4

Characteristics of the Study Area and of the Data

INTRODUCTION

The analyses presented in this book are based primarily on an extensive body of data collected in 1967, which describes samples of 1,583 units and their occupants in the city of St. Louis, and 206 dwelling units and their occupants in St. Louis County. The choice of the issues to be addressed, and the strengths and weaknesses of the methodology employed, are intimately related to the nature of the available data and to the composition of the sample. For example, a novel feature of the research is an unusually elaborate analysis of the characteristics of housing bundles. Most empirical analyses of housing markets have been based either on census tract or other aggregate statistics or on samples of microdata, such as the census one-in-one-thousand sample, which provide some information on individual housing units and households but include no information on the neighborhood environment. The sample used in this study provides extensive information on all three dimensions: household characteristics, dwelling units, and the broader neighborhood and community environment. The surveys and the techniques used to collect these data may themselves be useful methodological contributions. Therefore, in this chapter we shall describe the surveys in some detail.

The extensive analyses of the effects of housing-market discrimination presented in this book are made possible by a systematic oversampling of black households. In 1960, blacks accounted for 16 percent of all households in the St. Louis metropolitan area and 19 percent of the combined population of St. Louis County and city.[1] Black households comprise 34 percent of the samples used for the analyses reported here.

[1]U.S. Bureau of the Census, *U.S. Censuses of Population and Housing: 1970*, "Census Tracts," St. Louis (GPO, 1971), Table P-1.

In contrast, the samples of high-income and suburban neighbor-hoods are far smaller than would be desirable. To some extent, the relatively small samples of high-income households result from the decision to obtain relatively large samples of black households. How-ever, the suburban sample is considerably smaller than it would have been if the analysis of metropolitan housing had been the only considera-tion in sample design. This was not the case. The data used in this research were collected initially for more limited descriptive and analytic purposes by the St. Louis Community Renewal Program (CRP). The priorities of that program dictated a heavy sampling of target neighbor-hoods. Moreover, program restrictions prohibited the CRP from inter-viewing households beyond the boundaries of the city. As has been noted previously, the small, but exceedingly valuable, sample of house-holds for St. Louis County was financed from other sources.

There are many other instances where the design of the research that we undertook was influenced, made possible, or compromised by the characteristics of the survey instruments used or the composition of the sample. For example, the effect of workplace location on housing choices, which figures prominently in the theoretical discussion pre-sented in Chapter 2, is not evaluated in subsequent empirical analyses because of the limited geographical coverage of the sample and the systemic oversampling of unemployed or marginally employed house-holds.

To understand these issues, it is necessary to describe the data-collection procedures, the sampling methods, and the characteristics of St. Louis itself. This chapter is designed to provide this background. First, we present brief descriptions of the St. Louis metropolitan area, of its population, and of its housing market. These descriptions are fol-lowed by a presentation of the several survey instruments used to collect information on sample households, dwelling units, and neighborhoods and of the measurements drawn from these surveys. The chapter ends with a discussion of the sampling design and a brief comment on alterna-tive methods of weighting sample observations.

CHARACTERISTICS OF THE STUDY AREA

In 1970, nearly two and one-half million persons lived in the St. Louis metropolitan area. Nearly two-thirds of these lived in the city of St. Louis and in adjoining St. Louis County. (St. Louis city and St. Louis County, along with East St. Louis, Illinois, and the balance of St. Clair County, Illinois, form the urbanized core of the metropolitan area.) East St. Louis and St. Clair County accounted for an additional 12

percent of the metropolitan area population in 1970. The remainder of
the metropolitan area, shown in Figure 4-1 (St. Charles, Jefferson, and
Franklin Counties in Missouri, and Madison County in Illinois),
accounts for only 22 percent of the metropolitan population and is only
loosely linked to the central portions of the region. Housing located in
East St. Louis is more competitive with housing located in St. Louis city
and County, but the interrelationships are not so great that an analysis of
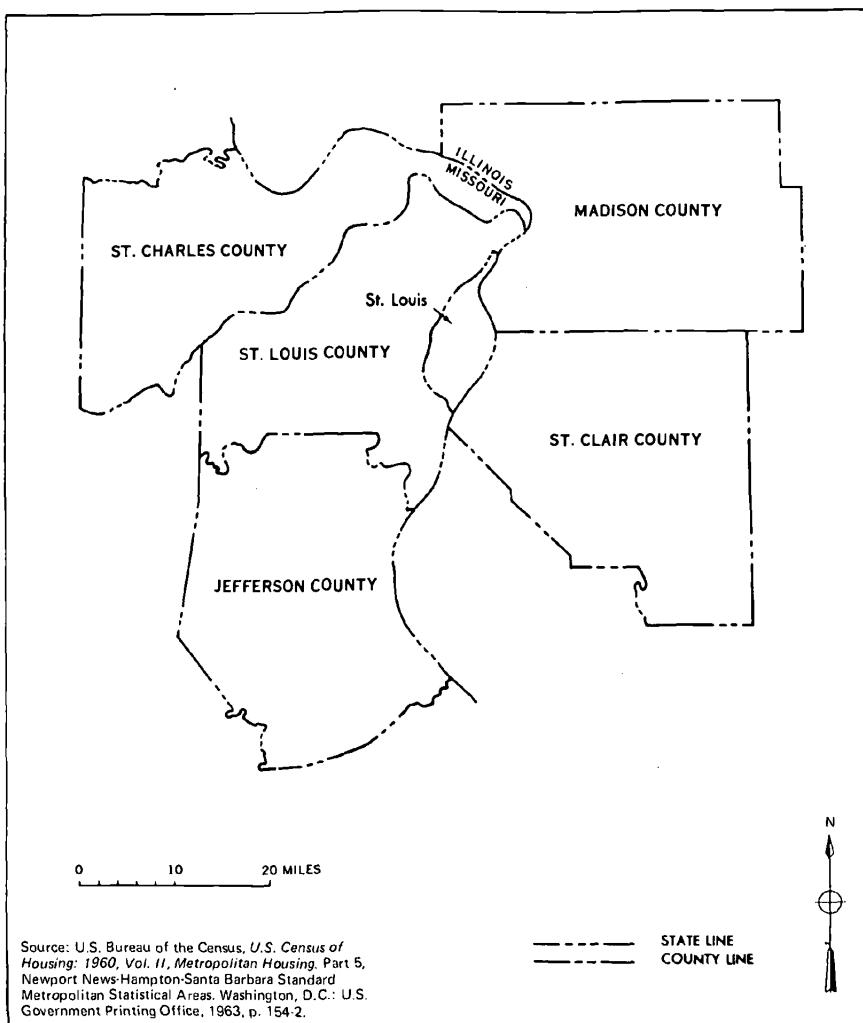

FIGURE 4-1
St. Louis Standard Metropolitan Statistical Area

the St. Louis housing market which excludes East St. Louis is seriously deficient.

