifetime progress can be measured. The complete housing variable in the analysis is a trichotomy: non-head, single-family owner, and all other heads of households.

#### Cohort Trajectories of Single Life Course Dimensions

The cumulative change or net increase over time of each life course dimension can be conceptualized as a developmental trajectory representing the aggregate experience of cohort members. Figures 6-1 through 6-5 portray these development trends for each cohort, based on data reported in Appendix B. The five figures depict the transition trajectories of single life course dimensions, one for each life course dimension other than age. Age is incorporated in each figure as the time dimension.

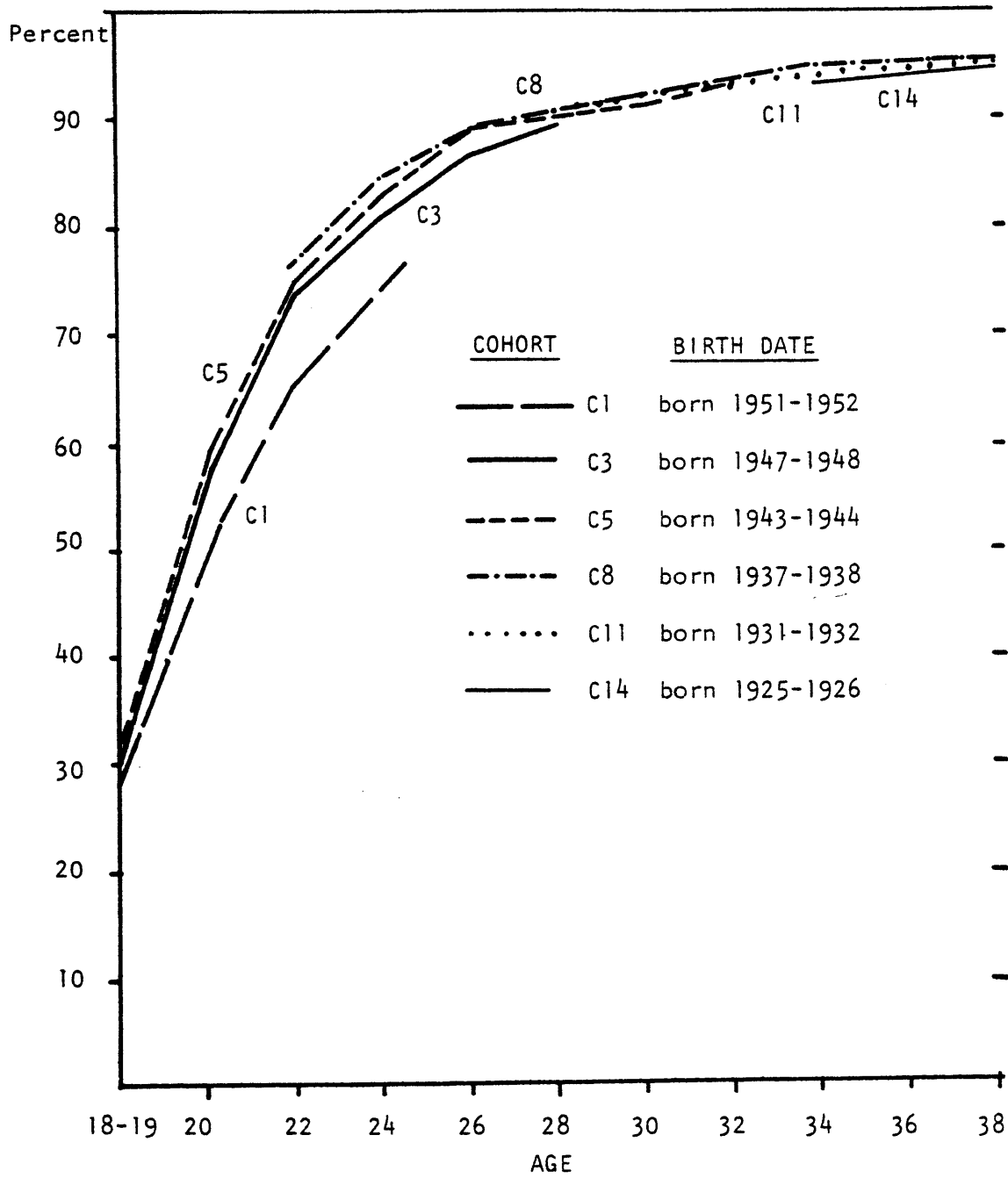
Figure 6-1 shows the cumulative percentage of each cohort that has ever been married. These trajectories rise very steeply up to age 22 and begin to approach an asymptote of about 95 percent in the late thirties. The trajectories are not complete for any cohort, because the 17 year study period from 1960-1976 is shorter than the 18-39 age span that is portrayed. Earlier cohorts are observed only at older ages before they move out of the age span, while later cohorts are observed only at young

ages after they enter the age span. Nevertheless, the cohorts can be compared by studying the portions of the age span that they share in common. In the marriage graph the principal difference to observe is that in the under-30 age range the youngest cohorts (C3 and C1), born in the early part of the baby boom, are entering marriage more slowly than their predecessors.

The second life course dimension, the percentage of women with children present, is portrayed in Figure 6-2. This graph indicates much more substantial changes across cohorts. In general, entry into motherhood does not proceed as rapidly as does entry into marriage, and it levels off at a lower peak value. Two directions of change across cohorts are observable in this graph. At the older ages the more recent cohorts arrive at a higher level of motherhood than the earlier cohorts (observe the change from C14 to C11 to C8). This is explained by the fact that the C8 cohort (born 1937-38) entered adulthood at the height of the baby boom and experienced nearly the greatest completed fertility of any cohort born in the twentieth century.<sup>3</sup> The older cohorts entered adulthood earlier, and although they also contributed to the baby boom, their fertility was not as great. Conversely, cohorts following after C8 have entered motherhood at progressively lower rates. In particular, the early children born in the baby boom period, cohorts C3 and C1 (born 1947-48 and 1951-52), appear to have slowed their entry into motherhood more than they have slowed their entry into marriage. This implies that there must be more childless couples in these later cohorts.

Figure 6-3 portrays the growth of family income for cohorts during the 1960-1970 period. Over this restricted time span, necessitated by

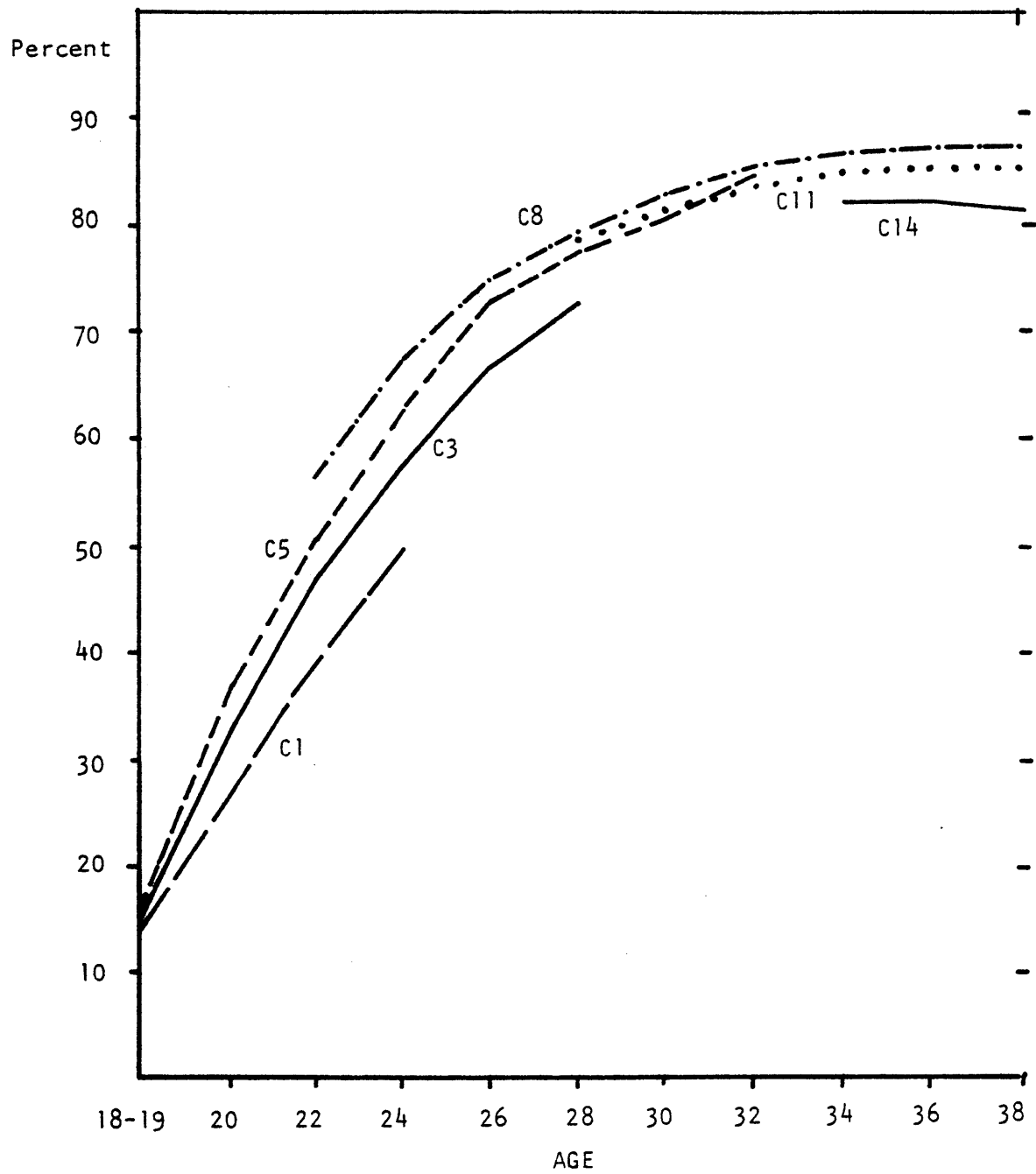
FIGURE 6-1: COHORT MARITAL TRAJECTORIES (PERCENT EVER-MARRIED AT EACH AGE)



SOURCE: Appendix B

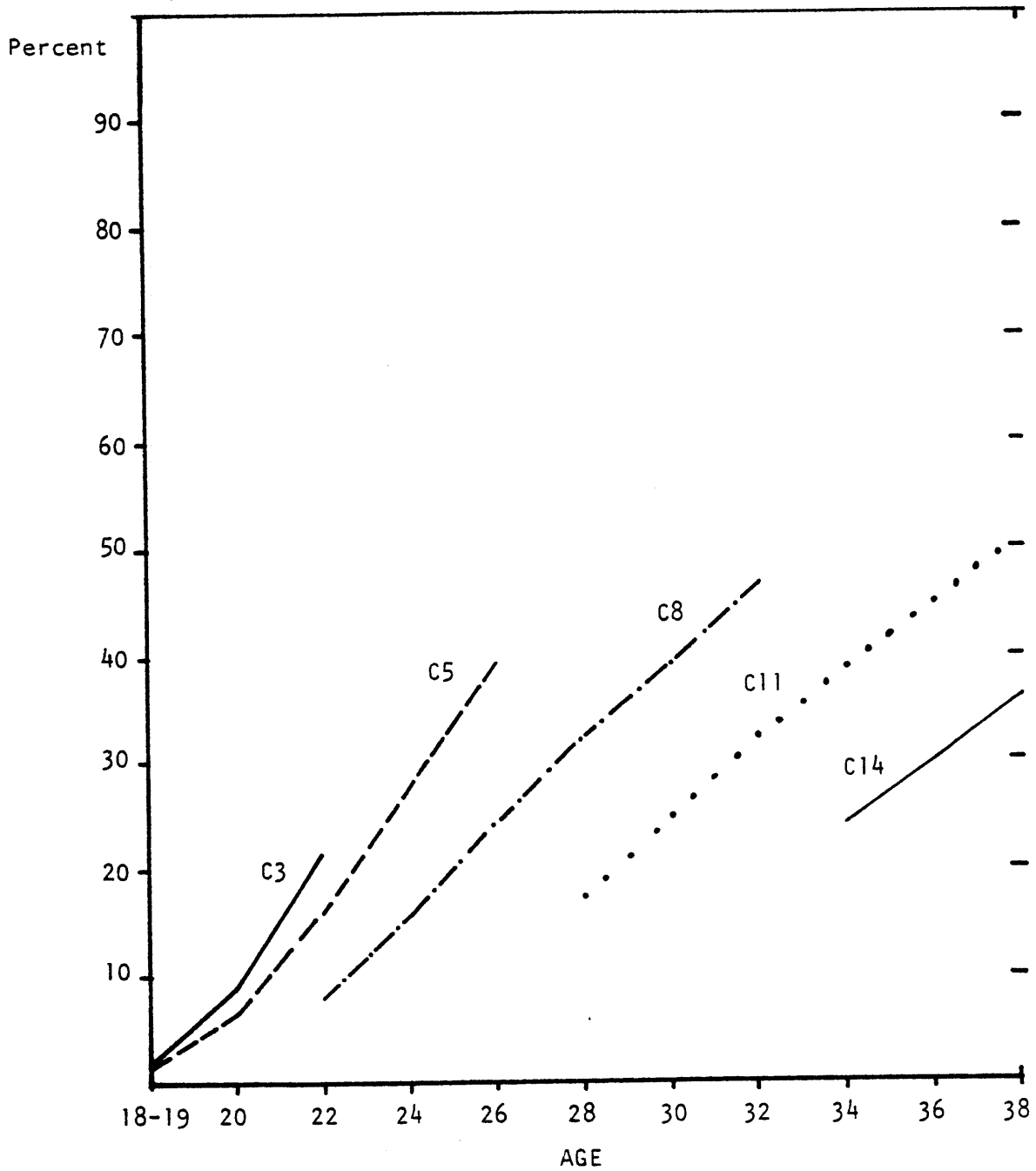


FIGURE 6-2: COHORT PARENTHOOD TRAJECTORIES (PERCENT AT EACH AGE LIVING WITH OWN CHILDREN)



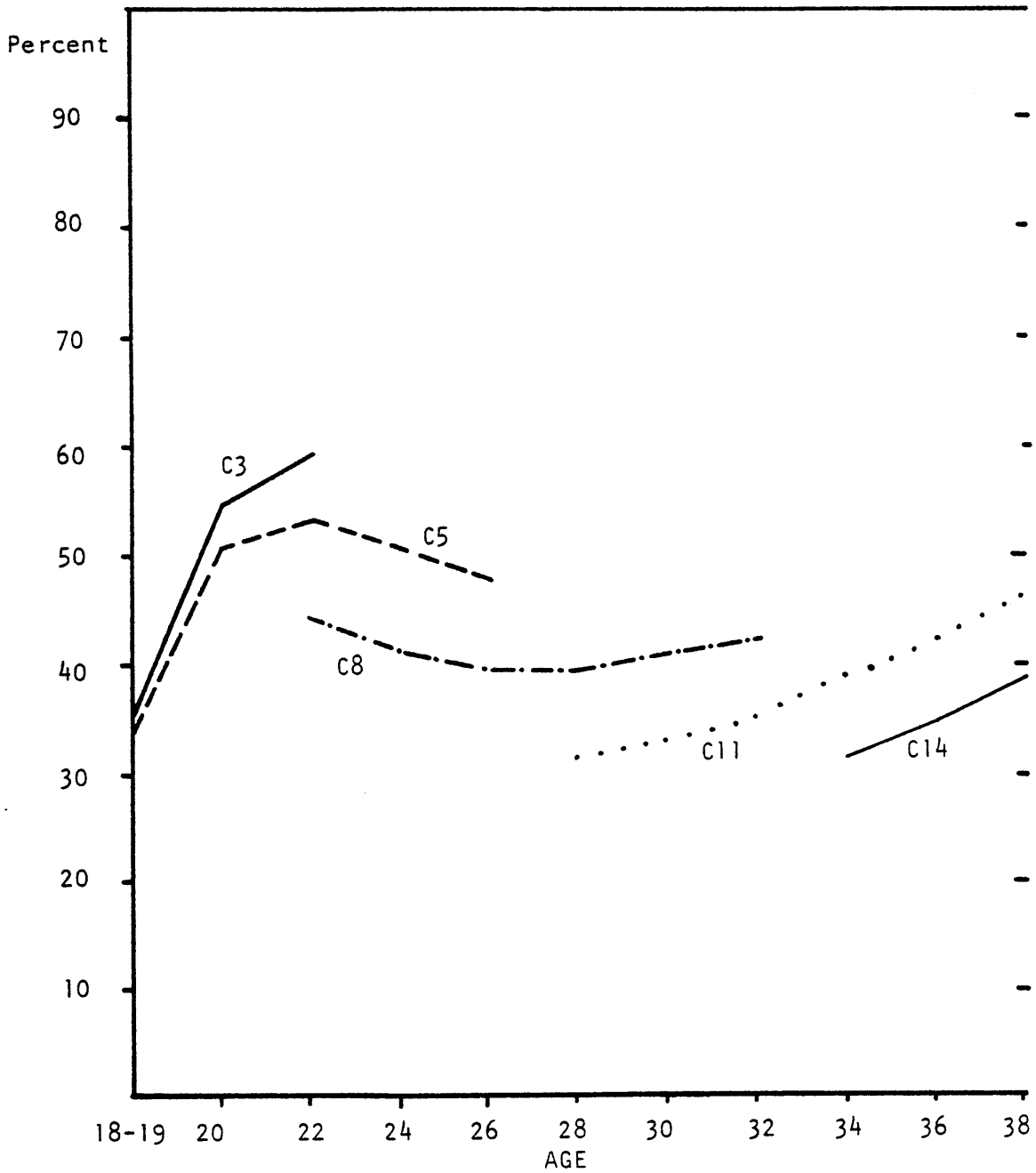
SOURCE and KEY: See Figure 6-1

FIGURE 6-3: COHORT INCOME TRAJECTORIES (PERCENT AT EACH AGE WITH A FAMILY INCOME OF AT LEAST \$10,000 IN 1969 DOLLARS)



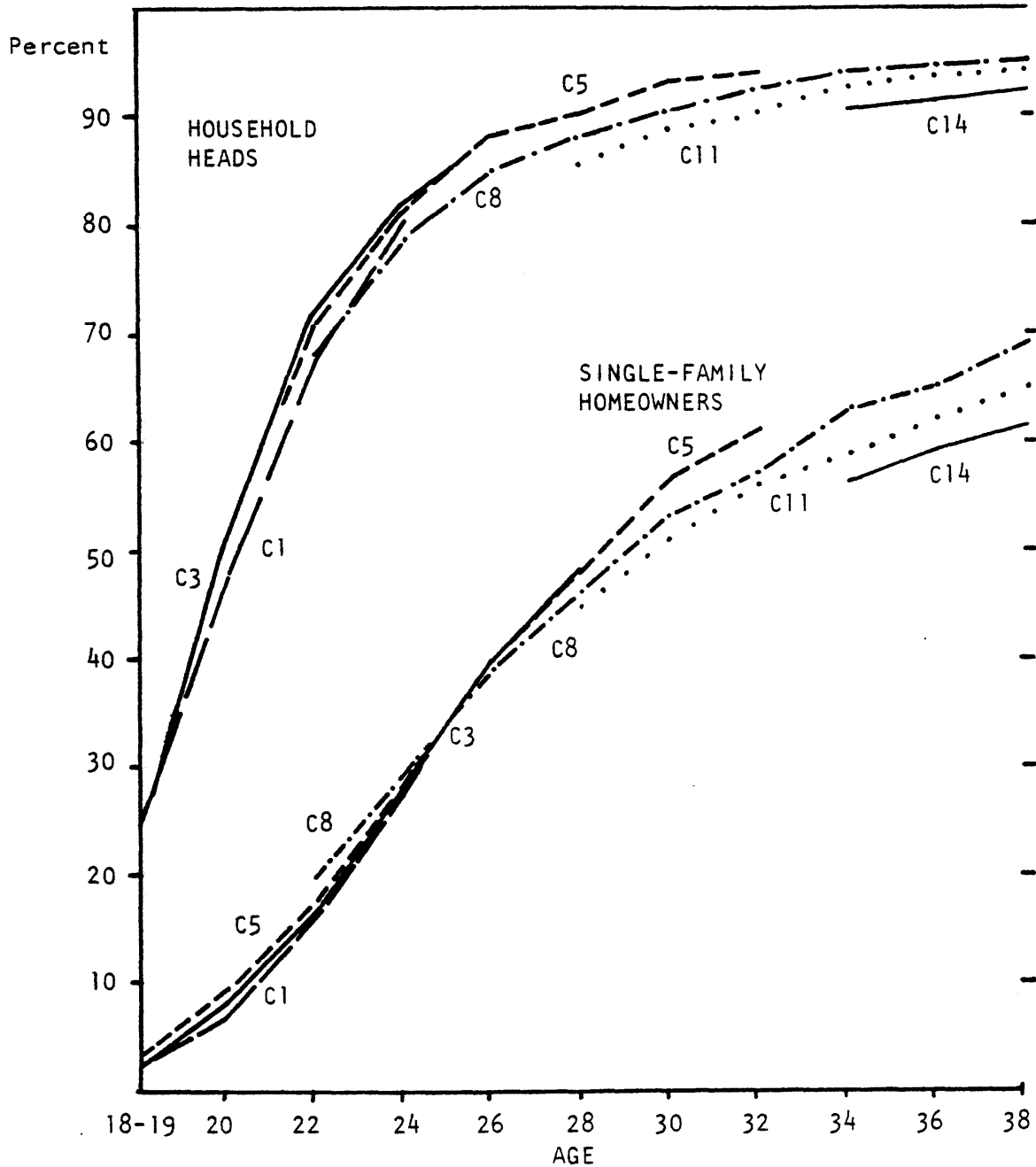
SOURCE and KEY: See Figure 6-1.

FIGURE 6-4: COHORT EMPLOYMENT TRAJECTORIES (PERCENT OF WOMEN AT EACH AGE WITH EARNINGS OF AT LEAST \$1,000 IN 1969 DOLLARS)



SOURCE and Key: See Figure 6.1.

FIGURE 6-5: COHORT HOUSEHOLD HEADSHIP AND SINGLE-FAMILY HOMEOWNERSHIP TRAJECTORIES (PERCENT AT EACH AGE WHO ARE HEADS OF HOUSEHOLD AND PERCENT WHO ARE SINGLE-FAMILY HOMEOWNERS)



SOURCE and KEY: See Figure 6-1.

limitations of the 1975 data base, it is clear that all cohorts have experienced strong movement toward higher income (\$10,000 or greater in 1969 dollars). What is noteworthy about these trajectories is how the elevation of real incomes over time has caused more recent cohorts to arrive at higher incomes earlier in their lives. Multiple earners in the family unit could also contribute to this change, and this will be investigated in detail for married couples in the next chapter. However, the pattern depicted in Figure 6-3 closely resembles that described by Ruggles and Ruggles (1977) for personal earnings of cohort members.

The trajectories of labor force participation (Figure 6-4) are restricted to the 1960-1970 period for the same reason. Nevertheless, the pattern portrayed by the cumulative net change of labor force participation is very interesting. We see some evidence of the M-shaped lifetime participation pattern (with a dip in the childbearing age) insofar as there is a decline from age 22-23 to 28-29, followed by a rise thereafter. But this dip does not seem as sharp as that portrayed cross-sectionally by Kreps and Clark (1975) in Figure 4-5. Moreover, since these are cohort trajectories we would expect to see no dip at all, if we believe Kreps and Clark. In fact, the difference in this graph is that age has been categorized in two-year intervals instead of five or ten-year intervals. The changes between ages are much smoother as a consequence. In this figure the 20-24 range is still characterized by high labor force participation, and the 25-29 range is still characterized by a dip in participation, but the changes with age are more gradual due to the greater number of observation periods.

The housing consumption trajectories are portrayed in Figure 6-5.

Two separate sets of trajectories are presented, one for household headship and one for single-family homeownership (a subset of household headship). The household headship trajectory shows a very steep rise at young ages before leveling off above 90 percent after age 30. The cohorts are bunched together, and the overall shape of the trajectory closely resembles that for entry into marriage. This is not surprising given the close association between marriage and household formation at young ages (Carliner, 1975). What has changed for the most recent cohorts is that entry into household headship has not declined as much as has entry into marriage. This implies that increasing numbers of adults are living in independent households while still single (cf. Kobrin, 1976).

Entry into single-family homeownership occurs later than any of the other life course dimensions examined here. The general pattern indicates rapid increases in ownership for cohorts between ages 22 and 30, but ownership continues to increase through ages 38-39. At this age the level of single-family ownership reaches 61.6 percent for C14, the oldest cohort in the study (born 1925-26). Following cohorts have reached even higher ownership levels--65.0 percent for C11 and 68.9 percent for C8. (These figures are taken from Appendix B.) As can be seen in the housing consumption graph, the next cohort (C5) is following a trajectory that probably will carry it to still higher ownership levels.

At the younger ages an opposite change is occurring across the cohorts. The most recent cohorts have fallen below the ownership level experienced by the C8 cohort. Yet around age 26 the trajectories of the recent cohorts catch up to, and then surpass, the level of ownership experienced by the C8 cohort. This represents a pattern of delayed entry into single-family

ownership in the early twenties, followed by accelerated ownership achievement in the middle and late twenties. Although the initial delay might be caused by rising costs of acquiring homeownership during the 1970s, this explanation is inconsistent with the accelerated acquisition of ownership as the cohorts grow past age 25. What is more likely is that the initial delay in ownership is related to the simultaneous delays in entering marriage or motherhood. In fact, the delay of ownership acquisition is much less than delays experienced in family formation behaviors. In a later section we will investigate the extent to which these family changes are related to changing levels of single-family homeownership.

#### Age-Time Shapes of the Trajectories

Figures 6-1 through 6-5 provide visual representations of the cohorts' different transition trajectories. While the preceding discussion of these figures has pointed out major features of the different trajectories' age-time shapes, further understanding of the differences between cohorts' careers can be gained by comparing quantitative measures of the shapes. In preceding chapters we reviewed the measures proposed by Modell et al. (1976), and we concluded that these measures could not be applied to cohort data that did not encompass the complete age span within which transitions occurred. Since we have only estimated transition trajectories between the 1960 and 1975 (transformed to 1976) surveys, the transition histories are incomplete for cohorts that had already reached their mid-twenties by 1960 or that had not reached their mid-thirties by 1975. As a consequence, we must compare the shapes of transition trajectories over limited portions of the age span where observations

are available for two or more cohorts.

Given these constraints, I have elected to compare cohorts' transitions over age spans that at least three cohorts share in common. These age spans are: 18-25 (cohorts C1, C3, and C5), 22-29 (cohorts C3, C5, and C8), 28-33 (cohorts C5, C8, and C11), and 34-39 (cohorts C8, C11, and C14). Developmental trajectories of four transitions can be compared within these age spans: entry into marriage, parenthood, household headship, and single-family homeownership. The labor force participation and income life course dimensions will not be analyzed further in this chapter because, as noted above, data for complete cohorts are not available in the 1975 data base. Instead, these variables will be entered into the analysis of married couples in the next chapter.

In order to measure the shape of trajectories over the limited age spans defined above, we will calculate ratio measures of age-time shape according to the method described in Chapter 4. These ratios are calculated by dividing the percentage of a cohort that has completed the transition at the end of the age span by the percentage of completion at the beginning of the age span. This ratio measures the linear slope of the trajectory between the two end points of the age span, and it can be used to compare cohorts passing through the same age span. Table 6-1 presents these ratio measures for the four different transitions in each of the four age spans.

The ratios for each transition decline in magnitude between the younger and older age spans. The high ratios at young ages indicate very rapid status transitions, whereas the ratios near 1.000 between ages 34-36 and 38-39 indicate flat trajectories that have reached an upper



Table 6-1: RATIO MEASURES OF THE AGE-TIME SHAPES OF COHORT  
TRAJECTORIES

Ratio <sup>a</sup>	Cohort	Life Course Dimension			
		Ever-Married	Parenthood	Headship	Ownership
24-25	C1	2.686	3.498	3.343	11.822
to	C3	2.633	3.686	3.322	10.376
18-19	C5	2.529	3.693	3.251	9.328
28-29	C3	1.212	1.536	1.258	2.919
to	C5	1.208	1.518	1.280	2.670
22-23	C8	1.187	1.401	1.291	2.331
32-33	C5	1.042	1.097	1.048	1.291
to	C8	1.031	1.080	1.050	1.244
28-29	C11	1.031	1.063	1.062	1.258
38-39	C8	1.007	.996	1.013	1.101
to	C11	1.010	1.000	1.019	1.100
34-35	C14	1.012	.994	1.025	1.096

SOURCE: Calculations are based on data reported in Appendix B and graphed in Figures 6-1, 6-2, and 6-5.

a. Ratio between proportions at older and younger ages.

asymptote. Only the transition into homeownership is still occurring in the late-thirties, as the ratios of about 1.10 indicate a 10 percent increase in the ownership proportion over this age span. In fact, the ownership trajectory is steeper than other transitions over every age span. As we observed when discussing Figure 6-5, the ownership transition is the latest to occur for every cohort, and the high ratios for the ownership transition indicate that cohorts experience rapid transition into ownership from initial, low ownership levels in the early twenties.

It is important to note, however, that the ratio measure of age-time shape is flawed by a bias that prevents accurate comparisons of transitions with very different initial status proportions. The ratio measure is biased toward higher values for transitions that start at lower levels, so that even though two transitions might have parallel trajectories their ratio measures will be different. More abstract measures might be constructed to correct for this bias, such as the ratio between the change of a status proportion over an age span and an arbitrary reference level, but such abstract measures are more difficult to interpret and provide little information that cannot be gained from more direct examination of the data. In general, it is safe to use the ratio measure as long as it is employed judiciously in conjunction with data indicating the status proportions at each age.

Figures 6-1 through 6-5 provide the necessary background data to employ the change ratios effectively. Our visual examination of these figures indicated only two important changes between cohorts. We observed a decline across the most recent cohorts in the rate at which they are entering parenthood, and we noted that the shape of the transition to

homeownership appeared to be changing for recent cohorts. Both of these visual observations are relatively prominent in Table 6-1.

