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The objectives were to determine the forms of improvement made to exciting single dwelling structures, to identify the extent to which each form of improvement was utilized, to develop a cost classification, and to identify trends in home improvement in Durham, North Carolina, during the years 1959-1968.

Data were collected from a 50% systematic sample of building permits issued by the Inspection Division of the city. Types of home improvement were classified as repairs, replacement, additions, alterations, conversion, and relocation.

Findings of the study showed that on an average, 648 permits were issued per year. The largest amount of money was spent for alterations; the average home improvement cost per permit was $1,172. Cost classification indicated that as the amount of money spent increased, the number of permits issued for each type of improvement decreased. The greatest number of home improvements, regardless of type, were for general improvements and changes in porches. The greatest number of permits were issued for the downtown area of the city, whereas, the largest amount of money was spent in the southwest section. The highest average cost per permit was for the area known as west campus of Duke University. Issuance of multiple permits for the same dwelling showed that the largest number of first and second permits were issued for improvements costing less than $999. In 21 % of the dwellings, the second permit was issued within one year after the first permit was issued. Reissue of permits was most frequent in the downtown area of

the city.

Results of the study indicated that over the ten years, 1959-1968, there was a trend toward increased amounts of money spent in home improvement and in average cost per permit for these improvements. There was a trend toward greater home improvement activity between five-year intervals for home improvement in basements, bathrooms, kitchens, porches, sleeping areas, underpinning, general, and interior improvements than in other locations. Those for kitchen and general improvements were in a negative direction between the first and second five-year periods.

HOME IMPROVEMENT IN DURHAM, NORTH CAROLINA

DURING YEARS 1959-1968

by

Ketki Babubhai Shah

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Approved by

Jane H. Carr
Thesis Adviser

APPROVAL SHEET

This thesis has been approved by the following committee of the Faculty of the Graduate School at The University of North Carolina at Greensboro.

Thesis Adviser Jane V. Carr

Oral Examination Committee Members Helen Canaday

Savannah S Day

George P. Gill

5/12/69
Date of Examination

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CHAPTER I

INTRODUCTION

Historically it has been assumed that persons of at least moderate income could finance home improvements on their property if need or desire to make improvements existed. The low-income homeowners and owners of low-income rental property often evidenced little interest in home improvement. In recent years the Federal Government has given impetus both to homeowners and owners of residential rental property to upgrade private housing through programs of the Federal Housing Administration, Farmers Home Administration, Office of Economic Opportunity, and the U. S. Department of Housing and Urban Development. This impetus during an era of rising family income and levels of living could initiate an increase in home improvements.

During an era also characterized by a shortage of dwelling units and high cost of new construction, one means of improving housing was to utilize to better advantage existing structures. What is happening to existing structures to make them better fit the needs of occupants? Changes made would likely be in the form of repairs, alterations and remodeling, or major additions. A study of these activities over a period of time should reflect whether or not any trends have developed, such as: Have families added a bathroom, bedroom, family room, den, dining space, porch, garage, or carport? Have large houses been converted to multiple dwelling units? Have structural features been

changed? Have materials been incorporated during repair which could affect ease of maintenance or safety? What has been the cost of these home improvements?

Should trends become evident, these could serve as a basis for future planning for residential use.

Objectives

Objectives of this study were:

1. To determine the form of improvement made to existing single dwelling structures in Durham, North Carolina, during 1959-1968.
2. To identify the extent to which each form of improvement was utilized.
3. To develop a cost classification of these home improvements.
4. To identify possible trends in home improvement.

Assumptions

Assumptions for the study were that repairs, alterations, and major renovations to existing dwellings are for the purposes of extending life to the structure, providing easier maintenance, improving its livability, conversion to a multiple dwelling structure, and meeting minimum housing standards. It was also assumed that cost estimates appearing on building permits reflect approximate actual cost.

Definitions

Definitions for the study were:

Improvement - activity which increases the value or excellence of quality or condition of a dwelling unit.

Alteration - a change or modification made on a dwelling unit

that does not increase its exterior dimensions.

Addition - facility, structure, or other property added that increases exterior dimensions beyond that already in service.

Repair - restoration to a sound state by fixing or mending.

Accessory building - a subordinate building on the same lot with dwelling, the use of which is in conjunction with the dwelling, such as a garage or storage building.

CHAPTER II

REVIEW OF LITERATURE

A search of literature relevant to this study indicated a dearth of such materials. Reviewed here are the United States reports of expenditures for home improvements and housing information about Durham, North Carolina.

At intervals, the U. S. Bureau of the Census has published reports of residential alterations and repairs. Reports of the years which are a part of this study (11-16) indicated that expenditures for residential maintenance, repairs, and improvements of single-dwelling units in the United States have fluctuated from year to year but decreased from 1960 to 1967 (see Table 1). However, average expenditures per property for years information was available (1962-1967) indicated an increase. The average dollars spent per property in the South were less than those for the nation as a whole.

When expenditures for maintenance and repairs were compared to those for improvements, it was evident that more money was spent for improvements each year than for maintenance and repairs (see Table 2). Details of expenditures for these improvements showed the same pattern for each year; highest cost was for alterations, and lowest cost was for additions. Dollars spent for replacements were between these two.