As the data in Table 4-1 illustrate, the city of St. Louis exhibits the characteristics common to old U.S. cities, albeit in a somewhat extreme form, while adjoining St. Louis County conforms rather well to the suburban stereotype.[2] Thus, in 1970, 41 percent of St. Louis city's population was black, but blacks comprised only 5 percent of St. Louis County's population. Moreover, 63 percent of city residents were renters as contrasted with only 26 percent of St. Louis County residents. Within the renter and owner markets, the median value of single-family units in the central city was only 70 percent as great as the comparable value for the suburbs; the median rent of city units was only 54 percent as large as that of suburban units.

East St. Louis, Illinois, is even blacker and poorer than St. Louis, Missouri. In 1970, 69 percent of its population was black; the median value of its single-family homes was only $8,800; and the median rent of its rental units was only $63 per month.

St. Louis exhibits still other characteristics that make it an archetypal central city. Between 1960 and 1970, the population of St. Louis declined by 127,790, or 19 percent, the largest percentage decline experienced by any U.S. central city during the decade. From Figure 4-2, it is apparent that these declines are the continuation of a trend which was evident as early as 1940. The economic expansion and controls associated with the Second World War continued to produce some growth in the decade 1940–50, but the experience, at least since 1950, has been one of rapid decline in central-city population. The central city's white population declined by even more, but part of this decline was offset by an increase of nearly 40,000 in the black population. Suburban St. Louis County, by contrast, grew steadily from the end of the First World War to the end of the Second World War and has grown explosively since then. Between 1960 and 1970, suburban St. Louis County grew by 248,000, an increase of 218,000 whites and 26,000 blacks. These differences in the growth of black and white populations in the central city and in suburban St. Louis County are clearly shown in Figure 4-3.

As is evident from Figure 4-4, segregation is intense within the central city, with black households residing in a few well-defined neighborhoods. Close to 98 percent of the city's black population resides in three community areas: the Model Cities neighborhoods (Yeatman,

[2]Among central cities of large SMSA's (over 500,000 population), only eight had a larger proportion of black residents in 1970, only six had a more adverse ratio of central-city to SMSA poverty (percent of St. Louis city population in poverty in 1970/percent of St. Louis SMSA population in poverty 1970 = 1.9), and none had a larger decline in population between 1960 and 1970.

TABLE 4-1
Characteristics of Major Subdivisions of the St. Louis Metropolitan Area: 1970

Subdivision	Population	% Black	Dwelling Units	% Owner-Occupied	Median Value	Median Rent	Median Number of Rooms
SMSA	2,363,017	16.0	785,498	60.5	$16,300	$ 79	4.7
St. Louis City	622,236	40.9	238,485	36.6	13,200	68	4.0
St. Louis County[1]	951,353	4.8	291,650	73.9	18,800	125	5.2
East St. Louis	69,996	69.1	23,613	45.5	8,800	63	4.3
Balance of St. Clair County, Ill.	215,180	7.0	67,741	69.8	13,600	88	4.6
St. Charles County, Mo.	92,954	1.2	28,119	71.3	17,500	98	5.0
Jefferson County, Mo.	105,248	0.8	33,677	71.3	14,600	82	4.7
Madison County, Ill.	250,934	5.2	82,286	70.0	13,900	76	4.6
Franklin County, Mo.	55,116	1.1	19,927	65.5	13,300	62	4.7

SOURCE: U.S. Bureau of the Census, *U.S. Censuses of Population and Housing: 1970,* "Census Tracts," St. Louis (GPO, 1970), Tables P-1, H-1.
[1]Excluding St. Louis City.

Population (thousands)
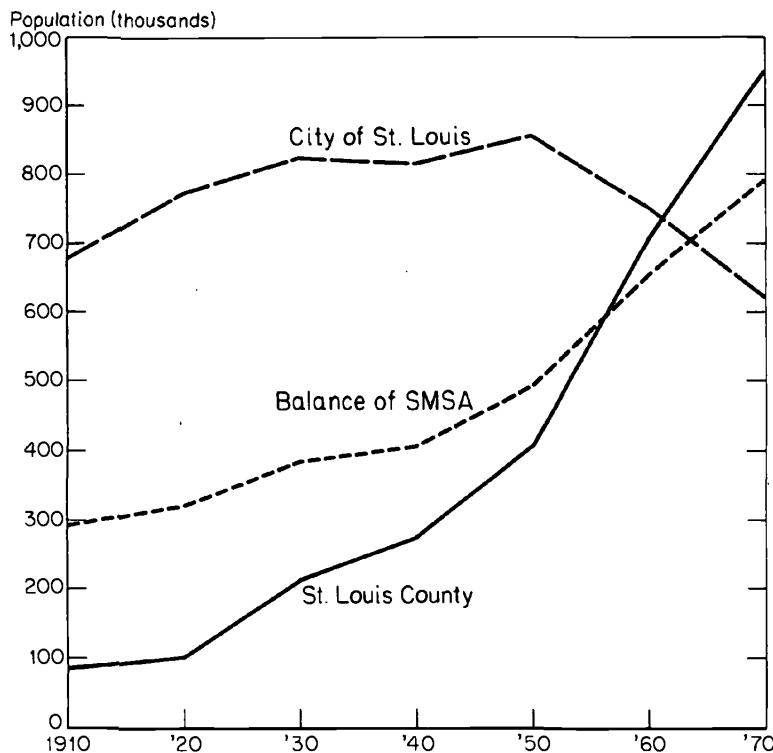
FIGURE 4-2

Population of the City of St. Louis, St. Louis County, and the Balance of the St. Louis SMSA (as Defined in 1970) from 1910 to 1970 [*Source:* U.S. Bureau of the Census, *Fourteenth Census of the United States, 1920: Population,* Vol. III, "Characteristics of the Population by States" (GPO), Missouri, Table 9, and Illinois, Table 9; *Sixteenth Census of the United States, 1940: Population,* "Characteristics of the Population by States" (GPO), Missouri, Table 22, and Illinois, Table 22; *Census of Population: 1950,* Vol. II, "Characteristics of the Population" (GPO), Pt. 13, Table 42, and Pt. 25, Table 42; *Census of Population: 1960,* Vol. I, "Characteristics of the Population" (GPO), Pt. 15, Table 28, and Pt. 27, Table 28; *Censuses of Population and Housing: 1970,* "Census Tracts" (GPO), St. Louis, Table P-1.]

Murphy-Blaxir, Carr-Central, Montgomery–Hyde Park), the near South Side, and the West End. The Taeuber and Taeuber index of racial segregation (discussed in Chapter 3) was 90.5 for St. Louis in 1960.[3] The expected index of racial residential segregation computed by Taeuber

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[3]Karl E. Taeuber and Alma F. Taeuber, *Negroes in Cities: Residential Segregation and Neighborhood Change* (Chicago: Aldine Publishing Co., 1965), p. 400.