The slowing entry into parenthood during the 18-19 to 24-25 age span is reflected by the lower transition ratio for the C1 cohort (3.498) relative to the C3 and C5 cohorts (3.686 and 3.693, respectively). As Figure 6-2 indicates, these cohorts all started at virtually the same parenthood level at age 18-19 and so differences in the ratio measures give relatively unbiased estimates of changes in the slope of the trajectory into parenthood. Over the 22-23 to 28-29 age span the C3 and C5 cohorts can be compared with the high-fertility C8 cohort. The transition ratio for the C8 cohort (1.401) is lower than for the other cohorts (1.518 for C5 and 1.536 for C3), not because the C8 cohort has entered parenthood more slowly, but because it started from a much higher level of parenthood at age 22-23 than did the other cohorts (see Figure 6-2).

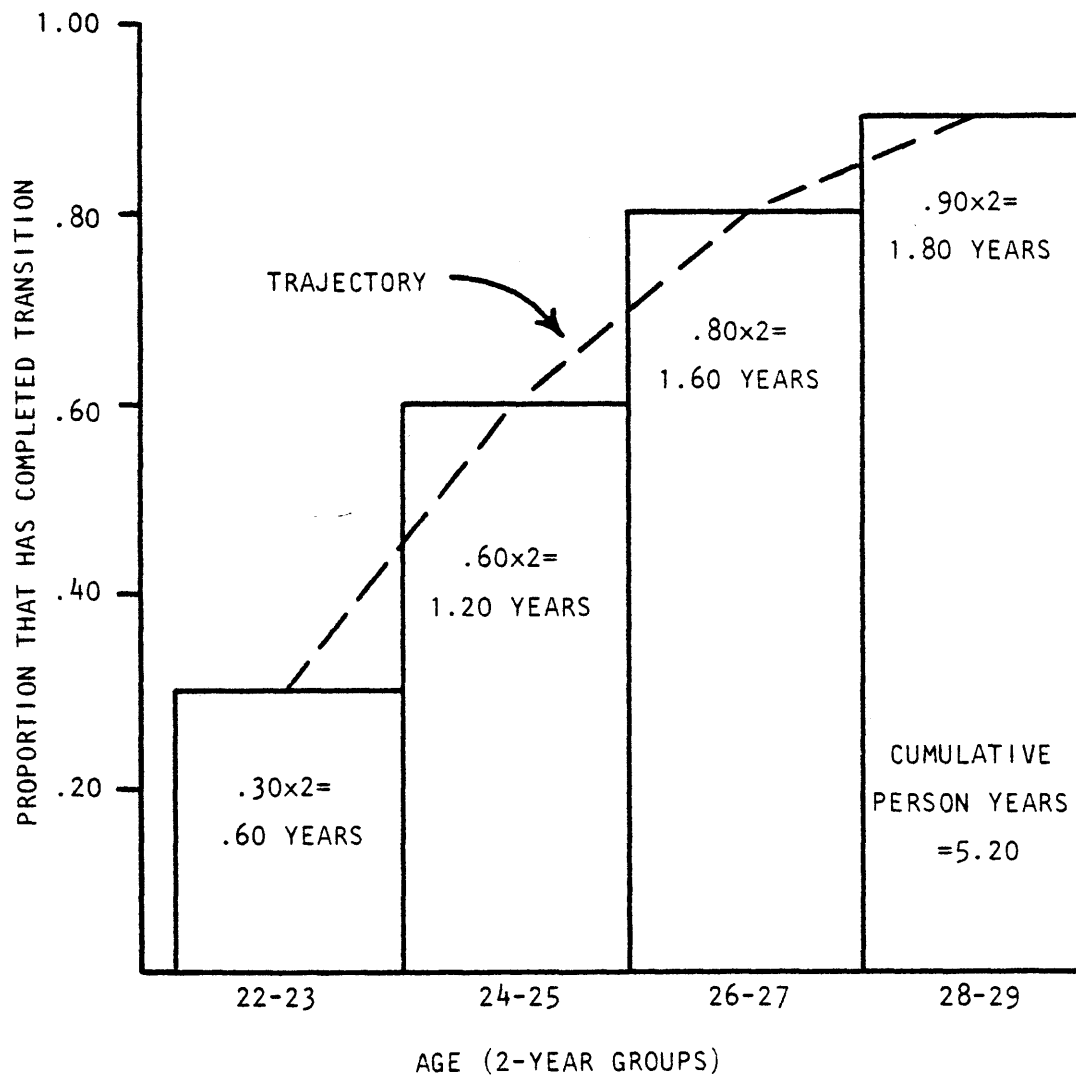
The transition to homeownership between age 22-23 and 28-29 is of special interest, because our visual inspection of Figure 6-5 suggested that not only were the slopes of the transition trajectories different, but the rank order of the cohorts was also reversing from one end of the age span to the other. In fact, the changes between cohorts in the ratio measures for the homeownership transition over this age span are the largest reported in Table 6-1. Between age 22-23 and 28-29 the C8 cohort increased its single-family homeownership rate by a factor of 2.331, but the C5 cohort increased its rate by a factor of 2.670 and the C3 cohort achieved an even larger increase, 2.919. As a consequence of these large increases, cohort C5 raised its ownership rate from 2.02 percentage points below cohort C8's rate at age 22-23 (19.76) to 1.30 percentage points above

cohort C8's rate at age 28-29 (46.06). Even more dramatic is the fact that cohort C3 raised its ownership rate from 3.37 percentage points below cohort C8's rate at the beginning of the age span to 1.78 percentage points above cohort C8's rate by the end of the age span. (These figures are all drawn from Appendix B.) It seems safe to conclude that the large differences between cohorts' ownership transition ratios reflect a substantial reshaping of ownership transitions.<sup>4</sup> The pattern emerging for recent cohorts indicates an initial delay in ownership attainment followed by rapid acceleration of ownership attainment after about age 26.

#### Cumulative Person Years of the Transitions

A convenient method of measuring the implications of these cohort trajectories is provided by the concept "person years of experience" that was briefly introduced in preceding chapters. It was explained that the area under the curve formed by a cohort's transition trajectory could be quantified as the cumulative person years of experience. That is, if each single year of age equals one person year, by cumulating the fractions of a cohort that are in a particular status at successive ages in the cohort trajectory, we can measure the total person years of experience over any age span. Figure 6-6 provides an illustration of this method, showing the relationship between a two-year cohort's transition trajectory and its cumulative person years experienced in the particular adult status--parenthood, for example. The transition trajectory is defined by connecting the age-specific status proportions (e.g. proportion that are parents) for each age group. Because the age groups are defined as two-year intervals, the status proportions must be multiplied by two to get the person years experienced in a status within a

FIGURE 6-6: SCHEMATIC RELATIONSHIP BETWEEN A TRANSITION TRAJECTORY AND CUMULATIVE PERSON YEARS OF EXPERIENCE FOR A TWO-YEAR COHORT



particular age group. In the example, 30 percent of persons aged 22-23 are parents, so the proportion .30 is multiplied by two, yielding .60 person years (out of a possible 2.0) spent as a parent within this age group. Identical operations are performed for each age group, and the person years for each age group are added cumulatively to yield a running total of experience as the cohort passes through the age groups. At the end of the 22-23 to 28-29 age span, the cohort in our example has spent 5.2 out of a possible 8.0 years per person as a parent.

In preceding chapters we have described three major advantages to using the person year method to analyze cohort careers. Cumulative person years can be calculated for age spans of any length, and the units of analysis are compatible with concepts of housing consumption that emphasize the occupancy (rather than dollar expenditures) of different types of housing (cf. Pitkin and Masnick, 1980). The final advantage is that the total person years can be partitioned to measure the overlap between two or more statuses. This overlap is explored in the next part of the present chapter. Before turning to that task, let us first examine the cumulative person years for single life course dimensions. We will study the three life course dimensions for which there is complete 1960-1976 data and we will compare cohorts within the same age spans defined in the preceding section.

Panel A of Table 6-2 compares the marital experience of the most recent cohorts over the 18-25 age span. The major difference among cohorts C5, C3 and C1 is that the early members of the baby boom generation spend much more time without ever having been married--45.4 percent of the maximum 8.0 years for C1 versus 37.8 percent for C5. Panel B includes two

Table 6-2: MARITAL EXPERIENCE OF COHORTS OVER SELECTED AGE SPANS

A. AGES 18-25						
Marital Status	Cohort C1		Cohort C3		Cohort C5	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
Never-Married	3.63	45.4	3.19	39.8	3.02	37.8
Currently-Married	3.69	46.1	4.11	51.4	4.30	53.8
Previously-Married	0.68	8.4	0.71	8.8	0.68	8.4
Total	8.00	100	8.00	100	8.00	100

B. AGES 22-29						
Marital Status	Cohort C3		Cohort C5		Cohort C8	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
Never-Married	1.42	17.7	1.28	16.0	1.22	15.3
Currently-Married	5.62	70.3	5.87	73.3	6.02	75.3
Previously-Married	0.96	12.0	0.85	10.7	0.76	9.5
Total	8.00	100	8.00	100	8.00	100

C. AGES 28-33						
Marital Status	Cohort C5		Cohort C8		Cohort C11	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
Never-Married	0.50	8.3	0.49	8.1	0.50	8.3
Currently-Married	4.72	78.7	4.83	80.6	4.92	82.0
Previously-Married	0.78	13.0	0.68	11.3	0.59	9.8
Total	6.00	100	6.00	100	6.00	100

D. AGES 34-39						
Marital Status	Cohort C8		Cohort C11		Cohort C14	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
Never-Married	0.34	5.7	0.34	5.7	0.37	6.2
Currently-Married	4.80	80.0	4.92	81.9	4.98	83.0
Previously-Married	0.86	14.3	0.74	12.3	0.65	10.8
Total	6.00	100	6.00	100	6.00	100

of the same cohorts, C3 and C5, but adds an earlier cohort, C8, that represents young adults from the early 1960s. These three cohorts are compared over the 22-29 age span. Again it is clear that the more recent cohorts have experienced larger fractions of time without ever being married. In addition, in this age span the more recent cohorts are also more likely to have been previously married. Thus the person years spent in a currently married state is being reduced by two different forces--failure to enter first marriages and disruption of prior marriages. This trend toward longer periods of time spent in disrupted marriages is also observed for the more recent cohorts in each of the other age spans. To the extent that marriage is associated with single-family homeownership and other marital statuses are not, we might expect this trend across cohorts to reduce the person years of homeownership in successive cohorts.

The parental experience of cohorts is assessed in Table 6-3. Panels A and B both indicate that the most recent cohorts are spending increasing portions of their twenties in a child-free state. The lowest level of childlessness is observed for the C8 cohort in each of the age spans where it can be compared. As explained above, this is attributable to this cohort's entry into adulthood during the peak of the baby boom. Given the greater presence of children for this cohort at ages 34-39 we might expect it to seek single-family homeownership more often than its predecessors. Similarly, we might expect the succeeding cohorts that experienced lesser presence of children to pursue single-family homeownership less often or more slowly.

The housing consumption experience of different cohorts is compared in Table 6-4. Panel A shows that the most recent cohort (C1) is falling



Table 6-3: PARENTAL EXPERIENCE OF COHORTS OVER SELECTED AGE SPANS

A. AGES 18-25						
Parental Status	Cohort C1		Cohort C3		Cohort C5	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
No Children	5.40	67.5	4.93	61.6	4.64	58.1
Young Children	2.19	27.4	2.60	32.5	2.86	35.8
Older Children	0.41	5.1	0.47	5.9	0.50	6.2
Total	8.00	100	8.00	100	8.00	100

B. AGES 22-29						
Parental Status	Cohort C3		Cohort C5		Cohort C8	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
No Children	3.13	39.1	2.71	33.9	2.43	30.4
Young Children	2.89	36.1	3.06	38.2	3.31	41.4
Older Children	1.98	24.8	2.23	27.9	2.26	28.3
Total	8.00	100	8.00	100	8.00	100

C. AGES 28-33						
Parental Status	Cohort C5		Cohort C8		Cohort C11	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
No Children	1.15	19.1	1.04	17.4	1.12	18.7
Young Children	1.05	17.6	0.99	16.5	1.14	19.0
Older Children	3.80	63.3	3.97	66.1	3.74	62.4
Total	6.00	100	6.00	100	6.00	100

D. AGES 34-39						
Parental Status	Cohort C8		Cohort C11		Cohort C14	
	Years	Percent of time	Years	Percent of time	Years	Percent of time
No Children	0.81	13.5	0.89	14.8	1.08	18.0
Young Children	0.21	3.5	0.27	4.5	0.36	5.9
Older Children	4.98	83.0	4.83	80.6	4.56	76.0
Total	6.00	100	6.00	100	6.00	100

behind the household headship schedule established by preceding cohorts. Over the 18-25 age span cohorts C3 and C5 spent 3.42 and 3.43 person years, respectively, as non-heads of household, but the time spent as a non-head has increased to 3.61 person years for cohort C1. This change is noteworthy because all other cohorts in Table 6-4 have spent less time as non-heads than cohorts which preceded them.

The recent cohorts have also spent less time as single-family homeowners under age 30 than have their predecessors, although this reduction is slight. Panel A shows a reduction in ownership consumption of 0.10 years between cohorts C5 and C1, and Panel B shows a reduction of 0.06 years between cohorts C8 and C3. These slight reductions do not reflect the fact, of course, that the age-time shape of the ownership transition has changed. The cumulative person years for cohort C3, for example, lag substantially behind those for cohort C8 early in the twenties and begin to close the gap only after age 26. Nevertheless, even though cohort C3 eventually rises to a higher ownership rate, its cumulative ownership consumption remains below that of cohort C8.

Between ages 28 and 33 the more recent cohorts have extended their higher ownership trajectories (see Figure 6-5), with the result that they have accumulated higher ownership consumption over the age span. The cumulative ownership consumption of cohort C5 is 0.26 years greater than that of cohort C11. Even larger increases in ownership consumption are observed in the 34-39 age span between cohorts C14 and C8--0.39 years. Cohort C8 represents adults who reached age 20 at the height of the baby boom and who, we suggested in Chapter 4, may have been motivated to seek larger homes because of their larger family sizes. The large difference

Table 6-4: HOUSING CONSUMPTION OF COHORTS OVER SELECTED AGE SPANS

A. AGES 18-25						
	Cohort C1		Cohort C3		Cohort C5	
Housing Consumption	Years	Percent of time	Years	Percent of time	Years	Percent of time
Household Head	4.39	54.8	4.58	57.3	4.57	57.1
Single-Family Owner	1.06	13.2	1.09	13.7	1.16	14.5
Non-Household Head	3.61	45.2	3.42	42.7	3.43	42.9
Total	8.00	100	8.00	100	8.00	100

B. AGES 22-29						
	Cohort C3		Cohort C5		Cohort C8	
Housing Consumption	Years	Percent of time	Years	Percent of time	Years	Percent of time
Household Head	6.62	82.7	6.60	82.4	6.43	80.4
Single-Family Owner	2.62	32.8	2.66	33.2	2.68	33.5
Non-Household Head	1.38	17.3	1.40	17.6	1.57	19.6
Total	8.00	100	8.00	100	8.00	100

C. AGES 28-33						
	Cohort C5		Cohort C8		Cohort C11	
Housing Consumption	Years	Percent of time	Years	Percent of time	Years	Percent of time
Household Head	5.55	92.5	5.43	90.6	5.30	88.3
Single-Family Owner	3.30	55.0	3.12	52.1	3.03	50.5
Non-Household Head	0.45	7.5	0.57	9.4	0.70	11.7
Total	6.00	100	6.00	100	6.00	100

D. AGES 34-39						
	Cohort C8		Cohort C11		Cohort C14	
Housing Consumption	Years	Percent of time	Years	Percent of time	Years	Percent of time
Household Head	5.67	94.5	5.58	93.1	5.48	91.3
Single-Family Owner	3.93	65.6	3.73	62.1	3.54	59.0
Non-Household Head	0.33	5.5	0.42	6.9	0.52	8.7
Total	6.00	100	6.00	100	6.00	100

between cohort C8's single-family ownership consumption and that of earlier cohorts reflects the trend across the 1950s and 1960s for greater housing consumption by young families. The evidence in Table 6-4 shows that this trend has continued across cohorts following C8 even though entry into parenthood has slowed down and average family size is decreasing. Entry into single-family homeownership appears to have slowed down for recent cohorts only under age 26, and yet it advances to unprecedented levels as cohorts advance toward age 30.

In the remainder of this chapter we will explore the changing relationship between cohorts' entry into marriage, family formation or other family-related behaviors, and their housing consumption careers. We will analyze the changing overlap between particular family behaviors and both household headship and single-family homeownership. And we will seek to summarize how much of the changing housing consumption is due to changing patterns of family participation and how much is due to shifting consumption rates within each family status at specific ages.

#### MULTIDIMENSIONAL CAREER CHANGES

A major advantage of quantifying the person years of experience in each status or combination of statuses is that it is possible to examine detailed changes in the overlap of different statuses for cohorts. In order to use this flexible technique to explore housing changes in a clear manner it is necessary to carefully circumscribe the analysis. The analysis will be restricted to a focus on housing consumption; that is, instead of possibly investigating the shifting overlap between marriage and parenthood, the emphasis is on the shifting overlap between these

family behaviors and the two levels of housing consumption.

The analysis of multidimensional career changes proceeds in two stages. First, we examine the changing proportion of time spent in particular family statuses that is also spent as a head of household or as a single-family homeowner. Then the second task is to summarize changes in cohorts' housing consumption relative to family participation by means of a components of change analysis. This analysis will seek to determine how much of the overall housing change is attributable to family changes and how much is attributable to changing consumption rates.

#### The Shifting Overlap Between Family and Housing Experience

A major observation from the preceding section is that the cohorts entering adulthood after the early 1960s have entered marriage and borne children at slower rates than were experienced by the C8 cohort. Because patterns of housing consumption have been relatively more stable, we have hypothesized that increasing numbers of single persons and childless couples are heading households and owning single-family homes. The magnitude of this change can be measured by the percentage of time that persons in different family statuses spend as household heads or as homeowners. These changes are assessed in Tables 6-5 and 6-6 for cohorts in three different age spans. The 18-25 age span has not been analyzed because, as discussed early in this chapter when the age variable was introduced, the data for age groups below 22 may not be sufficiently sound to permit detailed analysis. The 22-29 age span covers the bulk of the twenties, so little is lost by excluding the slightly younger age span.

Table 6-5 reports the percentage of time that different marital

Table 6-5: HOUSEHOLD HEADSHIP EXPERIENCE OF COHORT MARITAL GROUPS  
OVER SELECTED AGE SPANS

(Percent of Time Spent as Household Head)

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A. AGES 22-29

Marital Status	Cohort C3	Cohort C5	Cohort C8
Never-Married	37.3%	31.1%	21.2%
Married	97.9	97.7	96.6
Previously-Married	64.5	58.5	49.0

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B. AGES 28-33

Marital Status	Cohort C5	Cohort C8	Cohort C11
Never-Married	48.4	35.3	24.5
Married	99.1	98.8	98.0
Previously-Married	81.0	71.8	61.0

---

C. AGES 34-39

Marital Status	Cohort C8	Cohort C11	Cohort C14
Never-Married	48.1	36.3	32.1
Married	99.4	99.3	98.9
Previously-Married	85.4	78.6	73.0

---

groups were living as heads of households. Almost all married couples in every cohort are living in independent households. In general, over 95 percent of all married time is spent in household headship. Very substantial changes have occurred, however, in the experience of headship among never-married and previously-married women. In the 22-29 age span headship increased between cohorts C8 and C3 from 21.2 to 37.3 percent of time spent single. Among previously marrieds the most recent cohort also experienced higher headship, an increase from 49.0 percent to 64.5 percent of the total time spent in a post-marriage state. Even larger increases were experienced by the more recent cohorts in the older age spans as well. At ages 28-33 headship time increased from 61 to 81 percent for previously marrieds between the C11 and C5 cohorts. Since headship is virtually complete for married couples, the large increases for unmarried statuses would contribute to an overall increase in headship for cohorts if marital status distributions held constant. The relative contributions of consumption rate changes and family status changes are assessed in a later section.

Table 6-6 reports the percentage of time that different marital groups were single-family homeowners. Homeownership is much less common, even for married couples, than is household headship. Fewer than 2.0 percent of never-married women are homeowners during their twenties, and this experience does not grow much greater for never-married women at older ages. Among previously-married women homeownership is higher, especially in the older age groups, and more recent cohorts have spent higher fractions of post-marriage time as homeowners.

Married couples spend the most time as homeowners. Over the 34-39

Table 6-6: SINGLE-FAMILY OWNER-OCCUPANCY OF COHORT MARITAL GROUPS  
OVER SELECTED AGE SPANS

(Percent of Time Spent as Single-Family Owner)

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A. AGES 22-29

Marital Status	Cohort C3	Cohort C5	Cohort C8
Never-Married	1.6	1.8	1.3
Married	43.8	42.9	42.6
Previously-Married	9.7	9.1	7.7

---

B. AGES 28-33

Marital Status	Cohort C5	Cohort C8	Cohort C11
Never-Married	5.0	4.1	3.0
Married	65.9	61.8	59.6
Previously-Married	20.4	17.2	14.1

---

C. AGES 34-39

Marital Status	Cohort C8	Cohort C11	Cohort C14
Never-Married	9.1	6.3	4.9
Married	75.9	71.5	68.7
Previously-Married	30.3	26.0	24.3

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age span 75.9 percent of their time is spent as single-family owners for the C8 cohort. This represents a sizeable increase over the experience of the C11 and C14 cohorts which preceded, but the C5 cohort in the 28-33 age range experienced even greater ownership than did the C8 cohort in those ages (65.9 percent versus 61.8 percent). In the 22-29 age span, however, there has been very little difference among the cohorts in the percent of time that married couples spend as single-family homeowners. Ownership time of married women is only about one percent greater for the most recent cohort than for C8. What is noteworthy about this slight increase is that it stands in marked contrast to the declining owner-occupancy between the complete cohorts (all marital statuses combined) in the 22-29 age span (see Table 6-4).

A second dimension of family behavior is parental status. In particular, we might inquire about the shifting overlap between housing consumption and different stages of parenthood for married couples. Since household headship is virtually universal for married couples, we need only focus on single-family homeownership. Table 6-7 reports the percentage of time that married couples in different parental statuses are also single-family homeowners.

The general pattern indicates a higher likelihood of ownership for couples with young children than for childless couples, and ownership for parents of older children is even more common. Comparing cohorts within age spans, it is apparent that the likelihood of ownership has increased in all parent statuses between earlier and later cohorts. In terms of percentage point changes, the largest increase in the 34-39 age range is for parents in the C8 cohort who have older children (+7.4). Larger

Table 6-7: SINGLE-FAMILY OWNER-OCCUPANCY OF MARRIED COUPLES IN  
DIFFERENT PARENT STATUSES OVER SELECTED AGE SPANS

(Percent of Time Spent as Single-Family Owner)

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A. AGES 22-29

Parental Status	Cohort C3	Cohort C5	Cohort C8
No Children	33.0	28.4	27.4
Young Children	48.7	46.1	44.5
Older Children	48.2	48.1	47.0

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B. AGES 28-33

Parental Status	Cohort C5	Cohort C8	Cohort C11
No Children	50.7	39.9	39.8
Young Children	66.9	58.9	56.9
Older Children	68.0	65.0	63.0

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C. AGES 34-39

Parental Status	Cohort C8	Cohort C11	Cohort C14
No Children	53.5	50.0	49.4
Young Children	64.7	62.3	62.3
Older Children	78.0	73.9	70.6

---

increases are observed in the 28-33 age range for the childless (+10.9) and young-child (+10.0) couples of the C5 cohort. These same parent categories also experienced the largest gains for the most recent cohort in the 22-29 age span, although these increases are only half as large as in the older age span.

Nevertheless, the change in ownership time for parents of young children is large enough between C8 and C3 (Panel A of Table 6-7) to elevate the ownership experience of parents with young children above that for parents of older children. Even a slight reversal of the traditional ownership advantage of older-child parents over young-child parents seems improbable, because young children grow into older children as time passes and it is unlikely that parents give up ownership as their children reach school age. More precise estimates of the changing linkage between ages of children and single-family ownership attainment will be presented in the next chapter.

In summary, this section has documented the increasing participation of unmarried women in household headship and of all marital groups in single-family homeownership. Among married women we also examined the overlap of ownership experience with time spent in childless, young-child, or older-child parent statuses. This analysis revealed a trend toward greater overlap in each parent status, and the biggest increases were observed for the childless and young-child stages of the most recent cohort in the 28-33 age range. Changes within parent statuses could also be examined for never-married and previously married women, but this would lead to a proliferation of detail and many fewer women are parents in these marital statuses. In addition, this analysis has not taken account

of the shifting participation of women in each detailed marital-parent status. A comprehensive treatment of changing family and housing careers requires that changing family participation be weighted by changing housing consumption rates. In this manner we can analyze differences in total housing consumption experienced cumulatively over particular age spans.

#### Components of Cohort Differences in Housing Consumption

How much of the overall difference in housing consumption between cohorts is motivated by differences in family development patterns and how much is motivated by changes in consumption rates for each family status? Rather than examining the differences that occur for each individual combination of family and housing statuses, a components of change analysis can be designed to summarize the separate contributions of family differences and changes in housing consumption rates pertaining to each family status.

In order to provide a consistent reference point for making comparisons, the analysis estimates the differences of each cohort from the lifetime pattern of the C8 cohort (born 1937-38). This cohort provides a useful reference for the reason that its career can be traced through the entire 22-39 age span. As a result it provides a single continuous career against which other cohorts can be compared over more limited age spans. In addition, this cohort has special social significance in that it has a family career reflecting experience during the peak of the baby boom era.

For maximum efficiency and flexibility the components of change analysis is designed for application to matrices. Each cohort's career

is defined as a four-dimensional matrix of shape  $3 \times 3 \times 3 \times n$ . The first dimension pertains to marital status, the second to parent status, the third to housing status, and the final dimension to the number of ages through which the cohort's career is traced. This career matrix can be decomposed for each cohort into separate family status (D) and housing consumption rate (HR) matrices whose product generates the total career matrix:

$$C_i = D_i \times HR_i$$

By interchanging these components with those for the reference cohort ( $C_8$ ) over the same age span, the components of change can be calculated:

$$DC_i = (D_i \times HR_8) - C_8$$

$$HC_i = (D_8 \times HR_i) - C_8$$

$$I_i = (C_i - C_8) - (DC_i + HC_i)$$

where:

$DC_i$  is the component of family status differences

$HC_i$  is the component of housing consumption rate differences,

and

$I_i$  is a residual term representing the interaction of the two components.

The output of the matrix manipulations can be processed in different ways to help answer different questions. For the present analysis we are interested in the overall change in housing consumption summarized across all family statuses. Therefore, by summing across the first two dimensions (marital status and parent status) of the matrix output, we arrive at a

two-dimensional matrix (for each component) of changes in each housing status estimated at each age. These summary matrices contain the components of change for single-family homeownership and for household headship (sum of the single-family owner and other household head components). The summary matrices also specify the components of change between cohorts at each age. This provides the option of summing the components across age spans to measure changing experience during certain intervals. The components of change analysis will be reported for the same age spans utilized previously.

In earlier sections suggestions were made that slower entry into marriage and parenthood could contribute to slower entry into household headship or homeownership. It was noted, however, that delay in family formation was not matched by a similar slackening of housing consumption. In fact, each of the cohorts following C8 has experienced more time as a household head. Table 6-8 reports the decomposition of the changes over ages 22-29 into separate vectors of change, one representing the overall change in family participation of cohort members and the other reflecting the weighted average of the changing consumption rates in each status. If consumption rates had remained the same for each cohort, differences in family behavior would have decreased household headship by .08 person years for the C5 cohort relative to the C8 cohort, and headship would have decreased by .23 person years for the C3 cohort. These sizeable decreases were more than offset, however, by large increases attributable to differences in headship participation at each status. Other things being equal, headship increases would have amounted to an additional .24 person years for C5 and an additional .37 person years for

Table 6-8: COMPONENTS OF CHANGE UNDERLYING DIFFERENCES IN HOUSING CONSUMPTION BETWEEN SELECTED COHORTS AND COHORT C8 OVER THE 22-29 AGE SPAN

Differences From Cohort C8 Explained By:	Household Headship				Single-Family Homownership			
	Cohort C3		Cohort C5		Cohort C3		Cohort C5	
	Person Years	Percent	Person Years	Percent	Person Years	Percent	Person Years	Percent
Differences in Family Behavior	-0.234	-123.2	-0.080	-47.6	-0.253	-436.2	-0.098	-426.1
Differences in Housing Consumption Rates	+0.366	+192.6	+0.237	+141.1	+0.177	+305.2	+0.076	+330.4
Interaction (Residual)	+0.058	+30.5	+0.011	+6.5	+0.018	+31.0	-0.001	-4.3
Total Change	+0.190	100	+0.168	100	-0.058	100	-0.023	100

C3. These large potential increases due to rising consumption rates amount to 141 and 193 percent of the respective actual increases for cohorts C5 and C3. In the preceding section, it was shown that virtually all of the increase in headship rates occurred among never-married and previously married persons. Evidently, these increases were large enough to outweigh the losses resulting from delayed entry into marriage.

Differences in family behavior also contributed to a potential decline in the experience of single-family ownership. The calculations presented in Table 6-8 show that offsetting increases in ownership rates were not as great as for headship and they did not outweigh the reduction in ownership stemming from delayed family formation. The opposing vectors of change were over twice as large for C3 as for C5. Following C8 more closely, the C5 cohort has not deviated as far on either the family or housing dimension. Its overall reduction in ownership is .02 person years, while the reduction for C3 is .06 person years.