In 1963 President John F. Kennedy (6) emphasized the need for remodeling and improving homes. At that time in the United States more

than 45% of the existing houses were built before 1929. According to the 1960 census, in Durham, North Carolina, 35.5% of the total structures were over 30 years old, and 22.1% of the units were in deteriorating and dilapidated condition (9).

TABLE 1

Expenditures for Residential Maintenance, Repairs, and Improvements (U.S.A. and South)

Years	All Property (in millions)		Average Expenditure (in dollars)	
	U. S.	South	U. S.	South
1960	7,950	(NA)*	(NA)*	(NA)*
1961	7,411	(NA)*	(NA)*	(NA)*
1962	6,036	(NA)*	200	185
1963	6,760	1,816	224	192
1964	(NA)*	(NA)*	(NA)*	(NA)*
1965	7,033	1,655	216	160
1966	7,133	1,768	218	172
1967	7,024	1,707	216	172

Sources: Adapted from U. S. Department of Commerce, Bureau of the Census, Residential Alteration and Repairs, Construction Reports. C50-67 A, Part 2, p. 33, February 1969; C50-11, Part 2, p. 27, September 1968; C50-10, Part 1, p. 11, January 1967; C50-6, p. 7, July 1962; and C50-1, p. 7, June 1961.

* (NA) Not Available.

TABLE 2

Expenditures for Maintenance and Repairs and Improvements

for Selected Years (U.S.A)

(in millions of dollars)

Years	Total Expenditures	Maintenance and Repairs	Total Improvements	Improvements				
				Replacement	Total	Additions and Alterations		
						Additions	Alterations	Properties Outside of Residential Structures
1960	7,950	2,968	(NA)*	1,334	3,919	588	2,216	1,115
1961	7,411	2,801	4,610	1,102	3,508	567	2,163	778
1962	6,036	2,313	3,723	1,017	2,706	596	1,548	562
1963	6,760	2,401	4,359	1,103	3,256	785	1,586	886
1964	(NA)*	(NA)*	(NA)*	(NA)*	(NA)*	(NA)*	(NA)*	(NA)*
1965	7,033	2,382	4,651	993	3,658	915	1,986	757
1966	7,133	2,067	5,066	1,138	3,928	992	2,252	683
1967	7,024	1,935	5,089	1,094	3,996	828	2,303	863

Sources: Adapted from U. S. Department of Commerce, Bureau of the Census, Residential Alterations and Repairs, Construction Reports. C50-67, Q4, p.2, October 1968; C50-11, Part 2, p.5, September 1968; C50-6, p.7, July 1962; and C50-1, p.7, June 1961.

* (NA) Not Available.

The 1960 census of housing also indicated that there were 23,234 housing units in Durham, of which only 43.5% were owner occupied (10). Of all units 77.9% were considered sound, 16.3% were deteriorating, and 5.8% were dilapidated. At that time, 34.8% of the structures were between six to twenty years old; 16.2% were from twenty-one to thirty years old, and 35.5% were over thirty years old. After studying the condition of structures and sanitary facilities, the Durham City Council in April of 1963 established a Codes Review Committee. As a result of its action, a systematic Housing Code Compliance Program was planned to bring neighborhoods up to a desirable housing standard (2). A comprehensive study of each census tract area of the city was made for the purpose of determining the condition of the structures. As a result, a comprehensive urban renewal plan was developed with target dates for accomplishments. The urban renewal activities included clearance, conservation, and rehabilitation for improvement in the housing quality.

In Durham, improvement of houses is permitted only in those areas which are currently zoned for residential use (3). A building permit issued by the Inspection Division of the city government is necessary for any construction, reconstruction, alteration, repair, removal, or demoliton of any building or any part of it which costs more than $100 or for work on a flue or chimney at any cost (1, 7). The permit is valid for a period of twelve months; if work is not accomplished during that time, a new permit is required. Any change in plans or specifications of work must be approved by the Building Inspector.

The population of Durham, North Carolina, in the year 1960 was 78,302 persons (4). According to reports of the Research Triangle Planning Commission, Durham's estimated population for the year 1970 is 102,600 persons (8).

CHAPTER III

PROCEDURE

Information needed for this study was obtained from the building permits issued by the Inspection Division of the City of Durham, North Carolina, for the years 1959 through 1968. Data included issuance date of building permit issued, location of property, estimated cost of improvement, type of housing improvement, and location within structure where improvement occurred.

A pilot study for two months of the year 1968 was conducted. As a result of the study, sample size, sampling type, and classification of data categories were determined.

To reduce the standard error to less than .05, a 50% sample was selected, using systematic sampling consisting of odd numbered items for the odd numbered months and even numbered items for the even numbered months. Home improvements were classified in six categories: repairs, replacement, additions, alterations, conversion, and relocation.

For convenience in geographically locating structures, which had been improved, the U. S. Post Office zip codes were used: (1) downtown, (3) southeast, (4) northeast, (5) northwest, (6) west campus of Duke University, (7) southwest, (8) east campus of Duke University. Zip code two does not apply in this study; it is the number designated for mail boxes in the main post office of the city. Zip code locations of Durham

are reported in Appendix A.