Population (thousands)
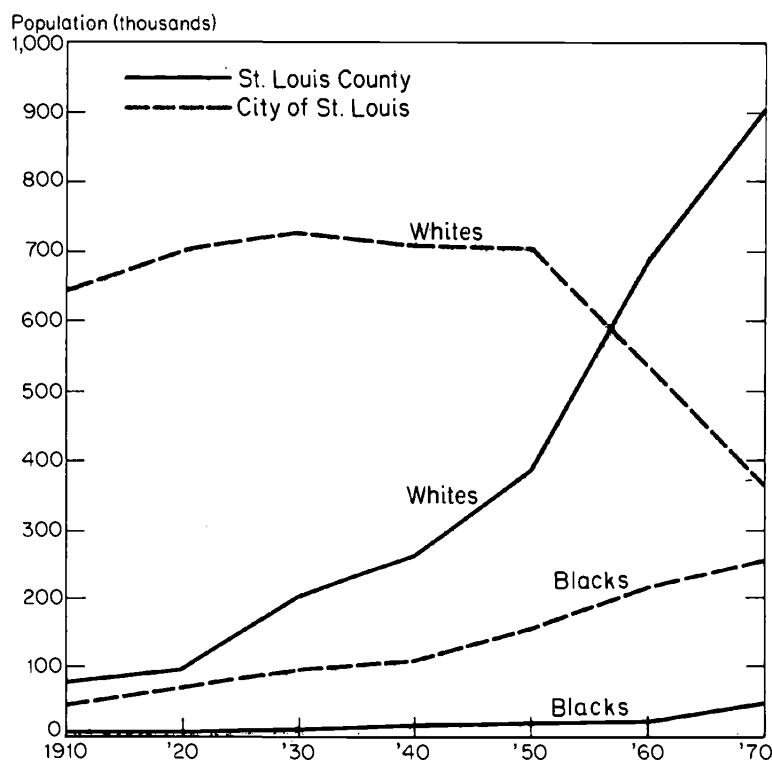
FIGURE 4-3

Black and White Population of St. Louis County and the City of St. Louis
from 1910 to 1970 [*Source:* U.S. Bureau of the Census, *Fourteenth Census
of the United States, 1920: Population,* Vol III, "Characteristics of the Popu-
lation by States" (GPO), Missouri, Table 9, and Illinois, Table 9; *Sixteenth
Census of the United States, 1940: Population,* "Characteristics of the
Population by States" (GPO), Missouri, Table 22, and Illinois, Table 22;
Census of Population: 1950, Vol. II, "Characteristics of the Population"
(GPO), Pt. 13, Table 42, and Pt. 25, Table 42; *Census of Population: 1960,*
Vol. I, "Characteristics of the Population" (GPO), Pt. 15, Table 28, and Pt.
27, Table 28; *Censuses of Population and Housing: 1970,* "Census Tracts"
(GP0), St. Louis, Table P-1.]

and Taeuber, based on indirect standardization for tenure, value, and
rent of occupied dwelling units, was only 12.4 in the same year.[4]
Therefore, based on these comparisons, in 1960 segregation of the races
within the central city was roughly seven times as great as that implied
by tenure choices and housing expense.

    [4]Ibid., p. 85.
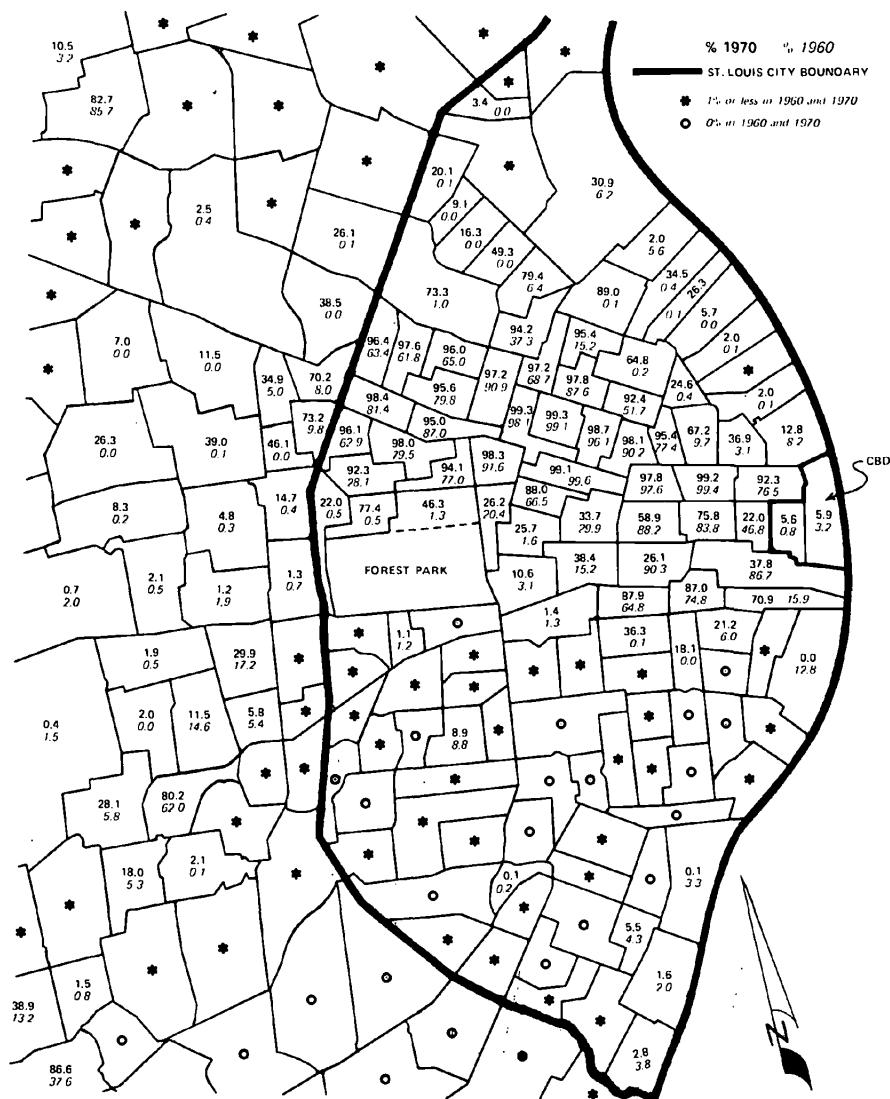
FIGURE 4-4
Percent Black by Census Tract in 1970 for St. Louis City and County
[*Source:* Hugh O. Nourse and Donald Phares, "The Filtering Process:
Aging or Arbitrage" (Columbia, Mo.: University of Missouri, 1972), pro-
cessed, p. 9.]

THE SURVEY INSTRUMENTS

An important feature of the research presented in this book is its extensive analyses of housing attributes. The basis of these analyses is a detailed description of each sample housing bundle. Although these descriptions are still far from ideal for analyzing the behavior of urban housing markets, they are unprecedented in their detail and completeness.