Table 6-9 reports the components of change during the 28-33 age span for cohorts C5 and C11 relative to C8. The family differences of these cohorts contributed only slightly to their housing consumption differences. These changes are slight because C11 precedes C8 by only 6 years in time while C5 follows C8 by only 6 years. In addition, the cohorts are being compared in an age span where there is less likelihood of delayed family formation than is true of the mid-twenties. The big differences for these cohorts are the changes attributable to consumption rates. The status-specific headship rates of C11 would have generated .13 fewer person years of headship experience had family behavior remained constant. In contrast, the headship rates of C5 would have generated .13 more person



Table 6-9: COMPONENTS OF CHANGE UNDERLYING DIFFERENCES IN HOUSING CONSUMPTION BETWEEN SELECTED COHORTS AND COHORT C8 OVER THE 28-33 AGE SPAN

Differences From Cohort C8 Explained By:	Household Headship				Single-Family Homeownership			
	Cohort C5		Cohort C11		Cohort C5		Cohort C11	
	Person Years	Percent	Person Years	Percent	Person Years	Percent	Person Years	Percent
Differences in Family Behavior	-0.028	-24.1	-0.005	-3.7	-0.079	-44.9	+0.012	+12.9
Differences in Housing Consumption Rates	+0.133	+114.6	-0.134	-99.3	+0.247	+140.4	-0.108	-114.9
Interaction (Residual)	+0.011	+9.5	+0.004	+3.0	+0.008	+4.5	+0.002	+2.1
Total Change	+0.116	100	-0.135	100	+0.176	100	-0.094	100

Table 6-10: COMPONENTS OF CHANGE UNDERLYING DIFFERENCES IN HOUSING CONSUMPTION BETWEEN SELECTED COHORTS AND COHORT C8 OVER THE 34-39 AGE SPAN

Differences From Cohort C8 Explained By:	Household Headship				Single-Family Homeownership			
	Cohort C11		Cohort C14		Cohort C11		Cohort C14	
	Person Years	Percent	Person Years	Percent	Person Years	Percent	Person Years	Percent
Differences in Family Behavior	-0.018	-21.2	-0.051	-26.4	+0.022	+10.6	-0.006	-1.5
Differences in Housing Consumption Rates	-0.068	-80.0	-0.147	-76.2	-0.229	-110.1	-0.395	-100.8
Interaction (Residual)	+0.001	+1.2	+0.005	+2.6	-0.001	-0.5	+0.009	+2.3
Total Change	-0.085	100	-0.193	100	-0.208	100	-0.392	100

years of headship had family behavior remained the same as for C8.

A somewhat different pattern of change occurred with regard to the single-family ownership experience of cohorts C5 and C11. Differences in family behavior were relatively more negative for cohort C5's potential ownership than for its headship. And the potential increase stemming from increased consumption rates was nearly twice as great for ownership as for headship. The most likely explanation for this difference emphasizes the variation among married couples that exists for ownership, but which does not exist for headship. Because headship rates are nearly 100 percent for married women this large group cannot contribute to rising headship rates. However it was demonstrated in the preceding section that ownership time increased for all marital groups. The result of this greater input to ownership rate increases is that the potential reduction due to family differences is more heavily outweighed.

The cohorts that are compared during the 34-39 age span, C11 and C14, both have preceded C8 in time. Because these cohorts reached adulthood a little before the peak baby boom years, the difference between C8's and their family behavior contributes a slight negative effect upon their household headship. A bigger negative factor has been the lower headship rates of these cohorts. These two negative differences are especially large for C14 and its person years of headship during this age span are .19 less than for C8. Much larger differences occurred, however, between C8 and the earlier cohorts in their rates of single-family homeownership. While family differences were negligible, differences attributable to status-specific consumption rates amounted to a potential decrease of .23 for C11 and .40 for C14.

Summarizing this analysis, we have observed that cohorts preceding C8 had almost the same family composition effect on housing consumption, but they had substantially lower consumption rates for headship or single-family ownership. In contrast, the cohorts following C8 have shown progressively greater reductions in potential composition due to family behaviors. But these family differences have been offset by even more substantial consumption rate increases, particularly for single-family homeownership.

#### CONCLUSION

This chapter has described the concurrent changes in cohorts' housing and family careers. We have examined the family formation behaviors of several widely-spaced cohorts that reached adulthood in very different periods: the immediate postwar period, the peak of the baby boom, and the recent period of delayed marriage and falling fertility rates. The housing consumption careers of cohorts were traced relative to the family career dimensions, proceeding in three stages.

The first stage of the analysis estimated the trajectories of different cohorts for several, individual life course dimensions. We compared trajectories visually and by means of two different quantitative measures. The ratio measure of trajectories' age-time shape showed that transitions were occurring most rapidly at young ages, and this measure spotlighted the differences between cohorts over the 22-29 age span in the age-time shape of the transition into single-family homeownership. Over these ages the proportion owners increased by a factor of 2.331 for the baby boom-parent cohort (C8), but it increased even more (by a

factor of 2.919) for the most recent cohort (C3), born at the beginning of the baby boom (1947-48). The latter cohort started at a lower ownership level than its "parent" cohort, but after about age 26 it accelerated its transition into ownership so much that by age 28-29 it had surpassed the ownership level of its "parents."

The second measure used to quantify cohorts' careers was based on the person-years concept. We measured the cumulative person years of experience in different statuses over particular age spans. For housing statuses this amounts to calculating cumulative housing demand over time for particular levels of consumption. We found that each successive cohort (save the most recent in the 18-25 age span) had consumed more housing units per person over time (i.e. higher lifetime household headship) than had the preceding cohorts. Similarly, we observed sharp increases in single-family ownership consumption across all successive cohorts except those in the 18-25 and 22-29 age span. Not only has the age-time shape of the ownership transition changed, but the initial delay in ownership attainment contributes to a reduction in cumulative homeownership consumption under age 30.

At several points in this analysis it was suggested that changes in the family formation patterns might be contributing to a reduction in single-family homeownership consumption, at least at young ages. The second stage of the analysis estimated the changing overlap in family development and housing consumption increases. We found that participation in household headship was increasing sufficiently among non-married women to offset the potential impact that delayed marriage and increased divorce might have on household formations. Similarly, participation in

single-family homeownership was increasing for all marital groups across successive cohorts, but evidently these increases were not sufficient to maintain previous cohorts' ownership levels at young ages.

We probed further into the overlap of owner-occupancy and married couples' time spent in different parent statuses. This analysis showed large increases in the owner-occupancy of childless and young-child couples who are members of recent cohorts. In fact, the most recent cohort in the 22-29 age span (C3) had higher cumulative ownership consumption for couples with only very young children than for couples with school age children. This represents a reversal of the order observed in all other cohorts. The finding is also somewhat anomalous since young children grow into older children and their parents are unlikely to give up ownership as the children reach school age. The next chapter will present a statistical analysis that affords more precise estimates of the changing linkage between family formation and single-family homeownership attainment.

The third stage of the analysis in this chapter sought to decompose the differences between cohorts' cumulative housing consumption into separate components attributable to differences in cohorts' family careers and differences in consumption rates at each age and family status. This components of change analysis showed that increased housing consumption in the postwar era was supported by both greater family formation rates and greater housing consumption rates. However, after the peak of the baby boom, the potential increases in consumption due to family shifts stopped with the C8 cohort and turned into sizeable, potential decreases as family formation slowed down for more recent cohorts. At the same time,

housing consumption rates continued to increase, and these increases largely have offset, and even exceeded, the large potential decreases in consumption due to changing family patterns.

This depiction of aggregate, longitudinal development of family and housing careers provides a valuable representation of aggregate experience over time, but this benefit has been secured by making certain sacrifices. To achieve the longitudinal career data we have been forced to rely on the constructed cohort method that manufactures observations for years where they are missing. We can have no confidence in the statistical reliability of changes between cohorts that are estimated with this method. Moreover, by focusing on cumulative experience over an age span it is possible that we have blurred certain important differences that might exist only at specific ages. In addition, the examination of overlapping statuses has estimated the frequency with which different combinations of statuses occur, but it does not allow us to measure the strength of association between different statuses or to test for the statistical significance of different relationships.

The next chapter seeks to remedy these shortcomings by developing a statistical analysis that compares cohorts at specific ages. This analysis will focus on the issue of how the timing of single-family homeownership attainment has changed relative to family formation behaviors for different cohorts. The family income and labor force participation variables that were neglected in the present chapter's analysis will be explored in the context of the next chapter's analysis.

## NOTES TO CHAPTER 6

1. Money income was based on earnings in the year preceding the survey. Using the Consumer Price Index to reflect the real value of the dollar, 1959 income was inflated by a factor of 1.258, 1969 income was held constant, and 1974 income was deflated by a factor of 0.743 (U.S. Bureau of the Census, 1977d: 478).

2. The family income distribution of all women is somewhat different from married women, and the distribution for young women differs from that for middle-aged women. Different distributions are reported below for six subsamples within the 18-39 age range. These distributions show that the income categorization scheme that is proposed provides a fair compromise for covering the income distributions of the different subsamples.

Income Level (1969\$)  
Percentage Distribution

	<u>Under \$5,000</u>	<u>\$5-9999</u>	<u>\$10-14,999</u>	<u>\$15,000 or more</u>
<u>All Women</u>				
22-23	38.39%	40.10%	17.24%	4.27%
28-29	20.09	37.37	29.20	13.35
38-39	18.58	30.37	29.54	21.51
<u>Married Women</u>				
22-23	16.46	50.16	26.75	6.62
28-29	8.61	38.86	35.94	16.59
38-39	8.49	30.40	35.06	26.05

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Source: Special tabulation of the Joint Center 1970 Public Use Sample Family Nucleus computer file.

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3. The cohorts born in the 1930s registered the highest fertility of any cohorts born in the twentieth century. The 1937-38 cohort entered motherhood very quickly. By age 27, 81.3 percent had become mothers. Only the immediately preceding cohort entered motherhood at a faster pace--81.8 percent of the 1935-36 cohort were mothers by age 27. Completed fertility is more difficult to compare, because cohorts will have not all completed their child-bearing until they reach age 49 or thereabouts. But it appears that the 1937-38 cohort will also have a lower completed fertility than its immediate predecessors (National Center for Health Statistics, 1976: Table 6A).



4. It can also be demonstrated that the apparent reshaping of the ownership transition is not an artifact of the constructed cohort method. Close examination of the age-specific ownership rates in the 1960, 1970, and 1975 surveys shows that ownership has been declining for cohorts under age 28 and that it has been increasing for cohorts above that age (unpublished tabulations prepared for input into the constructed cohort program).



## Chapter 7

THE SHIFTING LINKAGE BETWEEN FAMILY DEVELOPMENT AND  
ATTAINMENT OF SINGLE-FAMILY HOMEOWNERSHIP

Several limitations were noted in the preceding chapter concerning the estimation of cohort changes on the basis of constructed cohort careers. While this analysis uncovered some important insights about the nature of longitudinal interaction between aggregate family development and housing careers, we were unable to specify changes with any statistical confidence. A second shortcoming is that the analysis was based on aggregate descriptions of behavior that did not enable us to study the shifting linkages between behaviors on the basis of their associations at the individual level. While the aggregate person years of participation in different status combinations were calculated from the distributions of individuals, this mode of analysis does not permit us to assess the strength of association between different statuses.

This chapter presents an analysis that remedies these methodological weaknesses, first, by testing for the statistical significance of behavioral linkages and their changes, and second, by measuring the strength of association between behaviors and strength of change between cohorts. In order to achieve this degree of statistical precision, however, we must sacrifice the longitudinal cohort perspective in favor of a cross-sectional analysis that contrasts cohorts from different survey years at the same specific age. This analysis can be coordinated with the cohort analysis in the preceding chapter by selecting the same cohorts for comparison at particular ages. In addition, the statistical

analysis retains a longitudinal, life course focus by means of including a measure of family development stage. These features of the analysis will be elaborated below.

The statistical analysis will be focused on the relationships of family development and marital disruption to ownership attainment. A major observation in the preceding chapter was that recent cohorts have been expanding their participation in non-married and delayed parent statuses at the same time as ownership experience has overlapped increasingly with time spent in these statuses. The statistical analysis in this chapter will permit more accurate estimation of the links between different family behaviors and ownership attainment.

Our primary purpose will be to investigate the changes between cohorts in the timing of family formation relative to ownership attainment. A major hypothesis of this dissertation has been that adjustments in family formation behavior might serve as an important mechanism for helping to sustain housing progress in recent young cohorts. By delaying childbearing young women can sustain continuous labor force participation and also avoid incurring the direct costs of raising children. These family adjustments have the potential to be a very significant contributor to improved home purchasing ability by young cohorts. The behavioral evidence in support of this hypothesis is explored in this chapter.

A secondary research question concerns the changes between cohorts in the effect of marital disruption on homeownership. Divorce, separation, or widowhood disrupts the orderly process of both family development and housing progress. How much is ownership attainment impaired by marital disruption, and has this negative effect been reduced for recent

cohorts? These questions grow more important as the experience of marital disruption continues to increase. To some extent the rising rates of housing progress for married couples are being offset by the rising occurrence of marital disruption and its associated reversals of housing progress.

#### Overview of the Statistical Approach

The statistical methods to be employed in this chapter are based on techniques of multivariate contingency table analysis developed by Goodman (1965; 1970; 1971; 1972), Bishop et al. (1975), and others. It will be recalled that one of the techniques proposed by Modell et al. (1976) for analyzing cohort transitions was to calculate the contingent associations of pairs of statuses at each age. Modell and his associates decided to measure this "integration" of behaviors by means of Goodman's lambda. These authors give little discussion of the measure's statistical properties or how to interpret it beyond noting that when lambda "is high, we can better predict holding of one status by knowing the holding of another" (Modell et al., 1976:23).

There are three important shortcomings of the Modell approach to representing status contingencies. The first is that the lambda measure is based on logs of cell frequencies and so its measurement scale of integration is difficult to interpret. While it is clear that movement toward more negative values implies an increasing inverse correlation (and movement toward higher positive values indicates a stronger positive correlation), it is not clear what a "strong" correlation implies about the specific likelihood of one behavior given another. The second

weakness is that Modell appears to have calculated the lambdas from the raw data without first ascertaining the statistical significance of the effects. The third, and more important, weakness is that Modell has measured the associations only between pairs of statuses, and hence he has failed to take account of other relationships that might affect the contingency between two statuses.

The approach taken here improves on these weaknesses in the Modell methodology. The data first will be subjected to significance testing to ascertain what relationships are statistically significant. In addition, we will model the relationships among sets of variables representing cohort membership, family status, housing type, and other variables. These multivariate models will permit relationships to be studied after controlling for the effects of other variables. Finally, we will interpret the strength of associations between behaviors according to the odds of their occurrence. Odds and odds ratios are multiplicative measures that provide a more intelligible measurement scale for parameter estimation than is provided by measures based on adding the logs of frequencies (cf. Page, 1977).

The first stage of the analysis is to test for significant relationships among a set of variables forming a multivariate contingency table. The method to be employed involves fitting a series of hierarchical log-linear models to the data and comparing the goodness-of-fit of alternative model specifications. This method has been developed by Leo Goodman (1965; 1970; 1971; 1972), Bishop et al. (1975), and others, but its clearest exposition is provided by Davis (1974). The fundamental procedure is to see how closely the observed data can be replicated when

different marginals are held constant. When the effect of a specified marginal is not needed to create a reasonable description of the observed data, we can term that effect insignificant and drop it from the model. The significance of an effect is inferred from changes in the goodness-of-fit chi-square statistic or the likelihood-ratio chi-square statistic when the given marginal is omitted from the model specification.<sup>1</sup>

Marginal relationships within a multivariate table consist not only of the one-way relationships pertaining to each variable in the table, but marginals also exist for combinations of variables within the table. For example, a three-variable table has three one-way marginals, three two-way marginals composed of pairs of variables, and one three-way marginal composed of all three variables and exactly describing the data. The implications of models fitted with different sets of these marginals can be understood most clearly through discussion of an example.

The top panel of Table 7-1 reports the observed cell frequencies for the three-way relationship among cohort membership, parental status, and housing consumption. Each of these variables has only two categories and so the resulting table has 8 cells. These data pertain to married couples with the wife aged 28-29 in 1960 or in 1970 (thus identifying the two cohort categories). Parental status is defined by the age of the oldest child--under 6 or 6 and older. For purposes of this illustration childless couples are omitted. Housing consumption is defined in two categories--single-family homeowner or other. The data in Table 7-1 show that parents with older children have a higher percentage of ownership in both cohorts, and members of the 1970 cohort also have a higher percentage of ownership than the earlier cohort. A third possible two-way

Table 7-1: OWNER-OCCUPANCY OF MARRIED WOMEN AGES 28-29 BY  
COHORT AND PARENTAL STATUS

Cohort (C)	Parent Status (P)	<u>Housing Consumption (H)</u>		Odds, Own:Other	Percentage Homeowners
		Own	Other <sup>a</sup>		
<u>Observed Frequencies</u>					
1970 <sup>b</sup>	Older <sup>c</sup>	2917	1903	1.533	60.5
	Younger <sup>c</sup>	1281	957	1.339	57.2
1960	Older	2618	1971	1.328	57.0
	Younger	1413	1223	1.155	53.6
<u>Expected Frequencies Under Model (2) With Fitted Marginals: (CP) (PH)</u>					
1970	Older	2835.44	1984.56	1.429	58.8
	Younger	1237.01	1000.99	1.236	55.3
1960	Older	2699.56	1889.44	1.429	58.8
	Younger	1456.99	1179.01	1.236	55.3
<u>Expected Frequencies Under Model (3) With Fitted Marginals: (CP) (CH)</u>					
1970	Older	2866.87	1953.13	1.468	59.5
	Younger	1331.13	906.869	1.468	59.5
1960	Older	2560.31	2028.69	1.262	55.8
	Younger	1470.69	1165.31	1.262	55.8

SOURCE: The data for this table and all others in this chapter are drawn from calculations performed on the data base described in Appendix A.

a. "Other" category includes renters, owners not occupying single-family homes, and nonheads.

b. Cohorts are identified by survey year.

c. "Older" parent status signifies that children have reached age 6, while "younger" status signifies that the oldest child is under 6.



relationship is that a higher fraction of the 1970 cohort has older children. While this relationship does not directly involve homeownership, it has a potential indirect effect on the overall ownership rate differences of the two cohorts.

In order to assess the significance of different relationships within the table in a comprehensive, systematic fashion, a number of alternative models are fitted to the data reported in the top panel of Table 7-1. These models are described, and the degrees of fit are assessed, in Table 7-2. In each of these models the fitted marginals are described by the variables forming each marginal, with each variable designated by a letter: cohort (C), parental status (P), and housing consumption (H). For example, Model (1) describes a hypothesized set of effects containing two fitted marginals: a two-way marginal describing the relationship between cohort membership and parental status (CP) and a single-variable marginal pertaining to housing consumption (H).

Table 7-2

LIKELIHOOD-RATIO CHI-SQUARE VALUES AND DEGREES OF FREEDOM  
FOR SELECTED MODELS FITTED TO DATA IN TOP PANEL OF TABLE 7-1

Model	Marginals Fitted	Degrees of Freedom	$G^2$	Probability
(1)	(CP) (H)	3	34.7251	<.0001
(2)	(CP) (PH)	2	18.1539	.0003
(3)	(CP) (CH)	2	14.8522	.0009
(4)	(CP) (CH) (PH)	1	.0031	.9544
(5)	(CPH)	0	0	1.0000

Model (1) describes a baseline hypothesis that controls for parental differences between cohorts, but assumes that housing consumption is

identical for both cohorts and for both parental statuses. This model assumes that the total ownership rate in the table (57.6 percent) applies to all subcategories. The very high likelihood-ratio chi-square ( $G^2$ ) value of 34.7251 with 3 degrees of freedom indicates that this model does not fit well and at least one significant relationship needs to be added in order to describe the data adequately.

Models (2) and (3) in Table 7-2 test alternative hypotheses. Model (2) fits two two-way marginals to the data--(CP) and (PH)--reflecting the hypothesis that, controlling once again for the relationship between cohort and parental status, the data can be adequately described by the relationship between parental status and housing consumption. Model (3) also contains two two-way marginals--(CP) and (CH)--but it assumes that the key housing relationship is with cohort instead of parental status. Table 7-2 shows that the likelihood-ratio chi-square values for these models are still high and generate cell frequencies that are significantly different from the observed frequencies. When all three two-way marginals are included in the model specification, as in Model (4), a very close fit is obtained to the data. Only the saturated model--Model (5)--containing the full three-variable interaction (and exactly describing the data) provides a better fit, but the reduced model with three separate two-way marginals is adequate to describe the observed frequencies, and so it is adopted as the best-fitting model containing all significant relationships.

Despite their relatively poor fit, it is useful to examine closely the expected values produced by Models (2) and (3) because the pattern of these values reveals more clearly the implications of the alternative

model assumptions. The second and third panels of Table 7-1 report the expected frequencies generated by the two alternative model specifications. Model (2) assumes that the observed data can be generated by two two-way marginals, omitting the relationship between cohort and housing consumption. The resulting expected frequencies in the second panel of Table 7-1 show that the percentage who are homeowners is greater for parents of older children but that there is no difference between the two cohorts. Comparing the observed and expected frequencies in the homeownership cells, we see that the expected frequencies of homeownership for the 1960 cohort are too high, while those for the 1970 cohort are too low. These differences (together with the reciprocal differences in the non-homeowner cells) are large enough to generate the significant discrepancy reported by the chi-square value in Table 7-2.

Model (3) contains a different assumption; namely, that the data can be described without including the relationship between parental status and housing consumption and by including instead the relationship between cohort and housing. The expected values generated under this model are presented in the third panel of Table 7-1. These expected frequencies indicate a 3.7 percentage homeownership difference between cohorts but not between parental statuses. Comparing the observed and expected frequencies in the homeownership cells, it is apparent that the estimated ownership for parents of young children is too high in both cohorts and it is too low for parents of older children in both cohorts. These differences are also so large as to generate a significantly large chi-square value in Table 7-2.

The model that fits the observed frequencies best is Model (4)

containing all three two-way marginals. While the expected values generated by this model are not reported in Table 7-1, they are very close to the observed data. In the observed data there is a difference in homeownership both between cohorts and between parent groups. However, because the full three variable interaction (the saturated model represented by Model (5)) is not required to adequately fit the observed data, we know that the relationship between homeownership and parenthood has not altered between cohorts or, alternatively, that the relationship between cohort and homeownership is not different between parent groups.

The procedure for significance testing that is illustrated by the example discussed here can be extended to models applied to data tabulated in tables with four, five, six or more dimensions (variables). While these models can become much more complex, virtually the same procedure is followed as for the three variable example. Using the technique of fitting marginals with hierarchical loglinear models we can determine systematically and very efficiently what effects in the table are significant and worthy of close scrutiny.

The second stage in the analysis is to calculate the strength and direction of the significant effects comprising the reduced models. Table 7-1 presents two different measures for estimating effects: percentages and odds. The odds of homeownership are calculated as the ratio of owners to non-owners, while the percentage homeowners is calculated as the ratio between owners and the total persons in a group. Odds of 1.0 equal a percentage of 50 percent, with odds above 1.0 corresponding to a percentage greater than 50 percent, and odds below 1.0 corresponding to a percentage less than 50 percent. The exact relationship between the odds and a

percentage based on the same data is described by the following, alternative equations:

$$\frac{\text{Percent}}{100 - \text{Percent}} = \text{Odds}$$

$$\frac{\text{Odds}}{1 + \text{Odds}} \times 100 = \text{Percent}$$

Odds and odds-based measures are preferred for multivariate analysis because they are based only on individual cell frequencies within a table and do not depend, as does the percentage method, on marginal totals. Because of this property odds can be manipulated to express many different relationships within the same table. The primary measure that is used to describe statistical effects in this chapter is the odds ratio. The ratio of ownership odds for one group relative to another can be interpreted as the effect of group membership (other factors being equal) on ownership attainment. For example, the expected odds of ownership under Model (2) in Table 7-1 are 1.429 for parents of older children and 1.236 for parents of younger children. The odds ratio (older relative to younger) is 1.156, measuring the ownership advantage of parents with older children.

Additional effects can be calculated by taking the ratios of odds ratios to form higher-order odds ratios. For example, the ratio of the parent-housing odds ratio in 1970 to the ratio in 1960 measures the change over time in the relationship between parenthood and ownership attainment. In the expected frequencies generated by Model (2) this second-order odds ratio is 1.0, indicating no change in the relationship.

A second-order relationship of less than 1.0 (1970 relative to 1960) would have indicated a weakening of the 1960 relationship, while a second-order ratio of more than 1.0 would have indicated an intensification of the 1960 relationship. Of course, the finding of no change was predetermined by the model specification. A second-order odds ratio cannot depart from 1.0 unless a three-variable interaction term (a three-way marginal) is fitted to the data.

While odds ratios form the basis for log-linear analysis of contingency tables (cf. Bishop et al., 1975: 13-29), the log-linear model is based on additive combinations of cell frequencies in log form. This transformation of the multiplicative model based on odds and odds ratios into an additive model based on logs has been adopted for ease of computation and also, apparently, because the resultant formulation resembles the analysis of variance notation and conceptualization. Nevertheless, as Page (1977) and others have pointed out, the log transformation makes it much more difficult to interpret the statistical findings' substantive implications. Page recommends printing the expected frequencies generated by the best-fitting log-linear model and then calculating the magnitude of the significant effects in odds ratio form. This is the procedure that will be followed for the analysis presented in this chapter.

#### Selection of Cohorts for Cross-Sectional Comparison

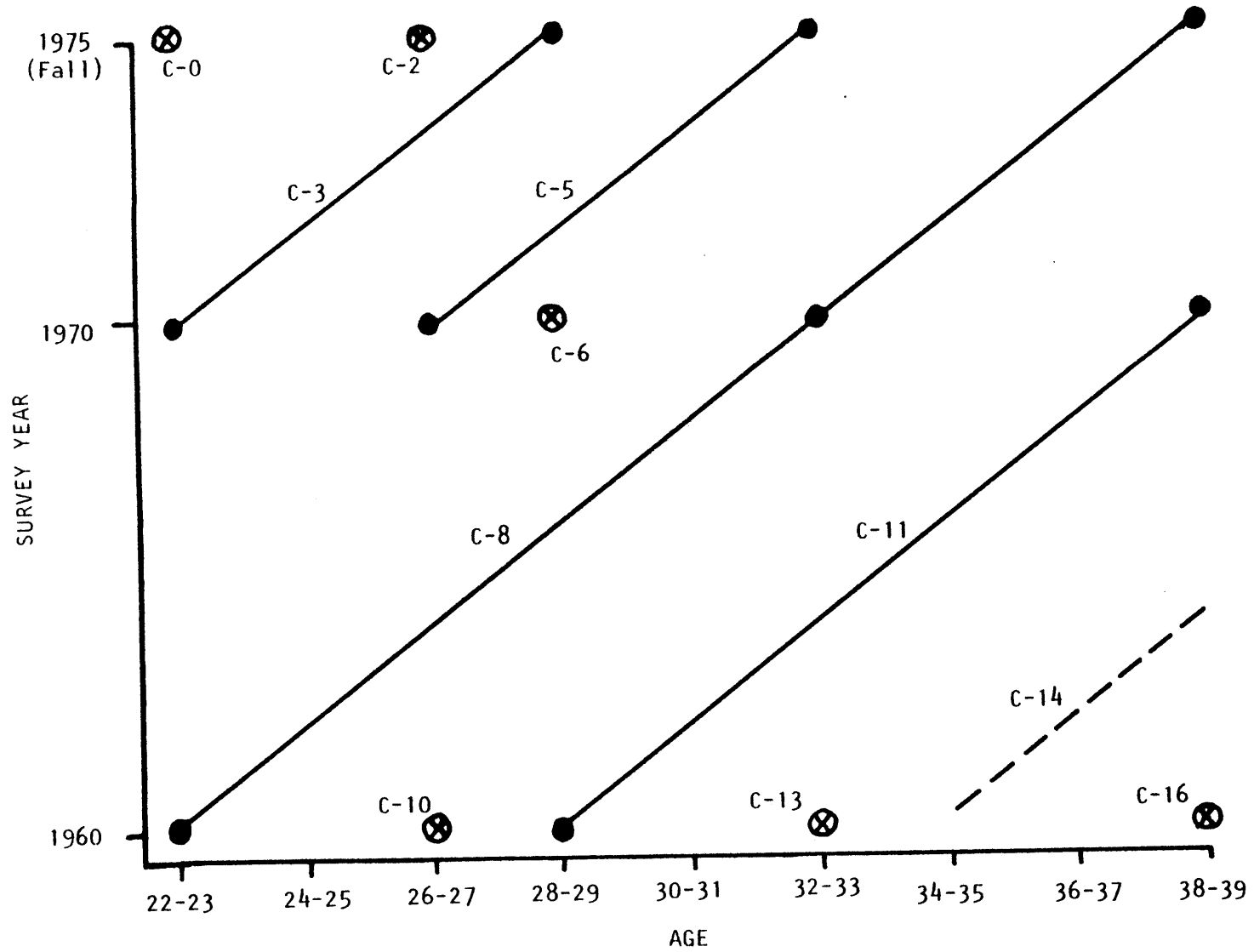
Using the 1960, 1970, and (fall) 1975 survey data implies that at most three cohorts can be compared when they are the same age. In the preceding chapter we focused the analysis on five cohorts: C3, C5, C8, C11, and C14. When these cohorts are traced across the three survey

years, ages 22-23, 26-27, 28-29, 32-33, and 38-39 are identified as the most appropriate ages for cross-sectional analysis if we are to establish continuity with the preceding chapter's analysis (see Figure 7-1).

These ages are appropriate on other grounds as well. Age 22-23 is the youngest age where we have strong confidence in the accuracy of the data and age 38-39 is the oldest age for which data have been collected in our sample frame, so both ages seem reasonable candidates for analysis. Moreover, ages 26-27, 28-29, and 32-33 have special importance because of their location within the age span where recent cohorts have rebounded from relatively low to progressively higher ownership rates. The changing age-time shape of single-family homeownership attainment was a major finding in the preceding chapter. It is possible that the changing linkage between family formation and ownership attainment is highly pronounced within age groups of the late twenties and early thirties, and these changes might account for cohorts' delayed, but relatively great, ownership attainment.

The sample cohorts are traced through the survey years in Figure 7-1. The 1975 survey has been treated like a 1976 survey because it was taken only 6 months before the two-year age groups would have enclosed the cohorts defined by age in 1970. As it is 25 percent of the cohort members are excluded by this age definition in the fall of 1975, and whatever changes are observed between 1970 and 1975 are slightly underestimated relative to the changes between 1970 and spring 1976. To complete the cross-sectional comparison, additional cohorts are sampled for each target age not occupied in a given survey year by one of the five sample cohorts. At the older ages in 1960, however, both the C14

FIGURE 7-1: SCHEMATIC REPRESENTATION OF THE COHORT SAMPLE PLAN





cohort and the "extra" observation at age 38-39 have been omitted for different reasons. The cohort aged 38-39 in 1960 established its families during the 1940s and does not represent the post-war experience as clearly as does the cohort aged 38-39 in 1970 (C11). The C14 cohort has been omitted partly for this reason, but primarily because it is the only sample cohort that cannot be observed as recently as 1970.