Data were coded on coding forms for transfer to keypunch cards. The summary tables and computations of data were analyzed by using an IBM 360 Computer at the Triangle Universities Computation Center in Research Triangle Park, North Carolina. Data were statistically analyzed on a yearly basis for identification of trends in type of improvement and cost. The Student's t test for significance of product-moment correlation was utilized in data relating to permits issued per year, total cost per year, and average cost per permit. Location of home improvement was tested for significance between two five-year intervals by the use of the approximate normal test statistic, for comparing the mean of two binominal populations. Tables were developed to present findings. Data mentioned but not numerically shown in the text were reported in Appendixes B and C.

CHAPTER IV

FINDINGS

Home Improvement Permits Issued by Year and Type

During the ten-year period of this study, 1959-1968, the average number of building permits issued for home improvement in Durham, North Carolina, was 648 (see Table 3). The largest number of permits issued was for alterations; others in descending order were repairs, additions, replacement, conversion, and relocation. This was also true for the five-year intervals, 1959-1963 and 1964-1968, but not for the individual years. There was no significant relationship between number of permits and the years studied, according to the Student's *t* test of correlation coefficient.

Home Improvement Cost by Year and Type

The total amount of money spent for home improvement decreased during the first four years of this ten-year study, but thereafter, it increased steadily (see Table 4). When improvements were broken down into specific types, that same pattern did not occur, except for the additions. During the ten-year period, the largest amount of money was spent for alterations; others in descending order were additions, repairs, conversion, replacement, and relocation. This sequence also resulted when data were cumulative at five-year intervals but did not occur during individual years. Correlation between years and total cost per year was significant at the 5 per cent level, by the Student's

TABLE 3

Total Permits for Home Improvement by Year and Type

Years	Total Permits	Repairs	Total				Total		
				Replacement	Additions	Alterations		Conversion	Relo-cation
1959	696	186	490	46	172	272	20	16	4
1960	798	268	508	28	176	304	22	20	2
1961	630	160	456	60	150	246	14	12	2
1962	542	98	434	28	140	266	10	8	2
1963	588	164	422	40	106	276	2	2	0
1964	630	200	422	26	134	262	8	6	2
1965	680	236	426	48	128	250	18	12	6
1966	694	254	434	40	124	270	6	4	2
1967	618	210	392	36	134	222	16	6	10
1968	602	182	388	34	148	206	32	10	22
1959-1963	3,254	876	2,310	202	744	1,364	68	58	10
1964-1968	3,224	1,082	2,062	184	668	1,210	80	38	42
1959-1968	6,478	1,958	4,372	386	1,412	2,574	148	96	52
Average per Year	648	196	437	38	141	257	15	10	5

TABLE 4

Total Cost of Home Improvement by Year and Type (in thousands of dollars)

Years	Total Cost*	Standard Error of Total Cost	Repairs	Total	Replacement	Additions	Alterations	Total	Conversion	Relocation
1959	754.5	49.7	139.4	552.2	17.6	297.4	237.2	62.9	60.4	2.5
1960	754.5	44.7	181.9	514.5	15.0	265.1	234.3	58.1	52.3	5.8
1961	627.5	48.0	143.9	433.0	23.4	194.2	215.4	50.6	50.1	0.5
1962	556.6	34.1	84.4	464.1	6.8	193.4	263.9	8.1	7.7	0.4
1963	632.6	39.9	118.5	510.5	14.0	223.6	272.9	3.6	3.6	0.0
1964	698.2	49.1	153.5	537.1	9.3	242.4	285.3	7.6	5.6	2.0
1965	809.1	76.5	216.8	556.6	26.9	267.5	262.2	35.7	28.1	7.6
1966	873.1	52.8	268.3	601.9	14.5	277.4	310.0	2.8	1.8	1.0
1967	913.2	71.5	200.3	669.7	13.6	315.0	341.1	43.2	18.0	25.2
1968	971.6	78.8	220.9	683.9	14.2	358.6	311.1	66.7	31.9	34.8
1959-1963	3,325.7	97.8	668.8	2,474.2	76.8	1,173.7	1,223.8	183.3	174.1	9.2
1964-1968	4,265.2	150.3	1,059.9	3,049.2	78.5	1,461.0	1,509.7	156.1	85.4	70.6
1959-1968	7,590.9	180.1	1,728.1	5,523.4	155.3	2,634.6	2,733.5	339.4	259.5	79.8

*Significant at the .05 level.

t test.

When categories of home improvements during 1959-1968 were compared, the frequency patterns of number of building permits issued differed from the cost pattern.

Average Home Improvement Cost Per Permit

During the years studied, average cost per permit for home improvement dropped slightly from the year 1959 to 1960, but it increased steadily thereafter (see Table 5). Correlation between years and average cost was significant at the 1% level by the Student's *t* test. The average cost for home improvement per permit for the ten years was $1,171.80. The ten-year average cost per permit was highest for conversion; followed by additions, relocation, alterations, repairs, and replacement. This was true for each five-year interval, but only for individual years 1965 and 1968. Total cost and annual cost of additions were higher than were costs of repairs and replacements.