The data, collected originally by the St. Louis Community Renewal Program, were used by the St. Louis CRP for several purposes, one of the most important of which was the development of a model to project the extent of residential blight for each block and census tract of St. Louis. Estimation of this model required detailed data on the quality and condition of individual dwelling units, blocks, and neighborhoods; these data form the basis of the analyses presented here.[5]

A home-interview survey of 1,583 dwelling units in the city of St. Louis and 206 dwelling units in the St. Louis County suburbs is the most important data source for the subsequent analysis. The city dwelling-unit sample was a stratified random sample in which dwelling units in low-income neighborhoods were sampled at higher rates than dwelling units in high-income neighborhoods. St. Louis County dwelling units were obtained by a stratified random sampling procedure of dwelling units located there.

Nonresponses, refusals, vacancies, demolitions, and language difficulties reduced the original sample of 1,789 dwelling units to 1,273 usable home interviews, of which 1,186 households were in the private housing market. Vacancy is the largest single reason for failing to obtain a home interview (192, or approximately 11 percent, of the units selected were vacant). Another 14 dwelling units had been demolished and had not as yet been removed from the current City Planning Commission maps used in drawing the sample. The number of incomplete interviews by reason is enumerated in Table 4-2.

Of the 1,273 sample dwelling units producing usable home interviews, 658 were renter-occupied (including 50 renters in public housing) and 578 were owner-occupied. An additional 37 units were occupied by tenants who, for a variety of reasons, did not pay rent.

The 87 units which were not in the private housing market (50 public-housing units and 37 tenants who did not pay rent) were removed

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[5]The blight model was developed by the authors as consultants to Alan M. Voorhees and Associates, Inc. It is described in Alan M. Voorhees and Associates, Inc., *Technical Report on a Residential Blight Analysis for St. Louis, Mo.* (prepared for the St. Louis City Plan Commission, Mar. 1969); and in John F. Kain and John M. Quigley, "Evaluating the Quality of the Residential Environment," *Environment and Planning* 2 (Jan. 1970): 23–32.

TABLE 4-2
Number of Unusable Home Interviews by Reason

Reason	St. Louis City	St. Louis County
Nonresponse	108	7
Householder refused	127	19
Dwelling-unit vacant	191	1
Dwelling-unit demolished	14	0
Householder not English- speaking	5	0
Sample eliminated, inconsistent, incomplete, all other reasons	35	9
Number of households selected	1,583	206
Number of acceptable samples	1,103	170

from the sample, leaving an analysis sample of 1,186 dwelling units and households.

The home-interview survey, which obtained data on both the household and its dwelling unit, incorporated several novel features. For each dwelling unit, the interviewer was asked to ascertain the total number of dwelling units in the structure, the number occupied, and the number of floors, and to rate the interior condition of common areas (halls, lobbies, and so on) and of the dwelling units. Each interviewer, moreover, was instructed to evaluate a number of specific features of the structure/dwelling unit, i.e., ceilings, walls, floors, stairways, lighting, and windows. This procedure differs from that used in many other surveys and in the 1940, 1950, and 1960 censuses of housing. Interviewers in these surveys were instructed to provide an overall evaluation of dwelling unit or structure condition. The 1970 Census of Housing, since it relied on self-enumeration, made no effort to obtain information on dwelling-unit condition. In the St. Louis Survey, interviewers were asked to make detailed observations of specific features of each dwelling unit in the hope that they would be impressed with the importance of the quality evaluations and be discouraged from making hasty overall evaluations of the condition and quality of sampled dwelling units. In addition, they were asked to rank the quality of housekeeping on a scale of 1, excellent, to 5, very bad. This question was included to encourage interviewers to make a distinction between the housekeeping and the physical condition of sample dwelling units and structures.

In addition, for each sample unit, interviewers obtained the number

of rooms other than bathrooms, the number of bathrooms, and the number of sleeping rooms, and determined whether the unit had hot water, central heating, and major appliances: air conditioner, refrigerator, stove, television set, telephone, washer, and dryer. The persons interviewed were also asked whether they owned or rented their home, and owners were asked for the year in which they purchased their present home, its purchase price, and their estimate of its current market value. Questions were also included on the types and costs of home improvements made by owner-occupants in the previous eight years. Unfortunately, subsequent analyses of the home improvement data indicated they were of very low quality. Regrettably, the survey did not obtain information on the method of financing owner-occupied homes or on financing terms.

Renters were asked both their current monthly rent and their rent in the previous year. Moreover, interviewers determined whether heat, water, electricity, stove, refrigerator, and furnishings were provided by the landlord and included in the rent. This information is necessary in distinguishing between structure rents and payments for utilities and furnishings. Many analyses of the rental housing market are flawed by the failure to distinguish between contract-rent and gross-rent payments. In this study, estimation of contract-rent corrections is an integral part of subsequent analysis. Renters were also asked to provide information on improvements to their property, but preliminary analyses of these data suggested they were even less reliable than the comparable information for owners.

In addition to descriptions of sample dwelling units, home interviewers obtained information on the size and composition of the family, and the age, sex, race, and labor-force attachment of all household members. Interviewers were asked, wherever possible, to obtain detailed breakdowns of income by source for each household member. These were aggregated to obtain the single measure of family income used in the analyses in subsequent chapters. The questionnaire also included questions on the household's perception of the neighborhood and its problems, on household mobility, and on the health of family members. These data are not used in the analyses presented in this book. (The full home-interview questionnaire is reproduced as Appendix A.)

The Physical Blight Parcel Survey and the Environmental Block Face Survey are the more novel parts of the survey design. These two surveys, carried out by nine professional building inspectors working in two-man teams, were designed to provide independent evaluations of the condition and quality of the exterior of the sample structure, of the parcel, and of adjacent structures and parcels. Because of their skill and

experience, and because each team could evaluate more structure exteriors than a single home interviewer, it was hoped that the building inspectors would be able to obtain better and more consistent evaluations of the structures. The Physical Blight Parcel Survey also provided a useful consistency check on the evaluations of structure interiors by the home interviewers, as well as an independent evaluation of the quality of conceptually distinct attributes of the bundles of housing services.

The nine building inspectors were asked to provide quality ratings for specific attributes of the structure, as well as overall quality ratings for all sampled dwellings, in both the city and the county. Similarly, they were asked to provide comparable quality ratings for adjacent parcels and structures. Information was also obtained on the existence and quality of garages, driveways, fences, and other objective characteristics of the parcels. The questionnaire used in the Physical Blight Parcel Survey is reproduced in Figure 4-5.

The second member of each building-inspector team performed the Environmental Block Face Survey. This survey, reproduced as Figure 4-6, shared the parcel survey's concern with the quality and condition of the physical environment. However, its focus was much broader; it emphasized the local environment, particularly the block faces on both sides of the street containing the sample structure. The survey provided measures of the amount and type of nonresidential use; the general condition of the structures; the condition of streets, sidewalks, and street lighting; the amount of landscaping; and the amount of trash and litter in the parcel area. This second team member also recorded an overall quality-index rating for each block.

In addition to these three surveys, the analysis draws on a variety of other published and unpublished data describing St. Louis neighborhoods. In particular, because of their oft-claimed importance in determining the neighborhood quality and in affecting the residential choice of households, a major effort was made to devise and obtain measures of neighborhood services (both "objective" measures and those perceived by residents). Special attention was given to neighborhood elementary schools (both public and parochial) and to police protection.