Before proceeding with the analysis a caution must be noted about the dangers of confusing age, cohort, and period (survey year) effects. When we compare cohorts at a given age we also are comparing periods because each cohort comes from a different survey year. As discussed in Chapter 5, it should be recognized that the cohort differences that are identified could just as likely be period differences. It is never possible to decompose these effects statistically, and so we must rely on the understanding that differences in cohort experience are a function of both period differences and behaviors unique to particular cohorts. That is to say, differences in housing careers can be caused by the fact that "times have changed" as well as by the fact that cohorts might be uniquely different.

#### FAMILY DISTRIBUTION OF OWNERSHIP ATTAINMENT

Following the cohort sample plan, cohorts in different survey years are compared at the same age. This analysis proceeds in two parts. First, the ever-married portions of cohorts are analyzed for basic differences in the effect of family status on homeownership attainment. Never-married women are excluded because too few have children to permit statistical analysis. Following this initial analysis, the currently

married portions of cohorts will be subjected to more detailed analysis adding income and labor force participation variables. The task of the later analysis will be to learn what effect these added variables have upon the basic relationships uncovered in the first section.

#### Single-Family Ownership of Ever-Married Women

Several research questions are addressed in this section. Has the ownership disadvantage of previously married women decreased in recent cohorts? Has the ownership disadvantage of childless women or women with young children decreased in recent cohorts? Is the effect of parent status different in different marital statuses, and has this interaction effect shifted for recent cohorts? These questions are addressed in two stages. We begin by conducting tests for statistical significance to learn what effects are present in the cohort data. Then these significant effects are measured for their strength.

A number of hierarchical log-linear models have been fitted to the cohorts compared at each age. Table 7-3 summarizes these results. Similar models are fitted to the data in each cohort comparison, so we will begin with a more detailed explanation of the tests for the youngest age group.

Model (1) for age 22-23 tests the hypothesis that cohort, marital status, and parent status each have a separate effect on ownership attainment. The large chi-square for this model indicates that this model fits poorly, and so this hypothesis must be rejected. Model (2) tests the hypothesis that the effects of marital status and parenthood on ownership are different in each cohort. This model generates a very low

Table 7-3: HIERARCHICAL LOG-LINEAR MODELS OF MARGINALS FITTED  
TO THE FAMILY AND HOUSING STATUSES OF EVER-MARRIED  
WOMEN IN SELECTED COHORTS AT EACH AGE

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Marginal Specifications

C = Cohort (observed in 1960, 1970, or fall 1975)

M = Marital Status (currently married, previously married)

P = Parent Status (childless, child under 6, child 6 or older)

H = Housing Status (single-family owner, other)

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A. AGE 22-23: Cohorts C8, C3, C0

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CMP) (CH) (MH) (PH)	51.7857	12	.0001
(2)	(CMP) (CMH) (CPH)	5.3001	6	.5071
(3)	(CMP) (CMH) (PH)	43.8068	10	.0001
* (4)	(CMP) (MH) (CPH)	12.8794	8	.1155

---

B. AGE 26-27: Cohorts C10, C5, C2

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CMP) (CH) (MH) (PH)	76.4816	12	.0001
(2)	(CMP) (CH) (MPH)	71.0559	10	.0001
(3)	(CMP) (CMH) (PH)	74.2460	10	.0001
* (4)	(CMP) (MH) (CPH)	13.6343	8	.0913

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C. AGE 28-29: Cohorts C11, C6, C3

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CMP) (CH) (MH) (PH)	56.6115	12	.0001
(2)	(CMP) (CMH) (CPH)	15.6909	6	.0155
(3)	(CMP) (CMH) (PH)	52.4695	10	.0001
* (4)	(CMP) (MH) (CPH)	19.6393	8	.0119

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D. AGE 32-33: Cohorts C13, C8, C5

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CMP) (CH) (MH) (PH)	44.39	12	.0001
(2)	(CMP) (MH) (CPH)	33.7118	8	.0001
(3)	(CMP) (CMH) (PH)	41.5506	10	.0001
* (4)	(CMP) (CH) (MPH)	20.5455	10	.0243

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 E. AGE 38-39: Cohorts C11, C8

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
* (1)	(CMP) (CH) (MH) (PH)	15.2051	7	.0331
(2)	(CMP) (CMH) (PH)	14.5389	6	.0239
(3)	(CMP) (MH) (CPH)	10.2137	5	.0686
Difference between (1) and (3)		4.9914	2	.0804

---

\* Designates the best-fitting model at each age. The criteria for best fit are:

- a) Chi-square  $\geq .01$
- b) Most reduced terms without generating a significant chi-square

chi-square when it is compared to the actual data, indicating a very close fit. The hypothesis that only parenthood has a constant effect on ownership in each cohort is tested in Model (3), but this model fits poorly. Finally, the fourth model tests the hypothesis that only marital status has a constant effect in each cohort. This model generates a low chi-square and, though it is greater than for Model (2), this model is preferred because its difference from the true data is not significant and because it requires fewer marginals to fit the data. Further tests (unreported) indicate that this model cannot be reduced further.

These significance tests lead to several substantive conclusions. First, the tests control for the differences among cohorts in marital status and parenthood by including the (CMP) term. After controlling for these demographic differences, a number of hypotheses are tested about effects on ownership. These tests show first that the disadvantage of previously-married women is the same in all cohorts because a (CMH) term is not required to fit the data adequately. Secondly the effect of parenthood is not different for married and previously-married women because a (MPH) term is not required. Finally, we have learned that the effect of parenthood is different in each cohort because a (CPH) term is needed to fit the data. Whether or not this represents a decrease in the disadvantage of childless or young-child families cannot be determined at this stage of the analysis. To answer that question we must compute the strength of the effects from the modeled data. Before reporting those effects let us summarize the significant, fitted models that have been determined for the other age groups.

At ages 26-27 and 28-29 the best fitting model is identical to that

for the youngest age group: (CMP), (CPH), (MH). In brief, this model implies a constant marital effect on ownership in each cohort and it indicates that the advantage of parents with school-age children differs between cohorts.

The relationship between family behavior and ownership attainment is substantially different, however, at age 32-33. Several models of fitted marginals are summarized in Table 7-3, and the only one that fits the data reasonably well, Model (4), contains different fitted marginals than for models in the younger age groups: (CMP), (CH), (MPH). This model contains a significant interaction among marital status, parenthood and housing, as represented by the (MPH) term. This indicates that the effect of marital status is not constant and varies by parent status. The model also contains a (CH) term that indicates a constant difference in ownership between cohorts that does not depend significantly on parent status as was the case for younger age groups.

The best fitting model at age 38-39 has a simpler structure than the other significant models selected for preceding age groups: (CMP), (CH), (MH), (PH). This model contains separate independent relationships between housing and each of the other variables. None of these relationships is significantly affected by another of the model variables. The most noteworthy feature of this model is that the effect of parent status on ownership is constant across cohorts and marital statuses.

We now turn to the question of how strong are the significant effects contained in the best fitting models selected for the different age groups. There are two basic effects on ownership that need to be evaluated: the effect of marital status on ownership and the effect of parent status on

ownership. Let us begin with the marital status effect, because it has the simplest, and strongest, link to homeownership. After we have assessed the marital effect at each age, we can turn to analysis of the more complicated parenthood effect.

The effect of marital status on ownership can be described as the ratio between ownership odds for married and previously-married women. The ownership odds ratios for each age group are reported in Table 7-4. The effect of being currently married is extremely strong, raising ownership odds approximately 8 times over those for previously-married women (divorced, separated, or widowed women). At age 32-33 there is no single significant effect of marital status: the effect of being currently married is significantly greater for childless women than for women with children.

The strength of the marital effect is not surprising, given the drastic changes that usually accompany marital disruption: income plummets, family life-style is altered, and the ex-wife is likely to change residence.<sup>2</sup> Ex-wives may be both less likely to retain ownership over time and also less likely to acquire it for the first time. The fact that the marital difference is so much greater for childless women at age 32-33 is possibly explained in two ways. One explanation is that these women were less advanced in their family careers at the time of disruption, and so they had not yet acquired the housing desired for family raising. The second possible explanation is that childless ex-wives are less likely to have retained ownership than mothers who become the heads of single-parent families. The surprising finding is that similar significant differences are not present in other age groups.

Table 7-4: EFFECT OF MARITAL STATUS ON OWNER-OCCUPANCY

(Ownership Odds Ratio Between Married and  
Previously-Married Women)

Age	Parent Status		
	Childless	Young-Child	School-Age Child
22-23		8.378 <sup>a</sup>	
26-27		7.789 <sup>a</sup>	
28-29		7.915 <sup>a</sup>	
32-33	12.407 <sup>b</sup>	5.227 <sup>b</sup>	6.531 <sup>b</sup>
38-39		6.512 <sup>a</sup>	

a. Derived from the (MH) fitted marginal in the best-fitting model for this age group. The effect of marital status on ownership is constant across other variables.

b. Derived from the (MPH) fitted marginal in the best-fitting model for this age group. The effect of marital status on ownership varies by parental status.



### The Family Timing Effect on Ownership

Let us turn our attention now to the parenthood effect on ownership. There are two substantive interpretations of the interaction of cohort and parenthood in their effect on homeownership when ownership is treated as the dependent variable. The first interpretation is that the change in ownership between cohorts is different in each parent status, while the second interpretation is that the difference in ownership between parent statuses changes for each cohort. These two interpretations are not contradictory, and in fact they represent merely a different emphasis on the same information. Nevertheless, the two interpretations embody different insights. We will discuss them in turn.

One of the findings in the preceding chapter was that ownership experience has increased most rapidly in those family statuses where it has been lowest traditionally. The current analysis permits statistically more accurate estimates of the changes between cohorts. The trend toward increased ownership can be measured as the ratio of ownership odds in one cohort to those for an earlier cohort. Table 7-5 summarizes these "change ratios" for each parent status in the age groups that have been analyzed. An initial observation to be made about these change ratios is that greater increases in ownership occurred between 1970 and 1975 than between 1960 and 1970. In only three age-parent groups did the odds of ownership decline between cohorts (a change ratio less than 1.0). Slight declines occurred between 1960 and 1970 among childless and young-child parents at age 22-23, and between 1970 and 1975 for school-age parents at age 26-27.

The important point to note is that increases between cohorts in age

Table 7-5: CHANGE RATIOS BETWEEN COHORTS OF OWNERSHIP ODDS FOR EACH PARENT STATUS

(Ownership Odds Ratios Between Recent and Earlier Cohorts)

		Cohort <sup>a</sup> Comparisons At Each Age		
Age	Parent Status	1970 Relative to 1960	1975 Relative to 1960	1975 Relative to 1970
22-23 <sup>b</sup>	Childless	.852	1.569	1.842
	Young-Child	.900	1.017	1.129
	School-Age	1.106	1.161	1.050
26-27 <sup>b</sup>	Childless	1.152	1.840	1.597
	Young-Child	1.165	1.491	1.280
	School-Age	1.091	1.007	.923
28-29 <sup>b</sup>	Childless	1.139	1.692	1.484
	Young-Child	1.162	1.689	1.453
	School-Age	1.170	1.213	1.037
32-33 <sup>c</sup>	Childless			
	Young-Child	1.115	1.384	1.241
	School-Age			
38-39 <sup>c</sup>	Childless			
	Young-Child	--- <sup>d</sup>	--- <sup>d</sup>	1.247
	School-Age			

a. Cohorts are identified by the survey year in which they occupied the specified age group (see Figure 7-1).

b. Ratios are derived from the (CPH) fitted marginal in the best-fitting model for this age group. The effect of cohort on ownership varies by parent status.

c. Ratios are derived from the (CH) fitted marginal in the best-fitting marginal for this age group. The effect of cohort on ownership is constant across other variables.

d. The 1960 cohort was not sampled for this age group.

groups under 30 were greater in the childless and young-child families than in the families with school-age children. For example, at age 28-29 the ownership odds for childless couples increased 1.484 times between 1970 and 1975 while those for parents of school-age children increased by only 1.037. At ages 32-33 and 38-39, however, there was no significant difference among parent groups in the rate of ownership increase between cohorts. Between 1970 and 1975 ownership odds increased by 1.241 and 1.247 for the respective age groups. Overall, the 1970-75 change ratios indicate that under age 30 ownership increases were concentrated in the childless and young-child parent statuses.

Three hypotheses are suggested by the occurrence of this ownership expansion in family statuses which the previous chapter identified as growing in cohort participation. The first possibility is that the trend toward increasing ownership among childless and young-child families merely represents a broadening of ownership opportunity to include family statuses where it is traditionally lowest. Whereas this rather vague hypothesis assumes that the ownership trend and the trend toward changing family participation are independent of one another, a second hypothesis assumes a passive link between the two trends. The second hypothesis asserts that there is a fixed likelihood of ownership in a cohort at each age, and as the cohort members distribute themselves disproportionately into different family statuses (relative to their predecessors) they carry increased likelihood of ownership into those growing family statuses. As an illustration of this hypothesis, if childless couples in the past were social deviants who cared neither for children nor homeownership, and if present childless couples subscribed more to the mainstream social

values (including homeownership), then the trend toward increased childlessness could be accompanied passively by higher ownership rates for childless couples.

In addition to the hypotheses of independent relationship and passive relationship, there is a third hypothesis that posits a causal link between the family and housing trends. This hypothesis states that the reason ownership has increased so much faster in childless and young-child statuses is that married couples have occupied those statuses as part of a strategy to acquire single-family homeownership. The causal hypothesis assumes that by postponing parenthood married couples are aided in their struggle for homeownership. This advantage stems from the fact that family income and accumulated savings can be increased if wives maintain continuous labor force participation, and added family expenditures also can be avoided by postponing parenthood (cf. Roistacher and Young, 1979).

Attitudinal survey data do not exist by which to test the three hypotheses linking family and housing behavior. Instead we must test the validity of the alternative hypotheses by closely examining the cohort behavior patterns. Because the hypotheses have an implicit hierarchical order, it is not necessary to test each separate hypothesis. For example, if it can be shown that there is a passive relationship between family and housing changes, then the hypothesis of independence can be rejected. And if evidence of a causal relationship can be discerned, then both the independent and passive hypotheses can be rejected.

Further evidence can be brought to bear on these hypotheses by subjecting the relationships among cohort, parent status, and ownership to a second interpretation. This second interpretation focuses on the

relationship between ownership odds in different parent statuses. If ownership is increasing more rapidly between cohorts for childless and young-child couples, then the ownership advantage of parents with school-age children should be reduced for more recent cohorts. The odds ratio between ownership odds in each parent status and ownership odds for school-age parents may be termed a "disadvantage ratio." A ratio of 1.0 implies parity of ownership between families in early stages and families containing school-age children, and a ratio below 1.0 indicates a relative disadvantage for families in early stages.

The disadvantage ratios for the cohorts and age groups we have analyzed are presented in Table 7-6. In 1960 the disadvantage ratios for each cohort indicate that childless couples had ownership odds only 0.4 times as high as those for parents of school-age children, while parents of young children had ownership chances that were .74 to .90 times as high as school-age parents' chances. Only slight changes occurred in this pattern at each age between 1960 and 1970. In 1975, however, substantial improvements occurred in the disadvantage ratios because of the disproportionate ownership increases that occurred in the childless and young-child family groups.

The startling observation is that in two of the age groups, 26-27 and 28-29, couples with young children reversed their traditional ownership disadvantage relative to parents of school-age children. Ownership increased so much at the young-child family stage that at age 26-27 ownership odds were 1.33 times greater than for parents of school-age children and at age 28-29 ownership odds were 1.21 times as great. The evidence for these age groups at least does not support the hypothesis of either

Table 7-6: OWNERSHIP DISADVANTAGE RATIOS BETWEEN PARENT STATUSES FOR EACH COHORT

(Ownership Odds Ratios Between Childless or Young-Child Parents and Parents of School-Age Children)

Age	Parent Status	Cohort <sup>a</sup>		
		1960	1970	1975
22-23 <sup>b</sup>	Childless	.410	.316	.554
	Young-Child	.896	.729	.784
	School-Age Child	1.000	1.000	1.000
26-27 <sup>b</sup>	Childless	.383	.405	.701
	Young-Child	.898	.959	1.330
	School-Age Child	1.000	1.000	1.000
28-29 <sup>b</sup>	Childless	.384	.374	.597
	Young-Child	.869	.863	1.209
	School-Age Child	1.000	1.000	1.000
32-33 <sup>c</sup>	Childless		<u>Married</u>	<u>Previously Married</u>
	Young-Child		.384	.202
	School-Age Child		.744	.930
38-39 <sup>d</sup>	Childless		1.000	1.000
	Young-Child			.281
	School-Age Child			.464
				1.000

a. Cohorts are identified by the survey year in which they occupied a specified age group (see Figure 7-1).

b. Ratios are derived from the (CPH) fitted marginal in the best-fitting model for this age group. The effect of parent status on ownership varies by cohort.

c. Ratios are derived from the (MPH) fitted marginal in the best-fitting model for this age group. The effect of parent status on ownership varies by marital status, and not by cohort.

d. Ratios are derived from the (PH) fitted marginal in the best-fitting model for this age group. The effect of parent status on ownership is constant across other variables. The 1960 cohort was not sampled for this age group.

an independent or passive link between the family and housing trends. Were the relationship merely passive, we would expect ownership to increase in the childless category only up to the point where ownership odds were equal in the two categories. Instead, we observe that in 1975 cohorts occupying certain age groups have gained a statistically significant advantage in homeownership if they have younger children.

The hypothesis of a causal link between the family and housing trends must be seriously entertained. The causal hypothesis argues that recent cohorts have postponed childbearing so that they may pursue a desired standard of living--part of which consists of acquiring single-family homeownership. Whether or not the explicit intent is to maximize their chances for homeownership, the revealed behavior pattern indicates that wives who have borne children only within the past six years have acquired a homebuying advantage over wives of the same age who started their families earlier.

This shift in ownership advantage was only observed for cohorts at two ages in 1975. Since we did not sample all possible cohorts in the three time periods, it would be useful to learn whether any other cohorts have experienced this new pattern of ownership advantage to delayed parenthood. To gain this overview, Figures 7-2 and 7-3 portray the odds ratios between different family statuses for married couples at each age but not controlling for other factors. Figure 7-2 shows the ownership odds ratio at each age between childless couples and parents of school-age children, while Figure 7-3 graphs the ownership odds ratio between parents of young children and parents of school-age children. These odds ratios measure the disadvantage of childless and young-child couples

FIGURE 7-2: RATIO OF OWNERSHIP ODDS BETWEEN CHILDLESS COUPLES AND COUPLES WITH SCHOOL-AGE CHILDREN, BY AGE OF WIFE

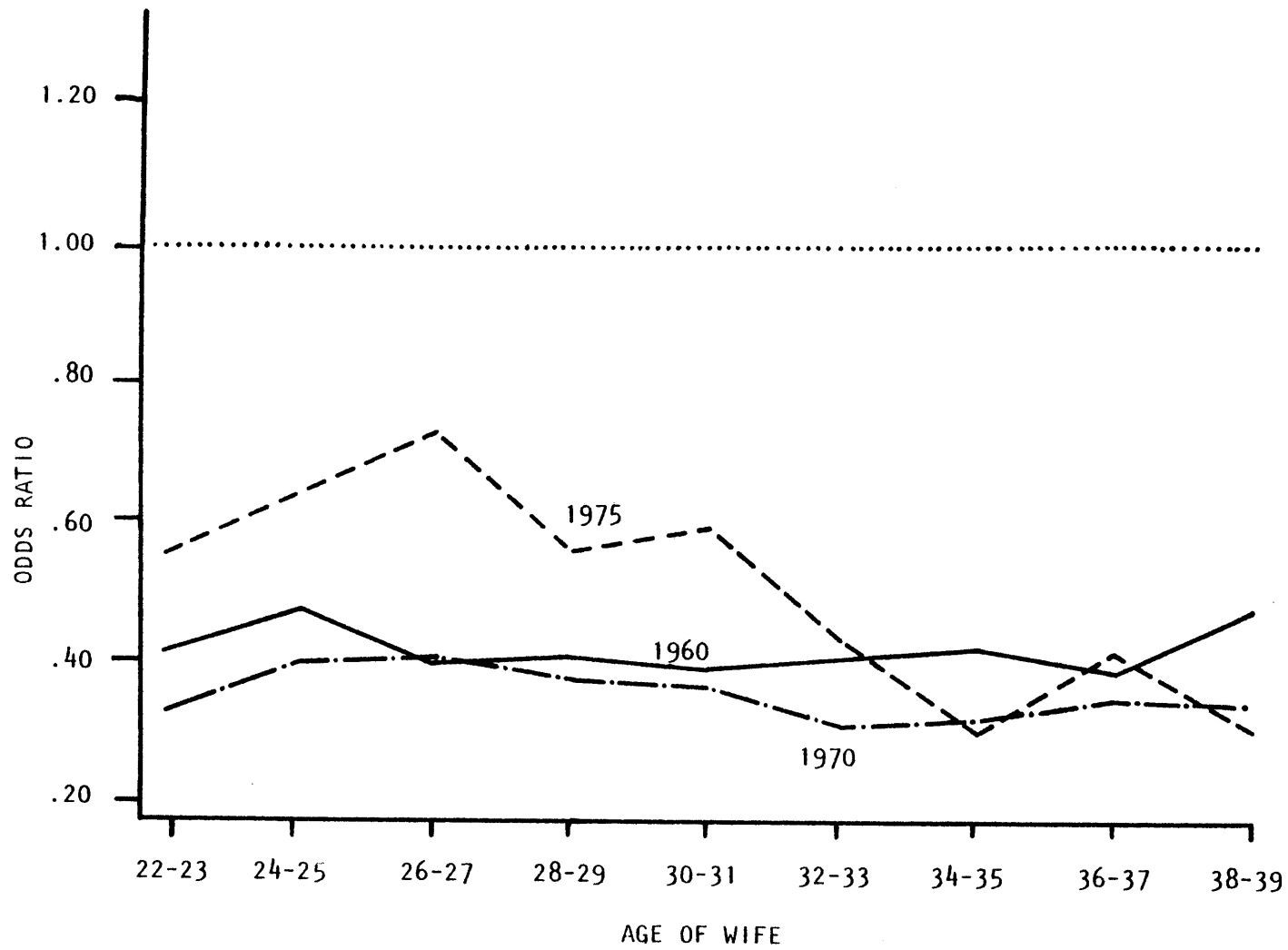
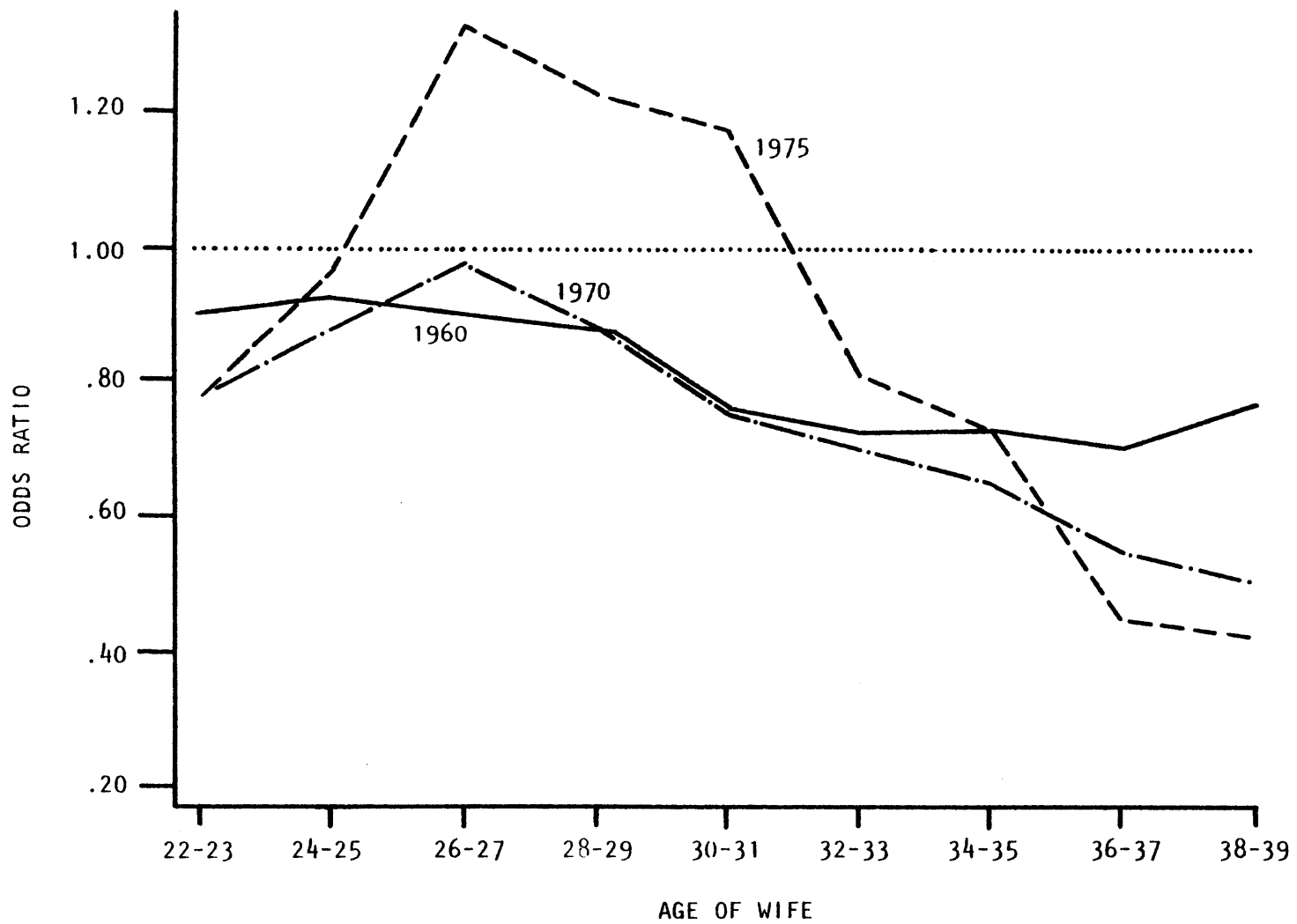




FIGURE 7-3: RATIO OF OWNERSHIP ODDS BETWEEN COUPLES WITH OLDEST CHILD UNDER AGE 6 AND COUPLES WITH SCHOOL-AGE CHILDREN, BY AGE OF WIFE



relative to parents of school-age children.

In both 1960 and 1970 Figure 7-2 shows that childless couples have ownership odds that are only about .40 of those for school-age parents at the same age. The 1975 disadvantage is much weaker as the relative odds rise as high as .72 at age 26-27. Examining the next figure, we see that among couples with young children in 1960 and 1970, the relative odds are higher but remain below 1.0 in every year. The relative odds in 1975, however, rise above 1.0 for three consecutive ages before dropping off sharply after age 30-31. Thus three consecutive cohorts--C2, C3, and C4--aged 26-27, 28-29, and 30-31 revealed a pattern in 1975 of ownership advantage by parents of young children.

This observation raises several puzzles. Why did this shift in advantage appear in 1975? Why is the shift apparent only between 26 and 31? Will the three cohorts carry this pattern forward to older age groups, and is there any evidence that they carried the new pattern forward from younger ages? Answering these questions requires a difficult separation of effects resulting from four temporal characteristics: cohort, period, age, and family stage.

Prior to addressing this task it would be helpful to investigate the changes for our selected cohorts in greater detail. For example, it is possible that higher-income families have postponed childbearing more than poor families, and it could be partly for this reason that ownership has increased disproportionately in the delayed parent categories. In addition, we ought to also investigate the contribution of married women's labor force participation to the pattern of ownership advantage. The effects of income and labor force participation are probed in the next two sections.

MORE DETAILED ANALYSIS OF OWNERSHIP TIMING  
AMONG MARRIED COUPLES

The analysis in the preceding section has uncovered evidence that cohorts occupying ages 26 through 31 in 1975 experienced an advantage in homebuying if they included only very young children. This change is consistent with the causal hypothesis linking family and housing changes in recent cohorts. This hypothesis states that young married couples have delayed childbearing so that they may acquire a higher standard of living-- a major part of which consists of homeownership attainment. While the evidence shows that couples who postponed childbearing have achieved a homeownership advantage, it is desirable to probe this relationship further in search of other factors that might contribute to this apparent advantage.

Impact of Family Income on Ownership

One potential spurious effect that could lead to an apparent advantage for couples who delay childbearing is created by class differentials in both homebuying and childbearing. If richer people are more likely to buy homes and also delay childbearing, then postponed parents could have higher ownership than non-postponed parents. This would not reflect the advantages of postponement per se. Instead, the appearance of a causal relationship would be created by the class differentials that are associated with both family and housing behavior. While this is a plausible relationship, it is not likely that the relationship has changed so substantially between 1970 and 1975 that it could account for the change in ownership advantage accruing to postponed parents.

Entering family income into the analysis of ownership attainment

will provide further evidence on cohort differences, and it will also provide a control for the potential spurious effect linking postponement and ownership. The variable to be used for income is categorized in \$5,000 increments (1969 dollars): less than \$5,000, \$5,000-\$9,999, \$10,000-\$14,999, and \$15,000 or greater. (The selection of this variable is defined in more detail in Chapter 6.) At age 22-23 so few married couples fall into the top income category that it is combined with the next highest interval to form a "high" category of \$10,000 or greater. At ages 26-27 and above, however, relatively few couples fall into the bottom category and so the bottom two categories are combined into a "low" category of under \$10,000.

Income enters the significant models of cohort differences in a different way for each age group. Table 7-7 summarizes some of the reduced models that were tested at each age. The best fitting model at age 22-23, Model (4), indicates by the (CIH) term that the effect of income on housing is different for each cohort. This effect is independent of the family effect on housing in each cohort described by (CPH). At age 26-27, however, there is no reduced model that adequately fits the data. Since the complete set of all possible 3-variable interaction terms are not sufficient, only the original data can summarize the significant relationships that exist. This implies that every relationship depends on every other relationship, making interpretation of the data more difficult.