Home Improvement by Type and Cost Classification (1959-1968)

More than one-half of the total permits for home improvement issued during the ten years were in amounts less than $999 (see Table 6). As cost increased, the number of permits issued decreased. The largest number of permits issued for any type of improvement fell into the under $999 cost classification.

Location of Improvement

Location within structure or reason for change by type improvement (1959-1968). When the building permits were classified for the ten-year period on the basis of type of improvement and rank order

TABLE 5

Average Home Improvement Cost per Permit by Year and Type (in dollars)

Years	Average Cost of All Improvements*	Standard Error of All Improvements	Repairs	Total				Total		
					Replacement	Additions	Alterations		Conversion	Relocation
1959	1,084.0	71.4	749.7	1,126.8	381.7	1,729.1	872.0	3,145.0	3,775.0	625.0
1960	945.5	56.0	678.8	1,012.7	537.5	1,506.1	770.9	2,640.9	2,615.0	2,900.0
1961	996.0	76.3	899.6	949.5	389.5	1,294.5	875.7	3,614.3	4,175.0	250.0
1962	1,027.0	62.9	861.0	1,069.5	243.2	1,381.4	992.3	810.0	962.5	200.0
1963	1,075.9	67.8	772.8	1,209.7	350.0	2,109.5	988.7	1,800.0	1,800.0	0.0
1964	1,108.2	77.9	767.6	1,272.7	358.2	1,809.1	1,089.1	950.0	933.3	1,000.0
1965	1,189.9	112.5	918.8	1,306.5	560.2	2,089.8	1,048.8	1,938.3	2,341.7	1,266.7
1966	1,258.0	76.0	1,056.2	1,387.0	362.2	2,237.2	1,148.3	475.0	462.5	500.0
1967	1,477.6	115.8	953.8	1,708.4	377.9	2,350.7	1,536.4	2,700.0	3,000.0	2,520.0
1968	1,614.0	131.0	1,213.8	1,762.7	418.1	2,423.3	1,510.1	2,085.9	3,190.0	1,584.1
1959-1963	1,022.0	30.0	762.8	1,071.1	380.1	1,577.5	897.2	2,695.6	3,001.7	920.0
1964-1968	1,322.9	46.6	979.5	1,478.8	426.7	2,187.1	1,247.7	1,951.2	2,248.7	1,682.1
1959-1968	1,171.8	27.8	882.6	1,263.4	402.3	1,865.9	1,062.0	2,293.2	2,703.6	1,535.6

*Significant at the .01 level.

TABLE 6

Total Number of Permits for Home Improvement by Cost Classification and Type (1959-1968)

Cost (in dollars)	Type Improvement						
	Repairs	Replacement	Additions	Alterations	Conversion	Relocation	Totals
Under 999	1,396	356	648	1,426	32	20	3,878
1,000-1,999	344	22	278	838	24	20	1,526
2,000-2,999	128	6	190	208	8	6	546
3,000-4,999	60	0	178	78	14	0	330
5,000 and over	30	2	118	24	18	6	198
Totals	1,958	386	1,412	2,574	96	52	6,478

by type improvement, the porch appeared among the first four ranks in all selected categories (see Table 7). The bathroom was among the first nine, and carports or garages were among the first ten ranks, in each type of improvement. It should be noted that remedying fire damage ranked high in the repair category.

Location within structure or reason for change by type improvement (each year). When building permits were classified annually by type of improvement and location of change, exterior alterations ranked first or second among the number of permits issued for each year (see Table 8). Other improvements in descending order were additional rooms (second or third rank), general repairs (first four ranks), interior alterations (second through fifth rank), replacement (fourth through eighth rank), and alterations to rooms (fifth to tenth rank).

Location of improvement regardless of type (1959-1968). Considering the total number of building permits issued according to the location or reason for change, the highest number of permits were for general improvement in the dwelling (see Table 9). Following in sequence were permits for porches, siding, rooms, and interior changes. Improvements in the dining room, recreational area, and living room appeared least often among home improvements in the ten-year period studied.

Changes in the number of permits issued for improvements within dwelling units between the two five-year periods 1959-1963 and 1964-1968, were significant at the 1% level for the basement, bathroom, general improvements, interior improvements, kitchen, porch, sleeping

TABLE 7

Rank Order (1-10) of Permits by Location and Selected Types of Home Improvement (1959-1968)

	Types of Improvement			
Rank	Repair	Replacement	Additions	Alterations
1	General	Porch	Rooms	Siding
2	Porch	Carport or Garage/Roof*	Carport or Garage	Interior
3	Fire Damage	Carport or Garage/Roof*	Accessory Building	Porch
4	Interior	Window	Porch	Kitchen
5	Foundation	Others	Bathroom	Underpinning
6	Exterior	Foundation	Sleeping Area	Bathroom
7	Others	Bathroom/Floor/ Fire Damage*	Storage	Carport or Garage/Basement*
8	Roof	Bathroom/Floor/ Fire Damage*	Patio	Carport or Garage/Basement*
9	Bathroom	Bathroom/Floor/ Fire Damage*	Others	General
10	Carport or Garage	Interior/ Siding*	Recreational Area	Exterior

*Multiple item ranking.