Measurement of the quality of neighborhood services is a formidable undertaking. There are a number of difficult conceptual problems associated with such measurement and little clear-cut theory or systematic empirical work to use as a guide. Where possible, both input and output data were gathered. However, the data collection and analysis emphasize output measures on the reasonable assumption that households, in choosing a residential bundle, are not very interested in how many policemen there are in the neighborhood but are very much

ST. LOUIS COMMUNITY RENEWAL PROGRAM
Physical Blight Parcel Survey
Residential Sample Blocks

QUESTIONS AND CODES

PARCEL IDENTIFICATION

1. Sample number

LAND USE CLASSIFICATION

2. Type of structure
   1. Single-detached
   2. Duplex
   3. Row
   4. Flat
   5. Apartment
   6. Rooming House
   7. Mixed commercial/industrial
   8. Other

3. If answer is #7 or #8, indicate the number which most closely approximates the mixed land use:
   1. Residential/industrial
   2. Residential/retail, service
   3. Residential/restaurant, entertainment, bar
   4. Residential/office, professional
   5. Residential/social service
   6. Residential/unoccupied non-residential
   7. Residential/trucking, garage
   8. Residential/warehouse, storage

4. If the land use of the parcel is mixed, is there evidence of adverse influence resulting from the non-residential use. Rate items below (1=yes; 2=no).
   A. Odors
   B. Smoke
   C. High noise level
   D. Evidence of vibration
   E. Glare from lighting
   F. Undesirability of commercial establishment

EXTERIOR EVALUATION OF RESIDENTIAL SAMPLE STRUCTURE

5. Type of construction
   1. Masonry
   2. Frame
   3. Metal
   4. Concrete
   5. Other

Rate items 6 through 14 according to the following scale:
   0. Item does not exist or is not observable
   1. Poor: deteriorated/maintenance neglected
   2. Fair; maintenance slipping
   3. Generally good condition
   4. Excellent condition

6. Walls
   A. Structural soundness
   B. Paint or finish

7. Porch (s)

8. Outside stairs/steps

9. Windows
   A. Window panes
   B. Sashes/frame
   C. Screens/storm windows

10. Doors
    A. Entrance door (s)
    B. Screens/storm door (s)

11. Downspouts and gutters

12. Chimney

13. Trim

14. Roof

15. Type of roof
    0. Not observable
    1. Composition
    2. Asphalt shingle
    3. Slate and/or tile
    4. Wood shingle
    5. Other

16. Rate the overall exterior condition of the residential structure according to the following scale:
    1. Very poor; badly deteriorated/unsound
    2. Poor; generally sound, maintenance neglected
    3. Fair; sound, maintenance slipping
    4. Good; sound, maintenance adequate
    5. Excellent condition

EVALUATION OF REMAINDER OF PARCEL

17. Land
    A. Amount of space available for landscaping
       1. None
       2. Small amount
       3. Moderate amount
       4. Large amount
    B. Amount of landscaping
       0. Not applicable
       1. None or minor
       2. Moderate amount of grass, shrubbery, or street trees
       3. Considerable amount of trees, grass, etc.
    C. Quality of landscaping maintenance
       0. Not applicable
       1. Poor: deteriorated/maintenance neglected
       2. Fair; maintenance slipping
       3. Generally good condition
       4. Excellent condition

18. If accessory building(s) exist, rate the most prominent.
    A. Construction
       0. Item does not exist or is not observable
       1. Masonry
       2. Frame
       3. Metal
       4. Concrete
       5. Other
    B. Use
       0. Item does not exist, or is not observable
       1. Residential dwelling
       2. Garage
       3. Storage
       4. Privy
       5. Abandoned
       6. Other
    C. Condition
       0. Item does not exist, or is not observable
       1. Poor: deteriorated/maintenance neglected
       2. Fair; maintenance slipping
       3. Generally good condition
       4. Excellent condition

19. Fences
    0. Item does not exist or is not observable
    1. Poor: deteriorated/maintenance neglected
    2. Fair; maintenance slipping
    3. Generally good condition
    4. Excellent condition

20. Walkways
    0. Item does not exist or is not observable
    1. Poor; deteriorated/maintenance neglected
    2. Fair; maintenance slipping
    3. Generally good condition
    4. Excellent condition

21. Driveways
    0. Item does not exist or is not observable
    1. Poor: unsurfaced or surface needs replacement
    2. Fair; hard surface, needs repair
    3. Good; hard surface, no dips or holes
    4. Excellent condition

22. Junk, trash, garbage
    1. Poor: obvious accumulation of litter, junk and/or glass
    2. Fair; moderate amounts of litter visible, but no glass or junk
    3. Good; Very small amounts of litter
    4. Excellent; no litter

23. Rate the overall conditions on the remainder of the parcel according to the following scale:
    1. Very poor: badly deteriorated
    2. Poor; maintenance neglected
    3. Fair; maintenance slipping
    4. Good; adequately maintained
    5. Excellent condition

ADJACENT PROPERTIES

Facing the front of the sample parcel, observe the adjacent parcel to your left.

24. Does the parcel contain a purely residential structure? (1=yes; 2=no)

CODING FORM

1	2	3	4						5	6	7	8	9		10		11	12	13	14	15	16	17			18			19	20
			A	B	C	D	E	F	A	B			A	B	C	A	B							A	B	C	A	B	C		

FIGURE 4-5

interested in the number and seriousness of crimes. In short, we assume that what concerns them is their personal safety and the security of their personal property, not the problems of the police commissioner. Similarly, parents are presumably concerned with the quality of education their children are likely to get, not how much it costs the city or how

September 1967

25. If the parcel *does* contain a purely residential structure, what is the type of structure?
   1. Single-detached
   2. Duplex
   3. Row
   4. Flat
   5. Apartment
   6. Rooming House

26. If the parcel *does not* contain a purely residential structure.
   A. Is it partly residential? (1=yes; 2=no)
   B. Indicate the number which most closely approximates the *partial* or *complete* non-residential usage.
      1. Industrial
      2. Retail, service
      3. Restaurant, entertainment, bar
      4. Office, professional
      5. School
      6. Church
      7. Other public building or social service
      8. Trucking, garage
      9. Warehouse, storage
      10. Park, cemetery
      11. Parking lot
      12. Unoccupied non-residential
      13. Vacant lot
      14. Other

Is there evidence of adverse influences resulting from the non-residential usage? Rate items below (1=yes; 2=no)
   C. Odors
   D. Smoke
   E. High noise level
   F. Evidence of vibration
   G. Glare from lighting
   H. Lack of privacy
   I. Traffic congestion

27. Rate the overall exterior condition of the structure according to the following scale:
   1. Very poor; badly deteriorated/unsound
   2. Poor; generally sound, maintenance neglected
   3. Fair; sound, maintenance slipping
   4. Good; sound, maintenance adequate
   5. Excellent condition

28. Rate the overall conditions on the remainder of the parcel according to the following scale:
   1. Very poor; badly deteriorated
   2. Poor; maintenance neglected
   3. Fair; maintenance slipping
   4. Good; adequately maintained
   5. Excellent condition

Facing the front of the sample parcel, observe the adjacent parcel to your *right*.