In contrast, the best fitting model at age 28-29 contains a simple formulation--(IH)--for the effect of income on housing. This association effect indicates that essentially the same income effect applies to

Table 7-7: HIERARCHICAL LOG-LINEAR MODELS OF MARGINALS FITTED TO THE FAMILY, HOUSING, AND FAMILY INCOME STATUSES OF CURRENTLY MARRIED WOMEN IN SELECTED COHORTS AT EACH AGE

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Marginal Specifications

C = Cohort (observed in 1960, 1970, or fall 1975)  
P = Parent Status (childless, child under 6, child 6 or older)  
I = Income (low, middle, high--  
see text)  
H = Housing Status (single-family owner, other)

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A. AGE 22-23: Cohorts C8, C3, C0

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CIP) (CPH) (IH)	41.5676	16	.0007
(2)	(CPI) (CPH) (CIH) (PIH)	8.8653	8	.3534
(3)	(CPI) (CPH) (PIH)	29.2700	12	.0039
* (4)	(CPI) (CPH) (CIH)	21.7397	12	.0402

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B. AGE 26-27: Cohorts C10, C5, C2

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CPI) (CPH) (CIH) (PIH)	34.5463	8	.0001
* (2)	(CPIH)	0	0	1.00

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C. AGE 28-29: Cohorts C11, C6, C3

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
* (1)	(CPI) (CPH) (IH)	31.0816	16	.0132

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D. AGE 32-33: Cohorts C13, C8, C5

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CPI) (PH) (CIH)	33.3084	16	.0069
(2)	(CPI) (PIH) (CIH)	23.2960	12	.0251
* (3)	(CPI) (CPH) (CIH)	25.5471	12	.0125
(4)	(CPI) (CPH) (PIH) (CIH)	16.1431	8	.0400
Difference between (2) & (4)		7.1529	4	.1268
Difference between (3) & (4)		9.4040	4	.0509

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each cohort and family status, and the income effect is independent of the family and cohort effect on housing represented by (CPH). At age 32-33, however, there is no clear-cut "best-fitting" model. Table 7-7 summarizes four models that provide a fairly close fit to the actual data. Models (1) and (2) are each subsets of Model (4), and each of these reduced models provides an adequate fit to the data. These models share two terms, (CPI) and (CIH), but contain different terms representing the effect of family status on housing. In Model (2) the (PIH) term indicates that this effect depends upon income level, while in model (3) the (CPH) term indicates that the family-housing effect depends on cohort. If these terms could be reduced to their common (PH) term, this dispute would be resolved, but Model (1) shows how much the chi-square is increased under this assumption. In the interest of simplicity, Model (3), with the (CPH) term is selected as best-fitting because the income effect is already included in the (CIH) term and because this model is more consistent with those in other age groups.

Let us turn now to an analysis of the magnitude of income's effect on homeownership attainment. Table 7-8 expresses the income effect as the ratio of ownership odds in the middle or highest income class to those in the lowest income class. As we would expect, ownership is much more likely for high-income than middle-income families, and ownership for the lowest income group--the omitted reference group--is lowest of all (1.000). The simplest effect of income is observed at age 28-29, where middle-income families have ownership odds 2.156 times greater than those of low-income families and high-income families have odds 3.120 times those of low-income families.

Table 7-8: EFFECT OF FAMILY INCOME ON OWNER-OCCUPANCY

(Ownership Odds Ratio Between Middle or High-Income  
Couples and Low-Income Couples)

Age	Parent Status	Cohort <sup>a</sup>					
		1960		1970		1975	
		Income Class Middle	Income Class High	Income Class Middle	Income Class High	Income Class Middle	Income Class High
22-23 <sup>b</sup>	All Statuses	2.365	3.979	2.149	4.000	2.580	5.989
26-27 <sup>c</sup>	Childless	2.540	2.396	1.889	2.507	3.158	8.394
	Young-Child	2.282	3.458	2.055	2.813	2.317	3.104
	School-Age Child	2.286	2.381	2.044	2.835	2.842	3.771
28-29 <sup>d</sup>	All Statuses	2.156	3.120	2.156	3.120	2.156	3.120
32-33 <sup>b</sup>	All Statuses	2.567	3.234	2.545	4.061	2.509	4.825

a. Cohorts are identified by the survey year in which they occupied the specified age group (see Figure 7-1).

b. Odds ratios are derived from the (CIH) fitted marginal in the best-fitting model for this age-group. The effect of income on ownership varies by cohort.

c. Odds ratios are derived from the (CPIH) saturated model for this age group. The effect of income varies by cohort and parent status.

d. Odds ratios are derived from the (IH) fitted marginal in the best-fitting model for this age group. The effect of income on ownership is constant across other variables.

The income effect is more complex at other ages. Our reduced models showed that income's effect on housing varied by cohort for two age groups, 22-23 and 32-33. At both these ages, the increased ownership odds for middle-income families are relatively constant across cohorts, while the increased odds for high-income families grow even greater for the 1975 cohort. At age 22-23 high-income families' advantage moves from 4.0 times that of low-income families in 1970 to 5.989 times greater in 1975. This indicates that high income has become even more important in 1975 for ownership attainment at an early age than it was in 1970. This shift was not as great for the 32-33 age group, as the higher-income advantage shifted only from 4.061 to 4.825 between 1970 and 1975.

At age 26-27, a reduced model could not be fitted to the cohort data. Therefore, the effect of income on ownership odds can only be expressed with reference to each family and cohort category. While Table 7-8 presents the complete set of income effects, we can summarize the data as indicating an upward shift in 1975, particularly for high-income families who are childless. Since the advantage of middle-income couples also increased in this family status, this suggests that childless couples were earmarking their income for homeownership more readily than in the past.

Given this understanding of income's direct effect on ownership attainment, let us look now at the measures of ownership advantage by family type, controlled for the income effect. We are particularly interested in the disadvantage ratios for parents of young children at ages 26-27 and 28-29. Are these couples still more likely to be owners



than school-age parents, or has the control for income returned this family type to its traditional, less advantaged status?

The disadvantage ratios controlled for income are presented in Table 7-9. The far right column reveals at a glance that couples aged 26-27 and 28-29 are still more likely to be owners if they have young children. At age 28-29 young-child parents were 1.134 times more likely to be owners than school-age parents. Comparing this result to the disadvantage ratio previously reported in Table 7-6 indicates that the advantage is reduced somewhat (from 1.209) in these income models. Failure to obtain a reduced model at age 26-27 requires that separate disadvantage ratios be calculated for each income class. These ratios indicate that middle and high-income families have only a slight advantage with young children, but that low-income families have a substantial advantage (1.284).

The conclusion to be drawn from analyzing these income effects is, first, that controlling for income does not alter substantially the relative advantages of family types in any age group or cohort. Secondly, we saw earlier that high income is becoming increasingly important for ownership attainment, particularly at age 22-23 and among childless couples at age 26-27. This shows that high family income is being used by recent cohorts to acquire ownership at an earlier age and also at an early family stage.

#### Additional Effects of Wives' Employment on Ownership

Perhaps the most important means by which young families can increase their income is through the employment of both spouses. The rapidly rising rate of labor force participation for married women indicates how

Table 7-9: OWNERSHIP DISADVANTAGE RATIOS BETWEEN PARENT STATUSES  
FOR EACH COHORT AFTER CONTROLLING FAMILY INCOME

(Ownership Odds Ratios Between Childless or Young-Child  
Parents and Parents of School-Age Children)

Age	Cohort <sup>a</sup>					
	1960		1970		1975	
	Family Stage Childless	Family Stage Young-Child	Family Stage Childless	Family Stage Young-Child	Family Stage Childless	Family Stage Young-Child
22-23 <sup>b</sup>	.315	.817	.263	.714	.416	.785
26-27 <sup>c</sup>						
Low-Income	.303	.860	.328	.891	.336	1.284
Middle-Income	.337	.858	.303	.895	.373	1.047
High-Income	.305	1.248	.290	.884	.748	1.057
28-29 <sup>b</sup>	.333	.824	.292	.789	.433	1.134
32-33 <sup>b</sup>	.344	.699	.260	.653	.347	.736

a. Cohorts are identified by the survey years in which they occupied a specified age group (see Figure 7-1).

b. Disadvantage ratios are derived from the (CPH) term contained in the best-fitting model for this age group. The effect of family stage on ownership differs by cohort.

c. Disadvantage ratios are derived from the (CPIH) term--the saturated model--that fits best for this age group. The effect of family stage on ownership differs by cohort and by income level.

many married couples are adopting this strategy to expand their real income (see Figures 4-5 and 6-4). Several researchers have suggested that the trend toward greater employment for young wives could be part of an evolving new economic life style that includes postponed fertility and higher standards of living (cf. Masnick et al., 1978; Oppenheimer, 1976; Roistacher and Young, 1979).

There are several specific questions about labor force participation that can be investigated with the cohort data. First, we might ask whether it makes a difference if income is earned only by the husband. Second, is there any evidence that postponed mothers who work are more likely to be owners than nonworkers? Third, we also can inquire whether the effect of labor force participation is different for different income levels or family types. In this vein, we are particularly interested in learning whether wives' employment helps to elevate the ownership of postponed parents relative to parents of school-age children. Finally, we can search for changes between cohorts in these effects.

Wives' employment status is measured by wives' earnings in the preceding tax year. As discussed in Chapter 6, earnings of \$1,000 or more (1969 dollars) are assumed to indicate employment and earnings below this amount are assumed to reflect negligible employment. Although this measure provides no information about the degree of labor force attachment by wives, it does serve to discriminate between the majority of wives who provide a negligible income contribution and the minority of wives who work to some meaningful extent.

Adding this variable for wives' employment to our previous set of four variables (cohort, parent or family status, income, and house type)

yields a set of five variables to be modeled for each age group. Table 7-10 summarizes some of the models that have been tested with these variables. In general, these models are much more complex than the models not including employment. In part, this is because reduced models with five variables are potentially composed of four-variable interactions, instead of three-variable interactions reduced from four-variable models. But this potential is realized only if the three-variable interactions that have been previously identified are influenced significantly by whether or not the wife works.

The best-fitting model at age 22-23 (Model (5) in Table 7-10) indicates by the (LH) term that employment has a direct effect on ownership that is independent of all other effects. This implies that wives' employment makes the same difference for every cohort, family type, and income group. The strength of this effect is measured by the odds ratio between employment and housing, .692, and the implication of this negative correlation is that working wives have ownership odds only .692 times as great as non-working wives. There are several possible explanations for this negative effect. Wives' income might be used less, or discounted, for ownership attainment more than husbands' income.<sup>3</sup> Alternatively, couples with working wives at this age might have weaker preference for ownership than more traditionally oriented families. Still another possible explanation is that wives' employment might be a symptom of financial distress, and this spurious factor could be reducing ownership attainment. Although it is unlikely that we can determine which of these alternative hypotheses best explains the negative effect of wives' employment, it is useful to examine the empirical results with

Table 7-10: HIERARCHICAL LOG-LINEAR MODELS OF MARGINALS FITTED TO THE FAMILY, HOUSING, FAMILY INCOME, AND EMPLOYMENT STATUSES OF CURRENTLY MARRIED WOMEN IN SELECTED COHORTS AT EACH AGE

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Marginal Specifications

C = Cohort (observed in 1960, 1970, or fall 1975)  
P = Parent Status (childless, child under 6, child 6 or older)  
I = Income ( low, middle, high--  
see text)  
L = (Wife's earnings under \$1000, equal to or greater than \$1000--1969 \$)  
H = Housing Status (single-family owner, other)

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A. AGE 22-23: Cohorts C8, C3, C0

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CPIL) (CPIH) (CPLH) (CILH) (PILH)	6.9388	8	.5441
(2)	(CPIL) (CPH) (CILH) (PILH)	17.7783	20	.6025
(3)	(CPIL) (CPH) (CILH) (PIH) (PLH)	33.7076	24	.0899
(4)	(CPIL) (CPH) (CIH) (PIH) (PLH)	39.6559	32	.1655
* (5)	(CPIL) (CPH) (CIH) (LH)	49.4189	38	.1016
(6)	(CPIL) (CPH) (IH) (LH)	72.3165	42	.0028
(7)	(CPIL) (CPH) (CIH) (PIH)	134.777	35	.0001

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B. AGE 26-27: Cohorts C10, C5, C2

Model	Marginals Fitted	G <sup>2</sup>	Degrees of Freedom	Probability
(1)	(CPIL) (CPIH) (CPLH) (PILH)	24.1406	12	.0193
(2)	(CPIL) (CPIH) (CPLH) (LIH)	50.3493	16	.0001
(3)	(CPIL) (CPIH) (CLH) (PILH)	27.1551	16	.0395
* (4)	(CIL) (CLP) (CPIH) (CLH) (PILH)	36.6729	24	.0469

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## C. AGE 28-29: Cohorts C11, C6, C3

Model	Marginals Fitted	$G^2$	Degrees of Freedom	Probability
(1)	(CPIL) (CPIH) (CPLH) (CILH) (PILH)	12.7417	8	.1205
(2)	(CPIL) (CPIH) (CILH) (PILH)	20.2873	12	.0615
(3)	(CPIL) (CPIH) (CLH) (PILH)	26.0011	16	.0537
* (4)	(CPIL) (CPIH) (PILH)	29.8990	18	.0382

## D. AGE 32-33: Cohorts C13, C8, C5

Model	Marginals Fitted	$G^2$	Degrees of Freedom	Probability
(1)	(CPIL) (CPIL) (CPLH) (CILH) (PILH)	53.0008	8	.0001
* (2)	(CPILH)	0	0	1.000

alternative explanations--discounting, weaker preference, or distress--in mind.

The fact that the same negative effect occurs at age 22-23 for all cohorts, family types, and income groups makes it especially difficult to choose among these alternative hypotheses. For example, the distress hypothesis would be supported if the negative effect were stronger for wives with young children. These women presumably have greater family need to stay at home and hence their employment might reflect greater financial distress. The discounting hypothesis might be supported if the negative effect diminished for recent cohorts or for those with higher income (where the ratio of husband's to wife's income is presumably higher). Alternatively, if the negative effect of working on ownership attainment increased at higher income levels, this would indicate a lower revealed preference for ownership. However, because the employment effect is constant for all sub-groups at age 22-23, perhaps the safest interpretation is that the negative effect of wives' employment simply reflects an economic lifestyle common to all very young married women.

The effect of wives' employment is much more complicated at age 26-27, but this complexity also provides us with greater information. Three models are summarized in Table 7-10 that closely fit the actual data for cohorts in this age group. Model (4) is selected as the best model because it has the simplest structure (most reduced form). This model contains two independent terms that include employment's effect on ownership--(CLH) and (PILH). The first term indicates that the employment effect is different for different cohorts. The second term indicates that for all cohorts the employment effect on ownership depends on

both income and family stage.

The magnitude of the employment effect is simple to describe for the (CLH) term. The ownership odds in 1960 when the wife works are .874 as great as those for non-workers. This odds ratio is .925 in 1970 and .635 in 1975. Evaluating the (PILH) term is more complicated. The presence of this significant term in the reduced models indicates that the effect of wives' employment on ownership is different for each family and income group. The top half of Table 7-11 gives the ownership odds ratio at age 26-27 between employment groups for each combination of income and family stage. Because of the cohort effect present in the (CLH) term, this set of odds ratios is scaled proportionally up or down for each cohort. For this reason, the odds ratios have been expressed relative to a reference group--low-income childless couples. With the exception of the relatively high (and positive) employment effect for high-income childless couples, the pattern of odds ratios suggests that wives' employment contributes most to ownership attainment when total family income is low, and it contributes least when children are present in the home.

In light of our earlier reasoning, this pattern of employment effects lends support for two of our hypotheses about wives' employment. The distress explanation for the negative effect of employment is consistent with the fact that the effect is more negative for wives with young children. In contrast, the discounting explanation is undermined by the fact that the effect does not grow less negative at higher income levels and also by the fact that the overall negative effect of labor force participation grew more negative, rather than less, between 1970 and 1975.



Table 7-11: EMPLOYMENT EFFECTS<sup>a</sup> ON OWNER-OCCUPANCY OF JOINT  
INCOME-FAMILY STATUSES

(Effects are scaled relative to low-income childless couples. Effects less than 1.0 indicate that wives' employment decreases ownership more for certain statuses than for this reference group.)

Age	Income Level	Family Stage		
		Childless	Young-Child	School-Age
26-27	Low	1.000	.814	1.200
	Middle	.903	.636	.587
	High	1.538	.514	.858
28-29	Low	1.000	.713	.798
	Middle	.551	.529	.495
	High	.815	.522	.304

a. Employment effects are calculated as the second-order conditional ownership odds ratio between working and non-working wives. Based on the (PILH) fitted marginal in the best-fitting models, ownership odds ratios are calculated within each category jointly defined by income and family stage. Second-order odds ratios are then formed by expressing these conditional odds ratios relative to a reference group: childless couples with low income. Effects less than 1.0 indicate that wives' employment decreases ownership more than for the reference group.

The only evidence by which to test the remaining hypothesis (that couples where wives work have lower preference for ownership) is based on the income pattern of the employment effect. If working couples had lower preference, we would expect lower ownership increases with income, and hence the ownership odds ratio between working and non-working wives would become lower (more negative) at higher income levels. We observe the hypothesized pattern for couples with children; however, if we conclude that working couples have lower ownership preference, this also casts doubt upon our more basic hypothesis that wives work in order to acquire ownership. We will return to discussion of this issue in the conclusion to the employment analysis.

The effect of wives' employment on ownership at age 28-29 is more easy to evaluate because only one independent effect of employment occurs in the best-fitting model reported in Table 7-10. This model consists of three four-variable interactions, one of which is (PILH). Model (4) indicates that at age 28-29 the employment effect has been the same for all cohorts (it contains no (CLH) term), and this effect varies simultaneously by income and family type.

The magnitude of the employment effect at age 28-29 is evaluated in the bottom half of Table 7-11. This effect is similar to that observed at age 26-27. Once again with the exception of high-income childless couples, the odds ratios suggest that wives' employment contributes to ownership most when total family income is low. This undermines the discounting hypothesis, but it is consistent with the hypothesis of lower ownership preference by working wives. The other important similarity to the odds ratio pattern for age 26-27 is that the employment

effect is more negative for mothers of young children. This supports the distress hypothesis explaining the negative impact of wives' employment on ownership. Reiterating this hypothesis, ownership may be depressed for working wives because of a spurious distress factor. Couples that are struggling financially to meet their desired expenditure levels may be more likely to keep the wife working after young children are born at the same time as they also lag behind in acquiring homeownership.

The final age at which we have been comparing cohorts is 32-33. There is no reduced model that fits the data at this age. Only the saturated five-variable model can reproduce the actual data, but this model does so exactly, without reducing the data to a more compact set of significant relationships. In the saturated model all relationships are significant--and with five variables this is extremely difficult to interpret. For this reason, we will forego further analysis of the 32-33 age group. Instead, let us proceed to the evaluation of family timing effects on ownership.

#### Wives' Employment and the Family Timing of Ownership

The five-variable models summarized in Table 7-10 enable us to measure the effect of family timing on ownership attainment after controlling for both family income and labor force participation by wives. It is possible that the earlier analysis of family timing effects misrepresented the role of family income by failing to take into account whether or not some of this income was earned by wives. From what we have learned about the negative effect on ownership of wives' employment, it is possible that the family timing effect will be different when both income and labor force are controlled.

There is only one term in the best-fitting model for age 22-23 that contains an effect of family stage on housing. The (CPH) term indicates that this effect is different for each cohort. The top part of Table 7-12 reports the ownership odds ratio (disadvantage ratio) between childless or young-child parents and school-age parents. These ratios are very similar to those estimated in the previous models with only income controlled (see Table 7-9). The disadvantage ratios in the young-child family statuses are nearly identical, while the ratios in the childless statuses are between 15 and 20 percent closer to equality with school-age parents after wives' employment is controlled.

The family timing effect is more complex at ages 26-27 and 28-29, because it enters into two independent terms at each age: (CPIH) and (PILH). The first of these terms indicates that the family effect on ownership depends on both cohort and income level, while the second term indicates that the family effect depends on wives' employment and income level. Perhaps the clearest way to evaluate these effects is first to compute the disadvantage ratios present in the (CPIH) term and then to compute the employment effect on these ratios from the (PILH) term.

Table 7-12 reports the disadvantage ratios for non-working wives at age 26-27 and at age 28-29. All the disadvantage ratios for non-working wives with young children at these ages in 1975 exceed 1.0, with the exception of middle-income wives at age 26-27. Ratios in excess of 1.0 also appear in 1960 and 1970 for higher-income 26-27 year-old wives with young children. Overall, these results clearly indicate that couples where the wife does not work gain an ownership advantage if they have only young children at ages 26-27 and 28-29.

Table 7-12: OWNERSHIP DISADVANTAGE RATIOS BETWEEN FAMILY STATUS FOR EACH COHORT, CONTROLLED FOR FAMILY INCOME AND WIVES' EMPLOYMENT STATUS

(Ownership Odds Ratios Between Childless or Young-Child Parents and Parents of School-Age Children)

Age	Income Level	Cohort <sup>a</sup>					
		1960		1970		1975	
		Family Stage Childless	Family Stage Young-Child	Family Stage Childless	Family Stage Young-Child	Family Stage Childless	Family Stage Young-Child
22-23 <sup>b</sup>		.375	.813	.307	.719	.477	.792
26-27 <sup>c</sup>	Low	.331	.911	.354	.963	.390	1.370
	Middle	.323	.841	.273	.853	.346	.946
	High	.232	1.465	.188	1.163	.522	1.423
28-29 <sup>c</sup>	Low	.313	.836	.314	.824	.368	1.014
	Middle	.432	.746	.358	.795	.444	1.100
	High	.182	.953	.146	.443	.312	1.143

a. Cohorts are identified by the survey years in which they occupied a specified age group (see Figure 7-1).

b. Disadvantage ratios are derived from the (CPH) term contained in the best-fitting model for this age group. The effect of family stage on ownership differs by cohort.

c. Disadvantage ratios are derived from the (CPIH) term contained in the best-fitting model for this age group. The effect of family stage on ownership differs by cohort and by income level. Because a second term, (PILH), contained in the best-fitting models indicates that the disadvantage ratios also vary by employment status, the effects in this table are calculated only for families where the wife is not employed. The nature of the employment effects on the disadvantage ratios is addressed in Table 7-13.

Let us look now at the effect of wives' employment on this advantage (Table 7-13). It is clear that employment of wives helps to reduce the ownership disadvantage among childless couples at both ages. For example, among high-income childless couples at age 26-27, wives' employment reduces the ownership disparity between childless and school-age couples by a factor of 1.793. The effect of employment on the ownership disadvantage of young-child couples is not as clear-cut at age 26-27. Wives' employment increases the disadvantage at low and high income levels, but it reduces the disadvantage slightly at the middle income level. The effect is more consistent, however, at age 28-29: wives' employment raises the relative ownership of young couples more as income increases.

Before we discuss the implication of these ownership effects, it is important to recognize that the disadvantage ratios can be affected by wives' employment either by raising ownership for childless and young-child families or by lowering ownership for school-age families. The employment effects reported in Table 7-11 clearly revealed that ownership in each family status is affected differently by wives' employment. How should we interpret the effect of employment if the disadvantage ratio is raised near 1.0 simply because employment reduces ownership more for school-age families than for childless couples? In this case employment reduces the ownership of both the reference group and the disadvantaged group. What we are most interested in ascertaining, however, is how much the employment of wives at a particular family stage reduces that group's ownership disadvantage relative to the non-working reference group.

This effect can be estimated by computing the disadvantage ratios

Table 7-13: EMPLOYMENT EFFECTS<sup>a</sup> ON THE OWNERSHIP DISADVANTAGE RATIOS REPORTED IN TABLE 7-12

(An effect greater than 1.0 indicates that wives' employment creates a proportionate reduction in the ownership disadvantage of different family statuses within each income level)

Age	Income Level	Family Stage	
		Childless	Young-Child
26-27	Low	.833	.677
	Middle	1.538	1.084
	High	1.793	.579
28-29	Low	1.256	.894
	Middle	1.113	1.066
	High	2.676	1.716

a. Employment effects are derived from the (PILH) term contained in the best-fitting models for these age groups. These effects are the second-order odds ratios, conditioned on income, between the disadvantage ratios (the odds ratios between family status and housing) of working and non-working wives.

based on the (LPH) interaction instead of the simple (PH) association. The new odds ratios are calculated as the ratio of ownership odds for each family-employment combination relative to a reference group of non-working wives with school-age children. Because the (LPH) interaction also varies significantly by income--it is included within the (PILH) term of the fitted models at age 26-27 and 28-29--separate sets of disadvantage ratios must be calculated at each income level.

The combined family-employment disadvantage ratios in 1975 are presented in Table 7-14. It is clear that, regardless of family income level, working wives have lower ownership at every family stage than do non-working wives with school-age kids. The only family groups that exceed the ownership of non-working school-age parents are non-working mothers of young children. Employment of wives increases the ownership of parents with young children only relative to mothers of school-age children who also work. Therefore, we are led to revise our earlier conclusions. Instead of helping to reduce ownership disadvantage, wives' employment lowers ownership at all family stages. An illusion of decreasing disadvantage is created by the fact that employment decreases ownership more for school-age parents than for other family stages.

#### Summarizing Ownership Timing Among Married Couples

The purpose of the more detailed analysis of ownership attainment among married couples was to test the validity of the hypothetical causal relationship between postponed childbearing and ownership attainment. The evidence uncovered in the preceding sections indicates that the apparent causal relationship still stands even after controlling for family income and whether or not the wife works. Nevertheless, the



Table 7-14: OWNERSHIP DISADVANTAGE RATIOS<sup>a</sup> BETWEEN JOINT FAMILY-EMPLOYMENT STATUSES, CONTROLLED FOR FAMILY INCOME

(Ownership Odds Ratios Between Joint Family-Employment StatUSES and a Reference Group-- Non-Working Mothers of School-Age Children)

Age	Income Level	Employment	Family Stage		
			Childless	Young-Child	School-Age
26-27	Low	Employed	.248	.708	.762
		Not	.390	1.370	1.000
	Middle	Employed	.199	.382	.372
		Not	.346	.946	1.000
	High	Employed	.510	.465	.545
		Not	.522	1.423	1.000
28-29	Low	Employed	.397	.783	.863
		Not	.368	1.014	1.000
	Middle	Employed	.264	.629	.536
		Not	.444	1.100	1.000
	High	Employed	.276	.646	.329
		Not	.312	1.143	1.000

a. Disadvantage ratios are calculated within each income level as the ownership odds ratio between childless or young-child families and families that have both school-age children and a non-working wife. These ratios are derived from the (PILH) fitted marginal contained in the best-fitting model for this age group. The effect of family stage on ownership varies by employment status and income level.

effects of income and wives' employment are interesting in their own right and it is worth summarizing some of the key findings.

Family income was shown to have its expected, clear effect on ownership attainment, but an especially large impact was noted for two groups in 1975. High income had an especially large impact on married couples where the wife is aged 22-23 and also on childless couples where the wife is aged 26-27. This shift in 1975 indicates that married couples in the early family stages are increasingly likely to earmark their income for homebuying. After controlling for the effect of income, the advantage of parents with very young children was still present, but at age 26-27 this advantage was especially important for lower-income couples. It seems reasonable that delaying parenthood a couple of years would make the biggest difference for married couples with the lowest budgets.

The effect of wives' employment on ownership attainment is not nearly as clear-cut, and in some respects the statistical findings contradict our expectations. The major finding is that wives' employment reduces the likelihood of homeownership. This is surprising given our presumption that wives are delaying parenthood and working in order to buy homes. It is important to note, however, that certain distortions possibly have been created by the way the income and employment variables are defined. Employment is inferred from the wife's earnings in the previous tax year. Thus the wife may not be employed at the time of the survey, but this probably creates only a slight bias. More important is the fact that the measure of current employment does not reflect a wife's employment history. Many of the women who are not presently working may have worked

several years earlier and many of the women who are currently working may have been unemployed before. Thus the employment variable only measures "current" (very recent) status. Wives who are still working with young children may be responding to very different financial constraints than mothers who have stopped working, and so the apparent effect on ownership could be different even though both groups have worked in order to buy homes.

The second potential distortion created by variable definition is the family income variable. Couples where the wife works are receiving income from two earners, while couples with a non-working wife are probably relying only on one earner. Even though the total family incomes of the two household types might be the same, the two-earner family might treat its income differently. In addition to this possible behavioral difference, there is an additional problem created by confounding of the two variables. Controlling wives' employment not only removes the effect of her behavior, but it also distinguishes between couples with varying levels of husbands' incomes. These problems are important to bear in mind when interpreting the statistical findings.

Three hypotheses were proposed to explain the negative effect of wives' employment on ownership attainment. The first hypothesis was that at a given family income level couples with a working wife might discount the wife's income when calculating housing expenditures. This hypothesis was rejected because the negative effect grew worse between 1970 and 1975 rather than diminish as one would expect when wives' employment became a more accepted, and more expected, part of family economies. Also the negative effect grew worse at higher incomes where

wives' contributions are likely to be a smaller fraction of total family income. If discounting were the cause of the negative effect we would expect it to diminish at higher income levels.

A second hypothesis was that couples with working wives might have weaker preference for ownership attainment. This could be true because these couples have less time for house cleaning and upkeep, because they have less interest in a family life style built around a single-family home, or because two-earner families have different locational preferences that encourage living in multi-family housing. Whatever the behavioral explanation, this hypothesis has received some indirect support. We reasoned that preferences would be revealed if higher income was used for higher ownership; and, because the employment effect became more negative at higher levels, this showed that ownership increased more slowly for working wives than for non-working wives.

The third hypothesis stated that the negative effect of employment was caused by a spurious relationship of financial distress. Married couples where the wife is still working after children are born may be struggling financially to achieve their desired standard of living. In contrast, couples without a working wife might have already achieved a level of savings or financial success that enables them to buy homes and raise families with the wife at home. This hypothesis also received empirical support as it was discovered that the employment effect was most negative for couples with children.

Controlling for both family income and whether or not the wife works did not eliminate the newly emerged homeownership advantage of parents with young children. Relative to a reference group consisting

of non-working mothers of school-age children, non-working mothers of young children retained their ownership advantage while working wives in all family stages had much lower chances of ownership attainment (see Table 7-14). The fact that the gap between the working and non-working wives was least for childless couples suggests that current employment fails to close the ownership gap because working mothers are responding to greater financial distress.