TABLE 8

Rank Order of Number of Permits by Type of Improvement

Location of Change, and Year

Type of Improvement and Location of Change	Rank Order									
	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Repairs										
Interior and Kitchen	15	17	15	15	10	11	18	14	15	15
Exterior and Foundation	16	14	16	15	14	14	15	16	17	14
Porch, Garage and Carport	5	4	8	8	6	5	8	9	12	8
Fire Damage	12	8	9	9	9	9	9	8	9	7
General	3	2	3	4	2	2	1	1	1	2
Others	14	20	12	19	16	17	18	12	19	21
Replacement										
Replacement	6	8	4	7	5	7	4	6	5	5
Additions										
Rooms	2	3	2	3	3	3	3	3	3	3
Garage and Carport	7	6	7	5	7	6	7	7	10	4
Porch	9	10	11	11	10	12	15	14	11	12
Accessory Building	18	10	10	9	10	10	12	10	7	10
Storage and Others	12	12	12	11	16	12	15	16	15	17
Alterations										
Rooms	8	7	5	6	7	7	6	5	7	10
Garage and Carport	18	16	22	15	13	15	10	11	6	19
Interior	4	5	5	2	4	4	5	4	4	5
Exterior	1	1	1	1	1	1	2	2	2	1
General	11	15	18	15	14	17	12	16	14	13
Patio and Others	21	17	16	13	16	17	18	12	21	19
Conversion										
Single into Multiple	10	12	14	13	16	17	10	22	17	15
Change in Use of Room	18	17	18	21	20	15	18	19	19	17
Others	21	22	18	21	20	22	18	19	21	21
Relocation										
Relocation	16	21	18	19	20	17	12	19	12	9

TABLE 9

Number of Permits for Five-Year Intervals and Ten-Year Period

by Location or Reason for Change

Location of Change	1959-1963	1964-1968	1959-1968
Accessory Building	72	78	150
Basement*	52	24	76
Bathroom*	110	64	174
Carport and Garage	216	206	422
Conversion and Relocation	66	78	144
Dining Area	0	2	2
Exterior	34	38	72
Fire Damage	108	104	212
Floor	6	4	10
Foundation	18	18	36
General*	528	828	1,356
Interior*	310	224	534
Kitehen*	46	74	120
Living Area	4	0	4
Patio	20	16	36
Porch*	660	488	1,148
Recreational Area	4	0	4
Roof	34	24	58
Rooms	334	350	684
Siding	458	530	988
Sleeping Area*	36	2	38
Storage	24	10	34
Window	10	8	18
Underpinning*	72	32	104
Other	32	22	54

*Significant at the .01 level.

area, and underpinning. More permits were issued for the last five years than for the first five for improvements in the kitchen and general improvements. Improvements in all other areas cited were less in the last five years than in the first five years.

Area of City

Permits by type of improvement (1959-1968). The highest number of permits, for all home improvements, was issued for the downtown area of the city, followed by the southwest and northwest sections (see Table 10). When permits were classified according to types of home improvement, it was found that for every type, except relocation, the highest number of permits was also issued for the downtown area of the city; the second in rank was the southwest section. The smallest number of permits for all categories was issued for the area designated as west campus of Duke University. No permits were issued during 1959-1968 for the area of the city designated as east campus of Duke University.

Cost by type of improvement (1959-1968). The largest amount of money spent on home improvement during the total period of study was spent in the southwest area of the city, and the next largest amount in the downtown section (see Table 10). There was no set pattern between the total amount of money spent in the different areas of the city and types of home improvement made.

Average cost per permit by type of improvement (1959-1968). The highest average cost per permit issued during the ten years studied was for the area that encompasses the west campus of Duke University; the lowest average cost per permit occurred in the downtown area of the city

TABLE 10

Area of City and Type of Improvement by Total Permits and Cost (1959-1968)

(Cost in thousands of dollars)

Area of City (Zip Code)	Type of Improvement													
	Repairs		Replacement		Additions		Alterations		Conversion		Relocation		Total	
	Permits	Cost	Permits	Cost	Permits	Cost	Permits	Cost	Permits	Cost	Permits	Cost	Permits	Cost
1	978	719.5	160	57.6	352	507.2	840	857.3	48	123.6	8	8.0	2,386	2,273.2
3	212	184.7	66	26.4	154	209.8	344	351.3	6	5.6	4	1.2	786	779.0
4	50	62.1	30	13.8	290	462.3	308	232.3	4	4.2	10	10.8	692	835.6
5	278	237.5	58	20.9	272	505.3	460	454.4	8	33.6	14	12.1	1,090	1,263.9
6	4	3.2	0	0.0	10	50.6	30	39.4	2	4.0	0	0.0	46	97.2
7	436	521.0	72	36.6	334	899.4	592	748.8	28	88.5	16	47.7	1,478	2,342.0

Note.— Area of city was coded as follows: 1. downtown, 3. southeast, 4. northeast, 5. northwest, 6. west campus of Duke University, and 7. southwest.