29. Does the parcel contain a purely residential structure? (1=yes; 2=no)

30. If the parcel *does* contain a purely residential structure, what is the type of structure?
   1. Single-detached
   2. Duplex
   3. Row
   4. Flat
   5. Apartment
   6. Rooming House

31. If the parcel *does not* contain a purely residential structure.
   A. Is it partly residential? (1=yes; 2=no)
   B. Indicate the number which most closely approximates the *partial* or *complete* non-residential usage.
      1. Industrial
      2. Retail, service
      3. Restaurant, entertainment, bar
      4. Office, professional
      5. School
      6. Church
      7. Other public building or social service
      8. Trucking, garage
      9. Warehouse, storage
      10. Park, cemetery
      11. Parking lot
      12. Unoccupied non-residential
      13. Vacant
      14. Other

Is there evidence of adverse influences resulting from the non-residential usage? Rate items below (1=yes; 2=no)
   C. Odors
   D. Smoke
   E. High noise level
   F. Evidence of vibration
   G. Glare from lighting
   H. Lack of privacy
   I. Traffic congestion

32. Rate the overall exterior condition of the structure according to the following scale:
   1. Very poor; badly deteriorated/unsound
   2. Poor; generally sound, maintenance neglected
   3. Fair; sound, maintenance slipping
   4. Good; sound, maintenance adequate
   5. Excellent condition

33. Rate the overall conditions on the remainder of the parcel according to the following scale:
   1. Very poor; badly deteriorated
   2. Poor; maintenance neglected
   3. Fair; maintenance slipping
   4. Good; adequately maintained
   5. Excellent condition

34. Looking at the entire block face, does the overall condition of the sample parcel appear to be:
   1. Considerably worse than the average for the block face
   2. Generally the same as the average for the block face
   3. Far superior than the average for the block face

ALLEY

35. Type
   0. No alley
   1. Straight
   2. "L" or intersected

36. Is the alley accessible to automobiles? (0=not applicable; 1=yes; 2=no)

37. Construction
   0. Not applicable
   1. Dirt
   2. Gravel
   3. Brick
   4. Blacktop
   5. Concrete
   6. Other

38. Condition
   0. Not applicable
   1. Poor; rutted, poorly drained
   2. Fair; maintenance slipping
   3. Good; smooth, hard surface

39. General Cleanliness
   0. Not applicable
   1. Poor; obvious accumulation of litter, glass and/or junk
   2. Fair; moderate amounts of litter, but no glass or junk
   3. Good; very small amounts of litter
   4. Excellent; no litter

OFF STREET PARKING

40. Adequacy
   1. None
   2. Inadequate (less than 1 space per dwelling unit)
   3. Adequate (1 or more spaces per dwelling unit)

21	22	23	24	25	26										27	28	29	30	31										32	33	34	35	36	37	38	39	40
					A	B	C	D	E	F	G	H	I						A	B	C	D	E	F	G	H	I										

DATE COMPLETED _____   NAME OF INSPECTOR _____

many teachers in the school have a master's degree. Other people, such as the elderly, may be concerned with taxes and have little interest in the schools.

Both output and input measures were obtained for each of the public and parochial elementary schools in the city of St. Louis. Atten-

ST. LOUIS COMMUNITY RENEWAL PROGRAM

Environmental Block - Face Survey

Residential Sample Blocks

September 1967

ADDRESS RANGE _____ **STREET NAME** _____

EVEN BLOCK NUMBER [___ | ___]   **ODD BLOCK NUMBER** [___ | ___]

EVEN BLOCK   ODD BLOCK

LAND USE

Percent of street frontage in:

Residential ....

Commercial ....

Industrial ....

Public and Institutional ....

Parks and Playgrounds ....

Vacant Lots ....

Percent of structures obviously vacant ....

CONDITION OF STRUCTURES

Percent of structures whose overall condition is:

Poor: Deteriorated--Obsolete--Neglected ....

Fair; Sound--Maintenance Slipping--Repairs Required ....

Good; Sound--Well Maintained ....

AMOUNT OF SPACE AVAILABLE FOR LANDSCAPING

1. None   3. Moderate Amount

2. Small Amount   4. Large Amount

QUALITY OF LANDSCAPING MAINTENANCE

0. Not Applicable   2. Fair; Maintenance Slipping   4. Excellent

1. Poor; Little Maintenance   3. Good; Adequate Maintenance

DEGREE OF TRASH OR JUNK ACCUMULATION

1. Poor; Obvious accumulation of litter, glass and junk

2. Fair; Small amounts of litter visible, but no glass or junk

3. Good; No obvious litter, glass or junk in streets or yards

CONDITION OF SIDEWALKS

0. No Sidewalks   2. Fair; Need Minor Repairs

1. Poor; Need of Replacement   3. Good; In Good Condition

ADVERSE INFLUENCES RELATIVE TO RESIDENTIAL USE

FIGURE 4-6

Objectionable Odors   1 Yes 2 No

High Noise Level   1 Yes 2 No

Objectionable Smoke   1 Yes 2 No

Evidence of Vibration   1 Yes 2 No

Glare From Lighting   1 Yes 2 No

Children Playing in or Around Street   1 Yes 2 No

ESTHETIC CONSIDERATIONS

Do either or both block faces contain any unusual or unique esthetic features which enhance the character of the area?

Architecture   1 Yes 2 No

Landscaping   1 Yes 2 No

Other   1 Yes 2 No

CONDITION OF STREET

1. Poor; Unsurfaced or surface needs replacement
2. Fair; Hard surface--needs minor repair
3. Good; Hard surface--no holes, dips or irregularities

CONDITION OF CURBS AND GUTTERS

0. No curb and gutter
1. Poor; Structural condition poor--major repairs or replacement required
2. Fair; In need of minor repairs
3. Good; Structural condition good--no holes, cracks, etc.

ADEQUACY OF STREET LIGHTING

1. No street lights
2. Existing street lights are not adequate
3. Existing street lights are adequate

TRAFFIC CONDITIONS

Percent of curb space normally available for parking ....

Parking Prohibited on Both Sides All Periods	Parking Prohibited One Side All Periods	Parking Prohibited Peak Traffic Period
1 Yes 2 No	1 Yes 2 No	1 Yes 2 No

Traffic Light at Either End of Block	Stop Sign at Either end of Block	Bus Stop on Either Block Face
1 Yes 2 No	1 Yes 2 No	1 Yes 2 No

Does it appear that the amount of commercial traffic on this street is:

1. Heavy   2. Moderate   3. Little or none

OVERALL COMBINED BLOCK FACE RATING

1. Bad; Major degree of structural deficiencies which are beyond repair--major deficiencies in maintenance, landscaping, accumulation of trash or adverse influences.
2. Poor; Some structural deficiencies--major deficiencies in maintenance, landscaping, accumulation of trash or adverse influences.
3. Fair; Moderate deficiencies In maintenance, landscaping, accumulation of trash or adverse influences.
4. Good; Only minor deficiencies.
5. Excellent; No deficiencies--evidence of considerable spending.