#### DISCUSSION AND CONCLUSIONS

This chapter has presented a detailed analysis of the changes between cohorts in their linkages of family and housing behaviors at specific ages. Our major purpose was to measure changes in the life course relationship between family timing and attainment of single-family homeownership. A secondary purpose was to investigate the changing effect of marital disruption on ownership attainment. Marital disruption is an increasingly prevalent aspect of life course experience and it should not be ignored simply because it does not fit into an orderly progression of life cycle stages.

The empirical evidence with regard to both these research questions is unambiguous. The strongest influence we have found on the likelihood of homeownership is marital disruption. The odds of ownership for currently married women are about eight times greater than those for previously married women. No significant differences were found between cohorts in the effect of marital disruption on ownership at any of the ages we have analyzed.

Weaker but still significant effects were uncovered for the influence

of family stage on ownership attainment. In 1960, childless women's ownership odds were only about .40 times as great as the ownership odds for mothers of school-age children. Between 1960 and 1975, however, ownership increased much more rapidly for childless women than for school-age families. As a consequence, the ownership disadvantage of childless women was reduced substantially (from about .40 to about .60). The odds of ownership for parents of very young children were more nearly equal to those of school-age families in 1960 (about .90), and ownership also increased more rapidly for parents of young children than for school-age families. The result was that in 1975 parents of young children achieved higher ownership odds at ages 26-31 than parents of school-age children (see Table 7-6). This change cannot be explained by either differences in current family income or differences in wives' current employment.

We have interpreted this shift in ownership advantages to indicate that delayed childbearing helps married couples to acquire homeownership. Not only does delayed childbearing help couples catch up to the traditional ownership leaders in more advanced family stages, but it enables them to surpass the ownership achievement of the more advanced families. This finding, combined with the observation that young cohorts are shifting to greater participation in delayed childbearing, lends strong support to the causal hypothesis that the family and housing trends are linked as part of a new life style that is evolving through efforts to achieve desired standards of living.

Part of this new life style includes greater labor force participation by married women. Although it has proven difficult for researchers

to identify the causal direction between employment and childbearing, it is unquestioned that the two are highly correlated. Oppenheimer (1976) has argued that higher fractions of successive female cohorts are being drawn into the paid labor force in order to achieve the living standards of older cohorts. She notes that delayed childbearing coordinates very easily with this economic strategy.

Our findings suggest that delayed childbearing (probably coordinated with employment of wives) leads to a later ownership advantage for women when children are eventually born. Women who still work after children arrive have been shown to bear an ownership disadvantage, and we have attributed this effect to greater financial distress faced by working mothers and, possibly, to lower preference for single-family homeownership.

The reason that the new ownership advantage occurs at ages 26-31 can be explained by two alternative factors. On the one hand, our measure of family timing--oldest child age 6 or over--might discriminate most efficiently between early and late childbearers when the mothers are aged 26-31. Below age 26 relatively few mothers could have children at least 6 years old, and above age 31 relatively few mothers might have children under 6 years old. In fact, moderate fractions of the cohorts we have surveyed have borne their first child outside this hypothetical, "most efficient" age range. Between 17 and 22 percent have borne a child by age 19 and about 16 percent have borne their first child between the ages of 26 and 30.<sup>4</sup> Given that between 43 and 51 percent of women have borne a first child within the ages of 20-25, it is likely that the family timing variable does discriminate better within this range than without.

The alternative explanation is that it is cohort differences in 1975

and not age differences that confine the new pattern of family and ownership timing to ages 26-31. It is possible that the new life style first developed in the cohort aged 30-31 in 1975, and so it has not yet appeared at older ages. Such a radical departure between adjacent cohorts is inconsistent, however, with the assumption of continuous social change between cohorts. In fact, if we re-examine Figure 7-3 it appears that the cohort aged 26-27 in 1970 (C5) had started to develop a new family-housing timing pattern. The shift at this age was also the greatest in 1975.

But what of the C5 cohort when it reached age 32-33 in the fall of 1975? Why is there no evidence that this cohort has continued to employ the new timing pattern in 1975? In fact, the answer to this question is very simple. Once a cohort has employed the new family timing strategy to attain an ownership advantage when it is young, an even higher ownership level is generated several years later for parents whose young children have matured into school-age children. It is not possible for parents with young children to perpetually upstage parents of older children when the issue is a cumulative asset like homeownership. Eventually the young families will mature and become the advantaged reference group against which progress is measured for newly-formed families.

The shifted family timing advantage that we have measured is most likely a temporary occurrence that will have dissipated within a few years. Successive cohorts have postponed parenthood and reaped higher ownership than more advanced families. But once these delayed families become mature they establish a much higher standard for other couples to surpass. The strong success of delayed parents aged 26-27 in 1975



will begin to raise the ownership level of school-age parents at age 30-31 in 1979. Thus we would expect that the 1980 census will show that the family timing advantage has been reduced or eliminated for the 30-31 age group.

In conclusion, application of the cohort-life course perspective to cross-sectional data in this chapter has uncovered important changes in the timing of family formation relative to ownership attainment. Evidence has been assembled to support the hypothesis that young cohorts are delaying parenthood as part of a strategy to acquire their preferred housing early in their lives.

## NOTES TO CHAPTER 7

1. The likelihood-ratio chi-square is interpreted identically to the familiar goodness-of-fit (Pearson) chi-square and the values of the two statistics are usually very similar. However, the likelihood-ratio statistic is preferred for multivariate analysis because it can be partitioned exactly for certain tests, whereas the Pearson chi-square lacks that property (cf. Bishop et al., 1975).
2. These events accompanying marital disruption are currently being documented by an ongoing study at the MIT-Harvard Joint Center for Urban Studies, entitled "Housing Change After Marital Disruption" (mimeographed report of preliminary findings, n.d.).
3. Roistacher and Young (1979) define "discounting" as treating wives' incomes less importantly than husbands' for the purposes of making housing decisions. (In other words, a \$1000 increase in husbands' incomes would lead to a greater average increase in housing expenditures than a \$1000 increase in wives' incomes.) Roistacher and Young note that discounting might be practiced by either, or both, mortgage lenders or the couples themselves.
4. These estimates are calculated from cohort fertility data reported by the National Center for Health Statistics (1976: Table 6A).

## Chapter 8

## AN EVALUATION OF LIFETIME HOUSING PROGRESS

On the basis of consumer preferences, I have defined lifetime housing progress as the advancement of cohorts into single-family homeownership. Unlike the conception of housing progress that emphasizes attainment of institutionally prescribed goals for housing provision, the lifetime conception of progress does not have a clear normative mandate. In addition, although there is widespread support for the importance of homeownership, measuring progress by this standard poses special problems. Traditional indicators of housing quality used in studies of housing needs have measured the number of housing units or households below a minimally acceptable standard. The implication when using these traditional indicators is that progress toward improving housing conditions should be pursued until all substandard conditions are eliminated.

In contrast to these bottom-oriented indicators, homeownership is an upward-oriented standard that reflects consumers' aspirations. Proponents of this standard have not assumed that all households should be homeowners; rather, they have argued that the chances for achieving homeownership should not be allowed to decrease. This is a relative argument and it implies that there is some level of ownership, short of universal, that is acceptable. We have recast this argument into the lifetime framework so that individuals' experience regarding the attainment of homeownership can be better represented.

This chapter evaluates the concept and the record of lifetime housing progress in preparation for making the normative leap to

prescriptions for public policy. We must question how important is lifetime housing progress, and we must answer questions about how much progress is enough and how much is too much, both within the lifetime and between generations.

The chapter begins with a summary of the key dimensions of progress for cohorts. Next we place this progress in its housing market context by introducing the issues of cohort size and the historical location of cohorts relative to one another. The family adjustments and housing career responses of recent, large cohorts are also explored. Then we turn to an assessment of some of the costs and benefits associated with housing progress. While these cannot be quantified, the discussion will help to clarify the boundaries of desired progress. The final section discusses the policy implications resulting from this evaluation.

#### DIMENSIONS OF PROGRESS

##### Lifetime Progress

For all cohorts the dominant factor underlying the experience of housing progress is advancing age. Among recent cohorts, achievement of single-family homeownership increased by 26.3 percentage points between ages 22-23 and 28-29 for the 1937-38 cohort, by 29.6 percentage points for the 1943-44 cohort, and by 31.5 percentage points by the 1947-78 cohort. While it is not possible to make a direct comparison, these amounts of lifetime progress appear substantially greater than the progress between 1930 and 1940 of males under age 25 in 1930 (an increase of 13.1 percentage points). The astounding fact about the homeownership data from the decade of the Great Depression (Table 4-1) is that lifetime

progress withstood the economic ravages sufficiently to increase the ownership rate of every cohort during the decade.

### Progress Across Cohorts

A second temporal dimension of progress is between cohorts. If cohorts surpass the achievements of their predecessors we would conclude that the nation as a whole has made housing progress. Employing the Great Depression example again, Table 4-1 shows that the total ownership rate decreased during the decade even though ownership increased for cohorts. The explanation for this apparent paradox is that cohorts' lifetime progress failed to carry them to as high ownership rates by 1940 as were recorded for the same age groups in 1930. Thus a relative short-fall in lifetime progress amounted to an absolute decrease in national progress.

There are three basic ways that we have measured progress across cohorts. The simplest, employed in the preceding chapter, is to compare cohorts from different years at the same exact age. More will be said about this method below. The other two approaches both compare segments (age spans) of cohorts' lifetimes. The first method emphasizes differences in the age-time shape of cohorts' transitions into homeownership. Figure 6-5 illustrates clearly that the more recent cohorts are delaying entry into ownership during their early twenties, but after about age 26 they are accelerating their progress to higher levels than achieved by preceding cohorts. We measured this change through the ratio of the ownership rates at ages 28-29 and 22-23. The trajectory into ownership is much steeper for the 1947-48 cohort than for the 1937-38 cohort given their respective ratios--2.919 and 2.331.

The second method for comparing progress across cohorts is to quantify the volume of owner-occupancy cumulated over portions of cohorts' lifetimes. This amounts to taking the area under the curve formed by the trajectory into homeownership. It is possible for two cohorts with very different age-time shaped ownership trajectories to generate the same cumulative demand, such as when one cohort delays ownership acquisition but later accelerates its progress. This issue will be discussed at length in a following section.

#### The Family Role in Progress

The third basic dimension of housing progress that we have chosen to analyze in addition to the lifetime and cross-cohort temporal dimensions concerns the relationship of ownership attainment to family status. There are two perspectives on this dimension of progress. In the first view, analysis in the preceding two chapters has shown that homeownership is increasing greatly in family statuses where it previously was lowest. In other words, the benefits of homeownership are being shared more equally in recent cohorts among persons in different family statuses. This family progress is related to the cross-cohort progress insofar as the components of change analysis in Chapter 6 showed that large potential decreases in owner-occupancy due to lower family formation have been offset for recent cohorts by substantial increases in ownership rates in all family statuses.

The second perspective on the family role in housing progress emphasizes the life course timing of ownership attainment relative to the timing of family formation. The analysis in the preceding chapter found that women aged 26-31 in the 1975 survey incurred a significant ownership

advantage if their oldest child was below school age. This advantage did not exist in the previous survey years. Equally important, the age range where the advantage appears is the same as that where cohorts have recently accelerated their lifetime progress to higher levels than previous cohorts.

The substantive interpretation given these findings in the preceding chapter is that couples with young children are couples who have delayed parenthood relative to the couples where the oldest child has already reached age 6. This childless time may have been spent with both spouses working in order to accumulate assets for homebuying. With the arrival of children these couples are better prepared to buy homes than couples whose early children are now reaching school age. It appears that this adaptive strategy only developed after the 1970 census was taken, and it is significant that the advantage in homebuying is now falling to the parent group that is growing most rapidly within young cohorts (i.e. delayed parents).

### Summary

In summary, the empirical evidence indicates that housing consumption is increasing for recent cohorts along all three dimensions of progress. Married couples have always had nearly universal household headship, but now participation in household formation is expanding to include more unmarried adults as well. Similarly, single-family homeownership is increasing most rapidly in those family statuses where it has been lowest. The result of this increase along the family dimension is that both household formation and single-family ownership are increasing across cohorts despite declines across cohorts in family participation. Finally,

expansion of household formation and ownership is proceeding at a very rapid pace as cohorts mature through their twenties.

#### COHORT SIZE, HOUSING DEMAND, AND FAMILY ADJUSTMENTS

##### Aggregate Housing Demand

The measurements of housing progress that have been presented in preceding chapters have focused on individuals' rates of housing consumption and on their participation in different family statuses. This individuals-based analysis has neglected the issue of the aggregate numbers of individuals experiencing each status. Under conditions of constant cohort size, changes in the consumption rates between cohorts' housing careers give a direct indication of proportionate changes in aggregate lifetime housing demand. However, under conditions of differential cohort size, aggregate changes in housing demand can only be estimated by weighting consumption rates by cohort size before comparing cohorts.

The total volume of housing demand generated by a cohort can be expressed as the person years of housing consumption (at one point in time or, alternatively, over an age span) times the number of persons in the cohort. For example, it was reported in Table 6-4 that the C3 cohort experienced more person years of household headship (6.62) over the 22-29 age span than did the C8 cohort (6.43). If the two cohorts were the same size, this 3.0 percent increase in the person years of housing consumption would also represent the relative magnitude of the increase in aggregate housing demand between the two cohorts.

In fact, the two cohorts are not the same size; as reported in Table 8-1, cohort C8 has 2.250 million members while cohort C3 has 3.636 million



members, 61.6 percent more than C8. As a consequence, a slight difference in the average person years of headship experience is transformed into a 66.4 percent difference in the number of housing units occupied during the 22-29 age span. Similarly, even though the average time spent as a single-family homeowner during the 22-29 age span is less for the C3 cohort (2.62 person years) than for the C8 cohort (2.68 person years), the total volume of single-family ownership consumption over this interval was 58.0 percent greater for the C3 cohort than for the C8 cohort.

This example provides a clear illustration of the practical distinction between the experience of housing progress by individuals and the trend in aggregate housing demand. From the individual's perspective progress might seem to merely replicate the experience per capita of the earlier generation, but from the public perspective a constant rate of lifetime progress for larger, successive cohorts generates an escalating, aggregate housing demand. Of course, individuals are not oblivious to this increased demand because they face increased competition for the housing that they desire.

The wide swings in the birth rate during the middle of the twentieth century have drastically altered the sizes of cohorts entering the housing market each year. We might designate age 24-25 as the age when cohorts have their strongest impact on the single-family homeownership market, because at this age cohorts are in the midst of their largest net accumulation of owner-occupancy. (The single-family homeownership trajectory is steepest at this age.) Table 8-1 shows the trend in cohort size measured at this age and gives the date when each two-year cohort will reach this age. This table shows that successive cohorts born between the mid-1920s and the mid-1930s were progressively smaller, and that the cohorts born

Table 8-1: SIZE OF TWO-YEAR FEMALE COHORTS BORN BETWEEN  
1925-26 AND 1957-58

Cohort	Year Born	Year Aged 24-25	Size (millions)	Ratio to the Size of Cohort C8
	1957-58	1982	4.202	1.868
	1955-56	1980	4.026	1.789
C0	1953-54	1978	3.784	1.682
C1	1951-52	1976	3.683	1.637
C2	1949-50	1974	3.480	1.547
C3	1947-48	1972	3.636	1.616
C4	1945-46	1970	2.840	1.262
C5	1943-44	1968	2.932	1.303
C6	1941-42	1966	2.583	1.148
C7	1939-40	1964	2.394	1.064
C8	1937-38	1962	2.250	1.000
C9	1935-36	1960	2.216	.985
C10	1933-34	1958	2.178	.968
C11	1931-32	1956	2.279	1.013
C12	1929-30	1954	2.373	1.055
C13	1927-28	1952	2.470	1.098
C14	1925-26	1950	2.537	1.128

SOURCE: U.S. Bureau of the Census (1966: Table 4; 1978b: Table 2).

in the late-1930s were only slightly larger (including our reference cohort--C8). This series of relatively small cohorts reached age 24-25 between 1950 and 1962. Subsequent cohorts have increased markedly in size to the point where the 1957-58 cohort that was born at the height of the baby boom is 86.8 percent larger than the C8 cohort. All other things being equal, the cohorts born after 1938 will generate substantially more housing demand than the C8 cohort. More important, perhaps, than the relative size of individual cohorts is the fact that these larger cohorts have come in a series. Beginning in 1972 when the leading cohort of the baby boom (born 1947-48) reached age 24-25, successive cohorts entering the single-family homeownership market have all been at least 50 percent larger than the C8 cohort and their respective over-sized housing demand has been piling up in the housing market.

Several analysts have stressed implications for housing markets deriving from this transition between small and large cohort size. Campbell (1966), Marcin (1974) and Alonso (1980), among others, have emphasized the great increase in housing demand that is likely to accompany the arrival of the baby boom generation in the housing market. We have documented this increase for the leading edge of the baby boom, but the cohorts born in the late 1950s are even larger.

A more interesting implication has been proposed by Sanders (1975) and followed by Goetze and Colton (1980). Sanders defined a family settlement index that roughly measures family formations by the number of persons reaching age 30 each year. His reasoning was that around this age households would seek a relatively permanent home--usually a single-family home that they owned--where they could settle for their family-

raising years. Sanders showed that in the late 1950s and during the 1960s the settlement index sagged, and he suggested that this implied a relatively soft demand for housing in many family-oriented neighborhoods. Sanders, and Goetze and Colton, thought that the family settlement index reveals one important cause of housing blight and neighborhood decline in central cities during the 1950s and 1960s. Furthermore, this index shows an abrupt reversal in the 1970s as the large baby boom cohorts began to strengthen demand once again for family housing. Not coincidentally, this decade witnessed the emergence of the so-called "back-to-the-city" movement. Accounts of neighborhood revitalization appeared in numerous cities across the country (cf. Black, 1975; Clay, 1979; Laska and Spain, 1980), although as Long (1980) has pointed out, unlike the back-to-the-country movement in the same decade the supposed return to the city has not been measured clearly by aggregate statistics.

A somewhat different implication of increasing cohort size has been emphasized by Noto (1979). She has constructed an index of demand pressure for single-family housing by taking the ratio of the number of households with head aged 25-34 to the number with head aged 55-64. The assumption of this index is that young families typically buy existing homes that are likely to have been occupied by older families whose children have now left home. While this index measures a very simplified abstraction from reality, it is interesting to observe what is the trend in potential recycling of housing between the two generations. Prior to 1980 the younger group out-numbers the older group by at most 10 percent, but for the next two decades the excess of younger households exceeds 50 percent. This change in the intergenerational ratio is a

function not only of the entry of larger cohorts into adulthood, but also of the arrival of the small cohorts of the late 1920s and 1930s in the empty-nester family stage. The major fault of the index is that it stresses the potential recycling of housing between two particular age groups when in fact the young households can draw housing from other age groups as well. Nevertheless, this index is important because it correctly emphasizes the importance of the existing housing stock for supplying the needs of young families and because it identifies a group of current occupants who would seem to be prime candidates for supplying homes suitable for raising families.

Summarizing the relationship between housing progress and aggregate housing demand, we have shown that if the recent baby boom cohorts follow the same pattern of lifetime progress in acquiring single-family homeownership as preceding cohorts they will generate much larger cumulative housing demand because of their greater size. Some of the implications of the trend in cohort size have been discussed above. Essentially, all the arguments emphasize the fact that the rapid increase in young family formations is outstripping the ability of supply to expand. The resulting demand pressure is causing prices to rise and it is increasing the attractiveness of less desired portions of the existing housing stock. If it is true that demand is surpassing supply, we would expect to see some alteration in the lifetime progress of the recent, large cohorts that are entering the housing market. The next two sections discuss the impact of housing progress by successive cohorts on the progress of subsequent cohorts.

### Hypothetical Housing Career Responses

In Chapter 6 we identified two dimensions by which lifetime housing progress can vary--age-time shape and the cumulative volume (person years) of housing demand. These two dimensions of the trajectory into ownership are related by the fact that the age-time shape of the curve defines an area that represents the cumulative person years of owner-occupancy. In the preceding section we compared the cumulative housing consumption of different cohorts without considering the age-time dimension of their housing careers. The point to be emphasized in this section is how alteration in the age-time shape causes the lifetime demand to be distributed differently across the cohort's ages (and time).

A major adjustment that over-sized cohorts are likely to make in their life course development has been postulated by Waring (1976). She suggests that relatively large cohorts are likely to decelerate their entry into roles, or housing occupancies, when the cohorts' greater size exceeds the vacancies relinquished by preceding cohorts. The important assumption here, about which most housing economists would agree, is that housing supply is only partially elastic in the short run. The stock of desired house types is not likely to expand to meet each annual increase in demand, and so members of cohorts with exceptionally large demand will be forced to pay more or else wait longer for their desired housing.

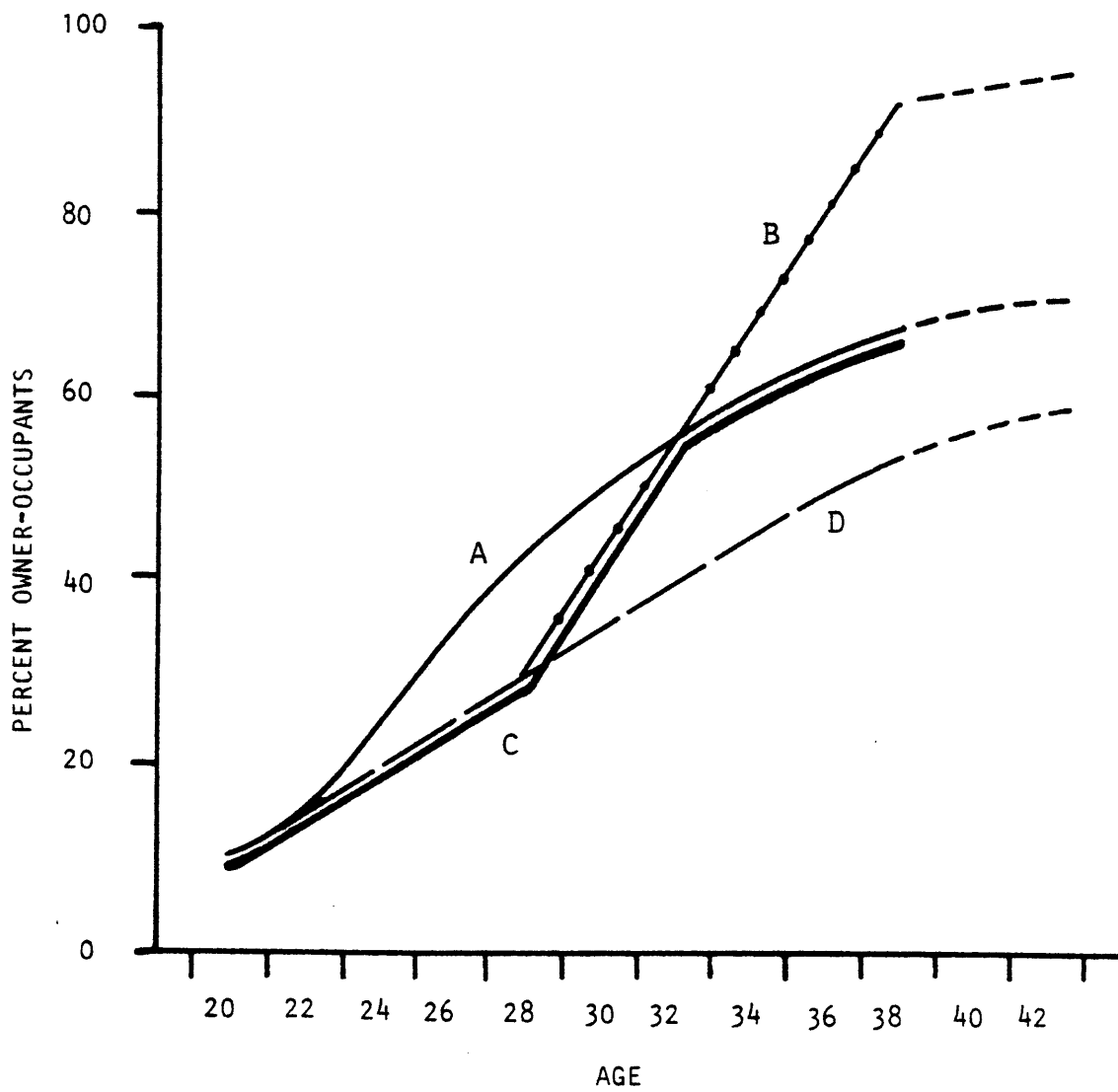
Such a deceleration in the face of inelastic supply would cause a change in the age-time shape of a cohort's transition into the preferred housetype. The analysis in Chapter 6 identified a change for recent cohorts that is consistent with the Waring hypothesis. Compared to

preceding cohorts, the most recent cohorts are pursuing a trajectory into single-family homeownership that shows a relatively slow pace of ownership acquisition below age 28. This initial delay is then followed by an accelerated entry into ownership that exceeds preceding cohorts' levels.

Abstracting from this observation, Figure 8-1 diagrams three hypothetical adjustments that larger cohorts might make in the face of supply constraints. Trajectory A depicts the "normal" trajectory that is loosely based on the real experience of cohort C8. This hypothetical trajectory defines a cumulative volume of housing demand over the 20-39 age span that equals 8.56 person years, or an average ownership rate of 42.8 percent. Trajectory B has an age-time shape that reflects initial delay and subsequent acceleration into ownership, but it defines the same cumulative housing demand over the 20-39 age span as given by Trajectory A. The shortfall in housing demand between Trajectories A and B under age 32 is made up by an excess of demand in the thirties. This is an extreme example, however, as Trajectory B climbs 36 percentage points over six years of age in order to "make up" the deficit in housing demand registered at the younger ages.

The dashed lines in Figure 8-1 signify that cohorts' lifetimes do not stop at age 38-39. In actuality, a level of ownership achieved by this age probably will be increased still further and persist for another two or three decades (Pitkin and Masnick, 1980). Thus it is likely that a cohort following Trajectory B will not only make up its initial shortfall in consumption, but will also greatly exceed the lifetime consumption of a cohort following Trajectory A.

FIGURE 8-1: SCHEMATIC REPRESENTATION OF A HYPOTHETICAL NORMAL COHORT HOUSING CAREER (A) AND THREE POTENTIAL ADJUSTMENTS (B, C, AND D) TO CONSTRAINTS ON OWNERSHIP ATTAINMENT





Trajectory C has an age-time shape identical to that for Trajectory B up to age 32. Instead of making up for postponed demand after this age, however, Trajectory C then resumes the shape of the "normal" Trajectory A. Thus the .72 person years of postponed demand cumulated during the twenties becomes foregone within the housing career depicted by Trajectory C. Finally, Trajectory D defines a housing career that is initially delayed, like Trajectories B and C, but which never accelerates back to normal levels at older ages. In addition to the demand deficit in the twenties (.72 person years), 1.36 more person years of owner-occupancy are foregone in the thirties. Moreover, as mentioned above, this lower trajectory implies lower lifetime demand in the years beyond age 39 as well.

Trajectories A, B, and C define the range of responses that cohorts' housing careers are likely to make in the face of an inadequate supply of preferred housing. We can discuss these responses both in terms of their impact on aggregate demand at a given point in time and in terms of the behavioral processes that might underlie the career reshaping. What all three responses have in common is a reduction in demand while cohorts are in their twenties. This has the effect of partially compensating for the larger size of an entering cohort. If a cohort is 25 percent larger, it would need to reduce its per capita demand by 20 percent in order to hold constant the aggregate demand in the age groups it occupies over time. Trajectory D comes closest to this response of proportionately reducing demand across the entire life span. The other two trajectories show more limited reductions in housing demand.

The difference between Trajectories B and C is that the reduced demand during the twenties is foregone by a cohort following Trajectory C, whereas the demand is merely temporarily postponed by a cohort following Trajectory B. Both trajectories have the same initial impact on the housing market. The impact of larger entering cohorts is cushioned by the reduced demand during the twenties; however, in the case of Trajectory B the reduced demand is merely transferred from the present to a future year when it will be added to the market competition faced by subsequent cohorts entering homebuying ages.

The true housing career changes that we have identified for recent cohorts lie somewhere between the hypothetical responses portrayed by Trajectories B and C. Drawing on this experience we can postulate some behavioral processes that might lead to the changing career shapes. In brief, the initial reduction in housing demand during the twenties can be accounted for by delayed family formation and by the high cost of housing that forces households to save longer for downpayments. What is more difficult to explain is why a cohort's trajectory might accelerate to unprecedented levels during the thirties. One abstract hypothesis is that a cohort experiencing initial delay suffers pent-up demand, and once this demand is released it over-reacts so that ownership climbs to unprecedented levels. Such a glib explanation that people get "carried away" by their pursuit of homeownership is insufficient because it does not specify the mechanisms by which higher ownership levels can be achieved.

Two specific explanations are proposed here for why recent cohorts have rebounded from reduced ownership during their twenties to increased

ownership during their thirties. The first explanation stresses the adaptive efficiency of households' adjustments, while the second emphasizes the period effects of rising inflation on the long-term real costs of ownership.

The adaptive efficiency argument assumes that households begin to make adjustments in their socioeconomic lifestyles while their progress is being delayed during their twenties. Examples of these adjustments include greater employment for wives, delayed or reduced childbearing, and changes in both expenditure patterns and savings habits. None of these adjustments is likely to have an immediate impact on home purchasing, but their effects will grow over time. This explains why the homeownership trajectory might lag in the twenties before catching up in the early thirties. The reason why the trajectory might surpass the normal ownership levels in the thirties is that some of these adjustments could prove so efficient that their eventual impact is to convey a bonus of additional ownership.

The inflation argument assumes that households' decisions to buy homes at any age, and in any cohort, depend on the real cost of home purchase in particular years. Inflation raises this cost by elevating the monthly mortgage payments in the initial years of a conventional mortgage contract. To counteract the effects of expected inflation the conventional mortgage contract tilts the stream of real monthly payments upward from the future to the present. However, once the discounted present value of future appreciation in home values is taken into consideration, the real cost of homeownership is greatly reduced (Follain et al., 1978). As long as house values continue to keep up with or

exceed the rate of inflation, households will be encouraged to buy homes as an investment that provides a hedge against the declining value of the dollar (Sternlieb and Hughes, 1979; Grebler and Mittelbach, 1979: Chapter 4).