(see Table 11). When types of home improvement were considered in conjunction with average cost per permit, the southwest area ranked in first or second position for all types of improvements, whereas other areas of the city fluctuated in rank order of cost among the categories of improvement.

Multiple Permits for Same Dwelling

The sample included in the study indicated that within the ten-year period, 1959-1968, multiple permits for the same dwelling were issued as follows: two permits for 820 dwellings, three permits for 104 dwellings, and four permits for 16 dwellings. Due to smallness of numbers in the three and four permit segments of the population detailed analysis was made only for dwellings for which two permits were issued.

Approximately 60% of both first and second permits for home improvements in the same dwelling were for amounts less than $999 (see Table 12). There were no instances of both a first and second permit issued for home improvements in amounts of $5,000 and over. When initial improvements cost between $3,000 and $4,999, all second-permit improvements cost less than $2,000 (see Table 12).

Alterations were the most frequent type of improvement in the dwellings regardless of first or second order of the permits issued, whereas relocation was the improvement least used (see Table 13).

Most frequently, one year elapsed between the issue of a first and second permit for improvement in the same dwelling. As the number of years increased between the issue of two permits, the frequency of this occurrence decreased (see Table 14).

TABLE 11

Area of City by Average Cost per Permit and Type of Improvement (1959-1968)

(in dollars)

Zip Code Area of City	Type of Improvement						
	Repairs	Replacement	Additions	Alterations	Conversion	Relocation	Total
1	735.7	359.8	1,440.9	1,020.6	2,576.0	1,000.0	952.7
3	871.3	400.0	1,362.3	1,021.3	933.3	300.0	991.1
4	1,241.9	459.1	1,594.3	916.6	1,050.0	1,085.0	1,207.5
5	854.5	361.0	1,857.7	987.8	4,200.0	864.3	1,159.5
6	800.0	0.0	5,060.0	1,313.3	2,000.0	0.0	2,113.0
7	1,195.0	508.8	2,692.8	1,264.8	3,160.7	2,981.2	1,584.6

Note.—Area of city was coded as follows: 1. downtown, 3. southeast, 4. northeast, 5. northwest, 6. west campus of Duke University, and 7. southwest.

TABLE 12

Cost of First and Second Permits for Same Dwelling (1959-1968)

(in dollars)

First Permit Cost	Second Permit					
	Under 999	1,000-1,999	2,000-2,999	3,000-4,999	5,000 and over	Totals
Under 999	300	140	52	20	8	520
1,000-1,999	80	48	24	24	4	180
2,000-2,999	44	12	4	4	4	68
3,000-4,999	28	4	0	0	0	32
5,000 and over	12	0	4	4	0	20
Totals	464	204	84	52	16	820

TABLE 13

Number of First and Second Permits for Same Dwelling

by Type Improvement (1959-1968)

First Permit	Second Permit						
	Repairs	Replacement	Additions	Alterations	Conversion	Relocation	Totals
Repairs	96	12	24	68	4	0	204
Replacement	12	4	8	16	0	0	40
Additions	24	8	68	104	0	0	204
Alterations	80	32	120	128	0	0	360
Conversion	0	0	0	8	0	0	8
Relocation	0	0	0	4	0	0	4
Totals	212	56	220	328	4	0	820

TABLE 14

Number of Years Between Issuance of First and Second Permit for Improving the Same Dwelling (1959-1968)

Number of Years	Frequency
1	180
2	164
3	104
4	100
5	92
6	92
7	48
8	24
9	16
Total	820

Incidence of multiple-permit issues was highest in the downtown area of Durham, followed by the southwest section of the city.

Trends

There appeared to be a definite trend of increase in total money spent on home improvement in Durham, North Carolina, over the ten-year period of this study and also an increase in average cost of home improvement per permit issued. These two trends, identified as increased amounts of money spent on home improvement and increased

average cost per permit issued, may be a reflection of the increase in cost of living, more expensive or extensive types of improvement, increase in standard of living, higher family incomes, and the property owners' increased interest in upgrading the quality of their property.

Location of home improvement activity was significantly different between the first five and second five-year intervals in eight locations in the structure. In Durham, North Carolina, during the interval 1959-1963, a trend was to improve basements, bathrooms, interiors, porches, sleeping areas, and underpinning. From 1964-1968, a trend to improve kitchens and to make general improvements showed up.

CHAPTER IV

SUMMARY AND RECOMMENDATIONS

Summary

In recent years, emphasis on improvement of existing dwellings by their owners has increased due to high incidence of substandard housing, higher costs of new structures, and costly redevelopment programs.

Objectives of this study were:

1. To determine the form of improvement made to existing single dwelling structures in Durham, North Carolina, during the years 1959-1968.
2. To identify the extent to which each form of improvement was utilized.
3. To develop a cost classification of these home improvements.
4. To identify possible trends in home improvement.

It was assumed that cost estimates appearing on building permits reflected approximate actual cost.