DATE COMPLETED _____ NAME OF INSPECTOR _____

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dance districts of each school were determined, and these measures were coded to each dwelling unit in the city sample. Output was measured by three achievement-test scores: reading, literary-writing, and math. Identical tests were used for both types of schools, but in the parochial schools they were given to the seventh grade, whereas public-school scores are for eighth-grade students. The input measures were student-teacher ratios and student-classroom ratios. In addition, the percentage of students and teachers that were nonwhite, the school's age, and a measure of the condition of the physical plant were obtained for public elementary schools.

It was not possible to obtain at reasonable cost input measures of police protection for each neighborhood. Thus, only output measures—the number of major crimes and the number of minor crimes per Pauly block[6]—were collected. These were also coded to each sampled dwelling unit.

Summary statistics of these indexes of school quality and police protection are presented in Table 4-3. From the data shown it is clear that there are important differences in public and parochial schools, and in the levels of criminal activity. Both factors are widely believed to exert a strong influence on a household's choice of residential location.

Obviously, it would be desirable to have comparable data for the county samples. Many explanations of the decline of central cities have focused on the better schools and lower level of criminal activity found in suburban areas. Unfortunately, comparable data enabling us to evaluate these claims were not available at reasonable cost for those units located outside the central city. Moreover, even if the figures were available, it is doubtful that the impact of these two factors and several other county–central-city hypotheses could be adequately tested with the data at hand, given the small size of the county subsample. The subsample of St. Louis county households is invaluable as an extension of the city sample, but it is too small and incomplete to permit testing some of the most important hypotheses about central-city–suburban competition for residents.

Several kinds of data were obtained from the city and county assessors' records for each of the sample dwelling units. The most valuable of these data were the assessed value of land and structures, structure age, parcel area, building area, and type of construction. These data were supplemented by professional real-estate appraisals obtained for a subsample of five-hundred parcels within the city. These apprais-

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[6]Pauly blocks are geographic areas of roughly equal sizes named after Lieutenant Pauly of the St. Louis Police Department, the developer of the statistical reporting system used in recording and tabulating crime data in St. Louis.

TABLE 4-3
Characteristics of Neighborhood School, Crime, and Accessibility Measures

Variable	Description	Mean Value	Standard Deviation	Minimum	Maximum
Public services (city only)					
Major crimes	By Pauly block in 1967	97.99	81.45	2.00	432.00
Other crimes		62.82	48.60	0.00	349.00
Public Schools	8th grade				
Reading score		7.83	1.21	6.70	9.20
Language score		8.49	1.27	6.80	9.90
Mathematics score		7.83	1.22	6.70	9.90
Parochial Schools	7th grade				
Reading score		7.83	0.62	6.70	9.00
Language score		8.53	0.64	7.10	9.80
Mathematics score		7.75	0.75	6.50	9.60
Distance and accessibility measures (entire sample)					
Distance from CBD	Miles	5.15	5.23	0.05	12.10
Accessibility to employment	Index value	7.88	2.30	0.81	12.53
Accessibility to personal business	Index value	2.40	0.75	0.28	4.05
Accessibility to shopping	Index value	1.89	0.53	0.33	4.11
Accessibility to social contact	Index value	1.45	0.32	0.28	2.05
Accessibility to recreation	Index value	1.36	0.42	0.32	2.35
Accessibility to non-home-based trips	Index value	2.37	0.51	0.44	3.78

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als, which included estimates of the current market value of land and improvements, and quality ratings of structure condition, provided an extremely valuable check on the accuracy and consistency of both the assessments and the owners' estimates. The estimate of market value for single-family units used in subsequent analyses is a composite of these three sources. The procedures used are described in Appendix B. The quality ratings provided by the appraisers provided still another independent evaluation of the quality of sampled structures.

Six measures of auto accessibility were available for each observation. These are accessibility of each dwelling unit to: (1) employment, (2) personal business, (3) recreation, (4) shopping, (5) social contact, (6) non-home-based trip destinations. In addition, each sampled dwelling unit was located on a grid (X, Y) coordinate system. This permitted each unit to be located in terms of its distance from any location within the St. Louis metropolitan area. Extensive tests of these accessibility measures were performed. All are highly correlated. Distance from the central business district, the simplest of these measures of accessibility, is used in most of the analyses reported here.

THE SAMPLE DESIGN

The samples used in our analyses—approximately 1,500 privately owned dwellings in St. Louis city, and approximately 200 in St. Louis County—are based on a relatively complicated sample design. The city subsample was drawn using a stratified cluster sample, in which the probability of selection was higher for households in low-income neighborhoods than for those in high-income neighborhoods. The suburban subsample is a stratified random sample of St. Louis County dwelling units, which employs different sampling rates for single and multifamily households. In addition, 50 public-housing units were sampled. However, these units are not included in our analyses.

THE CITY SUBSAMPLE

Sample dwelling units for the city subsample were drawn from one of four sampling strata defined in terms of 1960 census-tract median incomes. They are:

Stratum I—Median family income of $3,000 or less;
Stratum II—Median family income of $3,001–$5,000;
Stratum III—Median family income of $5,001–$6,000;
Stratum IV—Median family income of more than $6,000.

A cluster sampling technique, which insured that interviewers would have several addresses located near one another, reduced interviewing costs. The desired geographic clustering was obtained by use of a two-level method of sampling: (1) a predetermined number of blocks was randomly selected within each strata, and (2) a predetermined number of dwelling units was randomly selected within the sample blocks of each strata.

The desired number of sample blocks in each stratum was computed by dividing the number of sample dwelling units to come from a stratum by the desired average per block for that stratum. A compromise between coverage and economy in data collection dictated an overall average of 3 samples per block. However, because of the heavy sampling in Stratum I and Stratum II, the average number of sample dwelling units per subblock for these strata was increased to 4.3 and 3.5, respectively. Since several city blocks in each stratum contained no residential land use, it was necessary to oversample other blocks to compensate for their omission.

From City Plan Commission records, each city block was allocated to the appropriate income stratum, and city blocks within each stratum were sampled separately by a random-interval sampling procedure. Table 4-4 shows the results of this technique.

The second phase of selecting the private dwelling-unit sample—the selection of approximately fifteen-hundred residential dwelling units from within the sample blocks—was conducted in a similar manner. The number of dwelling units on each sampled block was obtained from City Plan Commission records, and the sampling rates for each stratum were determined by dividing the total number of dwelling units within the sample blocks of each stratum by the desired number of dwelling-unit samples.

The sample dwelling units were then selected within each income stratum by applying the sampling rate to all dwelling units, beginning with the northeast corner of the first sample block (the one with the lowest City Plan Commission identification number). Sanborn maps were used to obtain the correct street addresses and apartment numbers of the samples. When the last unit had been selected in the first block, the sampling rate was continued onto the next sample block in numeric order until all sample blocks in each stratum had been covered. This method assured that all dwelling units within the sample blocks had an equal probability of selection. Table 4-5 shows the results of the sampling procedure.