Thus, rising inflation during the 1970s has increased the incentive for households in every cohort to purchase homes. As a consequence, cohorts that experienced initial delays in ownership acquisition and that made adjustments to improve their home purchasing ability have now received added incentive to enter homeownership. Cohorts currently in their twenties are still suffering declines in ownership relative to preceding cohorts because they lack the financial means at this life stage to overcome the high entry cost of ownership. Nevertheless, the greater size of recent cohorts ensures that demand for single-family homes will remain strong despite small per capita decreases in ownership demand.

In fact, an added dimension of the inflation explanation that should be stressed is that there is possibly a direct connection between the size of cohorts now entering their twenties and recent increases in homeownership for cohorts in their thirties and above. The aggregate demand wielded by the series of large cohorts reaching homebuying age is what makes homeownership such an attractive investment for older cohorts. Of course, the more that older cohorts increase their own demand for homeownership, the greater will be the increase in demand aggregated across all cohorts. While it is impossible to know what sector of demand is truly leading the others, ownership is a long-term investment and it seems clear that buyers would behave differently if a series of undersized cohorts were entering adulthood instead of the baby boom generation.

We can summarize this discussion of hypothetical adjustments in cohorts' housing careers with the following overview. Given a series of successively larger cohorts entering homebuying ages and facing a relatively inelastic supply, cohorts' careers are likely to be reshaped in a manner reflecting increasingly intense adjustments. The initial cohorts, such as those born in the early 1940s, will delay ownership acquisition during their early twenties but make this up with ever-higher ownership levels during their thirties. These increases might result from the fruition of adaptive responses initiated in their twenties and also from the increasing investment potential of homeownership. Part of the expectation of rising house values rests on the size of following cohorts, so that each successive cohort is faced by a struggle to achieve ownership, it makes socioeconomic adjustments, and eventually it finances greater home purchases of its own under the expectation that the struggle for homeownership will be continued by the larger cohorts that follow.

As the aggregate demand increases from the success of preceding cohorts and from the greater size of entering cohorts, successive cohorts will face the need for more intense adjustments. Individual adjustments will be discussed in the next section, but in terms of aggregate housing careers we might expect cohorts to shift progressively from Trajectory A to Trajectories B and C as portrayed in Figure 8-1. Successive cohorts may well have greater difficulty making up their postponed homeownership. As the cohorts born in the 1960s reach homebuying age after 1985, they will not only provide demand to support preceding cohorts' investments, but they also will be followed by a series of smaller cohorts that will begin to change the homeownership investment outlook. The cohorts born

in the 1960s will have lower incentive to buy homes for investment and they will face greater current, aggregate homeownership demand than the cohorts that preceded them. As a consequence, their ownership trajectory may come to resemble that of Trajectory D in Figure 8-1. Public policy implications regarding these changing housing career shapes will be discussed in the concluding section of this chapter. The next section explores the implications of some individual family adjustments that are occurring for recent cohorts.

#### Family Adjustments in Pursuit of Homeownership

It is important to take a closer look at the specific adjustments cohort members are making in their pursuit of homeownership. In particular, we should evaluate the adaptive efficiency argument that was posited to explain cohorts' rebound from relative ownership deficits during their twenties to relative excesses in their thirties. The Introduction to this dissertation raised several concerns about the consequences of family adjustments being made in the struggle for homeownership. The central assumption of arguments made by Frieden (1977), Thygeson (1978), and others is that high costs of entering homeownership are forcing the current generation to make adjustments that constitute an unfair burden-- a problem of "intergenerational inequity" in Frieden's (1977:71) terms. The weakness in this argument that has been attacked by Weicher (1977, 1978) and Follain and Struyk (1979), among others, is that ownership has been increasing in the face of the alleged unfair burdens. On what grounds can adjustments that are proving so effective be termed to be publicly unacceptable?

The position that is taken here stresses the cumulative impacts

that are occurring through incremental adjustments made by successive cohorts. While individual households are freely taking part in these adjustments, and may not even recognize them to impose an unfair burden, the argument I will make is that the collective drift of these changes is toward lifestyles not preferred by individuals at present and which are shaping the competitive environment that will confront young cohorts in the future. The viewpoint that is adopted here is based on Schelling's (1978) discussion of a class of problems that Platt (1973) has termed "social traps."

In brief, the argument is that successive cohorts entering the homeownership market must match the adjustments made by preceding cohorts and, because aggregate demand is continuing to increase and prices to rise, they are forced by the competitive pressures to take the adjustments a notch or two further. The reason that cohorts continue to compete for homeownership given this requirement for constantly raising the ante is that the marginal adjustments are slight and there really is no other viable refuge for "the scared American" who is seeking economic security (Sternlieb and Hughes, 1979).

The adjustment that is most often cited by researchers is increasing incidence of multiple incomes. Basically, this means that wives are working more often. Roistacher and Young (1979), in particular, have suggested that married women are working increasingly in order to sustain standards of housing consumption established in the previous decade. In the Introduction we related this hypothesis to research by Oppenheimer (1976) that emphasizes the compensatory pattern of increased labor force participation combined with reduced or delayed childbearing. She

argues that each successive cohort has adopted these adjustments to a further degree in order to achieve the same desired standard of living.

The analysis in the preceding chapter documented the advantage that this strategy has for achieving homeownership. Two important points emerged from that analysis: first, that couples who delayed childbearing exceeded the ownership rates of couples that did not delay; and, second, this advantage only emerged after 1970. Delayed childbearing and (presumed) employment of wives is an efficient adaptation that enables couples to surpass the housing achievement of those who do not adopt the strategy. Yet increasing proportions of cohorts are choosing this lifestyle and as it becomes increasingly common its advantage will be shared by so many that the strategy must be adopted, once again, just to keep up.

It is significant that the family career changes between cohorts that were explored in Chapter 6 are much greater than the housing career changes. This gives the appearance that family behavior is being adjusted in order to maintain progress toward homeownership. Masnick et al. (1978) and Masnick (1980) present evidence that the cumulative changes in cohorts' life course patterns are increasing the likelihood that young women's assumption that their fertility is being simply postponed will be transformed into a realization that fertility has been foregone. In effect, incremental increases in postponed fertility and employment of wives are leading to continued achievement of housing goals at the same time as these adjustments are raising the chances of blocking goals for raising families. The concluding section to this chapter will discuss the extent to which public policy ought to intervene in the path of this social change.



### Summary

This section has sought to place the experience of housing progress in its housing market context. We began by discussing the translation of average lifetime housing demand by cohort members into aggregate housing demand. Attention was focused primarily upon the impact that rising cohort size has on aggregate demand. Next we discussed aggregate adjustments in cohorts' housing careers, and then we presented a viewpoint on the family adjustments that cohorts are presumed to be making in pursuit of homeownership. The policy implications of cohorts' adjustments will be discussed in a concluding section. The next section addresses some of the benefits and costs of housing progress.

### BENEFITS AND COSTS OF PROGRESS

There are several private and public benefits that derive from a high rate of housing progress. However, even though it might seem self-evident that more progress is better, a number of costs to progress can be specified that offset the benefits to a large degree. This section discusses a number of these benefits and costs without attempting to conduct a quantified assessment. The goal of the analysis is not to determine whether progress returns a net benefit, but rather the goal is to explore the boundaries of desired progress. How much progress is enough and how much is too much? Answers to these questions can only be reached in relative terms.

### Benefits

A major private benefit of housing progress is that consumers' aspirations have been fulfilled. Rapid progress in the lifetime implies

that the average wait for fulfillment is reduced, and rapid progress across cohorts implies that the enjoyment of single-family homeownership is being distributed to a higher fraction of successive cohorts at each age. Similarly, expansion of ownership to persons in traditionally less advantaged family statuses implies that aspirations for homeownership are being fulfilled with less penalty for style of family participation. These psychological benefits of aspiration fulfillment are, of course, supplemented by the physical benefits of larger housing usually built at lower densities. Homebuyers also reap the benefits of subsidies provided through deduction of mortgage interest expenses and property tax expenses from taxable income, but these benefits are also available to owners of condominiums and mobile homes.

Unlike owners of other types of units, however, single-family homeowners also benefit from investment in a real asset with a long-standing record of price appreciation in excess of inflation (Grebler and Mittelbach, 1979:11-35). While it might be argued that most homebuyers will never liquidate these investments, instead simply trading up from house to house, ownership of property provides a strong sense of economic security for many people. More specifically, a study of housing needs and conditions by the AFL-CIO (1975) emphasized that a major benefit to acquiring homeownership by middle age is that housing expenses are often lower than those for renters during retirement years.

For these reasons and others single-family homeownership is treated as a merit good whose attainment should be publicly stimulated. In 1931 President Herbert Hoover convened a conference on the topic of increasing homeownership. His introductory remarks, while cloaked in hyperbole,

expressed politically popular sentiments. In addition to emphasizing that the aspiration for homeownership "...is so embedded in the American heart..." as to constitute a "racial longing," Hoover asserted the following benefits deriving from homeownership: "It makes for happier married life, it makes for better children, it makes for confidence and security, it makes for courage to meet the battle of life, it makes for better citizenship." (Hoover, 1932:2) Certainly, not all these claims can be supported. Nevertheless, Hoover's statement illustrates the breadth of assumptions about homeownership's merit aspects.

Struyk (1977) cites three additional common beliefs about homeownership's public benefits: that homeowners take better care of their dwellings and enhance neighborhood stability, that owners save at a higher rate than renters, and that homeowners are more concerned citizens than renters. While these claims are difficult to substantiate, and their benefits difficult to quantify, these beliefs support the general notion that homeownership deserves promotion.

Progress toward single-family homeownership also provides a number of other public benefits. A steady flow of households into ownership generates demand for new construction by home builders. The construction industry provides employment for workers in over 110,000 home building firms (HUD, 1974:186), and through various multiplier effects it constitutes a key industry in the economy. Maintaining a healthy construction industry is certainly an important public benefit of sustained housing progress.

Attainment of homeownership and stimulation of new construction also provide the stimulant for filtering in the housing stock. It can be

argued that the rate of new construction directly determines the rate at which the poor or minorities improve their housing (Berry, 1976; Myers, 1980). If housing progress were slowed down, new home buyers would be forced to stay in their old homes rather than pass them on to other households. In addition, progress into single-family ownership increases the potential property tax revenues, because single-family homes are assessed at higher property values than are smaller and older housing units.

### Costs

There are impressive benefits deriving from continued housing progress by young cohorts. Yet these benefits are accompanied by often overlooked costs, some of which are directly related to the supposed benefits. For example, income tax subsidies are granted for homeownership because it is a merit or public good. The private benefit thus received by homeowners amounted to a public cost of 6.2 billion dollars in 1972 (HUD, 1974:33). To place this high cost in perspective, the total outlay for federally subsidized housing programs in 1972 was only 2.5 billion dollars. The earlier that the large baby boom cohorts enter homeownership, the longer that they will drain this subsidy from the national public income account.

It is possible also that the national economy is being weakened by excessive housing progress. Sternlieb and Hughes (1979) argue that consumers have overinvested in housing consumption in their struggle to achieve homeownership and to secure shelter from dollar devaluation. They claim that households are saving less than before and that

investment dollars are being drained from sectors of the economy that require funds for further development. As economic growth slows, personal income ceases to increase, and thus the disparity between house prices and incomes could possibly grow still larger.

The presumed benefits of a healthy construction industry and increased filtering in the housing market are also offset by associated costs. In the past, stimulating construction of new single-family housing has had the effect of encouraging low density urban development. While such development patterns need not persist in the future, new construction has been concentrated in different parts of metropolitan regions in different decades. As a consequence, different generations have come to reside in separate metropolitan locations, with the early occupants frozen in the neighborhood housing stocks (Myers, 1978). School populations have boomed and busted, and other service demands have fluctuated wildly, as neighborhoods age through their collective family life cycles.

In addition to this pattern of age segregation, increased construction and filtering leads to greater economic and racial segregation. While the trickle down of older housing benefits each family that is able to upgrade its own housing conditions, households that are too poor to afford single-family homes are forced to occupy less desirable housing in older neighborhoods. Among other spokesmen, Anthony Downs (1973; 1977) has argued forcefully that the trickle-down housing strategy causes grave social injustices and creates serious public costs by concentrating the poor: "To put it bluntly, a majority of American urban families have enjoyed the fruits of 'social progress' in housing that have been purchased at the expense of a minority who can ill afford to pay the price"

(Downs, 1977:163).

### Relative Status Comparisons

There is a further social cost to housing progress that deserves more detailed discussion because it is not often recognized. Each generation's housing progress establishes a standard by which subsequent generations evaluate their own housing well-being. Through a ratchet process each increase in progress between cohorts "raises the ante" required of the following cohort if it is to keep from suffering a declining standard of living. In an earlier section it was argued that cohorts are responding to this pressure by making increasing family adjustments. Ironically, the high housing standards established for young cohorts in the past two decades are based in part on the high fertility of the baby boom era. Richard Coleman has suggested that housing norms were elevated in this period as real income increases coincided with large baby boom families (Birch et al., 1973: Chapter 5). Even though family sizes have decreased in the past decade for young cohorts, the continued occupancy of large, single-family homes by the baby boom parents has kept the norms for suitably sized housing from being revised downward.

Not only are the standards of acceptable housing elevated by each generation's progress, but the well-being derived from a fixed quality of housing is lowered. Easterlin (1974) and Duncan (1975) have shown that increasing real income does not increase the reported level of happiness or satisfaction. What is important is the individual's relative income rank, not his absolute income. Rainwater (1974) has provided further evidence that conceptions of different levels of living have increased over time in such a way that their relationship to the overall income

distribution has remained relatively constant. Thus favorable self-perceptions of well-being require that one's own standard of living must increase at least as much as the average increase. Hirsch (1978) has added to this argument by suggesting that well-being is reduced not only through relative status comparisons, but also through a lower consumption that is derivable from a fixed good. His point is that once a desired good becomes widely attainable, its enjoyment is lessened by such externalities as traffic congestion, in the case of automobiles, and suburban sprawl or high property taxes, in the case of bucolic suburban living. Of course, the increased prevalence of homeownership need not reduce all of its important advantages such as the favorable income tax treatment.

#### Managed Lifetime Housing Progress

In an era of rising concern about resource conservation the costs of aspiration fulfillment seem very high if the level of well-being derived from rising standards of living remains constant. Yet what has been neglected by the authors cited above is the lifetime dimension of progress. The major preoccupation has been with progress across generations, and only to a limited extent has the family dimension been treated when analyzing living standards. The lifetime dimension of housing progress deserves much greater attention, because of its great magnitude, and also because progress along this dimension can occur without any added social cost. If each cohort merely replicates the lifetime progress of its predecessor, societal progress (progress across cohorts) will be negligible and the standard of living required for a fixed level of well-being will not be elevated for the population as a whole. Yet, at the same time, a pattern of strong lifetime progress will continue to give the

average person a sense of advancement in life.

Such an idyllic world of constant lifetime progress for successive cohorts (and, hence, zero cross-cohort progress) would retain most of the benefits cited above for housing progress. And this ideal state would also avoid a large part of the costs associated with progress. The key goal should be the fulfillment of aspirations at a rate that does not inflate expectations for the succeeding generation. A steady rate of new construction and filtering could be maintained without increasing the rate at which sprawl is proceeding or the rate at which the poor are being isolated. Similarly, the amount of foregone income tax revenues and the size of the outstanding mortgage debt would be kept from growing excessively. The judgements of costs and benefits that we are making here are based on the assumption that each benefit is necessary and each cost is unavoidable. The public interest is best served, however, by providing an acceptable level of benefits while keeping the costs from increasing.

There are three problems, however, attending this plan for managed lifetime housing progress. The first concerns the factor of differential cohort size that was discussed earlier in this chapter. Constant lifetime progress for successive cohorts will not generate stable housing demand over time if the cohorts are of different size. Total ownership will increase markedly when larger cohorts approach middle age. A balance must be struck between managing the experience of housing progress and managing the aggregate demand generated by cohorts' progress.

A second obstacle to the social plan concerns the question of how to phase in a new regime of constant lifetime progress. When the nation is accustomed to a continuous rate of cross-cohort progress, a cessation



of further increases might appear as a relative deprivation. Nevertheless, the large size of cohorts currently entering adulthood is leading to such a diminishment of cross-cohort progress. The extent to which public policy should intervene in the reshaping of cohorts' housing careers is discussed in the final section of this chapter.

A third, related, problem concerns the treatment of economic class differences in the plan for managed lifetime progress. A major advantage of ever-higher rates of lifetime progress is that a larger proportion of lower-income groups are gaining access to homeownership. Constraining the rate of progress is likely to have the adverse impact of constraining social mobility of lower and working-class persons. An equitable plan for managing housing progress must ensure that cutbacks are not borne exclusively by the economically disadvantaged. This consideration is a factor arguing for greater public intervention in the market forces that are reshaping cohorts' housing careers.

#### POLICY IMPLICATIONS

The broad conclusion emerging from this evaluation is that homeownership should be brought within the means of every person sometime during his or her lifetime. This is also one of the main conclusions that emerged from President Hoover's 1931 Conference on Home Building and Home Ownership (Wilbur, 1932:8). However, what has been lost over the years, probably as young veterans returned from World War II, is the understanding that homeownership is less important to achieve for young persons than for middle-aged persons. Because ownership cumulates for cohorts over time, higher ownership rates for middle-aged persons imply that larger

numbers of people are achieving homeownership within their lifetime. Increased ownership rates for young persons do not carry this implication and instead only lead to greater aggregate demand for homeownership.

#### A Publicly Advantageous Schedule of Lifetime Progress

In the preceding section we developed the idea of managed lifetime progress. There were several drawbacks to the ideal notion that was discussed. This section addresses these problems with reference to the earlier section on hypothetical housing career adjustments. Figure 8-1 depicted a "normal" trajectory into ownership based on the experience of the 1937-38 cohort, and the figure also showed three hypothetical changes in ownership trajectories that might occur as larger cohorts face increased competition for homeownership.

All three hypothetical responses begin with reduced owner-occupancy during the twenties. This is advantageous because it cushions the impact of larger cohorts entering the homeownership market. However, Trajectory B outlines a career path that makes up for this lost demand with higher than normal owner-occupancy during the thirties. The impact of this trajectory is thus to postpone demand until a later time. This would serve to increase the competition facing following cohorts.

Trajectory C does not make up for reduced owner-occupancy, instead only returning to the normal career path during the thirties. Thus this career provides a permanent savings in reduced ownership consumption while still enabling a normal fraction of the population to eventually become owners. Yet this increased progress is purchased at the expense of greater competition facing following cohorts. On balance, Trajectory

B is preferred to Trajectory C only if the transition to above normal ownership rates is delayed still further in time--to age 40 or above. Such a delay has the effect of decreasing the lifetime consumption of owner-occupancy at the same time as it permits a higher level of eventual ownership attainment.

Trajectory D represents the least preferred outcome. Large reductions in ownership consumption occur, but only at the expense that a lower fraction of the population can achieve homeownership. The persons who lose out under this scenario are likely to be those for whom ownership attainment is most financially marginal. This outcome does not seem to be publicly acceptable.

The question of how to phase in a publicly advantageous schedule of lifetime progress must consider the ongoing adjustments already occurring in response to market forces. In previous chapters we have uncovered evidence that cohorts are shifting from ownership trajectories like A in Figure 8-1 to B. We have hypothesized two complementary explanations for why cohorts are rebounding from reduced ownership during the twenties to higher than normal ownership during the thirties. First, the adjustments made by cohorts during their twenties are proving highly effective as they come to fruition in later years. Second, cohorts in their thirties are given an added incentive for buying homes because the great demand wielded by larger, following cohorts is causing house prices to rise faster than the rate of inflation.

In this view, cohorts pursuing Trajectory B are faring very well, even though they are being forced to make family adjustments during their twenties. However, this success is being won at the expense of

following cohorts. These later cohorts face not only the increased competition deriving from their own numbers, but also the added burden of greater demand generated by the success of their predecessors. We have discussed the potential public problem that is emerging as successive cohorts make cumulative incremental adjustments that are forming a path of social change toward family lifestyles not preferred by the participants. Even if this is an accurate assessment of current changes, this issue does not seem ready for public policy intervention. There is too little consensus about what should constitute family policy in the United States today (Bane, 1978).

Instead, the primary policy conclusion of this study is that homeownership assistance programs (including tax subsidies) should be conditioned on age. Access to homeownership subsidies and incentives should be restricted perhaps only to persons over age 35. Programs that are intended for use by younger persons are misguided for two reasons: first, these programs increase total ownership consumption without necessarily leading to higher rates of lifetime ownership attainment, and second, assistance to younger persons is only retarding the reshaping of housing careers that could help cushion the impact of the baby boom as it enters the homebuying ages. A more efficient use of public funds is to target resources in age groups where cohorts are reaching their highest lifetime ownership rates. In addition, the most equitable strategy is to target subsidies at middle ages because persons in the life stage who have not yet achieved homeownership, and who seek it, demonstrate the greatest need. Such a strategy of age targeting is not discriminatory because all persons will have access to these benefits when they have reached the

appropriate age in their life.

#### Obstacles to Policy Consensus and Program Design

It is important to recognize the political or practical obstacles that impede formation of a policy consensus concerning lifetime housing progress. Despite the rationality of arguments presented in this study, other issues have been neglected that have persuasive influence in the policy process. Before concluding this chapter it would be useful to recognize some of these other issues that might be raised in debates surrounding policy formation and program design.

The proposal for controlling the rate of lifetime housing progress by young cohorts is likely to be caught in a cross-fire between two different consumer interest groups. On the one hand, advocates for the poor will likely argue that housing progress should not be equated with homeownership acquisition. They would be correct to argue that the traditional quality indicators provide a better measurement of the conditions faced by very poor families, and these advocates might resist efforts to discuss broad middle-class housing concerns. Despite these arguments, the interests of the poor would be advanced by supporting the proposal to reduce housing subsidies to young, middle-class persons.

On the opposite side, spokesmen for young families or the middle class will argue strongly against any effort to reshape federal policies encouraging homeownership acquisition. The policy implications cited above run counter to the current momentum favoring increased subsidies for young families, and legislators who have been fighting for this cause will strongly resist any effort to undermine their policy

convictions. The Age Discrimination Act of 1975 will likely be cited in arguments against the proposal to target homeownership subsidies for middle-aged persons. While claims of age discrimination might be persistent, as well as superficial, the proposal for controlling the rate of lifetime housing progress need not rely upon explicit age criteria in the design of programs. To successfully counter the arguments of middle-class proponents it would be necessary to offer strong guarantees that a temporary diminishment of homeownership subsidies for some persons would be coupled with greater subsidies at a later time.

The policy debate would also need to resolve the issue of how to treat different house types in the measurement of lifetime housing progress. This study has emphasized single-family homeownership because of its strong consumer support and also because of its great prevalence. A major question concerns whether or not policies to control the rate of lifetime housing progress should treat single-family homeownership differently than other forms of homeownership. While this might seem to be a normative question, the policy debate would likely focus on the demand displacement effects of alternative classifications. If assistance is reduced for some types of housing more than others, demand is likely to be displaced toward the more subsidized house types. Just how this displacement will affect the current patterns of market competition, and particularly how the poor or minorities will be affected, should be a matter of major concern in the design of specific policies and programs. This issue underscores the fact that policies addressing homeownership cannot be treated in isolation from policies concerning condominium conversion, gentrification, or other current housing problems.

A third obstacle to reaching consensus about controlling the rate of housing progress is posed by the sticky issue of personal wealth accumulation. Homeownership is the greatest real asset that most persons acquire during their lifetime. Policies to reduce the rate of homeownership acquisition by young persons would have the effect of constraining the pace of wealth accumulation. At the same time, policies to increase ownership acquisition by middle-aged persons have the potential to increase the wealth of relatively lower income persons. Hence, the overall effect of the proposal to control the rate of housing progress could be to help distribute personal wealth more evenly across income groups. While it should not be the purpose of housing policy to achieve economic redistribution, some of these issues will likely be raised in debate by persons who are concerned about the investment advantages of homeownership. To alleviate the fears of young persons who seek early ownership acquisition for investment purposes, it would be helpful to develop alternative investment opportunities with rates of return comparable to those of house price appreciation.

A final difficulty that would need to be resolved concerns the proper treatment of regional and local differences. The analysis presented in this study has been conducted with data aggregated for the nation as a whole. It is worth considering, at least briefly, how much the study's conclusions might be altered if spatially disaggregated data were utilized; and, relatedly, we ought to address the question of how local differences might influence policy formation and program design.

A major reason that national data were analyzed is that cohort

analysis is not possible for local areas, given the high rates of residential mobility across their boundaries. Cohort analysis with data from replicated surveys such as the census requires a fairly closed population so that the same people can be sampled in different years. Nevertheless, the rates of housing progress that were estimated for national cohorts probably differ greatly from the experience of people residing in local areas. For example, single-family homeownership attainment is probably much lower for cohorts living in metropolitan areas of the Northeast that have relatively few single-family homes than it is for cohorts residing in newer areas of the Sunbelt with a high proportion single-family homes. In addition, persons who have migrated from the Northeast to the Sunbelt very likely have experienced a pattern of housing progress that is different from that of more settled residents in either region. It would be clearly difficult to trace the housing progress of persons born and residing in every possible combination of states or regions in the nation.

I would argue that these regional and local differences are unimportant for this study's conclusions. Even though the exact rate of housing progress varies by place, we have focused on the longitudinal experience of different generations. As long as the change between cohorts at the national level provides a reasonable description of the proportionate change between cohorts in each local area, the study's broad findings are relatively unaffected by spatial differences.

More serious problems accompany the question of how to treat local differences in the task of program design. By virtue of its greater prevalence, single-family homeownership is relatively more important to



persons in localities that are lower density suburbs than to residents of central cities, and it is also more important to persons in most southern or western metropolitan areas than it is to residents in older areas of the north. The stronger interests of some geographic groups would need to be accommodated by the program design process. For example, setting homeownership target levels according to average, national homeownership patterns would constitute a greater threat to suburban or Sunbelt residents than to residents of other areas where ownership has always been below the new target level. One solution to this imbalance is to scale the new target level proportionately to the current pattern in each metropolitan area. However, representatives of jurisdictions with low ownership levels might well complain that it is unfair to scale down their ownership levels to an even lower level. These representatives might propose that a two-step scaling algorithm be employed: areas with ownership levels below the national average are left unaffected, while areas above the national average are scaled down proportionately..

Such a geographically-based political struggle over policies to control the rate of housing progress could seriously disrupt efforts to develop consensus about some of the other problems discussed above. Thus it seems important to defuse the potential geographic conflict prior to entering the policy arena. Toward this end research should be conducted on the geographic distribution of legislators' voting support, comments, and attitudes regarding existing homeownership programs. Most, if not all, of these programs fail to correct for regional or local differences in single-family homeownership prevalence. Valuable insights might be gained from close scrutiny of previous legislation.

In sum, there is a host of problems attending the translation of

this study's conclusions into housing policies and programs. These difficulties are severe enough that it is likely the study's conclusions could have at most a marginal effect on the evolution of housing policy. The two most likely impacts of a debate on controlling the rate of housing progress might be: (1) to undercut efforts to further subsidize the home purchasing ability of young families, and (2) to encourage development of subsidy programs for more mature families with demonstrated difficulty achieving homeownership.

#### CONCLUSION

This evaluation has emphasized the great importance of viewing housing progress in the lifetime perspective. In this perspective the timing of housing achievement by individuals and the ultimate lifetime achievement levels of cohorts are the proper focus for housing policy. This chapter has reviewed the key empirical findings of this study, and it has placed the experience of housing progress by cohorts into the context of aggregate housing demand. The rapidly increasing size of cohorts now entering adulthood (attributable to the postwar baby boom) poses a major challenge to the continuation of past patterns of housing progress. If the current generation of young adults follows the same per capita lifetime consumption path as earlier generations, demand for single-family owner-occupancy will be increased enormously.

At present we are witnessing a mounting conflict between housing progress and housing demand. In the face of supply constraints and rising costs cohorts are delaying acquisition of single-family homes,

but ultimately they are acquiring them in record proportions. In part, this delayed success is the result of increasing family adjustments initiated during the twenties, but it also reflects the investment incentive for older cohorts to capitalize on the potential housing demand of following cohorts. Overall, there are fundamental inter-cohort relationships underlying the struggle for housing progress that must be considered by public policy.

This evaluation has concluded that there is a need to manage the process of lifetime housing progress. Before specific policy proposals can be developed, however, it is important to grasp a conception of the problem. The problem is not that young families are being priced out of the homeownership market, but rather that our society places too much importance on early attainment of single-family homeownership. I have argued that it is beneficial for young cohorts in the baby boom generation to slow their rate of housing progress. But this diminishment of the rate of progress should be prevented from becoming a lower level of ultimate, lifetime housing achievement. Public subsidies should be directed to middle-aged persons who have not yet achieved their housing goals before they are provided to young persons who are less advanced in their housing careers. Over time all persons should be guaranteed the same housing subsidies, but we must recognize that it is not possible to aid all persons simultaneously. In recognition of the fundamental importance of life progress, the proposals expressed in this chapter seek a dynamic distribution of resources that is just.



## Chapter 9

## CONCLUSION: THE LIFETIME DIMENSION OF PROGRESS

This study has argued for the strong importance of the lifetime experience of housing progress. Previous studies of aggregate housing improvement in the United States have not sought to measure housing conditions in a manner that represents the aggregate experience of improvement by individuals. Housing analyses that do not adopt a longitudinal framework for measuring individuals' experiences or housing demand are severely limited in their ability to measure either individuals' housing well-being or individuals' market behavior. I believe that the present analysis, although not without its faults, has made substantial progress toward improving the techniques for normative and empirical analysis of the American people's housing conditions.

The fundamental contribution of this study has been to address the measurement of improving housing conditions from a population perspective. This perspective leads us to inquire about the aggregate characteristics of individual population members as they are evolving over time. The cohort-life course theory and methodology have been employed for the empirical analysis of individuals' housing and family conditions. While fairly cumbersome to employ, it has been shown that the methods used here yield more accurate estimates of aggregate experience than methods currently used in housing analysis.