Data were collected from building permits issued during 1959-1968 and on file in the Inspection Division in the City of Durham, North Carolina. As a result of a pilot study, a fifty percent systematic sample was utilized. Types of home improvements were classified as repairs, replacement, additions, alterations, conversion, and relocation. Coded data were analyzed on an IBM 360 computer.

Findings of the study suggested that no significant difference

appeared in the number of permits issued yearly. The average number of permits per year was 648. Considering the types of home improvement, the highest total cost was for alterations. Lowest total cost was for relocation, which was consistent with the small number of relocations occurring. Average home improvement cost per permit was $1,172. By type improvement, average cost per permit was highest for additions and conversion. As cost classification increased in dollar amounts, the total number of permits issued decreased as did the number of each type of improvement.

When total permits issued were analyzed according to part of the house improved through repairs, additions, alterations, and replacement, it was found that porches, bathrooms, and carports or garages ranked high in each type of change. However, when permits were rank ordered by type of improvement and location of change for individual years, exterior alterations were in first or second rank each year, additional rooms ranked second or third, and general repairs ranked from one to four each year.

The greatest number of home improvements, regardless of type, occurred as general improvements and changes in porches. When changes in number of home improvements by location within the dwelling were compared for the two five-year periods in the study and tested at the .01 level of confidence, changes in eight of the twenty-five locations were found to be significant. These were basement, bathroom, kitchen, porch, sleeping area, underpinning, general improvement, and interior improvement; changes for kitchen and general improvement were in a negative direction.

In Durham, North Carolina, during 1959-1968, the area of the city for which the greatest number of permits were issued was the downtown area, followed by the southwest section. When cost was the basis of consideration, the reverse was true; improvements of greatest total cost were in the southwest section of the city, followed by the downtown section. The highest average cost per permit for the ten years studied was in the area designated as west campus of Duke University.

Multiple permits for the same dwelling during the period studied were issued as follows: two permits for approximately 13 percent of the dwellings, three permits for approximately two percent of the dwellings, and four permits for only a few structures. The largest number of first and second permits were issued for improvements costing less than $999. Alterations appeared most frequently among the types of improvement appearing on both the first and second permits. Approximately 21 percent of the second permits were issued within one year after the first permit. In the downtown area, reissue of permits was more frequent than for any other area of the city.

Results of the study indicated that over the ten years, 1959-1968, there was a trend toward increased amounts of money spent in home improvements and in average cost per permit for these improvements. There was a trend toward greater home improvement activity between five-year intervals for improvement in basements, bathrooms, kitchens, porches, sleeping areas, underpinning, and for general and interior improvements.

Recommendations

To increase validity of studies on home improvement, it is recommended that persons entering information on building permits (1) utilize an identical terminology for similar types of improvements, (2) provide more specific details regarding the improvements, such as the specific room to be added or enlarged, (3) include a breakdown of cost when more than one type of improvement is entered on one permit, and (4) use caution in entering street names and house numbers. Studies covering longer periods of time and other types of housing might reflect effectiveness of some of the recent programs designed to upgrade housing. Studies comparable to this one, for cities of similar size in the state, cities within the same geographic region, or in different areas of the country, could indicate whether trends are localized, regional, or national.