It is apparent from Table 4-5 that the average sampling rate for the entire city is one sample for each 159 private dwelling units. By strata, however, the rates range from a high of one sample for each 66 private

TABLE 4-4
Distribution of Private-Housing Sample Blocks

	Total Number of City Blocks	Desired Number of Dwelling-Unit Samples	Desired Average per Block	Minimum Desired Number of Sample Blocks	Actual Number of Sample Blocks Selected
Stratum I	657	152	4.0	38	41
Stratum II	1,520	563	3.5	161	168
Stratum III	1,688	429	3.0	138	149
Stratum IV	2,061	356	3.0	123	132
Total	5,926	1,500	–	460	490

TABLE 4-5
Distribution of Private-Housing Sample Dwelling Units

	Total Number of Private Dwelling Units	Number of Sample Blocks Selected	Desired Number of Sample Dwelling Units	Actual Number of Sample Dwelling Units Selected	Average Number of Sample Dwelling Units per Block	Sampling Rate[1]
Stratum I	11,124	41	151	169	4.1	66
Stratum II	72,844	168	563	559	3.3	130
Stratum III	76,911	149	429	432	2.9	178
Stratum IV	81,848	132	356	366	2.8	224
Total	242,727	490	1,500	1,526	3.1	159

[1]"Total number of private dwelling units" divided by "number of sample dwelling units."

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dwelling units in the lowest-income census tracts to a low of one sample per 224 private dwelling units in the highest-income tracts.

SAMPLING PROCEDURE FOR ST. LOUIS COUNTY

The procedure used to select the 206 sample dwelling units from within St. Louis County was somewhat different from that used for the city. The suburban subsample was designed to supplement the city sample in Income Stratum IV and to provide a better description of the full range of residential alternatives available in the urban area.

The first phase of the county sampling procedure involved the selection of a sample of parcels containing residential dwelling units from an alphabetical list of county blocks and their associated parcels in the County Assessor's Office. A random-interval sampling procedure was used to select 287 sample parcels containing residential dwelling units. Then, the number of dwelling units associated with each of these sample parcels was determined from county assessment records.

The second phase of the sampling procedure involved the selection of dwelling units from two subsamples within the 287 sample parcels: a subsample of 184 dwelling units from the 256 one- or two-family-structure parcels and a subsample of 22 dwelling units from 31 multiple-unit or mixed-land-use parcels. Table 4-6 summarizes the selection results.

A BRIEF NOTE ON WEIGHTING

It is obvious from the preceding discussion of the sampling procedures used to collect the home-interview data analyzed in the course of this book that the sample observations represent different numbers of households. This raises the question of how the sample should be treated in subsequent analyses. Specifically, the issue is whether, in the statistical analyses that follow, the sample observations should be weighted by the sample weights shown in Tables 4-5 and 4-6 or whether they should be weighted uniformly. As the statistics in Table 4-7 indicate, the choice makes a considerable difference in the computation of sample means. For both the renter and owner subsamples, the unweighted means have a larger proportion of black households, lower incomes, and lower house values and rents than the corresponding population estimates.

If the objective of the analyses that follow were to estimate population parameters for the city and county of St. Louis, the choice would be straightforward, and individual observations would be weighted. The case is less clear, however, in the statistical analyses presented in

TABLE 4-6
Summary of the County Residential-Dwelling-Unit Sample

	Estimated Number of Private Dwelling Units	Number of Sample Parcels	Desired Number of Sample Dwelling Units	Number of Sample Dwelling Units	Sampling Rate[1]
From 1- and 2-family dwelling units	199,626	256	180	184	1,085
From multiple and mixed dwelling units	57,549	31	20	22	2,616
Total	257,175	287	200	206	1,248

[1] "Estimated number of private dwelling units" divided by "number of sample dwelling units."

TABLE 4-7
Unweighted and Weighted Means for Renters and Owners in St. Louis City and County

	Renters		Owners	
	Unweighted	Weighted	Unweighted	Weighted
Proportion black	.45	.24	.18	.07
Income	$5,395	$6,753	$8,618	$10,218
Rent	$63.31	$80.75	–	–
Value	–	–	$16,512	$18,973

subsequent chapters. Although a good argument can be advanced for using the sample weights in these regressions, we have generally followed the opposite convention. In Appendixes D and E simple expenditure models are presented using both weighted and unweighted regressions. With these two exceptions, the regressions we present are based on unweighted observations.

If the individual equations estimated were correct specifications of true structural equations, equal weighting of observations would have only small effects on the estimation of individual parameters. The ordinary least-squares (unweighted) procedure would be less efficient, but the estimated coefficients would be unbiased.

SUMMARY

This chapter provides some pertinent background information on St. Louis, Missouri, and its environs. It also includes: a brief description of the survey instruments used to gather information for a sample of 1,583 dwelling units and households in the city of St. Louis and for a separate sample of 206 dwelling units and households in St. Louis County; and a discussion of collateral data obtained from assessment records for St. Louis city and County, from public and parochial school districts, from the St. Louis Police Department, and from the East-West Gateway Council, as well as from the U.S. Census. (The survey instruments used in the study are included as Appendix A.)

The sample of dwelling units located in the central city was chosen by a stratified, random-sampling technique in which the probability of selection for any dwelling unit varied inversely with the (1960) median income of the census tract. The smaller suburban sample was chosen by a random selection of blocks in St. Louis County and by a random

selection of dwelling units (stratified by single detached and multifamily units) within each block. The selection and survey process resulted in a sample of 1,186 dwelling units and households. With the exception of the analysis in Chapter 6, the analyses contained in the rest of this volume are based upon this sample of households and dwelling units.

The surveys used in this study had several novel features. Perhaps the most significant of these was the use of overlapping surveys carried out by home interviewers and building inspectors. These surveys were designed to elicit information about the dwelling unit, the neighborhood environment, and the household. The objective was to obtain detailed and comprehensive information about the broad range of living conditions (or the housing services, broadly defined) associated with each sample dwelling unit. In particular, a serious effort was made to describe and to quantify the qualitative as well as the quantitative attributes of dwelling units, structures, parcels, and their associated block faces and neighborhoods.

Besides its small size, the most serious weakness of the sample used for most of the analysis presented in subsequent chapters (we suspect that as a general rule *all* samples are considered too small by the researchers who use them) is the lack of an adequate sample of households and dwelling units from the suburb or from communities surrounding the central city. Because of the small suburban subsample and because some information was simply unavailable for any suburban housing units, at several points in the subsequent analysis we are unable to address adequately a number of crucial issues. On the other hand, the sample available for empirical analysis is extremely rich in its description of households and dwelling units, and its heavy oversampling of poverty households permits what is probably the most comprehensive quantitative analysis of the effects of social discrimination on the housing-market behavior of black households.