How important is it to measure individuals' housing experience over time? Chapter 2 has documented the evolving consensus in studies of

national housing needs about the importance of occupancy conditions experienced by households. These conditions include the match between households and housing units and they are believed to be a truer indication of housing deprivation than are the characteristics of the housing stock itself. In addition, increasing recognition is emerging about the importance of the duration of occupancy conditions for housing well-being. It makes a difference whether persons are living in overcrowded conditions or paying excessive rent for a short, temporary interval rather than for a prolonged period of their life. Moreover, when the issue is homeownership, it is clear that households adopt a long time horizon for planning their consumption decisions; and, as a result, policy analysis of the affordability crisis should also adopt a longitudinal framework for measuring homeownership cost burdens.

The major obstacle to implementing the normative viewpoint about the duration of experience by individuals is that it is empirically very difficult to measure changes over time for more than a relatively few persons in special surveys. The solution that has been proposed in this study is to aggregate individuals into cohorts and then measure the changes over time in cohorts' housing and family conditions. This method has certain limitations, however, that should be noted. First, aggregation into cohorts suffers the fault common to all aggregation in that individual idiosyncracies are averaged out. In addition, cohort analysis works best when analyzing changes that are relatively permanent. If there is a lot of shifting back and forth between statuses, the net changes of cohorts over time will provide very misleading estimates of aggregate individual experience over time. This problem is also common to all

measurement of net change, such as net migration, and yet analysts continue to emphasize measurement of net change even though it underestimates the true volume of change.

The usage of cohort analysis in this study has minimized the effects of these limitations. A major argument developed in Chapter 4 is that cohort aggregates permit a more accurate estimation of individuals' experience over time than do other forms of aggregation that ignore the fundamental effects of maturation and advancement through the life course. I believe that cohort units provide successful aggregation of individuals' fundamental life processes--aging, family formation, employment career advancement, and housing career advancement. It is true that the limitations posed by the need to measure net changes has forced us to focus on relatively permanent life changes--such as entry into marriage, entry into parenthood, and attainment of household headship or single-family homeownership--but who would say that the occurrence (or non-occurrence) of such relatively permanent transitions is not of major social significance? In addition, we have used the cohort-life course theory to step beyond the permanency limitation and analyze, under special conditions, the reversible state entered by previously-married women. While the broad pictures of longitudinal experience have been drawn for cohorts, this emphasis need not restrict us from analyzing particular statuses of cohort members at single points in time.

This study has adopted a key assumption about the definition of housing progress by cohorts that is in keeping with the emphasis on aggregate individual behavior. This assumption is that the experience of housing progress is best measured by the rate at which cohorts advance

toward housing quality standards that they prefer to attain. Thus progress is measured with reference to an upper standard representing consumers' aspirations rather than with reference to minimal standards established by housing professionals and policy makers. Defining progress according to consumers' wishes rather than according to policy makers' judgements, however, creates a potential conflict between private and public normative evaluations.

This conflict is not merely an unfortunate side effect of the approach taken by this study; rather, my intention has been to emphasize the importance of consumer preferences and consumer behavior in the definition of public quality standards and in the measurement of national housing needs. The issues of consumer preferences and behavior too often have been obscured in the policy-making process. By defining progress in terms of individuals' pursuit of personal goals, and then measuring the resultant careers of different cohorts, I have collected additional information that should be addressed when forming public, normative assessments of housing quality and housing needs. However, consumers' preferences should not directly dictate public policy, any more than public policy should dictate what is good for people. Instead, what is necessary is to adopt a value-critical approach (Rein, 1976) that integrates facts and values in arriving at public, normative assessments about the housing conditions of the American people. More will be said about this below.

Interpretation of consumer preferences in this study has led to the choice of single-family homeownership as the preferred housing standard. Granted that this is a sterile and unidimensional goal to ascribe



to all young adults, when most households have richly detailed hopes and plans, but the available data show that the vast majority of young adults subscribe to this single standard. Such consensus within the population about a single housing standard is extremely helpful for conducting aggregate analysis. While for special purposes it is useful to have more detailed definitions of preferred housing standards held by special population subgroups, the single standard is adequate for the highly aggregated, cohort-level analysis conducted in this study. Nevertheless, it should be emphasized that the single-family homeownership standard is not the most preferred by absolutely all young adults, and it is even less universally preferred by persons of elderly age. While additional standards would need to be developed to reflect the preferences of these individuals, it seems clear that single-family homeownership is a sufficiently valid general indicator of young adults' preferences.

An additional justification for employing the single-family homeownership standard in this study is that the attainment of this house type by young families has recently emerged as an issue of public normative concern. The public importance of homeownership attainment is not self-evident, because this problem concerns a high level of housing consumption when, at the same time, many households are still housed in substandard conditions according to the traditional, bottom-oriented indicators. In fact, a relative, intergenerational justification has been offered for why homeownership is an important issue. The implicit rationale for the affordability issue is that homeownership should not be allowed to become less accessible to the current generation of young families.

Substantial debate has developed over the nature and magnitude of the

alleged crisis of affordability. Chapter 2 offered the interpretation that the debate has centered more on the proper time frame for measuring financial burden than it has on the fact of high nominal housing costs facing first-time homebuyers. In fact, what is needed today is to develop a longitudinal framework for measuring access to homeownership. One such approach that has been developed by this study is to analyze the transition from renting to single-family homeownership for different cohorts over time.

In fact, a major normative innovation of this study has been to emphasize the importance of the timing of homeownership attainment. We can measure the lifetime progress of individuals toward their collective housing goals by the proportions of cohorts that have reached single-family homeownership by each age. Alternatively, we can measure progress by the linkage between family stage and ownership attainment for different cohorts at the same age. I have argued that the timing of ownership attainment relative to both life stage (age) and family stage provides important information for public policy consideration. While the family timing of ownership attainment is an issue of wide concern, and important empirical observations have been uncovered in Chapter 7, I have chosen to de-emphasize this aspect of timing for purposes of evaluating the public policy implications of lifetime progress.

Instead, the evaluation in Chapter 8 has stressed the age timing of lifetime progress by different cohorts. I have concluded that it is possible for there to be too much, as well as too little, housing progress. To understand this conclusion it is important to recall that progress is defined in terms of individuals' aspirations and that there is a

potential conflict between individual assessments of progress and public evaluations of good housing conditions. The individual who desires to acquire ownership of a single-family home might prefer to achieve that goal immediately, but this does not imply that public policy is obligated to help all households to simultaneously attain their objectives.

The conclusion that is reached by the evaluation of lifetime progress is that there is need for a public policy of managed lifetime progress. I believe that good housing conditions in the United States are defined by a situation where all persons can achieve their lifetime housing goals, but where early attainment of goals by some persons at the expense of others is discouraged. The twin objectives of progress management should be to ensure the ultimate achievement of single-family homeownership for all persons who seek it, but to curtail the single-family ownership consumption of cohorts at younger ages such as under 35. Alternative investment opportunities should be created for these households and further public subsidies should not be provided to young homebuyers. The reason that it is necessary to accept curtailment of owner-occupancy by young families is that the great size of the baby boom cohorts is generating enormous increases in housing demand even though these cohorts are pursuing a per capita lifetime housing progress that is similar to their predecessors' progress. Slowing the rate of progress for the baby boom cohorts will help to cushion the market impact of their greater size. At the same time, public policy must guarantee that every household will be able to eventually achieve homeownership, and to this end special subsidy programs ought to be developed for mature households who have not yet achieved their objectives.

Overall, the lifetime perspective promises new insights both for empirical research on consumer behavior and for normative research on policies to promote collective well-being. While it might seem difficult to implement such longitudinal insights at points in time when legislation is made, every program has a history and a future just as does every individual. Hopefully public policy can learn to coordinate programs more effectively with the lifetimes of individuals.

## Appendix A

DESCRIPTION OF THE DATA BASE AND  
ADJUSTMENT PROCEDURES

Data for the major empirical analyses in this dissertation, those conducted in Chapters 6 and 7, are drawn from three large surveys conducted by the U.S. Bureau of the Census in the Spring of 1960 and 1970, and in the Fall of 1975. The 1960 and 1970 surveys are decennial censuses conducted around April 1 for the purposes of achieving a complete enumeration of the population. One-in-one hundred samples of individual records from these decennial surveys have been released by the Census Bureau in the form of computer tapes. The 1975 survey, part of the series of Annual Housing Surveys, is restricted to the household population of the United States and the total sample amounts to about 70,000 households and 29,473 females aged 18-39. In contrast, the one-in-one hundred samples drawn from the 1960 and 1970 decennial censuses include 253,234 and 291,708 females aged 18-39, respectively.

These primary data have been transformed and adjusted in several ways. The data for this dissertation are taken from "family nucleus" conversions of the 1960, 1970, and 1975 surveys that were prepared by research staff of the MIT-Harvard Joint Center for Urban Studies. The nature of these family nucleus files and the specific variables selected for analysis are described in the first section of this Appendix.

In addition to defining the data sources, this Appendix also describes two important adjustments that have been made in the 1975 data. The first adjustment is necessitated by inadequate age detail released

for heads of households. Inexplicably, the primary data have been processed into five-year age categories for household heads and left in single-year age categories for all others (including wives of heads). In order to define more detailed cohort groupings it is necessary to transform the five-year age distributions into single-year distributions. Fortunately, this procedure need be applied to only a small fraction of the female population since Census Bureau programmers have suppressed the exact age detail only of the husbands in married couples that jointly head their own households. The second section of the Appendix describes the adjustment procedure that has been employed.

The second adjustment necessary for using the 1975 data concerns the conversion of the household sample into a total population sample. Using 1970 data as a basis for comparison it is possible to estimate how many persons in each age and marital group have been omitted by the household survey. The necessary adjustments are slight for all women other than those who are never-married and under age 22. This adjustment procedure is described in the third section to the Appendix.

#### The Joint Center Family Nucleus Files

The Census Bureau public use sample data tapes have been processed at the Joint Center by a program that re-organizes the data into "family nucleus" units. A family nucleus is formed by every individual aged 15 or older unless he or she is living with a marriage partner. In the latter case, the married couple is treated as one family nucleus. The nucleus concept is intended to reflect the notion of potential household heads; that is, persons who potentially could maintain independent

living arrangements. An important advantage of the Joint Center family nucleus files is that they are organized with a female-dominant structure. Data pertaining to nucleus units that are married couples are oriented primarily toward the female partner instead of the male as in the traditional Census Bureau practice. Wives are designated heads of household instead of husbands, and it is through the females that nuclei are identified with cohorts.

Ten variables were extracted from the nucleus files in order to form the six-dimensional matrices of behavioral statuses in the 1960, 1970, and fall 1975 surveys. The variable names are listed below and the purpose for which each was used is identified:

<u>Variable Name</u>	<u>Purpose</u>
NTYPE (TYPE in 1970)	Select females only
AGEHD	Age dimension
MSHD	Marital status dimension
OWNCH05	Parental dimension--presence or absence of children under 6
OWNCH614 (OWNCH014 in 1970)	} Parental dimension--presence or absence of children over 5
OWNCH15PL	
INC	Family income dimension and (if not married) employment status dimension
INCWIFE	Employment status dimension for married women
HUTYPE	Housing dimension--identify housing unit type occupied by household heads

HREL

Housing dimension--identify  
household headship statusEstimating More Specific Age Characteristics

For the purposes of the empirical analysis in Chapters 6 and 7 I wish to aggregate individuals in two-year birth cohorts. The two-year grouping provides finer age detail than is afforded by five or ten-year groupings and it also permits more precise estimates of social change across cohorts since five two-year cohorts are encompassed in a ten-year time span. Single-year cohorts would provide even more detail, but at the risk of making estimates of rare statuses in the 1975 data base statistically unreliable.

The major obstacle to defining two-year cohorts is that the 1975 data base, unlike the 1960 and 1970 data bases, does not give the exact ages for all persons. Age is coded in five-year categories for persons who have been designated heads of households by the Census Bureau. Fortunately, since husbands have traditionally been designated household heads in place of wives, the age detail for married women has not been suppressed. In addition, unmarried women who are not heads of household also have exact age detail. Only in those cases (14.1 percent of all 18-39 year-old women in the 1975 data base) where a woman is both unmarried and a head of household has age detail been suppressed.

For this segment of the population it is necessary to estimate the exact age distribution from the five-year age distribution. The method selected for this is an interpolation routine using Sprague multipliers. This method fits a curve through a set of five successive five-year age groups in order to generate an interpolated distribution of exact ages.



The multipliers that are used to fit the curve and the exact procedure are given in Shyrock et al. (1976:542-544, 555).

Through matrix multiplication these coefficients are applied to the five-year age distribution (for ages 15-19 through 40-44) of each detailed status combination. This procedure thus breaks down the matrix of behavioral statuses for each five-year age group into a separate matrix for each single year of age within the original group. The accuracy of this method depends upon the ability of the fitted curve to reflect sharp changes across successive age groups. This is not a problem for ages 20 through 44 as changes between successive age groups from 20-24 through 40-44 are fairly gradual. However, between ages 15-19 and 20-24 very sharp status changes occur, and given the added problem that the 15-19 age group is the end point in the chain of age groups used for the interpolation, the single-year estimates between 15 and 19 are relatively unreliable. Fortunately, the mis-estimates are concentrated below age 18 (outside the age range to be analyzed) and, in fact, only about 7.3 percent of the women in the 18-19 age group are unmarried household heads. Hence relatively few cases are subject to potential mis-estimation of exact ages.

Once the age dimension of the matrix of behavioral statuses has been estimated in single-year detail, pairs of ages are combined into the desired two-year cohort groupings. Then this estimated cohort data is meshed with the pre-existing cohort data for wives and other nonheads in order to yield the complete matrix of behavioral statuses for each two-year cohort from 18-19 to 38-39.

### Converting the 1975 Household Sample to a Total Population Sample

A second shortcoming of the 1975 data base is that it is recorded from a household sample and excludes from coverage persons living in institutions or group quarters. It is possible to adjust the 1975 data to represent the 1975 total population by using the known 1970 relationship between household and total population.

Table A-1 shows the percentage of the total population recorded by the 1970 Census as living in households. By definition all of those who are married with spouse present live in households. Virtually all females who are widowed, separated or divorced also live in households, while household living is somewhat less common among males. The lowest percentage of household residency is found among never-married men and women, particularly among those aged 18-24. At this age, 82.3 percent of women and 76.5 percent of men are living in households. The younger and older age groups have much higher household residency rates, and as a consequence, the major problem in converting from a household to total population estimate focuses on estimating the adjustments needed by exact ages within the 18-24 age span. Unfortunately, published census data do not provide more detailed age breakdowns than those given in Table A-1.

One of the empirical advantages of focusing on the female population is that the necessary adjustments between household and total population are more moderate than for males. Table A-2, Part B gives the estimated adjustment multipliers for converting the household sample into a total population estimate for each two-year age group. These multipliers are simply the inverse of the estimated proportions of the total population that are living in households (given in Part A of Table A-2). These

proportions were estimated by physically fitting a curve for each marital status through the different-sized age groups reported in Table A-1.

Estimation of household residency proportions for two-year age groups is fairly clear cut with the exception of estimates in the 18-19 through 24-25 age groups. The key assumption that is employed for these estimates is that age 18 marks an abrupt change from the 14-17 age group to the 18-24 age group. The behavioral basis for assuming such a sharp drop in household residency is that age 18 signifies completion of high school and enrollment in college for many young persons. These changes likely are accompanied by sudden decreases in household residency. I have assumed that household residency dips sharply and remains low in ages 18-19 and 20-21, followed by large increases by age 22-23 and further increases by age 24-25.

These estimates were developed for exact ages first before combining them into two-year age groups. As such, the estimates for exact ages 18 through 24 are constrained to average out to the .823 household residency proportion for all females in the 18-24 age group. The major obstacles to defining a curve representing the specific ages within this age span are uncertainty about the extent to which household residency drops off at ages 18-19 and about the prolongation of this sag through ages 20-21 and 22-23. The relative magnitudes of the 18-19 and 20-21 estimates are most in doubt. In contrast, the 22-23 estimate is fairly reliable, and the estimates for all other age groups and marital statuses are also reasonably secure. For these other estimates the major source of potential inaccuracy concerns the extent to which the 1970 relationship might have shifted by 1975.

Table A-1: PERCENT OF POPULATION IN HOUSEHOLDS, AS  
 REPORTED BY THE 1970 CENSUS, BY AGE, SEX,  
 AND MARITAL STATUS

	AGE				
	14-17	18-24	25-34	35-44	45-64
<u>Females</u>					
Married, Spouse Present	100	100	100	100	100
Never-Married	99.12	82.28	94.35	91.97	90.77
Widowed	98.94	98.36	99.09	99.16	98.37
Divorced and Other	71.07	97.46	98.31	97.90	96.14
<u>Males</u>					
Married, Spouse Present	100	100	100	100	100
Never-Married	98.22	76.50	91.07	90.40	88.70
Widowed	99.01	92.05	94.09	95.09	92.35
Divorced and Other	93.59	62.79	83.00	86.74	89.41

Table A-2

A. ESTIMATED 1970 RATIO OF HOUSEHOLD TO TOTAL FEMALE POPULATION, BY MARITAL STATUS AND TWO-YEAR AGE GROUPS

	AGE										
	18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
Married, Spouse Present	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Never-Married	.770	.765	.875	.925	.940	.950	.950	.945	.940	.930	.920
Divorced, Widowed and Other	.930	.965	.975	.980	.980	.985	.985	.980	.980	.980	.980

B. ADJUSTMENT MULTIPLIERS FOR CONVERTING HOUSEHOLD SAMPLES TO TOTAL POPULATION ESTIMATES (INVERSE OF RATIOS IN PART A)

	AGE										
	18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
Married, Spouse Present	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Never-Married	1.299	1.307	1.143	1.082	1.069	1.053	1.053	1.058	1.064	1.075	1.087
Divorced, Widowed and Other	1.075	1.036	1.026	1.020	1.020	1.015	1.015	1.020	1.020	1.020	1.020

To generate the total population estimate, the adjustment factors given in Table A-2, Part B are multiplied by the marital status/age marginals for the household population. The difference between the resultant total and household populations in each two-year age group and marital status is then allocated to particular cells within the matrix of behavioral statuses. By definition, the "extra" population living outside of households are not heads of households and so they are assigned that housing status. In addition, it is assumed that none of the females living outside households have children living with them, and so they are assigned to the childless parental status. With regard to the income and labor force statuses, there is little basis for assigning individuals to different categories, and so the extra population has been randomly assigned to categories along these dimensions of the behavioral matrix. As a consequence, the income and labor force dimensions are properly analyzed only for married persons because this is the only group in the 1975 data base for which true values, or even reasonably accurate estimates, are known.

#### Reliability of the Data Base Manipulations

Three different data transformations and adjustments have been described in this Appendix. It would be helpful to present a summary evaluation of the degree of confidence that is warranted for the resulting data estimates pertaining to different segments of the population.

In general, the family nucleus transformation has little impact on the accuracy of the original data. While certain assumptions are required, particularly for rare household configurations, these assumptions

are the most reasonable choices available and identical procedures have been applied to the three different data bases. Moreover, the family nucleus data files have withstood the scrutiny of several different investigators who have employed the data in numerous analyses.

More careful evaluation must be given the special adjustment procedures applied to the data for the present research purposes. Rather than recount the potential weaknesses of each step in the adjustment procedures, this evaluation can be made both more brief and more relevant by focusing on the potential magnitudes of errors in the data estimates for different population segments.

The married population has been completely unaffected by the data adjustments applied to the 1975 data base. The exact age detail of wives has not been suppressed in the survey data tapes and all married couples are in the household population. Hence the statistical analyses conducted for married couples in Chapter 7 are not subject to contamination through error introduced by the adjustment procedures.

In contrast, the least secure data estimates pertain to never-married persons under age 22. The numbers of these persons in the 1975 household survey have been adjusted upwards by some 30 percent, and we have had to make some strong assumptions about the magnitude of this adjustment. Given that there is likely to be weaker than average coverage of this population segment in the original household survey, as well as in the decennial census, extreme caution is required when analyzing this age group.

The other population segment that has been substantially adjusted consists of non-married women who are heads of households. The Sprague

interpolation method for converting age data for these women to single years of age is likely to have produced considerable mis-estimates for persons under age 20 or 22. Fortunately, relatively few women are subject to this biased adjustment and, moreover, these errors are concentrated in the same age range where caution is already required.



## Appendix B

MARGINAL DISTRIBUTIONS BY AGE OF LIFE COURSE  
STATUSES FOR SELECTED COHORTS

The constructed cohort method has been applied to the census data described in Appendix A to generate detailed family and housing careers for cohorts between ages 18-19 and 38-39 during the 1960-1976 period. As discussed in Chapter 6, these careers have five dimensions in addition to age: marital status (never-married, currently-married, or previously-married), parental status (no children present, children under age 6 only, or oldest child over age 6), income (under \$5,000, \$5-9,999, \$10-14,999, or \$15,000 or greater, in 1969 dollars), employment status (not working, working) and housing consumption status (non-household head, head not owning a single-family home, or single-family homeowner). Given the number of categories for each life course dimension, the full career for each cohort is described by a detailed matrix of 216 status combinations at each age.

Such a great amount of information cannot be reproduced here. Instead, the following tables report the marginal distribution of each life course dimension by age. These distributions are given for the six cohorts that are the subject of the analyses in Chapter 6: C1 (born 1951-52), C3 (born 1947-48), C5 (born 1943-44), C8 (born 1937-38), C11 (born 1931-32), and C14 (born 1925-26).

Table B-1: MARITAL STATUS DISTRIBUTIONS BY AGE

Cohort	Marital Status	AGE										
		18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
C1	Never-Married	71.66	51.22	34.95	23.89	---	---	---	---	---	---	---
	Currently-Married	22.77	41.06	56.40	64.29	---	---	---	---	---	---	---
	Previously-Married	5.57	7.74	8.64	11.81	---	---	---	---	---	---	---
C3	Never-Married	69.46	43.85	26.59	19.42	13.80	11.08	---	---	---	---	---
	Currently-Married	24.95	47.50	63.48	69.60	73.36	74.66	---	---	---	---	---
	Previously-Married	5.67	8.70	9.88	11.01	12.83	14.27	---	---	---	---	---
C5	Never-Married	67.26	41.31	25.51	16.88	11.61	9.99	8.65	6.24	---	---	---
	Currently-Married	27.13	50.21	64.91	72.98	77.73	77.74	77.78	80.59	---	---	---
	Previously-Married	5.76	8.53	9.57	10.20	10.63	12.25	13.57	13.18	---	---	---
C8	Never-Married	---	---	23.90	15.97	11.46	9.58	7.94	6.73	5.75	6.07	5.15
	Currently-Married	---	---	67.05	75.12	79.10	80.04	80.37	81.30	80.51	79.78	79.78
	Previously-Married	---	---	9.11	8.98	9.44	10.39	11.68	11.93	13.71	14.14	15.08
C11	Never-Married	---	---	---	---	---	9.77	8.10	6.95	6.18	5.77	5.27
	Currently-Married	---	---	---	---	---	81.18	82.13	82.63	82.28	82.18	81.34
	Previously-Married	---	---	---	---	---	9.11	9.83	10.50	11.52	11.98	13.33
C14	Never-Married	---	---	---	---	---	---	---	---	6.79	6.12	5.66
	Currently-Married	---	---	---	---	---	---	---	---	83.29	83.20	82.38
	Previously-Married	---	---	---	---	---	---	---	---	9.82	10.58	11.88

Table B-2: PARENTAL STATUS DISTRIBUTIONS BY AGE

Cohort	Parental Status	AGE										
		18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
C1	No Children	85.81	72.79	61.04	50.37	---	---	---	---	---	---	---
	Young Children	13.78	26.09	34.51	35.24	---	---	---	---	---	---	---
	Older Children	0.41	1.15	4.43	14.39	---	---	---	---	---	---	---
C3	No Children	84.42	66.84	52.95	42.33	33.45	27.80	---	---	---	---	---
	Young Children	15.17	31.71	41.99	41.13	34.47	26.71	---	---	---	---	---
	Older Children	0.49	1.50	5.01	16.58	32.07	45.50	---	---	---	---	---
C5	No Children	83.03	63.15	49.15	36.83	26.70	22.79	19.16	15.35	---	---	---
	Young Children	16.56	35.40	45.65	45.56	36.34	25.24	16.38	11.20	---	---	---
	Older Children	0.56	1.51	5.19	17.67	36.93	51.95	64.55	73.45	---	---	---
C8	No Children	---	---	43.46	32.38	24.95	20.70	17.09	14.28	13.47	13.26	13.81
	Young Children	---	---	51.15	50.02	38.37	25.95	15.20	8.43	5.38	2.93	2.12
	Older Children	---	---	5.45	17.67	36.68	53.36	67.71	77.25	81.12	83.79	84.07
C11	No Children	---	---	---	---	---	21.33	18.27	16.35	14.97	14.76	14.95
	Young Children	---	---	---	---	---	28.10	17.92	11.02	6.57	4.16	2.65
	Older Children	---	---	---	---	---	50.63	63.86	72.70	78.39	81.01	82.34
C14	No Children	---	---	---	---	---	---	---	---	17.85	17.67	18.36
	Young Children	---	---	---	---	---	---	---	---	8.41	5.62	3.81
	Older Children	---	---	---	---	---	---	---	---	73.64	76.61	77.76

Table B-3: INCOME DISTRIBUTIONS BY AGE (1970-76 OBSERVATIONS OMITTED)

Cohort	Income Level	AGE										
		18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
C3	<5000	66.11	61.68	38.38	---	---	---	---	---	---	---	---
	5-9,999	12.13	29.62	40.09	---	---	---	---	---	---	---	---
	10-14,999	1.61	7.49	17.22	---	---	---	---	---	---	---	---
	15,000 Plus	0.23	1.26	4.26	---	---	---	---	---	---	---	---
C5	<5000	87.09	64.90	43.82	29.44	21.25	---	---	---	---	---	---
	5-9,999	11.64	28.73	40.10	42.83	39.82	---	---	---	---	---	---
	10-14,999	1.24	5.58	13.08	21.00	27.67	---	---	---	---	---	---
	15,000 Plus	0.18	0.84	2.99	6.78	11.23	---	---	---	---	---	---
C8	<5000	---	---	51.98	38.37	30.14	25.57	22.17	18.78	---	---	---
	5-9,999	---	---	40.12	46.15	45.53	41.84	38.19	34.42	---	---	---
	10-14,999	---	---	6.88	12.58	18.24	23.06	26.44	30.44	---	---	---
	15,000 Plus	---	---	1.08	2.98	6.10	9.53	13.19	16.32	---	---	---
C11	<5000	---	---	---	---	---	33.77	28.56	24.58	23.02	20.71	18.54
	5-9,999	---	---	---	---	---	48.57	46.32	43.11	37.99	33.96	30.37
	10-14,999	---	---	---	---	---	13.86	18.33	22.36	24.88	27.45	29.53
	15,000 Plus	---	---	---	---	---	3.86	6.85	10.02	14.03	17.81	21.50
C14	<5000	---	---	---	---	---	---	---	---	29.06	26.47	24.73
	5-9,999	---	---	---	---	---	---	---	---	46.31	42.74	38.82
	10-14,999	---	---	---	---	---	---	---	---	17.72	20.66	23.04
	15,000 Plus	---	---	---	---	---	---	---	---	6.81	10.03	13.33

Table B-4: EMPLOYMENT STATUS DISTRIBUTIONS BY AGE (1970-76  
OBSERVATIONS OMITTED)

Cohort	Employment Status	AGE										
		18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
C3	Not Employed	64.89	45.57	40.84	---	---	---	---	---	---	---	---
	Employed	35.18	54.57	59.11	---	---	---	---	---	---	---	---
C5	Not Employed	66.96	49.86	46.95	49.37	52.29	---	---	---	---	---	---
	Employed	33.19	50.19	53.05	50.69	47.68	---	---	---	---	---	---
C8	Not Employed	---	---	56.11	58.88	61.18	61.32	59.40	57.90	---	---	---
	Employed	---	---	43.95	41.19	38.83	38.68	40.59	42.06	---	---	---
C11	Not Employed	---	---	---	---	---	68.68	66.93	65.00	61.31	57.84	53.85
	Employed	---	---	---	---	---	31.38	33.13	35.07	38.62	42.10	46.09
C14	Not Employed	---	---	---	---	---	---	---	---	68.39	64.45	60.58
	Employed	---	---	---	---	---	---	---	---	31.51	35.44	39.35

Table B-5: HOUSING CONSUMPTION DISTRIBUTIONS BY AGE

Cohort	Housing Consumption	AGE										
		18-19	20-21	22-23	24-25	26-27	28-29	30-31	32-33	34-35	36-37	38-39
C1	Non-Household Head	76.04	52.36	32.40	19.89	---	---	---	---	---	---	---
	Other Household Head	21.66	40.54	51.26	52.92	---	---	---	---	---	---	---
	Single-Family Owner	2.30	7.12	16.33	27.19	---	---	---	---	---	---	---
C3	Non-Household Head	75.58	48.48	28.21	18.67	12.34	9.78	---	---	---	---	---
	Other Household Head	21.83	43.50	55.35	53.76	48.37	42.39	---	---	---	---	---
	Single-Family Owner	2.66	8.07	16.39	27.60	39.28	47.84	---	---	---	---	---
C5	Non-Household Head	75.13	48.25	29.61	18.72	11.99	9.88	6.97	5.60	---	---	---
	Other Household Head	22.00	42.73	52.64	53.17	48.35	42.74	36.50	33.27	---	---	---
	Single-Family Owner	3.02	9.06	17.74	28.17	39.63	47.36	56.53	61.13	---	---	---
C8	Non-Household Head	---	---	31.72	20.71	14.51	11.77	9.15	7.31	6.04	5.68	4.84
	Other Household Head	---	---	48.58	50.12	46.54	42.18	37.96	35.35	31.30	29.20	26.23
	Single-Family Owner	---	---	19.76	29.24	38.95	46.06	52.88	57.30	62.63	65.11	68.93
C11	Non-Household Head	---	---	---	---	---	14.53	11.47	9.23	7.77	6.85	6.01
	Other Household Head	---	---	---	---	---	41.06	37.49	34.89	33.07	30.87	28.91
	Single-Family Owner	---	---	---	---	---	44.47	51.10	55.96	59.09	62.21	65.02
C14	Non-Household Head	---	---	---	---	---	---	---	---	9.83	8.50	7.63
	Other Household Head	---	---	---	---	---	---	---	---	33.90	32.03	30.74
	Single-Family Owner	---	---	---	---	---	---	---	---	56.17	59.37	61.56

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