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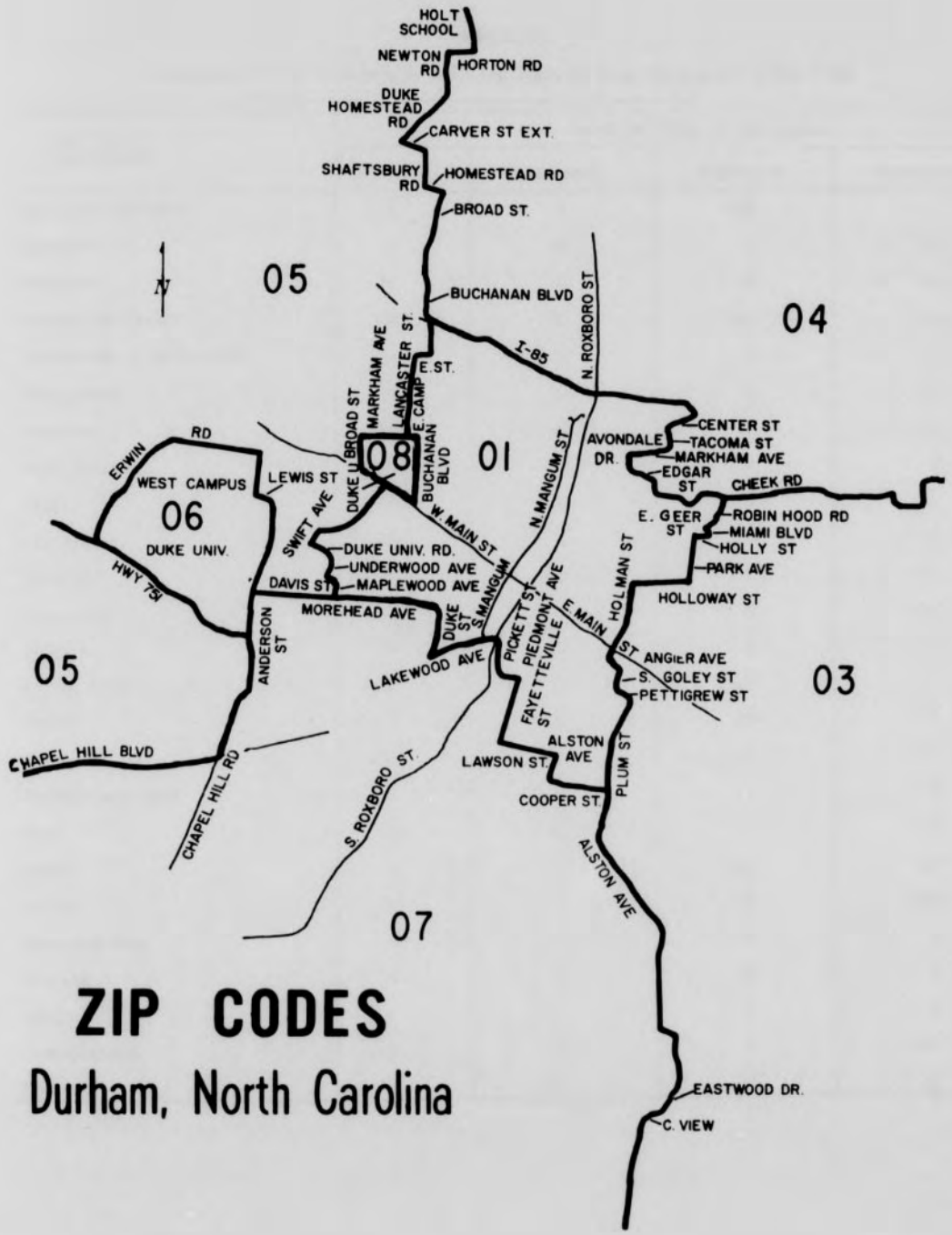
APPENDIXES

APPENDIX A



ZIP CODES

Durham, North Carolina

APPENDIX B

Location Within Structure by Selected Types of Home Improvement (1959-1968)

Location of Improvement	Selected Types of Improvement			
	Repairs	Replacement	Additions	Alterations
Accessory Building	4	0	142	2
Basement	2	0	2	72
Bathroom	10	4	70	90
Carport or Garage	8	14	328	72
Conversion or Relocation	0	0	0	0
Dining Area	0	0	2	0
Exterior	16	0	0	56
Fire Damage	208	4	0	0
Floor	4	4	0	2
Foundation	26	8	0	0
General	1,288	0	0	66
Interior	58	2	0	474
Kitchen	6	2	2	110
Living Area	0	0	0	4
Patio	2	0	22	12
Porch	296	310	110	432
Recreational Area	0	0	4	0
Roof	12	14	0	32
Rooms	0	0	654	32
Siding	0	2	0	986
Sleeping Area	0	0	32	6
Storage	0	0	30	4
Window	2	12	2	2
Underpinning	2	0	0	102
Others	14	10	12	18

APPENDIX C

Type of Improvement, and Location of Change by Year, Five-Year Intervals, and Ten-Year Period

Type of Improvement and Location of Change	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1959-1963	1964-1968	1959-1968
Repairs													
Interior and Kitchen	6	6	6	4	8	12	2	6	6	6	30	32	62
Exterior and Foundation	4	12	4	4	4	6	4	4	4	8	28	26	54
Porch, Garage and Carport	48	62	30	20	32	36	20	18	10	24	192	108	300
Fire Damage	10	28	28	16	24	18	14	20	18	32	106	102	208
General	110	156	84	52	94	126	194	198	168	110	496	796	1,292
Others	8	4	10	2	2	2	2	8	2	0	26	14	40
Replacement													
Replacement	46	28	60	30	40	26	48	40	36	34	204	184	388
Additions													
Rooms	112	86	66	60	64	62	88	74	82	88	388	374	762
Garage and Carport	32	42	38	42	28	40	26	26	14	38	182	144	326
Porch	16	16	12	10	8	8	4	6	12	18	62	48	110
Accessory Building	2	16	18	16	8	16	6	12	20	20	60	74	134
Storage and Others	10	14	10	10	2	8	4	4	6	4	46	26	72
Alterations													
Rooms	30	34	50	32	28	26	28	42	20	20	174	136	310
Garage and Carport	2	8	0	4	6	4	8	10	28	2	20	52	72
Interior	68	52	50	62	56	42	34	46	44	34	288	200	488
Exterior	160	196	144	156	176	186	172	162	124	138	832	782	1,614
General	12	10	2	4	4	2	6	4	8	12	32	32	64
Patio and Other	0	6	4	8	2	2	2	8	0	2	20	14	34
Conversion													
Single into Multiple	14	14	8	8	2	2	8	0	4	6	46	20	66
Change in use of Room	2	6	2	0	0	4	2	2	2	4	10	14	24
Others	0	0	2	0	0	0	2	2	0	0	2	4	6
Relocation													
Relocation	4	2	2	2	0	2	6	2	10	22	10	42	52